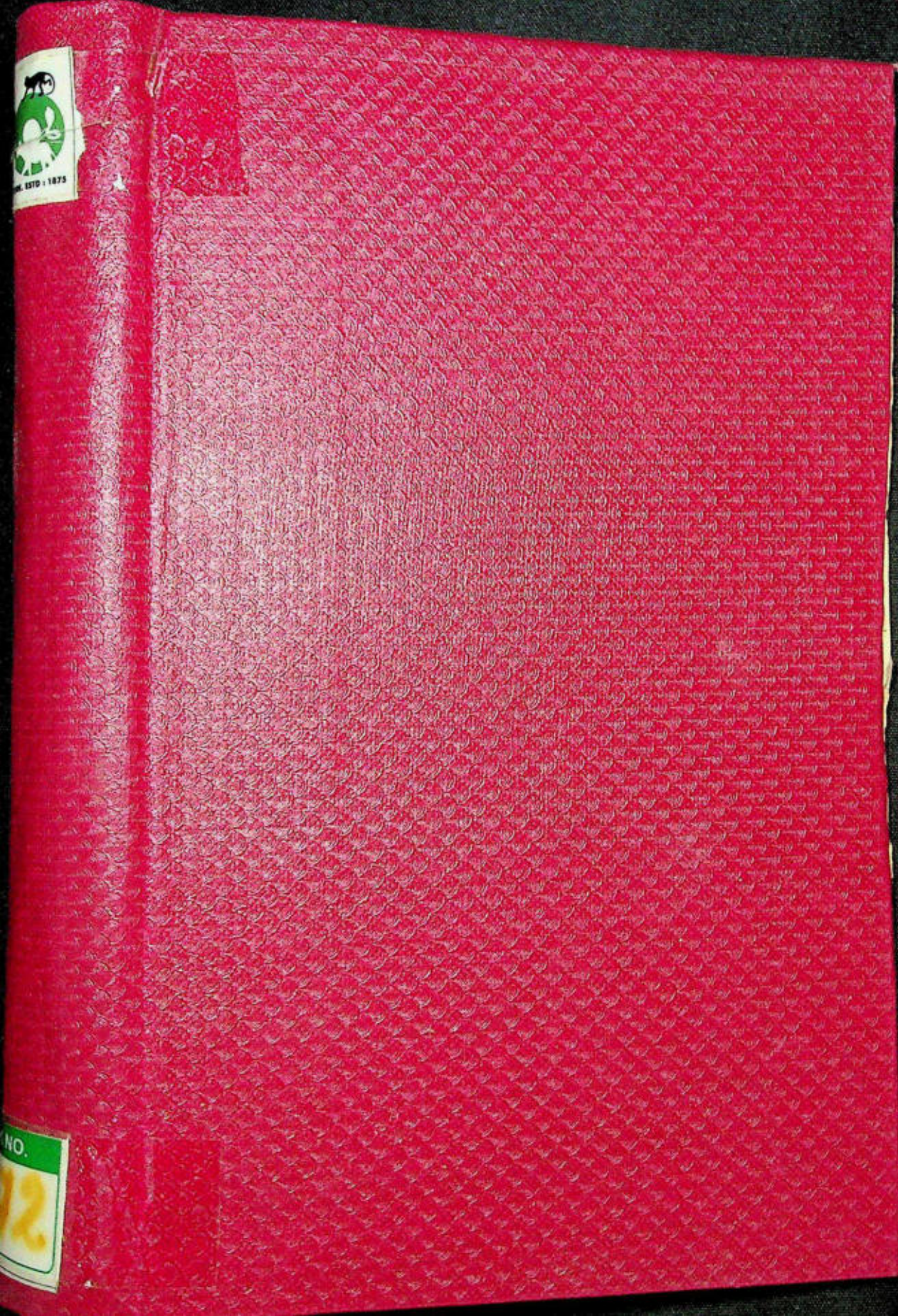


BOOK NO.
1172

THE

OOLOGICAL RECORD

FOR 1887;

BEING

VOLUME THE TWENTY-FOURTH

OF THE

RECORD OF ZOOLOGICAL LITERATURE.

EDITED BY

FRANK E. BEDDARD, M.A., F.Z.S.,

OSECTOR AND DAVIS LECTURER TO THE ZOOLOGICAL SOCIETY OF LONDON.

Explorate solum: sic fit via certior ultrà.

LONDON:
GURNEY & JACKSON, PATERNOSTER ROW.
M.DCCC.LXXXVIII.

1888

Communications, Papers, and Memoirs intended for this work shou be addressed *solely* to "THE EDITOR of the Zoological Reco Zoological Gardens, Regent's Park, London, N.W." It is earnest requested that in the case of separately-printed copies of papers forwarded, the *original pagination* be indicated.

ACC. NO - 505
Date - 13/12/06

LONDON:
PRINTED BY SIMMONS & BOTTEN,
4a. Shoe Lane. E.C.

EDITOR'S PREFACE.

The only alteration of importance which has been introduced into the present volume of the Record is that authors' names have been printed *throughout* in capitals. It is hoped that this will render a little clearer the references in the Systematic part of the several Records.

The staff of the Recorders has undergone some change. Mr. W. L. Sclater, on his appointment to the Calcutta Museum, was obliged to resign the *Mammalia*; his place has been filled by Mr. R. Lydekker. Prof. Bell, who found himself unable to continue recording *Vermes* and *Echinodermata*, has been replaced by Dr. Fowler.

The list of Periodicals has been again revised and added to; the additions contained in the present list, and in that of Vol. xxiii, occupy together about seven pages. I am indebted to the Recorders for much help in carrying out this work, and have again the pleasure of acknowledging the assistance of Mr. B. B. Woodward, of the General Library, Natural History Museum.

Mr. J. W. Gregory has kindly furnished me with the titles of some Russian papers omitted from recent volumes of the Record.

FRANK E. BEDDARD.

LIST OF THE ABBREVIATED TITLES

OF THE PRINCIPAL

JOURNALS AND TRANSACTIONS OF LEARNED SOCIETIES

WHICH CONTAIN ZOOLOGICAL PAPERS.

Abh. Ak. Berl.—Abhandlungen der königlich Akademie der Wissenschaften zu Berlin. (Also *SB.*)

Abh. bayer. Ak.—Abhandlungen der mathematisch physikalischen Classe der k. bayerischen Akademie der Wissenschaften (Munich). (Also *SB.*)

Abh. böhm. Ges.—Abhandlungen der k. böhmischen Gesellschaft der Wissenschaften (Prague). (Also *SB.*)

Abh. Ges. Götting.—Abhandlungen der k. Gesellschaft der Wissenschaften zu Göttingen.

Abh. Ges. Halle—Abhandlungen der naturforschenden Gesellschaft in Halle. (Also *Ber.*)

Abh. Ges. Hamb.—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturw. Verein in Hamburg.

Abh. Ges. Isis—Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (See *SB.*)

Abh. Ges. Königsb.—Abhandlungen der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg). (Also *SB.*)

Abh. naturf. Ges. Görlitz—Abhandlungen der naturforschenden Gesellschaft zu Görlitz.

**Abh. naturh. Ges. Nürnberg* — Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (See *J.B.*)

Abh. sächs. Ges.—Abhandlungen der k. sächsischen Gesellschaft der Wissenschaften (Leipzig). (Also *Ber.*)

Abh. schles. Ges.—Abhandlungen der Schlesischen Gesellschaft f. vaterländische cultur (Breslau). (Also *JB.*)

Abh. schw. pal. Ges.—Abhandlungen der schweizerischen palæontographischen Gesellschaft (Bâle).

Abh. Senck. Ges.—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft (Frankfort). (Also *Ber.*)

---

* Those periodicals marked with an asterisk (*) are no longer published.

Abh. Ver. Brem.—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen.

Anh. zool. Mus. Dresden—Abhandlungen und Berichte des k. zoologischen, etc., Museums in Dresden.

Act. Ac. Bordeaux—Actes de l'Académie nationale des sciences belles lettres et Arts de Bordeaux.

Act. Ac. nac. Ciencias exact.—Actas de la Academia nacional de Ciencias exactas (Buenos Ayres).

Act. Ac. Córdob.—Actas de la Academia Nacional de Ciencias de la republica Argentina en Córdoba (Buenos Ayres).

Act. Lund.—Acta Universitatis Lundensis (Lund). (Called also *Lund's Universitets Årskrift.*)

Act. Soc. Fenn.—Acta Societatis Scientarium Fennicæ (Helsingfors).

Act. Soc. Helv.—Actes de la Société helvétique des Sciences naturelles (Called also *Verhandl. d. schweiz. Naturforsch. Gesells.*).

Act. Soc. Jura.—Actes de la Société Jurassienne d'émulation.

Act. Soc. L. Bord.—Actes de la Société Linnéenne de Bordeaux. (Also *Comptes rendus.*)

Act. Upsala—Acta Universitatis Upsalensis. (Called also *Upsala Universitets Årskrift.*)

Aid—C. O. Waterhouse's Aid to the Identification of Insects (Janson : London).

Alb. Nat.—Album der Natuur (Harting : Haarlem).

Am. Geol.—The American Geologist (Calvin et alii : Minneapolis).

Am. J. Sci.—American Journal of Science and Art. (New Haven).

Am. Micr. J.—American Monthly Microscopical Journal (Hitchcock : Washington).

Am. Nat.—American Naturalist (Philadelphia).

Anat. Anz.—Anatomische Anzeiger (Bardeleben : Jena).

An. Mus. B. Aires—Anales del Museo publico, Buenos Aires.

An. Mus. Costa Rica—Anales del Museo Nacional-Republica de Costa Rica (San José).

An. Mus. La Plata—Anales del Museo-La Plata (Buenos Ayres).

An. Mus. nac. Mexico—Anales del Museo nacional de Mexico.

An. Soc. Arg.—Anales de la Sociedad cientifica Argentina (Buenos Aires).

An. Soc. Esp.—Anales de la Sociedad Española de Historia Natural (Madrid).

Ann. Acc. aspir. Nat.—Annali dell' Accademia degli aspiranti Naturalisti (Naples).

Ann. Ent. Belg.—Annales de la Société Entomologique de Belgique (Brussels).

Am. Geol. unic. Paris—Annuaire géologique universel-Revue de géologie et paléontologie (Carey & Douvillé :

Ann. Hofmuseum Wien—Annalen des k. k. naturhistorischen Hofmuseum (Wien).

Ann. Lomb. Venet.—Annali di Scienze del regno Lombardo-Venetiano.

Ann. Mal.—Annales de Malacologie (Servain : Paris).

Ann. Micrograph.—Annales de Micrographie (Miguel : Paris).

Ann. Mus. Belg.—Annales du Musée royal d'histoire naturelle Belgique (Brussels).

Ann. Mus. Genov.—Annali del Museo civico di Storia Naturale di Genova (Genoa).

Ann. Mus. Marseille—Annales du Musée d'Histoire Naturelle de Marseille. Zoologie (Marion : Marseilles).

Ann. N. H.—Annals and Magazine of Natural History (London).

Ann. N. York Ac.—Annals of the New York Academy of Sciences.

Ann. Sci. géol.—Annales des Sciences géologiques (Hébert & Milne-Edwards : Paris).

Ann. Sci. Nat.—Annales des Sciences Naturelles (Paris).

Ann. Soc. Agric. Lyon—Annales de la Société d'Agriculture, Histoire Naturelle, et Arts utiles de Lyon (Lyons & Paris).

Ann. Soc. Brux. — Annales de la Société scientifique de Bruxelles (Brussels).

Ann. Soc. Char.—Annales de la Société des Sciences Naturelles de la Charente Inférieure (= Academie de la Rochelle).

Ann. Soc. Em. Vosges—Annales de la Société d'Émulation du Département des Vosges (Epinal).

Ann. Soc. Ent. Fr.—Annales de la Société entomologique de France (Paris).

Ann. Soc. géol. Belg.—Annales de la Société Géologique de Belgique (Liége).

Ann. Soc. géol. Nord—Annales de la Société géologique du Nord (Lille). (Also *Memoires.*)

Ann. Soc. L. Lyon (n.s.)—Annales de la Société Linnéenne de Lyon. Nouvelle série.

Ann. Soc. mal. Belg.—Annales de la Société malacologique de Belgique (Brussels).

Ann. Soc. Mod.—Annuario della Società dei Naturalisti di Modena (See *Atti.*)

Ann. Univ. Toscane—Annali delle Università Toscane (Pisa).

Anz. Ak. Wien—Anzeiger der mathematisch-naturwissenschaftlichen Classe der K. Akademie der Wissenschaften zu Wien (Vienna).

Arb. Inst. Würzb.—Arbeiten aus dem zoologisch-zootomischen Institut in Würzburg.

Arb. z. Inst. Wien—Arbeiten aus dem zoologischen Institute der Universität Wien (Vienna).

Arb. z. Inst. Graz—Arbeiten aus dem zoologischen Institut zu Graz (Leipsic).

Arch. Anat. Phys.—Archiv für Anatomie und Physiologie (His, Braune, & Du Bois Reymond : Leipzig).

Arch. Biol.—Archives de Biologie (Van Beneden & Van Bambeke : Ghent).

Arch. f. Anthrop.—Archiv für Anthropologie : Zeitschrift für Naturgeschichte und Urgeschichte des Menschen (Brunswick).

Arch. f. math. og Naturv.—Archiv for Mathematik og Naturvidenskab (Worm-Müller, G. O. Sars, Kristiania).

Arch. f. Nat.—Archiv für Naturgeschichte. Neue Folge (Berlin).

Arch. f. Thierheilk.—Archiv für Thierheilkunde.

Arch. ges. Phys.—Archiv für die gesammte Physiologie des Menschen und der Thiere (Pflüger: Bonn).

Arch. Ital. Biol.—Archives Italiennes de Biologie; Revues, Résumés, Reproductions des travaux scientifiques Italiens (Emery & Mosso: Turin).

Arch. mikr. Anat.—Archiv für mikroskopische Anatomie (Bonn).

Arch. Miss. sci.—Archives des Missions scientifiques et littéraires (Paris).

Arch. Mus. Lyon—Archives du Muséum d'Histoire Naturelle de Lyon.

Arch. Mus. R. Jan.—Archivos do Museu Nacional do Rio de Janeiro.

Arch. Mus. Teyl.—Archives du Musée Teyler (Haarlem).

Arch. Nat. Liv.—Archiv für die Naturkunde Liv-, Esth-, und Kurlands (Dorpat).

Arch. naturw. landesforsch. Böhmen—Archiv für naturwissenschaftliche Landesdurchforschung von Böhmen (Prag).

Arch. Néerl.—Archives Néerlandaises des Sciences exactes et naturelles (Bosscha: Haarlem).

Arch. Phys.—Archives de Physiologie normale et pathologique (Brown-Séquard: Paris).

Arch. Sci. nat.—Archives des Sciences physiques et naturelles (Geneva).

Arch. slav. Biol.—Archives slaves de Biologie (Mendelssohn-Richet: Paris).

Arch. Ver. Mecklenb.—Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg.

Arch. Zeeuwosch Genoots. Wetensch.—Archief Vroegue en latere Mededeelingen voornaamalifk in Betrekking tot Zeeland uitgegeven door het Zeeuwosch Genootschap der wetenschaften (Middelburg).

Arch. Z. expér.—Archives de Zoologie expérimentale et générale (Paris).

Atti Acc. Gioen.—Atti dell' Accademia Gioenia di Scienze naturali (Catania).

Atti Acc. Napoli—Atti della R. Accademia delle scienze fisiche e matematiche.

Atti Acc. Palermo—Atti della R. Accademia di scienze, lettere é belle arti di Palermo (Palermo).

Atti Acc. Pontaniana—Atti dell' Accademia Pontaniana (Naples).

Atti Acc. Pontif. Lincei—Atti dell' Accademia Pontificia de' nuovi Lincei.

Atti Acc. Tor.—Atti della R. Accademia delle Scienze di Torino (Turin).

Atti Ist. Nap.—Atti del R. Istituto d'incorraggiamento alle Scienze Naturali economichi e technologiche, &c., di Napoli (Naples).

Atti Ist. Venet.—Atti del R. Istituto Veneto di scienze, lettere ed arti, &c. (Venice).

Atti (Mem. Rend.) Acc. Rom.—Atti (Memorie: Rendiconti) della R. Accademia dei Lincei (Rome).

Atti (Mem.) Soc. Tosc.—Atti (Memorie) della Società Toscana di Scienze naturali residente in Pisa.

Atti Mus. Civico Trieste—Atti del Museo civico di Storia Naturale di Trieste.

Atti (Rend. Mem.) Soc. Mod. Mem.—Atti (Memorie: Rendiconti) della Società dei Naturalisti di Modena.

Atti Soc. Ital.—Atti della Società Italiana di Scienze naturali (Milan).
Atti Soc. Ven.-Trent.—Atti della Società Veneto-Trentina di Scienze naturali residente in Padova (Padua). (Also *Bull.*)
Atti Univ. Genova—Atti della R. università di Genova.
Auk—The Auk. A Quarterly Journal of Ornithology. (Continuation of the *Bulletin of the Nuttall Ornithological Club.*)
Ausland—Das Ausland (Stuttgart).

Beitr. Morphol. Morphog.—Beiträge zur Morphologie und Morphogenie (Gerlach: Stuttgart).
Beitr. Pal. Oesterr.-Ung.—Beiträge zur Paläontologie Oesterreich-Ungarn's und des Orients (Mojsisovics & Neumayr: Vienna).
Beitr. Russ. Reiches (2)—Beiträge zur Kenntniss des Russischen Reiches und der angrenzenden Länder Asiens. Neue Folge (Schrenck & Maximowics: St. Petersburg).
Ber. Freiburg Ges.—Berichte der naturforschenden Gesellschaft zu Freiburg (Freiburg, i Br.).
Bergens Mus. Aarsber.—Bergens Museum Aarsberetning (Bergen).
Ber. Ges. Chemn.—Bericht der naturwissenschaftlichen Gesellschaft zu Chemnitz.
Ber. Ges. Halle—Bericht über die Sitzungen der naturforschenden Gesellschaft zu Halle. (Also *Abhandl.*)
Ber. Ges. Hanau = *JB. wetter. Ges.*
Ber. Komm. wiss. Unters. deutsch. Meere—Bericht der Kommission zur Untersuchung der deutschen Meere.
Ber. Naturf. Artzte—Ämtliche Bericht deutscher Naturforscher und Ärtzte.
Ber. naturf. Ges. Bamberg—Bericht der naturforschenden Gesellschaft in Bamberg.
Ber. Naturhist. Mus. Hamburg—Bericht des Naturhistorischen Museums in Hamburg.
Ber. natur. Ver. Passau—Bericht des naturhistorischen Vereins in Passau.
Ber. Oberhess. Ges.—Bericht der Oberhessischen Gesellschaft für Natur- und Heilkunde (Giessen).
Ber. Offenb. Ver.—Bericht über die Thätigkeit des Offenbacher Vereins für Naturkunde (Offenbach-on-the-Main).
Ber. Primärsch. Böhm.-Leipa—Bericht der Primärschule in Böhmisch-Leipa.
Ber. Sächs. Ges.—Bericht ueber die Verhandlungen der königlichen Sächs. Gesellschaft der Wissenschaft in Leipzig. (Also *Abhandl.*)
Ber. Senck. Ges.—Bericht der Senckenbergische naturforschende Gesellschaft im Frankfurt am Main. (Also *Abhandl.*)
Ber. St. Gall. Gess.—Bericht über die Thätigkeit der St. Gallischen naturwissenschaftlichen Gesellschaft (St. Gallen).
Ber. Ver. Augsburg—Bericht des naturhistorischen Vereins, Augsburg.
Ber. Ver. Cassel—Berichte des Vereins für Naturkunde zu Cassel.
Ber. Ver. Fulda—Bericht des Vereins für Naturkunde in Fulda.
Berl. Monatsh.—Berliner Monatshefte.

B. E. Z.—Berliner entomologische Zeitschrift.

Bibl. haut. études—Bibliothèque de l'école des hautes études. Section des Sciences Naturelles (Paris).

Bibl. univ.—Bibliothèque universelle et Revue Suisse (Geneva). (See *Arch. Sci. Nat.*)

Bidr. Finl. Nat.—Bidrag till Kännedom af Finlands Natur och Folk (Helsingfors).

Bih. Sv. Ak. Handl.—Bihang till K. Svenska Vetenskaps-Akademiens Handlingar (Stockholm).

Bijdr. Dierk.—Bijdragen tot de Dierkunde (Amsterdam).

Bijdr. Taal-, &c., Ned. Indië (4)—Bijdragen tot de Taal-, Land-, en Volkenkunde van Nederlandsch Indië. 4de Volgreeks (The Hague).

Biol. Centralbl.—Biologisches Centralblatt (Rosenthal : Erlangen).

Bol. Ac. Arg.—Boletin de la Academia Nacional de Ciencias de la Republica Argentina (Cordoba).

Bol. mus. la Plata.—Boletin del Museo la Plata (Buenos Ayres).

Boll. Mus. Zool. Anat. Comp. Torino—Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Universita di Torino.

Boll. Nat.—Bollettino del naturalista Collettore, Allevatore, Coltivatore (Brogi, Siena).

Boll. scient.—Bollettino scientifico (Maggi, Zoja, & Giovanni : Pavia).

Boll. Soc. Adr.—Bollettino della Società Adriatica di Scienze naturali (Trieste).

Bol. Soc. geogr. Lisboa—Boletim da Sociedade de geographia de Lisboa (Lisbon).

Boll. Soc. geol. Ital.—Bollettino della Società geologica Italiana (Rome).

Boll. Soc. Nat. Napoli.—Bollettino della Società di Naturalisti di Napoli.

Bot. Centralbl.—Botanisches Centralblatt. Referentes-Organ für das Gesammtgebeit der Botanik des In- und Auslandes (Uhlwein & Behrens : Cassel).

Bot. Z.—Botanische Zeitung (Halle).

Brit. Med. J.—British Medical Journal (London).

Bull. Ac. Belg.—Bulletin de l'Académie Royale des Sciences, des lettres, et des Beaux Arts de Belgique (Brussels). (Also *Mem.*)

Bull. Ac. Hippone—Bulletin de l'Académie d'Hippone (Bona).

Bull. Am. Mus. Nat. Hist.—Bulletin of the American Museum of Natural History (New York).

Bull. Brooklyn Soc.—Bulletin of the Brooklyn Entomological Society (New York).

Bull. Brookville Soc.—Bulletin of the Brookville Society of Natural History (Brookville, Indiana, U.S.A.)

Bull. Buff. Nat. Club—Bulletin of the Buffalo Naturalists' Club (Buffalo, N.Y.).

Bull. Bussey Inst.—Bulletin of the Bussey Institution (Boston).

Bull. Cal. Ac. Sci.—Bulletin of the California Academy of Sciences (San Francisco).

Bull. Chicago Ac. Sci.—Bulletin of the Chicago Academy of Sciences.

Bull. Denison Univ.—Bulletin of the Scientific Laboratories of Denison University (Granville, Ohio).

Bull. Dep. Agric. Ent.—U.S. Department of Agriculture. Division of Entomology. Bulletin (Washington).

Bull. Des Moines Ac.—Bulletin of the Des Moines Academy of Sciences (Des Moines, Iowa).

Bull. Ent. Ital.—Bullettino della Società Entomologia Italiana (Florence).

Bull. Ess. Inst.—Bulletin of the Essex Institute (Salem, U.S.A.).

Bull. hebdom. Ass. sci. Fr.—Bulletin hebdomadaire de l'Association scientifique de France.

Bull. Illin. Lab. N. H.—Illinois State Laboratory of Natural History. Bulletin (Normal, Illinois).

Bull. Inst. Nat. Genevois—Bulletin de l'institut nationale Genevois.

Bull. Minnesota Acad.—Bulletin of the Minnesota Academy of Natural Sciences.

Bull. Mosc.—Bulletin de la Société impériale des Naturalistes de Moscou.

Bull. Mus. Belg.—Bulletin du Musée Royal d'Histoire Naturelle de Belgique (Brussels).

Bull. Mus. C. Z.—Bulletin of the Museum of Comparative Zoology of Harvard College (Cambridge, U.S.A.)

Bull. Nat. Hist. Soc. New Brunswick—Bulletin of the Natural History Society of New Brunswick (St. John's, N.B.)

Bull. Pétersb.—Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg.

Bull. Phil. Soc. Wash.—Bulletin of the Philosophical Society of Washington.

Bull. Sci. Nord.—Bulletin scientifique de la France et de la Belgique (Giard : Paris).

Bull. Sedalia Soc.—Bulletin of the Sedalia Natural History Society (Sedalia, Mo.).

Bull. Soc. Ac. Brest—Bulletin de la Société Academique de Brest.

Bull. Soc. Acclim.—Bulletin mensuel de la Société nationale d'Acclimatation de Paris (Paris).

Bull. Soc. Angers—Bulletin de la Société d'études scientifiques d'Angers (Angers).

Bull. Soc. Anthrop. Lyon—Bulletin de la Société d'Anthropologie de Lyon.

Bull. Soc. Anthrop. Par.—Bulletin de la Société d'Anthropologie de Paris.

Bull. Soc. Belg. Micr.—Bulletin de la Société Belge de Microscopie (Brussels).

Bull. Soc. Béziers—Bulletin de la Société d'étude des Sciences naturelles de Béziers. Comptes rendus des Séances (Béziers).

Bull. Soc. Borda-Dax—Bulletin de la Société de Borda-Dax.

Bull. Soc. Colm.—Bulletin de la Société d'Histoire naturelle de Colmar.

Bull. Soc. Dinan.—Bulletin de la Société des Naturalistes Dinantais (Dinant).

Bull. Soc. Ent. Fr.—Bulletin des séances de la Société entomologique de France (Paris). (See *Ann.*)

Bull. Soc. Étud. sci. Paris—Bulletin de la Société d'Études scientifiques de Paris.

Bull. Soc. Finistère—Bulletin de la Société d'études scientifiques du Finistère (Morlaix).

Bull. Soc. Geogr.—Bulletin de la Société de Geographie (Paris).

Bull. Soc. géol.—Bulletin de la Société géologique de France (Paris).

Bull. Soc. L. Bruxelles—Bulletin de la Société Royale Linnéenne de Bruxelles.

Bull. Soc. L. Nord France—Bulletin de la Société Linnéenne du Nord de la France (Amiens).

Bull. Soc. L. Norm.—Bulletin de la Société Linnéenne de Normandie (Caen).

Bull. Soc. mal. Fr.—Bulletin de la Société malacologique de France (Paris).

Bull. Soc. mal. Ital.—Bullettino della Società malacologica Italiana (Pisa).

Bull. Soc. Metz — Bulletin de la Société d'histoire naturelle de Metz (formerly du Département de la Moselle).

Bull. Soc. Murith.—Bulletin des travaux de la Société Murithienne du Valais (Neufchâtel).

Bull. Soc. Nancy—Bulletin de la Société des Sciences de Nancy (Paris).

Bull. Soc. Neuchatel—Bulletin de la Société des sciences naturelles de Neuchatel.

Bull. Soc. Philom.—Bulletin de la Société Philomathique de Paris.

Bull. Soc. Rouen—Bulletin de la Société des Amis des Sciences Naturelles de Rouen (Rouen).

Bull. Soc. Sarthe—Bulletin de la Société d'Agriculture, des Sciences, &c., de la Sarthe (Le Mans).

Bull. Soc. Saone—Bulletins de la Société des sciences naturelles de Saone-et-Loire (Chalons sur Saone). (Also *Mem.*)

Bull. Soc. Savoie—[Bulletin de la] Société d'histoire naturelle de Savoie (Annecy).

Bull. Soc. Sci. Phys. Nat. Toulouse—Bulletin de la Société des sciences physiques et naturelles de Toulouse (Toulouse).

Bull. Soc. Sud-Est—Bulletin de la Société des Sciences naturelles du Sud-East (Grenoble).

Bull. Soc. Toulouse—Bulletin de la Société d'Histoire Naturelle de Toulouse.

Bull. Soc. Vaud.—Bulletin de la Société Vaudoise des Sciences Naturelles (Lausanne).

Bull. Soc. Ven.-Trent. — Bullettino della Società Veneto-Trentina di Scienze naturali (Padua). (Also *Atti.*)

Bull. Soc. Yonne—Bulletin de la Société des Sciences historiques et naturelles de l'Yonne (Auxerre).

Bull. Soc. Z. Fr.—Bulletin de la Société Zoologique de France (Paris).

Bull. U. S. Fish Comm.—Bulletin of the United States Fish Commission (Washington).

Bull. U. S. Geol. Surv.—Bulletin of the United States Geological and Geographical Survey of the Territories (Washington).

Bull. U. S. Nat. Mus.—Bulletin of the United States National Museum (Washington).

Bull. Washb. Coll.—Bulletin of the Washburn College Laboratory of Natural History (Topeka, Kansas).

Canad. Ent.—Canadian Entomologist (Saunders : Montreal).

Canad. Nat.—The Canadian Naturalist and Quarterly Journal of Science (Montreal).

Can. Rec.—Canadian Record of Science.

Cardiff Nat. Soc.—Cardiff Naturalists' Society. Report and Transactions (Cardiff).

CB. Bakt. Parasit—Centralblatt für Bakteriologie und Parasitenkunde.

CB. Ges. Anthrop.—Correspondenzblatt der Deutschen Gesellschaft für Anthropologie, &c. (Brunswick).

CB. Iris—Correspondenz-Blatt des Entomologischen Vereins Iris zu Dresden.

CB. med. Wiss.—Centralblatt für die medicinischen Wissenschaften (Berlin).

CB. Ver. Regensb.—Correspondenz-Blatt des naturwissenschaftlichen Vereins in Regensberg (Ratisbon).

CB. Ver. Rheinl.—Correspondenz-Blatt des naturhistorischen Vereins der preussischen Rheinlande und Westphalens (Bonn.) (Also *Verh. & SB.*)

CB. Ver. Riga—Correspondenzblatt des Naturforscher Vereins zu Riga.

Cellule—La Cellule. Recueil de Cytologie et d'histologie générale (Carnoy, Gilson, & Denys : Lierre & Gand).

Chrysanthemum—The Chrysanthemum : a Monthly Magazine for Japan and the Far East (Yokohama).

Circ. deutsch. Fisch. Ver.—Circulare des deutschen Fischerei-Vereins (Berlin).

Cist. Ent.—Cistula Entomologica (Janson : London).

Comm. Acc. Petersb.—Commentarii Academiæ scientiarum imperialis Petropolitanæ (St. Petersburg).

Comm. Ateneo Brescia—Commentari dell' Ateneo di Brescia.

Conch. Mittheil.—Conchologische Mittheilungen (Martens : Cassel).

Congr. Sc.—Congrès Scientifique de France.

Contr. E. M. Mus. Geol. Princeton—Contributions from the E. M. Museum of Geology, Princeton College, U. S. A. (Scott & Osborn).

C.R.—Comptes rendus des Séances hebdomadaires de l'Académie des Sciences (Paris).

C.R. Ass. Fr. Sci.—Compte-rendu de l'Association Français pour l'avancement des Sciences.

C.R. ent. Belg.—Comptes rendus des Séances de la Société entomologique de Belgique (Brussels).

C.R. Soc. Biol.—Comptes rendus hebdomadaires des Séances et Mémoires de la Société de Biologie (Paris).

Dan. Selsk. Skr.—K. Danske Videnskabernes Selskabs Skrifter (Copenhagen).

Denk. Ak. Wien—Denkschriften der k. Akademie der Wissenschaften zu Wien (Vienna). (Also *SB.*)
Deutsche e. Z.—Deutsche entomologische Zeitschrift (Kratz: Berlin).

Ent.—The Entomologist (London).
Ent. Am.—Entomologica Americana (Brooklyn).
Ent. M. M.—The Entomologist's Monthly Magazine (London).
Ent. Med.—Entomologiske Meddeldser udgivne af Entomologisk Forening ved Fr. Meinert Copenhagen.
Ent. Nachr.—Entomologische Nachrichten (Karsch: Berlin).
Ent. Tidskr.—Entomologisk Tidskrift, på föranstaltande af Entomologiska Föreningen i Stockholm (Spångberg: Stockholm).
Ertes. math. természett.—Ertesitö a mathematikai és természettudományi osztályok közlönye (Budapesth).
Ért. Term. Kor.—Értekezések a természettudományok köréből, Magyar tudományos Akadémia [Memoirs on Natural Science, Hungarian Academy of Sciences] (Budapesth).
Ess. Nat.—See *Tr. Ess. Club.*
Etudes d'Ent.—Études d'Entomologie, Faunes Entomologiques, Descriptions d'Insectes nouveaux ou peu connus (C. Oberthür: Rennes).
Evkön. Erd. Muz.—Evkönyvek erdélzi muzeumegylet (Kolozsvár = Klausenberg).

Feuill. Nat.—Feuille des Jeunes Naturalistes (Dollfus: Paris).
Field.—The Field (London).
For. & Str.—Forest and Stream.
Forh. Selsk. Chr.—Fordhandlinger i Videnskabs-Selskabet i Christiania.
Förh. Sk. Naturf.—Förhandlingar vid de Skandinaviska Naturforskarnes.

Gard. Chron.—The Gardener's Chronicle (London).
Garner—The Garner and Science Recorders' Journal (Ramsay: Walworth).
Gef. Welt—Die gefiederte Welt: Zeitschrift für Vogelliebhaber, -zuchter und -händler (Russ: Berlin).
Geogr. JB.—Geographisches Jahrbuch (Gotha).
Geogr. MT.—Mitteilungen aus Justus Perthes' geographischer Anstalt (Gotha).
Geol. Mag.—Geological Magazine (Woodward: London).
Giorn. Sci. Palerm.—Giornale di Scienze naturali ed economiche di Palermo.

Hist. Berwick Nat. Club—History of the Berwickshire Naturalists' Club (Alnwick).
Hor. Ent. Ross.—Horæ Societatis Entomologicæ Rossicæ (St. Petersburg).
Humboldt—Humboldt: Monatsschrift für die gesammten Naturwissenschaften (Stuttgart).

Ibis—The Ibis (Selater & Saunders: London).

Ind. Ann.—The Indian Annals and Magazine of Natural Sciences (An Illustrated Monthly) (Murray: Bombay & London).

Isvest. Mosc. Univ.—Isvestiya imperatorskova obshchestva hyubitelei Estestvoznauiya, Antropologi i Etnografii Sostoyashova, pre Moskovskom Universitet.

J. Ac. Philad.—Journal of the Academy of Natural Sciences of Philadelphia.

J. Anat. Phys.—Journal of Anatomy and Physiology (London).

J. A. S. B.—Journal of the Asiatic Society of Bengal (Calcutta).

J. A. S. (Bombay)—Journal of the Bombay Branch of the Royal Asiatic Society.

J. A. S. (Ceylon)—Journal of the Ceylon Branch of the Royal Asiatic Society.

J. A. S. (China)—Journal of the North China Branch of the Royal Asiatic Society.

JB. Ak. Amst.—Jaarboek van de k. Akademie van Wetenschappen (Amsterdam). (Also *Verhandl.*)

JB. geol. Reichsanst.—Jahrbuch der k.-k. geologischen Reichsanstalt (Vienna). (Also *Verhandl.*)

JB. Hamb.—Jahrbuch der Hamburgischen wissenschaftlichen Anstalten.

JB. Karpath. Ver.—Jahrbuch des ungarischen Karpathen-Vereins (Kèsmark).

JB. k. Akad. Erfurt—Jahrbücher der Königlichen Akademie gemeinnütziger Wissenschaften zu Erfurt.

JB. k. preuss. geol. Landesanst.—Jahrbuch der königlich preussischen geologischen Landesanstalt und Bergakademie zu Berlin.

JB. mal. Ges.—Jahrbuch der deutschen malakozoologischen Gesellschaft (Kobelt: Frankfort).

JB. Mineral.—Neues Jahrbuch für Mineralogie, Geologie, and Palæontologie (Leonard & Geinitz: Leipzig).

JB. Mijnwezen. Nederl. Indie—Jaarboek van het Mijnwezen van Nederl. Oost. Indie (Amsterdam).

JB. Mus. Kärnt.—Jahrbuch des naturhistorischen Landesmuseums von Kärnthen (Klagenfurt).

JB. nass. Ver.—Jahrbuch des nassauischen Vereins für Naturkunde (Wiesbaden).

JB. nat. Ges. Nürnberg (? continuation of *Abhandl.*).

JB. Preuss. geol. Landes-Anstalt—Jahrbuch der Königlich Preussischen geologischen Landes-Anstalt (Berlin).

JB. sieb. Karpath. Ver.—Jahrbuch des siebenbürgischen Karpathen-Vereins (Hermannstadt).

JB. Tharand. Ges.—Jahrbuch der Tharanden forstlichen Gesellschaft (Dresden).

J. Ber. Annab. Ver.—Jahresbericht des Annaberg-Buchholzer Vereins für Naturkunde (Annaberg).

J. Ber. Ges. Graub.—Jahresbericht der naturforschenden Gesellschaft Graubündens (Chur).

J. Ber. Ges. Hannov.—Jahresbericht der naturforschenden Gesellschaft in Hannover.

J. Ber. k. Böhm. Ges. Wiss.—Jahresbericht der königlich Böhmischen Gesellschaft der Wissenschaften.

J. Ber. Laurent. Arnsberg—Jahresbericht über das königlichen Laurentianum in Arnsberg.

J. Ber. Pollichia—Jahresbericht der Pollichia eines naturwissenschaftlichen Vereins der Rheinpfalz (Dürkheim a. d. Hart).

J. Ber. schles. Ges.—Jahresbericht der schlesischen Gesellschaft für vaterländische Cultur (Breslau). (Also *Abhandl.*)

J. Ber. schleswig. Ges.—Jahresbericht der naturwissenschaftlichen Gesellschaft in Schleswig.

J. Ber. Ver. Braunschw.—Jahresbericht des Vereins für Naturwissenschaft zu Braunschweig (Brunswick).

J. Ber. Ver. Elsass-Lothr.—Jahresbericht des naturwissenschaftlichen Vereins von Elsass-Lothringen (Barr).

J. Ber. Ver. Frankfurt—Jahresbericht des physikalischen Vereins zu Frankfurt-am-Main.

J. Ber. Ver. Magdeburg—Jahresbericht und Abhandlungen der naturw. Vereins in Magdeburg.

J. Ber. Ver. Osnabr.—Jahresbericht des naturwissenschaftlichen Vereins zu Osnabrück.

J. Ber. Ver. Pass.—Jahresbericht der naturwissenschaftlichen Vereins in Passau.

J. Ber. Ver. Zwickau—Jahresbericht des Vereins für Naturkunde zu Zwickau.

J. Ber. westf. Ver.—Jahresbericht der zoologischen Section des westfälischen provinzial-Vereins für Wissenschaft und Kunst (Münster).

J. Ber. wetter. Ges.—Jahresbericht der wetteranischen Gesellschaft für die gesammte Naturkunde (Hanau).

J. Ber. Württemb. Ver. Handelsgeogr.—Jahresbericht des Württembergischen Vereins für Handelsgeographie (Stuttgart).

J. Bomb. N. H. Soc.—Journal of the Bombay Natural History Society (Aitken Sterndale : Bombay).

J. Cincinn. Soc.—Journal of the Cincinnati Society of Natural History.

J. Comp. Med.—Journal of Comparative Medicine and Surgery (Conklin & Porter : New York).

J. de Conch.—Journal de Conchyliologie (Crosse & Fischer : Paris).

J. de l'Anat. Phys.—Journal de l'Anatomie et de la Physiologie (Pouchet : Paris).

Jen. Z. Nat.—Jenaische Zeitschrift für Naturwissenschaft, herausgegeben von der medicinisch-naturwissenschaftlichen Gesellschaft zu Jena.

J. f. O.—Journal für Ornithologie (Cabanis : Leipzig).

J. Hopk. Univ. Circ.—Johns Hopkins University Circular (Baltimore).

JH. Ver. Lüneb.—Jahreshefte des naturwissenschaftlichen Vereins für das Fürstenthum Lüneburg.

JH. Ver. Württ.—Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg (Stuttgart).

J. L. S.—Journal of the Linnean Society ; Zoology (London).

J. Morph.—Journal of Morphology (Whitman & Allis : Boston, U.S.A.).
J. Microgr.—Journal de Micrographie (Pellétan : Paris).
J. Micr. & Nat. Sci.—Journal of Microscopy and Natural Science. (The Journal of the Postal Microscopical Society. A. Allen : London & Bath.)
J. Northampt. Soc.—Journal of the Northamptonshire Natural History Society and Field Club.
J. N. Y. Micr. Soc.—Journal of the New York Microscopical Society (New York).
J. of Conch.—Journal [formerly Quarterly Journal] of Conchology (London).
J. Physiol.—The Journal of Physiology (Foster : Cambridge).
J. Quek. Club—Journal of the Quekett Microscopical Club (London).
J. R. Agric. Soc.—Journal of the Royal Agricultural Society (London).
J. R. Inst. Cornwall—Journal of the Royal Institution of Cornwall (Truro).
J. R. Micr. Soc.—Journal of the Royal Microscopical Society (London).
J. R. Geol. Soc. Ireland—Journal of the Royal Geological Society of Ireland (London, Dublin, & Edinburgh).
J. R. Soc. N. S. W.—Journal and Proceedings of the Royal Society of New South Wales (Sydney).
J. Sci. Lisb.—Jornal de Sciencias, &c., da Academia de Lisboa (Lisbon).
J. Soc. Arts—Journal of the Society of Arts (London).
J. Trenton Soc.—Journal of the Trenton Natural History Society (Trenton, N.J.).
J. Tr. Vict. Inst.—Journal of the Transactions of the Victoria Institute, or Philosophical Society of Great Britain (London).
Jaarb. Univ. Leiden—Jaarboek der Rijks-Universiteit te Leiden (Leiden).

Kolozsvári Orvos-term. társ. Értes.—Kolozsvári Orvos-természettudomanyi társulat Értesitö [Intelligencer of the Society of Medical and Natural Science, Koloszvár (Klausenberg)].
°*Kosmos*—Kosmos : Zeitschrift für einheitliche Weltauschauung auf Grund der Entwickelungslehre.
Kosmos Lemberg—Kosmos : Lemberg.

L'Ab.—L'Abeille (De Marseul : Paris).
La Nature—La Nature, Revue des Sciences, &c. (Tissandier : Paris).
Le Nat.—Le Naturaliste (Deyrolle : Paris).
Leopoldina—Leopoldina : Ämtlichen Organ für der k. Leopold-Carol. deutsch. Acad.
Lewisham Ass.—Lewisham and Blackheath Scientific Association.
Lotos—Lotos, Jahrbuch für Naturwissenschaft im Auftrage des Vereines 'Lotos' (Prague).
Lund's Univ. Årsskrift—Lund's Universitets Årsskrift. (Also *Act. Lund.*)

Maandbl. Natuurw.—Maandblad voor naturwetenschappen (Amsterdam).
Madras Journ.—The Madras Journal of Literature and Science.

Mal. Bl.—Malakozoologische Blätter (Clessin : Cassel).

Math. Nat. Ber. Ung.—Mathematische und naturwissenschaftliche Berichte aus Ungarn. Mit Unterstützung der Ungarischen Akad. d. Wiss. und der K. Ungar. naturwiss. Ges. herausgegeben von Baron R. Eötvös, &c. (Fröhlich : Buda-Pest).

Math. naturw. Mitt.—Mathematisch-naturwissenschaftliche Mittheilungen, Tübingen (ed. Böklen).

Math. term. Közl.—Mathematikai es termeszettudományi közlemények (Buda-Pest).

Med. World—Medical World.

Med. Soc. Fenn.—Meddelanden af Societas pro Fauna et Flora Fennica (Helsingfors).

Mél. biol.—Mélanges biologiques tirés du Bulletin de l'Académie Impériale des Sciences de St. Petersburg.

Mém. Ac. Amiens—Mémoires de l'Académie des sciences, des lettres, et des arts d'Amiens (Amiens).

Mém. Ac. Aix—Mémoires de l'Académie des Sciences, Agriculture, Arts, et Belles-lettres d'Aix (Aix en Provence).

Mem. Ac. Barcel.—Memorias de la real Academia de Ciencias de Barcelona.

Mém. Ac. Belg.—Mémoires de l'Académie royal des Sciences, des lettres, et des beaux-arts de Belgique (Brussels). (Also *Bull.*)

Mem. Acc. Bologn.—Memorie della R. Accademia delle Scienze dell' Istituto di Bologna.

Mém. Ac. Caen—Mémoires de l'Académie nationale des Sciences, Arts, et belles-lettres de Caen. (Formerly *Bulletin.*)

Mém. Ac. Dijon—Mémoires de l'Académie des Sciences, Arts, et belles-lettres de Dijon.

Mém. Ac. Lyon—Mémoires de l'Académie des Sciences, Belles-lettres et Arts de Lyon (Lyon).

Mem. Ac. Madrid—Memorias de la real Academia de ciencias exactas fisicas, y naturales de Madrid (Madrid).

Mém. Ac. Metz—Mémoires de l'Académie de Metz.

Mem. Acc. Mod.—Memorie delle Regia Accademia di Scienze, Lettere, ed Arti in Modena.

Mém. Ac. Montp.—Mémoires de la Section des Sciences de l'Académie des Sciences et lettres de Montpellier.

Mém. Ac. Pétersb. (7)—Mémoires de l'Académie impériale des Sciences de St. Pétersbourg. 7me série.

Mem. Ac. Rouen—Précis analytique des travaux de l'Académie des sciences, belles lettres, et arts de Rouen (Rouen).

Mém. Ac. Savoie—Mémoires de l'Académie des Sciences, Belles lettres, et Arts de Savoie (Chambéry). (Also *Comptes Rendus.*)

Mém. Ac. Sci.—Mémoires de l'Académie des Sciences (Paris).

Mem. Ac. Sci. Lisboa—Memorias da Academia real das Sciencias de Lisboa.

Mem. Acc. Tor.—Memorie della R. Accademia delle Scienze di Torino (Turin).

Mém. Ac. Toulouse—Mémoires de l'Académie des Sciences, &c., de Toulouse.

71·05
GUSR

PREFACE.

The Zoological Record for 1887 has been prepared, under Mr. Beddard's editorship, on the same plan as the previous volume.

The Committee appointed by the Council of this Society to superintend the publication for the present year, consisted of Mr. W. T. Blanford, F.R.S., Dr. Günther, F.R.S., Prof. A. Newton, F.R.S., Mr. Osbert Salvin, F.R.S., Mr. Howard Saunders, and the President and Secretary.

The Committee much regret the delay that has taken place in the issue of the present volume, which has been caused by the failure of one of the Recorders to send in his MS. at the prescribed date. Every endeavour will be made to avoid such delay in future; but it is obvious that the alternative of issuing the Record in an incomplete state would not recommend itself except in case of stringent necessity.

P. L. SCLATER,

Secretary.

Zoological Society of London,
3, Hanover Square, London, W.
24th December, 1888.

Mém. Ac. Vaucluse—Mémoires de l'Académie de Vaucluse (Avignon).

Mem. Am. Ac.—Memoirs of the American Academy of Arts and Sciences (Boston).

Mem. Boll. Soc. geogr. Ital.—Memorie (Bollettino) della Società geografica Italiana (Rome).

Mem. Bost. Soc.—Memoirs of the Boston Society of Natural History.

Mem. California Acad.—Memoirs of the California Academy.

Mém. Cour. 4to.—Mémoires Couronnés et Mémoires des Savants Étrangers publiés par l'Académie Royale des Sciences, des Lettres et des Beax Arts de Belgique.

Mém. Cour. 8vo.—*Ibid.* 8vo.

Mem. Geol. Surv. India—Memoirs of the Geological Survey of India (Calcutta).

Mém. hist. nat. Empire Chinois—Mémoires concernant l'histoire naturelle de l'Empire Chinois par des pères de la compagnie de Jésus (Shanghai).

Mém. Inst. Genév.—Mémoires de l'Institut national Genévois (Geneva).

Mem. Ist. Lomb.—Memorie del R. Istituto Lombardo di scienze (Milan).

Mem. Ist. Venet.—Memorie del R. Istituto Veneto di Scienze, &c (Venice).

Mém. Liége—Mémoires de la Société Royale des Sciences de Liége.

Mem. Mus. C. Z.—Memoirs of the Museum of Comparative Zoology at Harvard College (Cambridge, U.S.A.).

Mem. Nat. Ac. Sci.—Memoirs of the National Academy of Sciences (Washington).

Mém. près. Ac. Sci.—Mémoires présentés par divers savants a l'Académie des Sciences de l'institut de France (Paris).

Mém. Soc. Angers—Mémoires de la Société nationale d'agriculture, sciences, et arts d'Angers (Angers).

Mém. Soc. Aube—Mémoires de la Société Académique d'agriculture, des sciences, arts, et belles lettres du département de l'Aube (Troyes & Paris).

Mém. Soc. Biol.—(See *C.R.*)

Mém. Soc. Bord.—Mémoires de la Société des Sciences physiques et naturelles de Bordeaux.

Mém. Soc. Cannes—Mémoires de la Société des Sciences naturelles et historiques des lettres et des Beaux-Arts de Cannes et de l'Arrondissemente de Grasse (Cannes).

Mém. Soc. Cherb.—Mémoires de la Société nationale des Sciences naturelles et mathématiques de Cherbourg.

Mém. Soc. ém. Doubs.—Mémoires de la Société d'émulation du Doubs (Besançon).

Mém. Soc. Géol.—Mémoires de la Société Géologique de France (Paris).

Mém. Soc. Hainault—Mémoires et publications de la Société des Sciences, des Arts, et des Lettres du Hainault (Mons).

Mém. Soc. Helv.—Mémoires de la Société Helvétique des Sciences naturelles (Lausanne).

Mém. Soc. Hist. Nat.—Mémoires de la Société des Sciences naturelles de France.

Mem. Soc. Ital. Sci. Nat.—Memorie della Société Italiana di scienze naturali (Milan).

Mém. Soc. Lille—Mémoires de la Société de l'agriculture et des arts de Lille.

Mém. Soc. L. N. Fr.—Mémoires de la Société Linnéenne du Nord de la France (Amiens).

Mém. Soc. Maine et Loire.—Mémoires de la Société Académique de Maine et Loire (Angers).

Mem. Soc. Manch.—Memoirs of the Manchester Literary and Philosophical Society (London).

Mém. Soc. Neuchatel—Mémoires de la Société des sciences naturelles de Neuchatel.

Mém. Soc. Phys. Genève.—Memoires de la Société de Physique et d'Histoire Naturelle de Genève.

Mém. Soc. Saône—Mémoires de la Société des sciences naturelles de Saône-et-Loire (Chalon-sur-Saône). (Also *Bulletin.*)

Mém. Soc. Seine & Oise—Mémoires de la Société des Sciences naturelles et médicales de Seine-et-Oise (Versailles).

Mem. Univ. Tokio.—Memoirs of the Science Department, Tokio Daigaku (University of Tokio).

Midden-Sumatra—Midden-Sumatra. Reizen en orderzoekingen des Sumatra-Expedite uitgerust door het Aardrijkskundig Genootschap, 1877–1879, beschreven door de Leden der Expedite onder Toezicht van Prof. P. J. Veth. Part iv. Natuurlijike Historie (Brill: 1884, 8vo.)

Midl. Nat.—The Midland Naturalist (Badger & Harrison: London & Birmingham).

Mon. MT. Naturw. Frankfurt—Monatliche Mittheilungen aus dem Gesammtgebiete der Naturwissenschaften (Huth: Frankfurt-a-O.).

Month. Int. J. Anat. Hist.—Monthly International Journal of Anatomy and Histology (Paris, Leipsic, London).

Month. P. Am. Ent. Soc.—Proceedings of the Monthly Meetings of the Entomological Section of the Academy of Natural Sciences, Philadelphia (issued with *Tr. Am. Ent. Soc.*).

Morph. JB.—Morphologisches Jahrbuch: eine Zeitschrift für Anatomie und Entwickelungsgeschichte (Gegenbauer: Leipzig).

MB. Akad. Berlin—(See *SB.*, &c.)

MT. anthrop. Ges. Wien—Mittheilungen der anthropologischen Gesellschaft in Wien (Vienna).

MT. deutsch. Fisch. Ver.—

MT. Embr. Inst. Wien (*n.s.*).—Mittheilungen aus dem Embryologischen Institute der k. k. Universität in Wien. New series (Schenck: Vienna).

MT. Ges. Bern.—Mittheilungen der naturforschenden Gesellschaft in Bern.

MT. Ges. Ostasien's—Mittheilungen der deutschen Gesellschaft für Natur- und Völkerkunde Ostasien's (Yokohama).

MT. min. geol. Mus. Dresden—Mittheilungen aus dem kön. mineralogisch-geologischen und prähistorischen Museum in Dresden.

MT. Münch. ent. Ver.—Mittheilungen der Münchener entomologischen Vereins.

MT. orn. Ver. Wien—Mittheilungen des ornithologischen Vereins in Wien (Vienna).

MT. Osterlande—Mittheilungen aus dem Osterlande (Altenberg).

MT. schw. ent. Ges.—Mittheilungen der schweizerischen entomologischen Gesellschaft (Schaffhausen).

MT. Thurgau. Ges.—Mittheilungen der Thurgauischen naturforschenden Gesellschaft (Frauenfeld).

MT. ung. geol. Anst.—Mittheilungen aus dem Jahrbuche der kön. ungarischen geologischen Anstalt (Buda-Pest).

MT. Ver. Frankfurt-a.-O.—Monatliche Mittheilungen aus dem Gesammtgebiete der Naturwissenschaften. Organ des naturwissenschaftlichen Vereins des Regierung-Bezirkes, Frankfurt-an-der-Oder (Huth : Berlin).

MT. Ver. Steierm.—Mittheilungen des naturwissenschaftlichen Vereins für Steiermark (Grätz).

MT. Vorpomm.—Mittheilungen aus dem naturwissenschaftlichen Vereine von Neu-Vorpommern und Rügen (Griefswald).

MT. z. Stat. Neap.—Mittheilungen aus der zoologischen Station in Neapel (Leipzig).

N. Act. Ups. — Nova Acta R. Societatis Scientiarum Upsaliensis (Upsala).

N. Acta Ac. L.-C. Nat. cur.—Nova Acta Academiæ Cæs. Leopoldino-Carolinæ Germaniæ Naturæ curiosorum (Leipzig). (Also *Verhandlungen der k. Leop. Carol. deutschen Acad. d. Naturf.*)

**N. Ann. sci. nat. Bologna* — Nuovi annali della scienze naturali Bologna.

N. Arch. Mus.—Nouvelles Archives du Muséum d'Histoire Naturelle (Paris).

N. Denk. schw. Ges.—Neue Denkschriften der allgemeinen schweizerischen Gesellschaft für die gesammten Naturwissenschaften. (Also *Nouveaux Mém. de la Soc. Hele. des Sciences Naturelles.*)

N. Mag. Naturv.—Nyt Magazin for Naturvidenskaberne (Christiana).

N. Mém. Soc. Imp. Moscou—Nouveaux Mémoires de la Société Impérial des Naturalistes de Moscou.

N. Saggi Acad. Padova—Nuovi saggi della R. Accademia di scienze lettere ad arti in Padova.

°*N. Z. J. Sci.*—The New Zealand Journal of Science (Dunedin).

Nachr. Ges. Götting.—Nachrichten von der k. Gesellschaft der Wissenschaften und der Georg Auguste Universität zu Göttingen.

Nachr. mal. Ges.—Nachrichtsblatt der deutschen malakozoologischen Gesellschaft (Frankfort).

Nat. Canad.—Le Naturaliste Canadien (Provancher : Cap Rouge, Quebec).

Nat. Hist. J.—The Natural History Journal and School Reporter (Loudon and York).

Nat. Hist. N.—Natural History Notes (Rowbotham : London).

Nat.-Hist. Tr. North Durham — Natural-History Transactions of Northumberland, Durham, and Newcastle-on-Tyne (London & Newcastle).

Nat. Mex.—La Naturaleza (Mexico).

Nat. Sicil.—Il Naturalista Siciliano: Giornale di Science Naturali (Ragusa: Palermo).

Nat. Tids.—Naturhistorik Tidsskrift (Schiödte: Copenhagen).

Nat. Tijdschr. Nederl. Ind.—Natuurkundig Tijdschrift voor Nederlandsche Indie (Batavia).

Nat. Ver. Haarlem—Natuurkundige Verhandelingen van de Hollandsche Maatschappig der Wetenschappen te Haarlem (Haarlem).

Nat. Verh. Utrecht — Natuurkundige Verhandelingen Provinciaal Utregtsch genootschap van Kunsten en Wetenschappen (Utrecht).

Natur—Die Natur: Zeitung zur Verbreitung naturwissenschaftlichen Kenntniss und Naturanschauung für Leser alle Stände. Organ des deutschen Humboldt-Verein (Müller: Halle).

Naturalist—The Naturalist: Journal of the Yorkshire Naturalists' Union, &c. A Monthly Journal of Natural History for North of England (Roebuck & Clarke: London & Leeds).

Nature—Nature (London).

Naturforscher—Naturforscher: Wochenblatt zur Verbreitung der Fortschritte in den Naturwissenschaften (Sklarek: Berlin).

Nor. Selsk. Skr.—K. Norske Videnskabers Selskabs Skrifter (Throndhejm).

Notes Leyd. Mus.—Notes from the Royal Zoological Museum of the Netherlands at Leyden (Jentink).

Notizbl. Ver. Erdk. Darmstadt—Notizblatt des Vereins für Erdkunde zu Darmstadt.

Nouv. et faits—Nouvelles et faits divers (De Marseul: Paris).

Nunq. Ot.—Nunquam otiosus (Schaufuss: Dresden).

Œfv. Ak. Förh.—Œfversigt af k. Vetenskaps Akademiens Förhandlingar (Stockholm).

Œfv. Finska Förh.—Œfversigt af Finska Vetenskaps Societetens Förhandlingar (Helsingfors).

Onderz. Phys. Lab. Utrecht.—Onderzoekingen gedaan en het physiologisch Laboratorium der Utrechtsche Hoogeschool.

Orn. & Ool.—Ornithologist & Oologist (Pawtucket, R. I.).

Ornis—Ornis: Internationale Zeitschrift für die gesammte Ornithologie (Blasius & Hayek: Vienna).

Orvos-termesz. Ertesitö.—Orvos-termeszettudományi Értesitö (Kolozsvar = Klausenberg).

Overs. Dan. Selsk.—Oversigt over det k. Danske Videnskabernes Selskabs Forhandlinger (Copenhagen).

P. Ac. Philad.—Proceedings of the Academy of Natural Sciences of Philadelphia.

P. Am. Ac.—Proceedings of the American Academy of Arts and Sciences (Boston).

P. Am. Ass.—Proceedings of the American Association for the Advancement of Science.

P. Am. Micr. Soc.—Proceedings of the American Society for Microscopists.

P. Am. Phil. Soc.—Proceedings of the American Philosophical Society (Philadelphia).

P. A. S. B.—Proceedings of the Asiatic Society of Bengal (Calcutta).

P. Bath N. H. Soc.—Proceedings of the Bath Natural History and Antiquarian Field Club.

P. Belf. Soc.—(See *Report.*)

P. Biol. Soc. Washington—Proceedings of the Biological Society of Washington.

P. Birmingh. Phil. Soc.—Proceedings of the Birmingham Philosophical Society.

P. Birmingh. Soc.—(See *Report.*)

P. Bost. Soc.—Proceedings of the Boston Society of Natural History (Boston, U.S.A.).

P. Bristol Soc.—Proceedings of the Bristol Naturalists' Society.

P. Cambr. Phil. Soc.—Proceedings of the Philosophical Society, Cambridge.

P. Canad. Inst.—Proceedings of the Canadian Institute (Toronto).

P. Chest. Soc.—Proceedings of the Chester Society of Natural Science.

P. Colorado Soc.—Proceedings of the Colorado Scientific Society (Denver).

P. Cotteswold Nat. F. C.—Proceedings of the Cotteswold Naturalists' Field Club (Gloucester).

P. Davenport Ac.—Proceedings of the Davenport Academy of Natural Sciences (Davenport, Iowa).

P. Dorset Field Club—Proceedings of the Dorset Natural History and Antiquarian Field Club (Sherborne).

P. E. Soc.—Proceedings of the Entomological Society of London.

P. Folkestone Soc.—Proceedings of the Folkestone Natural History Society.

P. Geol. Ass.—Proceedings of the Geologists' Association (London).

P. Holmesdale Nat. Hist. Club—Proceedings of the Holmesdale Natural History Club (London).

P. Linn. Soc. N.S.W.—Proceedings of the Linnean Society of New South Wales (Sydney).

P. Liverp. Field Club—Proceedings of the Liverpool Naturalists' Field Club.

P. Liverp. Soc.—Proceedings of the Literary and Philosophical Society of Liverpool.

P. Nebraska Ass.—Proceedings of the Nebraska Association for the Advancement of Science.

P. N. H. Soc. Glasg.—Proceedings of the Natural History Society of Glasgow.

P. N.-Scot. Inst.—Proceedings and Transactions of the Nova-Scotian Institute of Natural Science (Halifax, N.-S.).

P. Perthsh. Soc.—Proceedings of the Perthshire Society of Natural Science (Perth).

P. Phil. Soc. Glasg.—Proceedings of the Philosophical Society of Glasgow.

P. Phys. Soc. Edinb.—Proceedings of the Royal Physical Society of Edinburgh.

P. R. Inst.—Proceedings of the Royal Institution of Great Britain (London).

P. R. Irish Ac.—Proceedings of the Royal Irish Academy (Dublin).

P. R. Soc.—Proceedings of the Royal Society (London).

P. R. Soc. Edinb.—Proceedings of the Royal Society of Edinburgh.

P. R. Soc. Queensl.—Proceedings of the Royal Society of Queensland (Brisbane).

P. R. Soc. Tasm.—Papers and Proceedings and Reports of the Royal Society of Tasmania (Hobarton).

P. R. Soc. Vict.—Proceedings of the Royal Society of Victoria (Melbourne).

P. Soc. Manch.—(See *Mem.*)

P. Somerset. Soc.—Proceedings of the Somersetshire Archæological and Natural History Society. New series (Taunton).

P. Tr. Croydon Nat. Hist. Club—Proceedings and Transactions of the Croydon Microscopical and Natural History Club (Croydon).

P. U. S. Nat. Mus.—Proceedings of the United States National Museum (Washington).

P.-v. Soc. Mal. Belg.—Procès-verbaux des séances de la Société malacologique de Belgique (Brussels).

P.-v. Soc. Tosc.—Processi verbali della Società Toscana di Scienze naturali (Pisa).

P. Warwick. Club—Proceedings of the Warwickshire Naturalists' and Archæologists' Field Club (Warwick).

P. Z. S.—Proceedings of the Zoological Society (London).

Pal. Abh.—Palæontologische Abhandlungen (Dames & Kayser : Berlin).

Palæontogr.—Palæontographica : Beiträge zur Naturgeschichte der Vorwelt (Cassel).

Pal. Ind.—Palæontologia Indica. (Folio) Memoirs of the Geological Survey of India (Calcutta).

Pam. Akad. umiej. wydz. mat. przyr. Krakau—Pamietnik Akademii Umijetnosci w Krakowie. Wydzialmatem. przyr (Crakau).

Pam. Fizjogr.—Pamietnik Fizjograficzny (Warsaw).

Papilio—Papilio : the Organ of the New York Entomological Club, devoted exclusively to Lepidoptera (H. Edwards : New York).

Phil. Tr.—Philosophical Transactions of the Royal Society (London).

Preisschr. Jablonovsk. Gesells. Leipsig—Preisschriften gekrönt und herausgegeben von der fürstlich Jablonovski' schen Gesellschaft zu Leipsig.

Prodr. Zool. Vict.—Prodromus of the Zoology of Victoria (McCoy : Melbourne).

Protok. nat. Ges. Kazan—Protokol der naturforschenden Gesellschaft, Kazan.

Prot. Soc. Nouv. Russ.—Protocol de la Société des Naturalistes de la Nouvelle Russie (Odessa).

Psyche—Psyche, a Journal of Entomology. Published by the Cambridge Entomological Club (Cambridge, Mass, U.S.A.).

Publ. Inst. Luxemb.—Publications de l'Institut royal grand-ducal de Luxembourg.

Q. J. Geol. Soc.—Quarterly Journal of the Geological Society (London).

Q. J. Micr. Sci.—Quarterly Journal of Microscopical Science (Lankester et alii : London).

Rad jugoslav. akad.—Rad jugoslavenske akademije znanosti i umjetnosti (Zagreb). [Transactions of the South Slav Academy of Science and Art.]

Rec. Geol. Surv. Ind.—Records of the Geological Survey of India (Calcutta).

Rec. Vénus—Recueil de Mémoires, Rapports et Documents relatifs à l'observation de Passage de Vénus sur le Soleil (Paris).

Rec. Z. Suisse—Recueil Zoologique Suisse (Fol : Geneva & Bâle).

Rend. Acc. Nap.—Rendiconto dell' Accademia delle Scienze fisiche e matematiche (Sezione della Società reale di Napoli).

Rend. Ist. Bologna—Rendiconti delle sessioni della R. Accademia delle scienze dell' Istituto di Bologna.

Rend. Ist. Lombardo—Rendiconti del Real Istituto Lombardo di Scienzi e letteri (Milan).

Rep. Belfast N. H. Club—Reports of the Belfast Natural History Field Club.

Rep. Birm. N. H. Soc.—Report [and Transactions] of the Birmingham Natural History and Microscopical Society.

Rep. Brighton Soc.—Annual Report and Abstract of Proceedings of the Brighton and Sussex Natural History Society (Brighton).

Rep. Brit. Ass.—Report of the British Association for the Advancement of Science.

Rep. Cornell Univ. Stat.—Report of the Department of Entomology of the Cornell University Experiment Station (Comstock : Ithaca, N.Y.).

Rep. Cornwall Polytechn.—Reports of the Royal Polytechnical Society of Cornwall.

Rep. Dep. Agric. & Rep. Ent.—Report of the Entomologist. From the Annual Report of the Department of Agriculture (Washington).

Rep. Dulwich Col. Soc.—Annual Report of the Dulwich College Science Society (Dulwich).

Rep. E. Soc. Ont.—Report of the Entomological Society of the Province of Ontario.

Rep. Fish. Scotl.—Annual Report of the Fishery Board for Scotland (London, Edinburgh, & Dublin).

Rep. Geol. Surv. Canada—Report of the Geological and Natural History Survey and Museum of Canada (Montreal).

Rep. Ins. Illin.—Annual Report of the Noxious and Beneficial Insects of the State of Illinois (Springfield).

Rep. Ins. N. York—Annual Report of the Injurious and other Insects of New York (Lintner : Albany).

Rep. Leicest. Soc.—(See *Tr.*)

Rep. Marlb. Coll. Soc.—Report of the Marlborough College Natural History Society.

Rep. N. Y. Mus.—Annual Report of the New York State Museum of Natual History (Albany).

Rep. Penzance Soc.—Report and Transactions of the Penzance Natural History and Antiquarian Society.

Rep. Plym. Inst.—Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society (Plymouth).

Rep. Rugby Soc.—Report of the Rugby School Natural History Society.

Rep. Tr. Cardiff Nat. Soc.—Report and Transactions of the Cardiff Naturalists' Society.

Rep. Tr. Devon Ass.—Report and Transactions of the Devonshire Association for the Advancement of Science, &c. (Plymouth).

Rep. U. S. Ent. Comm.—Report of the United States Entomological Commission (Washington).

Rep. U. S. Fish Comm.—Report of the Commissioner, United States Commission of Fish and Fisheries (Washington).

Rep. U. S. Geol. Surv.—Report of the United States Geological Survey (Washington).

Rep. Wellington Soc.—Report of the Wellington College Natural Science Society (Wellington Coll.).

Rep. Winchester Soc.—Report of the Winchester College Natural History Society (Winchester).

Rep. W. Kent Soc.—Papers and Reports, &c., of the West Kent Natural History, Microscopical, and Photographic Society (Greenwich).

Rev. Biol.—Revue biologique du Nord de la France (Barrois, Hallez, Moniez : Lille).

Rev. Cien. Madrid—Revista de los progresos de las Ciencias exactas, fisicas, y naturales (Madrid).

Rev. d'Ent.—Revue d'Entomologie, publié par la Société Française d'Entomologie (Fauvel : Caen).

Rev. mens. Ent.—Revue mensuelle d'Entomologie pure et appliquée (Doukhtouroff : St. Petersburg).

Rev. Montp.—Revue des Sciences naturelles (Montpellier).

Rev. Quest. sci.—Revue des Questions scientifiques (Brussels).

Rev. Sci.—Revue Scientifique de la France et de l'Étranger (Paris).

Rev. Sci. Nat.—Revue des Sciences Naturelles (Dubreuil : Paris).

Rev. Soc. Porto—Revista da Societa de Instrucção do Porto (Oporto).

Rev. Tierheilkunde—Revue für Tierheilkunde und Tierzucht (Vienna).

Rev. Tr. Sci.—Revue des Travaux Scientifiques (Paris).

Rev. Zool.—Revue Zoologique.

Ric. Ital. Sci. Nat.—[Now *Boll. Soc. Nat. Napoli.*]

Rochester Nat.—The Rochester Naturalist (Rochester).

Rov. Lapok—Rovartani Lapok [Entomological Leaves] (G. Horváth : Budapest).

Rozprawe Wydz. matem.-przyr. Akad. Umiej.—Rozpraw y i Zprawozdania z posiedzen Wydzialu matem.-przyr. Akademii Umiejetnosci. [Transactions of the Academy of Sciences, Krakau.]

S. E. Z.—Stettiner entomologische Zeitung (Dohrn: Stettin).

Samm. Geol. Mus. Leid.—Sammlungen des Geologischen Reichmuseums in Leiden.

SB. Ak. Berlin—Sitzungsberichte der königlich preussischen Akademie der Wissenschaften zu Berlin (formerly Bericht and Monatsbericht). (Also *Abhandl.*)

SB. Ak. Wien—Sitzungsberichte der mathematische-naturwissenschaftlichen Classe der k. Akademie der Wissenschaften (Vienna). (Also *Denkschriften.*)

SB. bayer. Ak.—Sitzungsberichte der mathematisch-physikalischen Classe der k. bayerischen Akademie der Wissenschaften (Munich). (Also *Abhandl.*)

SB. böhm. Ges.—Sitzungsberichte der k. böhmischen Gesellschaft der Wissenschaften (Prague). (Also *Abhandl.*)

SB. Ges. Dorp.—Sitzungsberichte der Naturforscher Gesellschaft bei der Universität Dorpat (Dragendorff: Dorpat).

SB. Ges. Isis—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' (Dresden). (Also *Abhandl.*)

SB. Ges. Königsb.—Sitzungsberichte der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg). (See *Schr. Ges. Königsb.*)

SB. Ges. Leipzig—Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig.

SB. Ges. Marb.—Sitzungsberichte der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg.

SB. Ges. Morph.—Sitzungsberichte der Gesellschaft für Morphologie und Physiologie in München (Munich).

SB. Ges. Würzb.—Sitzungsberichte des physikalisch-medicinischen Gesellschaft zu Würzburg. (Also *Verh.*)

SB. Jen. Ges.—Sitzungsberichte der Jenaischen gesellschaft für medicin-und-naturwissenschaftlichen Gesellschaft in Jena (Jena).

SB. nat. Fr.—Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin.

SB. niederrhein. Ges.—Sitzungsberichte der niederrheinischen Gesellschaft für Natur- und Heilkunde (Bonn). (Published with *Verh.* & *CB. Ver. Rheinl.*)

SB. Soc. Erlangen—Sitzungsberichte der Physikalisch-medicinischen Societät zu Erlangen.

SB. z.-b. Wien—Sitzungsberichte der zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *Verh.*)

Schr. Ges. Danz.—Neueste Schriften der naturforschenden Gesellschaft zu Danzig (Danzig).

Schr. Ges. Königsb.—Schriften der physikalisch-ökonomischen Gesellschaft zu Königsberg in Preussen.

Schr. gesammt. Naturw. Marburg—Schriften der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg.

Schr. Nat. Ver. Schleswig—Schriften des naturwissenschaftlichen Vereins für Schleswig-Holstein (Kiel).

Schr. Ver. Harzes—Schriften des naturwissenschaftlichen Vereins des Harzes in Wernigerode.

Schr. Univ. Kiel—Schriften der Universität zu Kiel.
Science—Science (Dall : Cambridge, Mass.).
Sci. Goss.—Science Gossip (Taylor : London).
Science Obs.—Science Observer (Boston Scientific Society, U.S.A.).
Sci. P. R. Dubl. Soc.—Scientific Proceedings of the Royal Dublin Society.
Sci. Tr. R. Dublin Soc. (2)—The Scientific Transactions of the Royal Dublin Society. Second series.
Scot. Nat.—The Scottish Naturalist (Trail : Perth).
Sem. Médic.—La semaine médicale.
Smiths. Contrib. Knowledge—Contributions to Knowledge by the Smithsonian Institution (Washington).
Smiths. Misc. Coll.—Smithsonian Miscellaneous Collections (Washington).
Soc. Agricole Pyrén-orient.—Société Agricole Scientifique et Littéraire des Pyrénées-orientales (Perpignan).
Soc. Sci. Vitry.—Société des Sciences et Arts de Vitry la François (Arcis sur Aube).
Sprawozd. Kom. fizyjogr.—Sprawozdanie Komisyi fizyjograficznéj, &c. (Cracow).
Stud. Biol. Lab. J. Hopkins Univ.—Studies at the Biological Laboratory of the Johns Hopkins University (Baltimore).
Stud. Micr. Sci.—Studies in Microscopical Science (Cole : London).
Sv. Ak. Handl.—K. Svenska Vetenskaps-Akademiens Handlingar (Stockholm).

Tag. Deut. Nat. Vers.—Tageblatt der Versammlung deutscher Naturforscher und Aertzte.
Taprobanian—The Taprobanian (Nevill : Bombay).
Tijdschr. Ent.—Tijdschrift voor Entomologie (The Hague).
Tijdschr. Nederl. Dierk. Ver. (2)—Tijdschrift van de Nederlandsche Dierkundige Vereeniging (The Hague and Rotterdam).
Tijdschr. Nederl. Ind.—Naturkundig Tijdschrift voor Nederlandsch Indië (Batavia).
Timehri—Timehri : being the Journal of the Royal Agricultural and Commercial Society of British Guiana (Quelch : Demerara).
Termes Közlöny—Természettudományi Közlöny kiadja a k. magyar termeszett. Társak (Budapest).
Term. füzetek—Természetrajzi füzetek : kiadja a magyar remzeti Múseum (Journal of Zoology, &c., edited by Hungarian Museum at Budapesth).
Tr. Albany Inst.—Transactions of the Albany Institute.
Tr. Am. Phil. Soc.—Transactions of the American Philosophical Society (Philadelphia).
Tr. Am. Ent. Soc.—Transactions of the American Entomological Society (Philadelphia).
Tr. A. S. Japan—Transactions of the Asiatic Society of Japan (Yokohama).
Tr. Barrow Nat. Field Club—Transactions of the Barrow Naturalists' Field Club.

Tr. Cambridge Phil. Soc.—Transactions of the Cambridge Philosophical Society.

Tr. Cardiff Nat. Soc.—(See *Rep. Tr. Cardiff Nat. Soc.*).

Tr. Conn. Acc.—Transactions of the Connecticut Academy of Sciences (New Haven).

Tr. Cumberl. Westmorl. Ass.—Transactions of the Cumberland and Westmoreland Association for the Advancement of Literature and Science (Goodchild : Carlisle).

Tr. Devon Ass. (See *Rep. Tr. Devon Ass.*)

Tr. Dumfries Nat. Hist. Soc.—The Transactions and Journal of Proceedings of the Dumfries and Galloway Natural History and Antiquarian Society (Dumfries).

Tr. Edin. Geol. Soc.—Transactions of the Edinburgh Geological Society.

Tr. Edinb. Nat. Club—Transactions of the Edinburgh Naturalists' Field Club.

Tr. Ess. Club = *Ess. Nat.*—Essex Naturalist: being the Journal, Transactions, and Proceedings of the Essex Field Club (Buckhurst Hill).

Tr. E. Kent Nat. Hist. Soc.—Transactions of the East Kent Natural History Society (Canterbury).

Tr. E. Soc.—Transactions of the Entomological Society of London.

Tr. Geol. Soc.—Transactions of the Geological Society of London.

Tr. Hertf. Soc.—Transactions of the Hertfordshire Natural History Society and Field Club (Watford).

Tr. Kansas Ac. — Transactions of the Kansas Academy of Science (Topeka).

Tr. Leicester Soc.—Transactions of the Leicester Literary and Philosophical Society (Leicester).

Tr. L. S. (2)—Transactions of the Linnean Society, London. Second series.

Tr. L. S. New York—Transactions of the Linnean Society of New York.

Tr. Newbury Club—Transactions of the Newbury District Field Club.

Tr. Norw. Soc.—Transactions of the Norfolk and Norwich Naturalists' Society (Norwich).

Tr. Notts. Soc.—Transactions of the Nottingham Naturalists' Society.

Tr. N. York Ac. Sci. — Transactions of the New York Academy of Sciences (New York).

Tr. N. Z. Inst.—Transactions and Proceedings of the New Zealand Institute (Wellington).

Tr. Odont. Soc.—Transactions of the Odontological Society.

Tr. Ottawa Nat. Club—Transactions of the Ottawa Field-Naturalists' Club.

Tr. R. Irish Ac.—Transactions of the Royal Irish Academy (Dublin).

Tr. S. African Phil. Soc.—Transactions of the South African Philosophical Society (Cape Town).

Tr. R. Soc. Canada—Proceedings and Transactions of the Royal Society of Canada (Montreal).

Tr. R. Soc. Edinb.—Transactions of the Royal Society of Edinburgh.

Tr. R. Soc. S. Austr.—Transactions and Proceedings and Report of the Royal Society of South Australia (Adelaide).

Tr. R. Soc. Viet.—Transactions and Proceedings and Report of the Royal Society of Victoria.

Tr. Shropshire Soc.—Transactions of the Shropshire Archæological and Natural History Society (Shrewsbury and Oswestry).

Tr. Stirling Soc.—Transactions of the Stirling Natural History and Archæological Society.

Tr. St. Louis Acad.—Transactions of the Academy of Science of St. Louis.

Tr. Tyneside Club—Transactions of the Tyneside Naturalists' Field Club (Newcastle-upon-Tyne).

Tr. Wisconsin Acad.—Transactions of the Wisconsin Academy of Sciences, Arts, and Letters (Madison). (Also *Bulletin.*)

Tr. Woolhope Nat.—Transactions of the Woolhope Naturalists' Field Club (Hereford).

Tr. Yorksh. Union—Transactions of the Yorkshire Naturalists' Union (London & Leeds).

Tr. Z. S.—Transactions of the Zoological Society (London).

Trav. Ac. Reims—Travaux de l'Académé nationale de Reims (Reims).

Trav. Inst. Zool. Lille—Travaux le l'Institut Zoologique de Lille et de la Station maritime de Wimereux (Lille).

Trav. Lab. Histol.—Travaux du Laboratoire d'Histologie du Collège de France, École pratique des Hautes Études (Ranvier: Paris).

Trav. Soc. Univ. Kharkow—Travaux de la Société des Naturalistes à l'Université Impériale de Kharkow.

Trencsén term. egy.—Trencsén megzei természettudomanyi egysület (Trencsin).

Tromsö Mus. Aarsh.—Tromsö Museum's Aarshefter.

Trudui Kazan. Univ.—Trudui obschtchestva estestvoespytatelei pre emperatorskom Kasanskom Universitet.

Trudui Kharkoff Univ.—Trudui obschtchestva ispytatelei prihody pre imp. Kharkovakom universitet (Kharkoff).

Trudui Russ. Nat.—Trudui sezda russkich estestvoespytatelei.

Trudui St. Petersburg Nat.—Trudui sanct Petersburgkova obschtchestva estestvoespytatelei.

Uebers. Arb. schles. Ges. Breslau—Uebersicht der Arbeiten und Verhandlungen des schlesischen naturwissenschaftlichen Gesellschaft in Breslau.

Unters. Nat.—Untersuchungen zur Naturlehre des Menschen und der Thiere (Moleschott: Giessen).

Upsala Univ. Årsskrift—Upsala Universitets Årsskrift (Upsala). (Also *Act. Upsala.*)

Verh. Ak. Amst.—Verhandelingen der koninklijke Akademie van Wetenschappen (Amsterdam). (Also *JB.*)

Verh. Batav. Genoots—Verhandelingen van het Bataviaasch Genoots chap van Kunsten en wetenschappen (Batavia) (1880).

Verh. geol. Reichsanst.—Verhandlungen der k.-k. geologischen Reichsanstalt (Vienna). (Also *JB.*)

Verh. Ges. Basel—Verhandlungen der naturforschenden Gesellschaft in Basel (Bâle).

Verh. Ges. Würzb. — Verhandlungen der physikalisch-medicinischen Gesellschaft zu Würzburg. (Also *SB.*)

Verh. k. Leopold. Carol. Akad. Naturf.—(See *N. Act. Ac. Leop. Carol. Nat. cur.*)

Verh. naturw. Ver. Karlsruhe—Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe.

Verh. siebenb. Ver.—Verhandlungen und Mittheilungen des siebenburgischen Vereins für Naturwissenschaften (Hermannstadt).

Verh. Ver. Brünn.—Verhandlungen des naturforschenden Vereins in Brünn.

Verh. Ver. Hamb.—Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg.

Verh. Ver. Heidelb.—Verhandlungen des naturhistorisch-medicinischen Vereins zu Heidelberg.

Verh. Ver. Presburg—Verhandlungen des Vereins für Natur- und Heilkunde zu Presburg.

Verh. Ver. Rheinl.—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westphalen (Bonn). (Also *CB.*)

Verh. z.-b. Wien—Verhandlungen der Kaiserlichen-königlichen zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *SB.*)

Versl. Ak. Amst.—Verslagen en Mededeelingen der k. Akademie van Wetenschappen (Amsterdam).

Vict. Nat.—Victorian Naturalist (Melbourne).

Vid. Medd.—Videnskabelige Meddelelser fra den naturhistoriske Forening (Copenhagen).

Viert. Ges. Zürich—Vierteljahrschrift des naturforschenden Gesellschaft in Zürich (Wolf : Zurich).

Wesley Nat.—The Wesley Naturalist. Monthly Journal of the Wesley Scientific Society (Dallinger et alii : London).

West Am. Scientist—The West American Scientist (San Diego).

Wiedomosci z nauk przyrod. = Materialen zu dem Wissenschaften (Warsaw).

Wien. ent. Z.—Wiener entomologische Zeitung (Vienna).

Wilt. Mag.—The Wiltshire Archæological and Natural History Magazine (Devizes).

York Phil. Soc.—Yorkshire Philosophical Society Annual Report (York).

Young Nat.—The Young Naturalist (Morley : Huddersfield).

Z. Biol.—Zeitschrift für Biologie (München).

Z. Ent. Bresl.—Zeitschrift für Entomologie (Breslau).

Z. Ferdinand. Tirol Vorarlberg—Zeitschrift des Ferdinandeums für Tirol und Vorarlberg (Innsbrück).

Z. f. Ethnol.—Zeitschrift für Ethnologie (Bastian & Hartmann : Berlin).

Z. f. Thiermed.—Zeitschrift für Thiermedicin und vergleichende Pathologie).

Z. geol. Ges.—Zeitschrift der deutschen geologischen Gesellschaft (Berlin).
Z. ges. Orn.—Zeitschrift für die gesammte Ornithologie (Von Madarász: Budapest).
Z. Naturw.—Zeitschrift für Naturwissenschaften. Original Abhandlungen und Berichte herausgegeben im Auftrage der naturwissenschaftlichen Vereins für Sachsen und Thüringen (Brass: Halle-a-S.).
Z. wiss. Geogr.—Zeitschrift für wissenschaftliche Geographie (Kettler: Lahr, in Baden).
Z. wiss. Mikr.—Zeitschrift für wissenschaftliche Mikroscopie und für mikroscopische Technik (Berens: Braunschweig).
Z. wiss. Zool.—Zeitschrift für wissenschaftliche Zoologie (Kölliker & Ehlers: Leipzig).
Zapiski Kiev.—Zapiski Kievskova Obshtchestva Estestvoespytatelei (Kieff).
Zapiski Novoross. Obsch. Estestv.—Zapiski novorossiysche Obshtchestva estestvoespytatelei (Odessa).
Zool.—The Zoologist (Harting: London).
Zool. Anz.—Zoologischer Anzeiger (Carus: Leipzig).
Zool. Beitr.—Zoologische Beiträge (Schneider: Breslau).
Zool. Gart.—Der Zoologische Garten (Wienland, Bruch, & Noll: Frankfort).
Zool. Jahrb.—Zoologische Jahrbücher (Spengel: Giessen.)
Zool. JB.—Zoologischer Jahresbericht (Mayer & Giesbrecht: Berlin).
Zool. Rec.—The Zoological Record (Beddard: London).

An asterisk prefixed to a quotation signifies that the Recorder has not seen the journal or work referred to.

CONTENTS.

GENERAL SUBJECTS. By J. Arthur Thomson, M.A., F.R.S.E.

	Page
Text Books and General Works	1
Theory of Evolution:	
General	10
Variation	13
Environment	15
Heredity	19
Special Subjects:	
Protoplasm and the Cell	21
Oogenesis	26
Spermatogenesis	32
Sex and Reproduction	35

MAMMALIA. By R. Lydekker, B.A., F.G.S.

Introduction	1
The General Subject, Titles	2
Faunas	17
Special Structures, Development, &c.	18
Primates	19
Carnivora	24
Insectivora	27
Chiroptera	29
Rodentia	31
Ungulata	37
Sirenia	47
Cetacea	48
Edentata	51
Marsupialia	52
Monotremata	56
Incertæ sedis	56

AVES. By A. H. Evans, M.A., F.Z.S.

Introduction	1
The General Subject, Titles, &c.	3
Passeres	41
Picariæ	59
Psittaci	62
Striges	63
Accipitres	63
Steganopodes	64
Herodiones	65
Odontoglossæ	66
Anseres	66
Columbæ	67
Gallinæ	68
Fulicariæ	70
Alectorides	70
Limicolæ	70
Gaviæ	72
Tubinares	73
Pygopodes	73
Impennes	74
Crypturi	75
Ratitæ	75
Formæ sedis incertæ	76

Z. geol. Ges.—Zeitschrift der deutschen geologischen Gesellschaft (Berlin).
Z. ges. Orn.—Zeitschrift für die gesammte Ornithologie (Von Madarász: Budapest).
Z. Naturw.—Zeitschrift für Naturwissenschaften. Original Abhandlungen und Berichte herausgegeben im Auftrage der naturwissenschaftlichen Vereins für Sachsen und Thüringen (Brass: Halle-a-S.).
Z. wiss. Geogr.—Zeitschrift für wissenschaftliche Geographie (Kettler: Lahr, in Baden).
Z. wiss. Mikr.—Zeitschrift für wissenschaftliche Mikroscopie und für mikroscopische Technik (Berens: Braunschweig).
Z. wiss. Zool.—Zeitschrift für wissenschaftliche Zoologie (Kölliker & Ehlers: Leipzig).
Zapiski Kiev.—Zapiski Kievskova Obshtchestva Estestvoespytatelei (Kieff).
Zapiski Novoross. Obsch. Estestv.—Zapiski novorossiysche Obshtchestva estestvoespytatelei (Odessa).
Zool.—The Zoologist (Harting: London).
Zool. Anz.—Zoologischer Anzeiger (Carus: Leipzig).
Zool. Beitr.—Zoologische Beiträge (Schneider: Breslau).
Zool. Gart.—Der Zoologische Garten (Wienland, Bruch, & Noll: Frankfort).
Zool. Jahrb.—Zoologische Jahrbücher (Spengel: Giessen.)
Zool. JB.—Zoologischer Jahresbericht (Mayer & Giesbrecht: Berlin).
Zool. Rec.—The Zoological Record (Beddard: London).

An asterisk prefixed to a quotation signifies that the Recorder has not seen the journal or work referred to.

CONTENTS.

GENERAL SUBJECTS. By J. Arthur Thomson, M.A., F.R.S.E.

	Page
Text Books and General Works	1
Theory of Evolution:	
General	10
Variation	13
Environment	15
Heredity	19
Special Subjects:	
Protoplasm and the Cell	21
Oogenesis	26
Spermatogenesis	32
Sex and Reproduction	35

MAMMALIA. By R. Lydekker, B.A., F.G.S.

Introduction	1
The General Subject, Titles	2
Faunas	17
Special Structures, Development, &c.	18
Primates	19
Carnivora	24
Insectivora	27
Chiroptera	29
Rodentia	31
Ungulata	37
Sirenia	47
Cetacea	48
Edentata	51
Marsupialia	52
Monotremata	56
Incertæ sedis	56

AVES. By A. H. Evans, M.A., F.Z.S.

Introduction	1
The General Subject, Titles, &c.	3
Passeres	41
Picariæ	59
Psittaci	62
Striges	63
Accipitres	63
Steganopodes	64
Herodiones	65
Odontoglossæ	66
Anseres	66
Columbæ	67
Gallinæ	68
Fulicariæ	70
Alectorides	70
Limicolæ	70
Gaviæ	72
Tubinares	73
Pygopodes	73
Impennes	74
Crypturi	75
Ratitæ	75
Formæ sedis incertæ	76

REPTILIA AND BATRACHIA. By G. A. BOULENGER.

	Page
General	1
Faunæ	2
Palæontological	5
REPTILIA	6
Lacertilia	7
Rhiptoglossa	15
Pythonomorpha	15
Ophidia	15
Dinosauria	20
Crocodilia	21
Chelonia	22
Ichthyosauria	25
Plesiosauria	26
Rhynchocephalia	26
Proterosauria	27
Theromorpha	27
"Proganosauria"	28
BATRACHIA	28
Ecaudata	29
Caudata	32
Apoda	33
Stegocephala	34

PISCES. By G. A. BOULENGER.

General	1
Faunæ	4
Palæontological	6
Palæichthyes	7
Chondropterygii	7
Holocephala	10
Ganoidei	11
Teleostei	13
Acanthopterygii	14
A. Pharyngognathi	21
Anacanthini	22
Physostomi	25
Lophobranchii	32
Plectognathi	32
Cyclostomata	33
Incertæ Sedis	34

TUNICATA. By PROF. W. A. HERDMAN, D.Sc., F.L.S.

List of Publications	1
Anatomy	2
Development	4
Geographical Distribution	4
Phylogeny	5
Ascidiæ Simplices	5

MOLLUSCA. By W. E. HOYLE, M.A., F.R.S.E.

List of Publications	1
Anatomy and Physiology	30
Geographical Distribution	42
Cephalopoda	54
Pteropoda	55
Gastropoda Pulmonata	55
(Gastropoda) Opisthobranchiata	66
„ Prosobranchiata	67
„ Scutibranchiata	78
„ Polyplacophora	79
Pelecypoda	80

BRACHIOPODA. By W. E. HOYLE, M.A., F.R.S.E.

List of Publications	1
Text-Books, Anatomy, &c.	2
Geographical Distribution	3
Inarticulata	3
Articulata	4

POLYZOA. By W. E. HOYLE, M.A., F.R.S.E.

List of Publications	1
Anatomy and Physiology	5
Geographical Distribution	7
Pterobranchia	8
Eupolyzoa	8
Entoprocta	8
Ectoprocta	8
Cyclostomata	8

CRUSTACEA. By G. Herbert Fowler, B.A., Ph.D.

	Page		Page
List of Publications	1	Stomatopoda	22
Subject-Index	15	Amphipoda	22
Systematic	17	Isopoda	24
Decapoda	17	Phyllopoda	24
„ Brachyura	17	Ostracoda	25
„ Macrura	20	Copepoda	25
Schizopoda	21	Cumacea	26
Syncarida	22	Cirrhipedia	26

ARACHNIDA. By R. Innes Pocock.

Anatomy, Embryology, Physiology, &c.	1	Systematic	9
General	1	Aranеidea	9
Scorpionidea	2	Thelyphonidea	17
Aranеidea	3	Scorpionidea	17
Solpugidea	5	Phalangidea	17
Pseudoscorpionidea	6	Pseudoscorpionidea	18
Acaridea	6	Acaridea	18
Titles of Faunistic Papers	7	Pycnogonida	29
Distribution	9	Pentastomida	29
		Gigantostraca	30

MYRIOPODA. By R. Innes Pocock.

List of Publications	1	Chilopoda	5
Embryology	3	Diplopoda	9
Anatomy	3	Pauropoda	11
Physiology	4	Symphyla	12
Classification	5	Archypolypoda	12
Distribution	5	Protracheata	12

INSECTA. By D. Sharp.

Introduction	1	IV. Economic	82
I. Titles	2	V. Bibliography, Biography, Nomenclature	84
II. Anatomy and Physiology	65	VI. Systematic	86
III. Faunistic and Palæontology	68		

(a.) Coleoptera.

	Page		Page		Page
The General Subject	86	Trichopterygidæ, Hydroscaphidæ, and Scaphidiidæ	112	Dermestidæ	116
Cicindelidæ	86	Histeridæ	112	Byrrhidæ	116
Carabidæ	87	Phalacridæ	113	Parnidæ	117
Haliplidæ and Dytiscidæ	93	Nitidulidæ	113	Heteroceridæ	117
Gyrinidæ	95	Trogositidæ	113	Lucanidæ and Passalidæ	117
Hydrophilidæ	95	Colydiidæ	114	Scarabæidæ	118
Staphylinidæ	96	Cucujidæ	114	Buprestidæ	129
Pselaphidæ	104	Cryptophagidæ	114	Throscidæ, Eucnemidæ, and Elateridæ	132
Paussidæ	109	Lathridiidæ	115	Cebrionidæ and Rhipidoceridæ	134
Scydmænidæ	109	Mycetophagidæ and Thorictidæ	116		
Silphidæ	111				

VERMES. By G. Herbert Fowler, B.A., Ph.D.

	Page		Page
List of Publications	1	Rotifera	29
Subject Index	23	Gephyrea	29
Systematic	25	Annulata	30
Platyhelminthes	25	Archiannelida	30
Cestoda	26	Chætopoda	30
Trematoda	26	Hirudinea	33
Turbellaria	27	Myzostomidæ	33
Nemertea	27	Enteropneusta	33
Nematoda	28	Incertæ Sedis	33
Acanthocephali	28		

CŒLENTERATA. By J. Arthur Thomson, M.A., F.R.S.E.

List of Publications	1	Actinozoa	12
Hydrozoa	11	Ctenophora	14

SPONGIÆ. By Prof. W. J. Sollas, M.A., D.Sc., LL.D.

List of Publications	1	Distribution	13
Anatomy	4	New Species and Synonymy	19
Physiology	5	Fossil Sponges	19
Classification	5		

PROTOZOA. By J. Arthur Thomson, M.A., F.R.S.E.

List of Publications	1	Structure	18
Genera and Species—		Physiology	19
Gymnomyxa	13	Reproduction	19
Sporozoa	15	Parasitic	20
Infusoria	16	Faunistic	21
General	18	Palæontology	21

Index to Genera and Subgenera described as New, &c.

Gen. Sub. 1
Acc no. 505
dt. 13/12/06

ZOOLOGICAL RECORD

FOR 1887.

GENERAL SUBJECTS.

BY

J. ARTHUR THOMSON, M.A., F.R.S.E.

PLAN OF RECORD.

(A.) TEXT-BOOKS, GENERAL WORKS.
(B.) THEORY OF EVOLUTION.
1. General.
2. Variation.
3. Environment.
4. Heredity.

(C.) SPECIAL SUBJECTS.
1. Protoplasm and the Cell.
2. Oogenesis.
3. Spermatogenesis.
4. Sex and Reproduction.

(A.) TEXT-BOOKS AND GENERAL WORKS.

°ABBOTT, C. A Naturalist's Rambles about Home. New York: 2nd ed., 16mo, 485 pp., 7/6.

ALLEN, GRANT. The Progress of Science from 1836–1886. Fortn. Rev. xli, pp. 868–884.

ALLEN, HARRISON. A Prodrome of a Memoir on Animal Locomotion. P. Ac. Philad. pp. 60–67.

Atlas des Aquariums der Zoologischen Station zu Neapel. Berlin: 8vo, 47 Taf., 3/-.

°BALFOUR, E. The Agricultural Pests of India, and of Eastern and Southern Asia, Vegetable and Animal, injurious to Man and his Products. London: 8vo, illustr.

°Ball, J. Notes of a Naturalist in South America. London: 8vo, 410 pp., 8/6.

°Beauregard, H. Nos Parasites: parasites de l'Homme, animaux et végétaux. Paris: 8vo, 234 pp., illustr., 2/8.

°——, & Galippe, V. Guide pratique pour les travaux de micrographie, comprenant la technique et les applications du microscope à l'histologie végétale et animale, à la bactériologie, à la clinique, à l'hygiène, et à la médecine légale. 2 ed., entièrement refondue. Paris: 8vo, 586 cuts, 15 frs.

°Behrens, W. Tabellen zum Gebrauch bei Mikroskopischen Arbeiten. Braunschweig: 8vo, 76 pp., 2/4.

*Beiträge zur Physiologie,—Carl Ludwig gewidmet. Leipzig: 8vo, 330 pp., 4 pls. [See Cell.]

Berghaus, H. Physikalischer Atlas. Abth. vi. (see Marshall).

Bericht der Commission zur wissenschaftlichen Untersuchung der Deutschen Meere in Kiel für die Jahre 1882–1886. Berlin: fol., 183 pp., 8 pls., 25/-.

°Blanchard, R. Traité de Zoologie médicale. Paris: 8vo, 800 pp., 350 figs., 10/6.

°Boas, J. E. V. Zoologi. 1 hfte. Kjöbenhavn: 8vo, 240 pp.

°Bolles-Lee, A., & Henneguy, F. Traité des méthodes techniques de l'anatomie microscopique, histologie, embryologie et zoologie. Avec une preface de M. Ranvier. Paris: 1887 (Nov. 1886), ix and 488 pp., 12 frs.

°Brandt, A. Kurzes Kursus der vergleichenden Anatomie der Wirbelthiere. (Russian.) Charkow: 8vo, 176 pp., 6 pls.

Brass, A. Kurzes Lehrbuch der normalen Histologie des Menschen und typischer Thierformen. Lief 3. Leipzig: 8vo, pp. 161–240, figs., 2/-.

°Brehm's Thierbilder. Neue Ausgabe. Leipzig: 523 Abbildungen auf 55 Taf. in fol., 5/-.

°Brogniart, Ch. Tableaux de Zoologie (Classification). Fasc. 1, 2 ed., Paris: 26 pp., figs., 2/8.

Bronn's Klassen und Ordnungen des Thierreichs. [See *Protozoa*, Bütschli, O.; *Vermes*, Pagenstecher, A.; *Reptilia*, Hoffmann, C. K.; *Aves*, Gadow, H.; *Mammalia*, Leche, W.] Heidelberg.

Brühl, C. B. Zootomie aller Thierklassen für Lernende, nach Autopsien skizzirt. Wien: fol., lfg. 37–39, 24 pp. text, 12 pls.

°Büchner, L. Thatsachen und Theorien aus dem naturwissenschaftlichen Leben der Gegenwart. Berlin: 8vo, 361 pp., 6/-.

°Carlet, G. Précis de Zoologie médicale. 2 édit. entièrement refondue. Paris: 12mo, 636 pp., 512 figs., 7/-.

°Chalon, J. Manuel des Sciences Naturelles. 4 ed. remaniée. Bruxelles: 8vo, 426 pp., 294 figs., 3/6.

°Claus, C. Lehrbuch der Zoologie. 4 umgearb. u. verm. Aufl. Marburg and Leipzig: 8vo, xii & 886 pp., 792 cuts, 18/-.

*Colin, G. Traité de Physiologie comparée des Animaux considerée dans ses rapports avec les Sciences Naturelles, la Médecine, la Zootechnie, et l'Economie rurale. 3 ed. augm. Vol. ii. Paris: 8vo, 1116 pp., 130 figs. (complete work 23/6).

Dalla Torre, K. W. v. [See Knauer, F.]

°De la Rue, A. Les Animaux nuisibles; leur description, leurs mœurs. Paris: 12mo, illust., 3/6.

°Delbœuf, J. La matière brute et la matière vivante. Étude sur l'origine de la vie et de la mort. Paris: 12mo, 2/2.

Detmer, W. Mittel und Wege phylogenetischer Erkenntniss. Naturforscher. xx. No. 52, pp. 462 & 463.

°Dombrowski, R. v. Allgemeine Encyclopädie der gesammten Forst- und Jagdwissenschaften. Wien: 8vo, Bd. iii., Lief. 1 & 2, 80 pp., each 1/-.

°Dubois, A. Faune illustrée des Vertébrés de la Belgique. Sec. II. 8vo, livr. 96–98, col. pls., each livr. 2/-.

°Ellenberger, W. Vergleichende Histologie der Haussäugethiere. Berlin: 8vo, 779 pp., 452 figs, 25/-.

Encyklopädie der Naturwissenschaften, herausgegeben von W. Förster, A Kenngott, A. Ladenburg, A. Reichenow, Schenk u. a. I. Abth. 53 Lief. Handwörterbuch der Zoologie, Anthropologie, und Ethnologie. 21 Lief., Bd. 5, pp. 257–384. Breslau: 8vo.

°Emery, C. Introduzione allo studio della zoologia: quattordici lezioni dettate in nov. e dic, 1886. Torino: 8vo, pp. 56.

Encyclopædia Britannica. Vol. xxii,—Sib–Szo. Edinburgh. *Siluridæ* (Günther, A.), Skeleton (Mivart, St. George), Snakes (Günther, A), Sponges (Sollas, W. J.), &c., see separate Records.

°Erdmann, G. A. Geschichte der Entwicklung und Methodik der biologischen Naturwissenschaften (Zoologie und Botanik) nebst zwei Anhängen, enhaltend ergänzende Anmerkungen zum Text und Nachweis über Litteratur und Veranschaulichungsmittel. Cassel und Berlin: 8vo, viii & 198 pp., 3/6.

°Ermengem, E. van. Manuel Technique de Microbiologie. Ed. franç. par F. Hueppe. Paris: 8vo, 76 cuts, 2 pls., 13/6.

°Fabre-Domergue. Les Invisibles, Phénomènes les plus intéressants de la vie des êtres microscopiques. Paris: 120 figs., 2/6.

*Festschrift, Albert von Kölliker zur Feier seines siebenziges Geburtstages gewidmet von seinen Schülern. Leipzig: 4to, 444 pp., 17 pls., 40/-.

Flower, W. H. A General Guide to the British Museum (Natural History), Cromwell Road, London, S.W. London: 8vo, 55 pp., 2d.

°Flügge, C. Les Microorganismes, étudiés spécialement au point de vue de l'étiologie des maladies infectieuses. Traduit d'après la seconde édition allemande par F. Henrijean. Bruxelles : 8vo, 144 figs., 16/6.

•Folin, A. de. Sous les Mers. Campagnes d'exploration du 'Travailleur' et du 'Talisman.' Paris : 12mo, 45 figs., 3/-.

•—— & Périer L. Les fonds de la Mer. Étude internationale sur les particularités nouvelles des regions sous-marines. Paris : tome iv, livr. 10–15, pp. 151–240, 15 pls., each livr. 2/2.

°Fort, J. A. Anatomie descriptive et Dissection, contenant un Précis d'Embryologie, la Structure microscopique des Organes et celle des Tissus, avec des Aperçus physiologiques et pathologiques. 4 ed. rev. et augm. Paris : 3 vols. 8vo, pp. 727, 1113, & 772, figs. 1316, 26/-.

•Fürst, H. Illustriertes Forst- und Jagd-Lexicon. Lief. 2–5, pp. 145–224, 63 figs., each lief. 1/-.

Galippe, V. [See Beauregard, H.]

°Gaudry, D. Les ancêtres des nos animaux dans les temps géologiques. Paris: 12mo, 49 figs., 3/-.

°Gérard, R. Traité pratique de micrographie appliquée à la Botanique, à la Zoologie, à l'Hygiène, et aux recherches cliniques. Paris : 8vo, iv & 545 pp., 40 pls., and 280 figs., 18 frs.

°Gervais, P. Cours élémentaire de Zoologie, 4 édit., revue par H. P. Gervais. Paris : 12mo, 455 pp., 240 figs.

°Graber, V. Leitfaden der Zoologie für die oberen Classen der Mittelschulen. Wien : 8vo, pp. 250, figs. (62 colrd.) 502.

Günther, A. Guide to the Galleries of Reptiles and Fishes in the Department of Zoology of the British Museum (Natural History). London : 8vo, pp. 119, 101 figs., -/6.

Haacke, W. Biologie, Gesammtwissenschaft und Geographie. Biol. Centralbl. vi, pp. 705–718.

General considerations as to the subdivisions of Biology, relations to Physiography, &c.

°Haas, H. J. Die Leitfossilien. Synopsis der geologisch wichtigsten Formen des vorweltlichen Thier- und Pflanzenreichs. Leipzig : 8vo, viii & 328 pp., over 1000 figs., 7/-.

°——. Katechismus der Versteinerungskunde (Petrefaktenkunde, Paläontologie). Leipzig : 1887 (Oct. 1886), •8vo, viii & 240 pp., 178 cuts, 3/-.

Haddon, A. C. An Introduction to the Study of Embryology. London : 8vo, 336 pp., 190 figs., 18/-.

•——. Guide to the recent Invertebrates in the Natural History Department of the Science and Art Museum, Dublin. 8vo, 17 pp.

°Hartinger, A. Wandtafeln für den naturwissenschaftlichen Unterricht. Wien : Abth. Zoolog. li.f 7–11, each 8/-.

°Hartwig, G. Wild Animals of the Tropics. London : 8vo, 268 pp., 66 figs., 3/6.

°——. Sea Monsters and Sea Birds. London : 8vo, 156 pp., 75 figs., 2/6.

Haushofer, K. [See Zittel, K. A.]

Hehn, V. Kulturpflanzen und Hausthiere in ihrem Ubergang aus Asien nach Griechenland und Italien, sowie in das übrige Europa. Historisch-linguistische Skizzen. 5 Aufl. Berlin : 8vo, iv & 522 pp., 10/-.

Heilprin, A. The Geographical and Geological Distribution of Animals. New York & London : 8vo, 435 pp.

Henneguy, F. [See Bolles-Lee, A.]

Hensen, V. Ueber die Bestimmung des Planktons oder des im Meere treibenden Materials an Pflanzen und Thieren. Ber. Comm. wiss. Unters. deutsch. Meere, v, pp. 1–109, Anhang xix, 6 pls., with 70 figs., viii tables.

Herdman, W. A. On an Ideal Natural History Museum. Reprint P. Liverp. Soc. 21 pp., 1 plan.

°Holder, C. F. Living Lights : a popular Account of Phosphorescent Animals and Vegetables. London: 8vo, xv & 187 pp., 27 pls., 8/6.

°Hull, E. Sketch of a Geological History ; being the natural history of the earth and of its pre-human inhabitants. London : 194 pp., diagr., 3/8.

Hurst, C. H. [See Marshall, A. Milnes.]

°James, F. L. Elementary Microscopical Technology. Part I. St. Louis : 8vo, 106 pp.

°Keller, C. Grundlehren der Zoologie. 2 umgearb. Aufl. Leipzig : 8vo, 390 pp., 576 figs., 3/-.

*Keller, O. Thiere des classischen Alterthums in culturgeschichtlicher Beziehung. Innsbruck : 8vo, ix & 488 pp., illustr., 10/8.

°Gadeau de Kerville, H. Les Insectes Phosphorescents, notes complémentaires et Bibliographie générale. Rouen : 8vo, 134 pp., 1/6.

°Kiessling & Pfalz. Methodisches Handbuch für den Unterricht in der Naturgeschichte. In 6 Cursen : Curs. 4 & 5. Braunschweig : 8vo, 4/6.

Knauer, F., & Dalla Torre, K. W. v. Handwörterbuch der Zoologie. Stuttgart & Wien : 8vo, xiv & 828 pp., 9 pls., 20/-.

Kölliker, A. v. Der jetzige Stand der morphologischen Disciplinen mit Bezug auf allgemeinen Fragen. Eröffnungsrede der 1 Versammlung der anatomischen Gesellschaft. Anat. Anz. ii, 12, pp. 326–345.

°Krass & Landois. Der Mensch und die drei Reiche der Natur (3 Theile). Th. 1. Der Mensch und das Thierreich. Freiburg : 8 Aufl., 248 pp., 184 figs., 2/6.

KRUKENBERG, C. Fr. W. Vergleichend-Physiologische Studien. Zweite Reihe. iv, Abth. Heidelberg: 188 pp., 3 pls., 8/-.

LANDOIS. [See KRASS.]

°LANG, A. Mittel und Wege phylogenetischer Erkenntniss. Jena: 8vo, 1/6.

°LATTEUX, P. Manuel de technique microscopique ou Guide pratique pour l'étude et le maniement du microscope. 3 éd. rev. et augm. Paris: 8vo, 385 figs., 12 frs.

°LEUCKART, R., & NITSCHE, H. Zoologische Wandtafeln zum Gebrauche an Universitäten und Schulen. 17–24 Lief., Taf. 40–59, mit deutsch., franz. u. engl. text. Kassel: imp. fol. u 4to.

°LEUNIS, J. Schul- Naturgeschichte. 1 Th. Zoologie, 10 Aufl. neu bearb. von Hub. Ludwig. Hannover: 8vo, viii & 581 pp., 4/.

°LEUTEMANN, —, & SCHMIDT, —. Karakterplaten uit de dierenwereld voor het aanschouwelijk onderwijs, naar oorspronkelijke aquarellen van Leutemann en Schmidt. 2 Ser. De Rijp, J. W. Van Raven, 12 pls.

°LIESERING, A. G. T. Atlas der Anatomie des Pferdes und der übrigen Hausthiere. 2 Aufl. Leipzig: Lief 7, 5 pls., text 18 pp., 5/-.

MAITLAND, J. R. G. The History of Howietoun. Stirling: 8vo, 278 pp., 196 figs., 31/6.

Containing a full description of the various Hatching-houses and Ponds, and of experiments which have been undertaken there, from 1873 to the present time, and also of the Fish-cultural work, and the magnificent results already obtained.

°MAREY, E. J. Étude de la locomotion animale par la chromo-photographie. Nancy: 8vo, 26 pp., 34 figs.

MARSHALL, A. MILNES, & HURST, C. H. A Junior Course of Practical Zoology. London: 8vo, 440 pp., 48 figs.

MARSHALL, W. Atlas der Tierverbreitung. (Berghaus Physikalischer Atlas, Abtheilung vi.) Gotha: fol., 10 pp. text, 9 col. maps (52–60), 45 figs., 12/6.

°MCCOOK, H. C. Tenants of an old Farm: Leaves from the Note-book of a Naturalist. London: 8vo, 456 pp., illustr., 6/-.

MCCOY, F. Prodromus of the Zoology of Victoria; or Figures and Descriptions of the living species of all classes of the Victorian Indigenous Animals. Melbourne: 8vo, decades xiv & xv, pp. 119–156, 10 pls., pp. 157–193, 10 pls.

Lizards, Fishes, Insects, Crustaceans, *Polyzoa* [see separate classes].

°MEINHOLD, —. Wandbilder für den Unterricht in der Zoologie. Dresden: Ser. i, Lief. 8, fol., 5 col. pls., 4/-.

°Mexia, Ramos Matias. Cartilla de Zoologia evolucionista. Buenos Aires: 8vo, 9 tav., vi & 304 pp.

Mivart, St. George. Some Notes on Colonial Zoology. Contemp. Rev. li, pp. 668–680.

°Moleschott, J. Untersuchungen zur Naturlehre des Menschen und der Thiere. Giessen: 8vo, Bd. xiii, Heft. 6, 4/-.

°——. Kleine Schriften. Neue Folge. Giessen: 242 pp., 4/-.

Unity of science; general properties of nerves; Darwin, &c.

Morgan, C. Lloyd. Animal Biology. An elementary Text-book. London: 8vo, 370 pp., 103 figs., 8/6.

°Müller, J. Die wissenschaftlichen Vereine und Gesellschaften Deutschlands im neunzehnten Jahrhundert, Bibliographie ihres Veröffentlichungen seit ihrer Begründung bis auf die Gegenwart. Elfte Lief. Berlin: 4to, pp. xxi & 797–878.

°Muybridge, E. Animal Locomotion. Electro-photographic investigation of consecutive phases of animal movements. Roy. 4to, 781 pls., £135.

Nægeli, C., & Schwendener, S. The Microscope in Theory and Practice. English ed. by F. Crisp & J. Mayall. London: 374 pp., 210 figs., 22/-.

Translation of original work, omitting 3 parts—on microphysics, microchemistry, morphology.

Neumayr, M. Erdgeschichte. Bd. ii, Beschreibende Geologie (pp. 1–649, Historical Geology). Leipzig: 8vo, 879 pp., 581 figs., 12 col. pls., 2 maps.

°——. Allgemeine Naturkunde. Leipzig: 8vo, Lief. 97-100, each Lief, 1/-.

Nicholson, H. A. A Manual of Zoology for the Use of Students. 7th edit., re-written and enlarged. London and Edinburgh: 8vo, 939 pp., 555 figs., 18/6.

——. Natural History: its rise and progress in Britain, as developed in the life and labours of leading Naturalists. Edinburgh and London: 8vo, pp. 312, 6/-.

°——. Introductory Text-book of Zoology. 6th ed., revised and enlarged. London: 8vo, 260 pp., 3/6.

°Ortmann, J. H., & Schüssler, K. Thierkunde, nebst Anhang: Der menschliche Körper. 2 Lfg. Dillenburg, Seel, 8vo, ix & 227–333 pp.

Packard, A. S. Zoology. 5th ed. (1886). New York: 8vo, 722 pp., 545 figs., 15/-.

°Paust, J. G. Thierkunde. Eine synthetische Darstellung des Thierreiches. 2 Aufl. Breslau: 8vo, 328 pp., illustr., 2/6.

Périer, L. [See Folin, A. de.]

°PERRIER, E. Les principaux types des êtres vivants des cinq parties du monde (races d'hommes, animaux et végétaux). Paris: atlas in 4to, 582 grav., text 16mo, 5/6.

——. Eléments de Zoologie. 3 ed. Paris: 12mo, 392 pp., 328 figs., 3 frs.

PFALZ. [See KIESSLING.]

°POLI, A. I recenti progressi nella teoria del microscopico. Firenze: 8vo, 25 pp., 1/-

°POUCHET, F. A. Mœurs et instincts des animaux. Avec gravures. Paris: 8vo, 320 pp., 3 frs.

POWER, H., & SEDGWICK, L. W. The New Sydenham Society's Lexicon of Medicine and the Allied Sciences (Based on Mayne's Lexicon). Fourteenth Part—Ilo–Kid. London: 4to, 160 pp.

°PROUVOT, —. Cours de Zoologie, professé à la Faculté des Sciences de Paris.—Arthropodes. Paris: 4to, 258 figs., 7/6.

°Quekett Club-man: Students' Handbook to the Microscope. London: 8vo, 72 pp., 2/6.

°REGODT, H. Notions d'Histoire naturelle applicables aux usages de la vie. 10 ed. Paris: 12mo, 336 pp., 110 figs., 2/6.

RIEHM, G. Repetitorium der Zoologie, zum Gebrauch für Studirende. Göttingen: 8vo, iv & 169 pp., 243 figs., 3/6.

°ROCHEBRUNE, A. T. DE. Iconographie élémentaire du Règne Animale. Each livr. 10 pls., 1/-.

°ROMILI, G. Lezioni d'Embriogenia umana e comparata dei Vertebrati. I. Embriogenia generale. Siena: 4to, 4/6.

°SAINT-HILAIRE, J. BARTHÉLEMY. Aristote, Traité de la génération des animaux. Traduit en français pour la première fois, et accompagné de notes perpetuelles. Paris: 8vo, 2 vols., (1) cclxxxiii & 128 pp., (2) 557 pp., 20 frs.

SARASIN, P. und F. Ergebnisse Naturwissenschaftlicher Forschungen auf Ceylon in den Jahren 1884–1886. Wiesbaden: Bde. I & II, pp. 31 & 40, folio, 10 col. pls.

Diadematidæ, Parasitic Snails, *Ichthyophis*.

°SAUVAGE, H. E. La grande Pêche; les Tortues de mer, les animaux inférieurs. Paris: 8vo, 70 cuts, 2/-.

SCHEDEL, J. Die Schutzfärbung der Thiere (mit Berücksichtigung der Fauna der Ostsee). Zool. Gart. xxviii, 4 & 5, pp. 140–145.

°SCHLEIDEN, M. J. Das Meer. 3 Aufl. bearbeitet von E. Voges. Braunschweig: 8vo, viii & 624 pp., 500 cuts, 12 col. pls.

SCHLÜSSLER, K. [See ORTMANN, J.]

SCHMARDA, L. K. Bericht über die Fortschritte unserer Kenntnisse von der Verbreitung der Thiere. Geogr. JB., xi Jhrg. pp. 147–206.

SCHULTZ-HENCKE. [See STENGLEIN.]

SCHWENDENER. [See NAEGELI.]

°SCHWERI, J. Unsere freilebenden Wirbelthiere (Vögel, Saügethiere, und Reptilien) nach ihrem Nutzen und Schaden betrachtet. Zürich: 8vo, xvi & 170 pp., 2/-.

SEDGWICK, L. W. [See POWER, H.]

SEITZ, A. Betrachtungen über die Schutzvorrichtungen der Thiere. Zool. JB., Bd. iii, Hft. 1, pp. 59-96, 6 cuts.

°SOCIN, C. Il mimismo nel Regno Animale. Rovereto: 8vo, 170 pp., 5 pls., 3/-.

°STENGLEIN, M. Anleitung zur Ausführung mikrophotographischer Arbeiten, bearbeitet und herausgegeben unter Mitwirkung von Schultz-Hencke. Berlin: 8vo, viii & 131 pp, 2 pls., 5 cuts, 4/-.

°STERNE, C. Die alte und die neue Weltanschauung, Studien über die Rätsel der Welt und des Lebens. Stuttgart: Lief. 1, illust., each 6d.

°STOKES, A. C. Microscopy for Beginners; or, common objects from ponds and [illegible]tches. New York: 12mo, xii & 308 pp., illustr.

TASCHENBERG, O. Bibliotheca Zoologica, II. Verzeichniss der Schriften über Zoologie, welche in den periodischen Werken enthalten und vom Jahre 1861-1880, selbständig erschienen sind, mit Einschluss der allgemein naturwissenschaftlichen, periodischen und palæontologischen Schriften bearbeitet. Bd. I, Sign. 1-108. Leipzig: 8vo.

°TORIN, K. Grundlinier til Zoologiens Studium, omarb. af. S. Almquist. 7 Uppl. af C. Aurivillius. Stockholm: 8vo, 279 pp.

°VAYSSIÈRE, A. Atlas d'anatomie comparée des Invertébrés avec une preface de F. Marion. Paris: 4to, Fasc. I, 15 pls.

VOGES, E. [See SCHLEIDEN, M. J.]

VOGT, C., & YUNG, E. Traité d'Anatomie comparée pratique. Paris (also Braunschweig, in German): Livr. 9-12, each 2/-.

°WIDEGREN, H., & HOLMGREN, A. E. Handbok i Zoologi for Landtbrukare, Fiskerudkare, Skogshushallare, och Jägare. Del I, Skandinaviens Däggdjur, af Holmgren. 2 Uppl. Stockholm: 8vo, 477 pp., 5/6.

°WILDER, —, & GAGE, —. Anatomical Technology as applied to the Domestic Cat. Introduction to human and comparative anatomy. New York: 8vo, 150 figs., 21/-.

°WOOD, J. G. Domestic Animals of the Bible. London: 8vo, 268 pp., 23 figs., 3/6.

——. Homes under the Ground. London: 8vo, 266 pp., 28 figs., 3/6.

Yearbook of the Scientific and Learned Societies of Great Britain and Ireland. Fourth issue. London: 8vo, 223 pp.

YUNG, E. [See VOGT, C.]

°Zenz, W. Methodik des naturgeschichtlichen Unterrichts. 2 Aufl. Wien: 8vo, 40 pp.

Zittel, K. A. v. Handbuch der Palæontologie unter Mitwirkung von A. Schenck. 1 Abth. Palæozoologie. 10 Lfg. München: 8vo, Bd. iii, pp. 1–256, 266 cuts., 10/-.

°Zittel, K. A. v. Palæontographica. Beiträge zur Naturgeschichte der Vorzeit. Vol. xxxiii, parts 1–3. Stuttgart: 1886–7.

°Zittel, K. A., & Haushofer, K. Paläontologische Wandtafeln und geologische Landschaften zum Gebrauch an Universitäten und Mittelschulen. 8 Lfg. Kassel: imp. fol., 8 pp., taf. 32–39.

°Zürn, F. A. Die Schmarotzer auf und in dem Körper unserer Haussäugethiere. In zwei Theilen. 2 Th. Die pflanzlichen Parasiten. 2 Aufl. 1 Hälfte. Weimar: 1887 (Dec. 1886), 8vo, 2 pls., 5/4.

B.—THEORY OF EVOLUTION.

1. *General.*

Argyll, Duke of. The Power of Loose Analogies. Nineteenth Cent. xxii, pp. 745–765.

Historical and critical discussion of natural selection.

°Aspersheim, O. Darwinismen eller Evolution og evolutions-theorier. Christiania: 8vo, 99 pp.

°Aveling, E. Die Darwinische Theorie. 2 u. 3 Hft. Stuttgart: 8vo, pp. 73–222.

Brauer, F. Beziehungen der Descendenzlehre zur Systematik. Schr. Ver. nat. Kennt. Wien, xxvii, pp. 577–614; also sep., 12mo, 32 pp., 1/6.

°Canestrini, G. La teoria di Darwin criticamente esposta. 2 ediz. corretta ed ampl. Milano: 8vo, xi & 402 pp., and figs., 6/-.

——. La teoria dell' evoluzione esposta ne' suoi fondamenti come introduzione alla lettura delle opere del Darwin e de' suoi seguaci. 2 ediz. ampl. dall' autore. Torino: 8vo, 258 pp., 4/6.

Cope, E. D. Theology of Evolution. Philadelphia: 12mo, 39 pp., 3/8.

——. The Origin of the Fittest: Essays on Evolution. London and New York: 467 pp., 15/-.

Collection of essays. Reviewed by G. J. Romanes, Nature, xxxvi, pp. 505 & 506.

Curtis, G. T. Creation or Evolution? a Philosophical Inquiry. New York (London): 8vo, 572 pp., 10/6.

Darwin, F. Life and Letters of Charles Darwin. London: 8vo, 3 vols., pp. 395, 387, & 418.

[Darwin, F.] Leben und Briefe von Charles Darwin, mit einem seine Autobiographie enthaltenden Capitel. Herausgegeben von Fr. Darwin. Aus dem Englischen übersetzt von J. V. Carus. Bd. i & ii, large 8vo, pp. 383 & 376, mit 2 portraits. Jeder Bd. 8/-.

Döderlein, L. Phylogenetische Betrachtungen. Biol. Centralbl. vii, pp. 394–402. [*Cf.* Naturforscher, xx, pp. 455 & 456.]

The importance of a hereditary constitutional tendency in a given direction, accounting for extreme types and for forms not explicable as the direct result of natural selection.

Düsing, C. Die Weiterentwicklung des Darwinismus. Humboldt: 6 Jhrg., pp. 417–423.

°Fauvelle, —. Phylogénie et ontogénie. Bull. Soc. anthrop. Paris, ix (4) pp. 487–502.

°Gaule, J. Die Stellung des Forschers gegenüber dem Problem des Lebens. Akad. Antrittsrede. Leipzig.

Haacke, W. Biologie, Gesammtwissenschaft und Geographie. Biol. Centralbl. vi, pp. 641–647.

Necessity of considering variations in habitat and conditions of life in phylogenetic investigation. Survival of ancient forms. [See General.]

°Hellwald, F. v. Die menschliche Familie nach ihrer Entstehung und natürlichen Entwicklung. Leipzig: 8vo, Lief 2 & 3, pp. 65–192, each 1/-.

°Heriz, E. Ratones y Orugas; Origen y extincion de las Especies. Barcelona & Madrid: 8vo, 16 pp.

°Hodoly, L. Studien über die Descendenztheorie. Lemberg, Wien, Leipzig: 8vo, 43 pp.

Huxley, T. H. On the Reception of the "Origin of Species." Chap. v in Darwin's Life and Letters, vol 2.

Hubrecht, A. A. W. The Relations of the *Nemertea* to the *Vertebrata*. Q. J. Micr. Soc. xxvii, pp. 605–644, 1 pl.

New combinations or organs do not appear by the action of natural selection, unless others have preceded, from which they are gradually derived by a slow change and differentiation.

Kölliker, A. v. Eröffnungsrede der Anatomischen Gesellschaft. Der jetzige Stand der morphologischen Disciplinen mit Bezug auf allgemeinen Fragen. Anat. Anz. ii, pp. 325–345; also sep., Jena.

Discussion of theory of evolution, variation, heredity, cell, karyokinesis, nucleus, fertilisation, segmentation, origin of *Metazoa*, continuity of cells.

°Gadeau de Kerville, H. Causeries sur le transformisme. Paris: 8vo, 475 pp. (v.) Origine de l'homme. Conférence faite à Elbeuf. Elbeuf: 12mo, 95 pp. (vi.) Résumé général, critiques et applications de la doctrine transformiste. Elbeuf: 12mo, 88 pp.

°Vianna de Lima. L'homme selon le transformisme. Paris: 2 frs. 50.

°ZENZ, W. Methodik des naturgeschichtlichen Unterrichts. 2 Aufl. Wien: 8vo, 40 pp.

ZITTEL, K. A. v. Handbuch der Palæontologie unter Mitwirkung von A. Schenck. 1 Abth. Palæozoologie. 10 Lfg. München: 8vo, Bd. iii, pp. 1–256, 266 cuts., 10/-.

°ZITTEL, K. A. v. Palæontographica. Beiträge zur Naturgeschichte der Vorzeit. Vol. xxxiii, parts 1–3. Stuttgart: 1886–7.

°ZITTEL, K. A., & HAUSHOFER, K. Palæontologische Wandtafeln und geologische Landschaften zum Gebrauch an Universitäten und Mittelschulen. 8 Lfg. Kassel: imp. fol., 8 pp., taf. 32–39.

°ZÜRN, F. A. Die Schmarotzer auf und in dem Körper unserer Haussäugethiere. In zwei Theilen. 2 Th. Die pflanzlichen Parasiten. 2 Aufl. 1 Hälfte. Weimar: 1887 (Dec. 1886), 8vo, 2 pls., 5/4.

B.—THEORY OF EVOLUTION.

1. *General.*

ARGYLL, DUKE OF. The Power of Loose Analogies. Nineteenth Cent. xxii, pp. 745–765.

Historical and critical discussion of natural selection.

°ASPERSHEIM, O. Darwinismen eller Evolution og evolutions-theorier. Christiania: 8vo, 99 pp.

°AVELING, E. Die Darwinische Theorie. 2 u. 3 Hft. Stuttgart: 8vo, pp. 73–222.

BRAUER, F. Beziehungen der Descendenzlehre zur Systematik. Schr. Ver. nat. Kennt. Wien, xxvii, pp. 577–614; also sep., 12mo, 32 pp., 1/6.

°CANESTRINI, G. La teoria di Darwin criticamente esposta. 2 ediz. corretta ed ampl. Milano: 8vo, xi & 402 pp., and figs., 6/-.

——. La teoria dell' evoluzione esposta ne' suoi fondamenti come introduzione alla lettura delle opere del Darwin e de' suoi seguaci. 2 ediz. ampl. dall' autore. Torino: 8vo, 258 pp., 4/6.

COPE, E. D. Theology of Evolution. Philadelphia: 12mo, 39 pp., 3/8.

——. The Origin of the Fittest: Essays on Evolution. London and New York: 467 pp., 15/-.

Collection of essays. Reviewed by G. J. ROMANES, Nature, xxxvi, pp. 505 & 506.

CURTIS, G. T. Creation or Evolution? a Philosophical Inquiry. New York (London): 8vo, 572 pp., 10/6.

DARWIN, F. Life and Letters of Charles Darwin. London: 8vo, 3 vols., pp. 395, 387, & 418.

[DARWIN, F.] Leben und Briefe von Charles Darwin, mit einem seine Autobiographie enthaltenden Capitel. Herausgegeben von Fr. Darwin. Aus dem Englischen übersetzt von J. V. Carus. Bd. i & ii, large 8vo, pp. 383 & 376, mit 2 portraits. Jeder Bd. 8/-.

DÖDERLEIN, L. Phylogenetische Betrachtungen. Biol. Centralbl. vii, pp. 394–402. [*Cf.* Naturforscher, xx, pp. 455 & 456.]

The importance of a hereditary constitutional tendency in a given direction, accounting for extreme types and for forms not explicable as the direct result of natural selection.

DÜSING, C. Die Weiterentwicklung des Darwinismus. Humboldt: 6 Jhrg., pp. 417–423.

°FAUVELLE, —. Phylogénie et ontogénie. Bull. Soc. anthrop. Paris, ix (4) pp. 487–502.

°GAULE, J. Die Stellung des Forschers gegenüber dem Problem des Lebens. Akad. Antrittsrede. Leipzig.

HAACKE, W. Biologie, Gesammtwissenschaft und Geographie. Biol. Centralbl. vi, pp. 641–647.

Necessity of considering variations in habitat and conditions of life in phylogenetic investigation. Survival of ancient forms. [See General.]

°HELLWALD, F. v. Die menschliche Familie nach ihrer Entstehung und natürlichen Entwicklung. Leipzig: 8vo, Lief 2 & 3, pp. 65–192, each 1/-.

°HERIZ, E. Ratones y Orugas; Origen y extincion de las Especies. Barcelona & Madrid: 8vo, 16 pp.

°HODOLY, L. Studien über die Descendenztheorie. Lemberg, Wien, Leipzig: 8vo, 43 pp.

HUXLEY, T. H. On the Reception of the "Origin of Species." Chap. v in Darwin's Life and Letters, vol 2.

HUBRECHT, A. A. W. The Relations of the *Nemertea* to the *Vertebrata*. Q. J. Micr. Soc. xxvii, pp. 605–644, 1 pl.

New combinations or organs do not appear by the action of natural selection, unless others have preceded, from which they are gradually derived by a slow change and differentiation.

KÖLLIKER, A. v. Eröffnungsrede der Anatomischen Gesellschaft. Der jetzige Stand der morphologischen Disciplinen mit Bezug auf allgemeinen Fragen. Anat. Anz. ii, pp. 325–345; also sep., Jena.

Discussion of theory of evolution, variation, heredity, cell, karyokinesis, nucleus, fertilisation, segmentation, origin of *Metazoa*, continuity of cells.

°GADEAU DE KERVILLE, H. Causeries sur le transformisme. Paris: 8vo, 475 pp. (v.) Origine de l'homme. Conférence faite à Elbeuf. Elbeuf: 12mo, 95 pp. (vi.) Résumé général, critiques et applications de la doctrine transformiste. Elbeuf: 12mo, 88 pp.

°VIANNA DE LIMA. L'homme selon le transformisme. Paris: 2 frs. 50.

MARTIN, W. T. The Evolution Hypothesis: a criticism of the new cosmic philosophy. Edinburgh: 8vo, 301 pp.

°MEUNIER, V. Avenir des Espèces: les Singes domestiques. Paris: 8vo, viii & 402 pp.

°POZZO (DAL) DI MOMBELLO, E. L'evoluzione geologica morganica, animale ed umana. Foligno: 16mo, pp. xxx & 534, 5/-.

MORSE, E. B. What American Zoologists have done for Evolution. Science, x, No. 236, pp. 73-76.

Historical review of last decade.

°MOSER, J. Das Lebensräthsel und der Materialismus. Eine naturphilosophische Studie. Frankfurt: 8vo, 34 pp.

Nature, xxxv. Correspondence on Origin of Species, by J. J. MURPHY, p. 76; E. CATCHPOOL, p. 76; G. J. ROMANES, p. 124.

Nature, xxxv, pp. 247, 366, & 390; xxxvi, pp. 268 & 341. On Physiological Selection. G. J. ROMANES, H. K. RUSDEN, and A. R. WALLACE.

Rev. Sci. xl, No. 18, p. 572. Un passage d'Aristote à propos de la lutte pour l'existence.

ROMANES, G. J. The Factors of Organic Evolution. Nature, xxxvi, pp. 401–407.

Discussion of the Lamarckian position, and its assumption that functionally-produced modifications are inherited. The case for this position stated. Criticism of Weismann; especially of his essay on degeneration (see Zool. Rec. xxiii).

——. Organic Evolution. Review of "The Factors of Organic Evolution," by Herbert Spencer. Nature, xxxv, pp. 362–364.

——. Physiological Selection. Nineteenth Cent. xxi, pp. 59–80.

Reply to criticisms, &c.

ROYER, C. L'évolution mentale dans la série organique. Rev. Sci. xxxix, 24, pp. 749–758.

°SAINT-LOUP, REMY. L'Homme au point de vue zoologique. Marseille: 8vo, 16 pp.

SCHULZE, F. E. Zur Stammgeschichte der Hexactinelliden. Abh. Ak. Berl. p. 35; SB. Ak. Berlin, x, p. 125; Zool. Challenger Rep. on *Hexactinellida*. (See Sponges.)

The structure and disposition of spicules regarded from point of view of utility or of natural selection.

°SINTEMORES, C. El Darwinismo. Madrid: 8vo, 200 pp.

SNELL, K. Vorlesungen über die Abstammung des Menschen. Nachlass herausg. von R. Seydel. Leipzig: 8vo, 214 pp.

°UNGAR, G. Ueber den Einfluss der Kunsttriebe bei den Thieren auf die Erhaltung und Wohlfahrt der Art. Schässburg: 4to, 31 pp.

VARIGNY, H. DE. La sélection physiologique. Rev. Sci. xxxix, No. 15, pp. 449–456.

VIRCHOW, R. Ueber den Transformismus. Tag. Deut. Nat. Vers. No. 6, pp. 136–144; Biol. Centralbl. vii, pp. 545–561.

Different degrees of transformism, metaplasia, &c. Every specific variation referable to pathological conditions. Reiteration of previously-expressed convictions on the inheritance of acquired characters, theromorphy, descent of man, &c.

VOGT, C. On some Darwinistic Heresies. Ann. N. H. xix, pp. 57–61. [Translated from Einige darwinistische Ketzereien; Arch. phys. nat. xvi (1886) pp. 300–308.]

WEISMANN, A. Ueber den Rückschritt in der Natur. Sep. Abdr. Ber. Freiburg Ges. Bd. ii, 1, pp. 1–30.

On degeneration and the importance, in connection therewith, of the cessation of natural selection.

WIEDERSHEIM, R. Der Bau des Menschen als Zeugniss für seine Vergangenheit. Ber. Freiburg Ges. ii, 4, pp. 165–278.

List and discussion of the structural changes demonstrable in human subject. (i) Progressive, 9; (ii) Retrogressive, without loss of functionality, 12; (iii) Progressive, with more or less loss of functionality, 78; (iv) Change of function, 6; displacements, 18. General discussion of degeneration of superfluities as a condition of progress. The *rôle* of natural selection in establishing adaptations, and in retaining them when established. Non-operation of natural selection, and the occurrence of "panmixia" condition degeneration. Confirmation of Weismann.

2. *Variation.*

BOWMAN, F. H. On some Variations in the Structure of Wool and other allied Fibres. P. R. Soc. Edinb. pp. 657–672.

Constant tendency to reversion. Influences of environment, &c.

°BROOKS, W. K. On the Relative Variability of Men and Women. Mem. Nat. Ac. Sci., November.

CHABRY, L. Contribution à l'embryologie normale et tératologique dans les Ascidies simples. J. de l'Anat. Phys. xxiii, 3, pp. 167–319, 4 pls.

Monsters from monstrous germs. Correlative variations in the blastoderm, when certain blastomeres are pathologically affected. The segmented ovum a system in equilibrium. The importance of the reciprocal attraction or cohesion of the blastomeres. Injury to a given blastomere results in the suppression of development of the organs potentially contained in the blastomere, unless neighbouring cells change in potency, and compensate the loss.

°——. Embryologie normale et tératologique des Ascidies. Paris: 8vo, 154 pp., 5 pls.

CLARK, F. LE GROS. Some Thoughts on the Evolution and Affinity of Disease. J. Anat. Phys. xxi, 2, pp. 239–263.

Affinities between diseases; divergence by evolution from a simple type; such evolution influenced or determined by environment, heredity, and accidental or acquired idiosyncracies; reversion in disease.

COPE, E. D. On the Mechanical Origin of the Structures of the Hard Parts of the *Mammalia*. Mem. Nat. Ac. Sci. (November).

DARESTE, C. C.R. civ, pp. 715–717.

Double monsters, in some cases probably due to double fertilisation.

FISCHER, J. v. Weisse Froschlurche im Freien. Humboldt, 1 Heft, pp. 22 & 23.

GEDDES, P. Proposed Contributions to the Theory of Variation. Rep. Brit. Ass. p. 735.

——. On the Nature and Causes of Variation in Plants and Animals. Report of Linn. Soc. in Zool. Anz. x, pp. 274 & 659.

POULTON, E. B. Notes upon Lepidopterous Larvæ, &c. Tr. Entom. Soc. Part iii, pp. 281–321, 1 pl.

Markings, protective characters, &c.

——. The Experimental Proof of the Protective Value of Colour and Markings in Insects, in reference to their Vertebrate Enemies. P. Z. S. pp. 191–274.

QUATREFAGES, A. DE. Tératologie et tératogénie. J. de Savants, pp. 217–229, 351–365, & 430–434.

(1) Historical Sketch ; (2) Researches of Dareste ; (3) Investigations of Is. Geoffroy-St.-Hilaire ; (4) Contributions of E. Geoffroy-St.-Hilaire.

——. Tératologie et tératogénie. Paris : 4to (Extrait du Journal des Savants, 1887).

RICHTER, W. Zur Theorie von der Kontinuität des Keimplasmas. Biol. Centralbl. vii : 2, pp. 40–50 ; 3, pp. 67–80 ; 4, pp. 97–108. [See Heredity.]

Variations in connective tissue of human subject, in mechanical response to functional demands. Historical and critical discussion of variation.

ROUX, W. Selbstdifferenzirung der Furchungskugeln (50 Vers. Deut. Naturf.). Anat. Anz. ii, 762 & 763.

A preliminary note. One of the two first segmentation cells of a frog ovum (the other being destroyed) forms a semi-morula, semi-blastula, semi-gastrula, and semi-embryo.

RUPERT JONES, T., & SHERBORN, C. DAVIES. Remarks on the *Foraminifera*, with especial reference to their Variability of Form, illustrated by the Cristellarians. Part II. J. R. Micr. Soc. pt. 4, pp. 545–557.

SHUFELDT, R. W. Specific Variations on the Skeletons of Vertebrates. Science, ix, pp. 414 & 416.

TURNER, W. On Variability in Human Structure, as displayed in Different Races of Men, with especial reference to the Skeleton. J. Anat. Phys. xxi, 3, pp. 473–495.

VILLOT, A. Sur le développement et la détermination spécifique des Gordiens vivants à l'état libre. Zool. Anz. x, pp. 505–509.

Variations in different conditions.

3. *Environment.*

AMANS, M. Généralités sur les Organes de locomotion aquatique. C.R. cv, pp. 1035–1037.

"The enormous preponderant influence of the same physical cause (resistance of the water) on the external form of the body and its appendages."

°BALASCHEWA, —. De l'influence du milieu extérieur et principiellement celle des dimensions du bassin d'eau sur quelques Mollusques. Mem. Soc. Nat. Nouv. Russ. Odessa, xii, 1.

BALBIANI, E. G. Observations relatives à une note récente de M. Maupas, sur la multiplication de la *Leucophrys patula*. C.R. civ, pp. 80–83.

Failure of nutrition in fluid with *Trichorhynchus tuamotuensis*, n. g., followed by universal encystation. This persists with the enclosed individuals either entire or divided into two or four.

BARFURTH, D. Versuche über die Verwandlung der Froschlarven. Arch. mikr. Anat. xxix, pp. 1–28.

——. Der Hunger als förderndes Princip in der Natur. *T. c.* pp. 28–34, 1 pl., 5 figs.

Low temperature retards tadpole metamorphosis. Quiet and fasting curtail it. Cutting off tail either retards or does not influence. Fasting is an especially important factor in shortening the last stages of metamorphosis. In other cases fasting has an important rôle in development.

——. Die Rückbildung des Froschlarvenschwanzes und die Sogenannten Sarcoplasten. *T. c.* pp. 35–60, 2 pls.

The tissues begin to die in consequence of insufficient nutrition, and this in consequence of the cessation of trophic influence from the nervous system. The trophic influence ceases because the tail becomes superfluous. The importance of phagocytes in absorption.

RITZEMA-BOS, J. Untersuchungen über *Tylenchus devastatrix*, Kühn. Biol. Centralbl. vii, 8, pp. 232–243.

Tylenchi, which have been restricted for generations to one kind of plant, come to differ in form and size from the same species on other plants. Slight changes appear in response to different environment, and many species are only adaptive modifications. Their virulence for certain plants may be attenuated by culture for generations on some other.

——. Futteränderung bei Insekten. *T. c.* pp. 321–331.

CAMERANO, L. Dello sviluppo degli Anfibi Anuri sulle Alpi. Bol. Mus. Zool. Anat. Comp. Torino, ii (30), pp. 1–10.

The influence of external (alpine) conditions on period, &c., of development.

°CONN, H. W. Life-history of *Thalassema*. Stud. Biol. Lab. J. Hopkins Univ. iii (1886), pp. 351–399, 4 pls.; J. R. Micr. Soc. iii, pp. 396–398.

Regular segmentation associated with free-life; irregular, with encapsuling or protection. The cause mechanical; not so much due to the yolk present, as to gravity.

DELSAUX, E. Sur la réspiration des Chauves-Souris pendant leur sommeil hibernel. Arch. Biol. vii (1), pp. 207–215.

Reduction of surrounding temperature lessens the amount of CO produced.

DETMER, W. Zum Problem der Vererbung. Arch. ges. Phys. xli (5, 6), pp. 203–215.

Instances of effect of external conditions on minute structure of organism.

EISIG, H. Die Capitelliden des Golfes von Neapel, &c. [See *Vermes.*]

Experiments on accustoming *Capitella capitata* to live in fresh water (pp. 798–805). The blood-corpuscles must become "hardened" to the change before the transference is successful.

FOREL, F. A. La pénétration de la lumière dans les lacs d'eau douce. Festschrift, A. v. Kölliker. [See General.]

GERLACH, L. Ueber neuere Methoden auf dem Gebiete der experimentellen Embryologie. Biol. Centralbl. vii (19), pp. 588–605 ; Anat. Anz. Nos. 18 & 19.

Inter alia—effect of localised heat and cold, mechanical pressure, chemicals, &c., retarding influence of chloral hydrate on segmentation—all seen through embryoscope.

GIARD, A. Parasitic Castration and its Influence upon the External Characters of the Male Sex in Decapod *Crustacea*. Translated from Bull. Sci. Nord. x ; Ann. N. H. xix, pp. 325–345.

——. Sur la castration parasitaire chez l'*Eupagurus bernhardus*, Linné, et chez la *Gebia stellata*, Montagu. C.R. civ, pp. 1113–1115.

Phyxus paguri makes male *Eupagurus*, in its abdominal appendages, like female, and testes are filled with imperfect spermatozoa. *Peltogaster paguri* makes male *Pagurus* sterile, and modifies abdominal appendages of female in direction of normal male.

——. On Parasitic Castration in *Eupagurus bernhardus*, Linné, and in *Gebia stellata*, Montagu. Ann. N. H. xx, pp. 78–80.

GRABER, V. Thermische Experimente an der Küchenschabe (*Periplaneta orientalis*). Arch. ges. Phys. xli (5, 6), pp. 240–256.

GRASSI, B., & SEGRÈ, R. I. Nuove osservazioni sull' eterogenia del *Rhabdonema* (*Anguillula*) *intestinale*. II. Considerazioni sull' eterogenia. Rend. Acc. Rom. pp. 100–108.

Influence of temperature on life-history. In low temperature, *Filaria* forms arise directly from the young of above ; in summer heat, indirectly from a *Rhabditis* form.

HÉRON-ROYER. Observations comparatives sur le développement externe et l'état adulte des Batraciens du genre *Bombinator*. Bull. Soc. Z. Fr. xii, pp. 640–655, 2 pls.

Quickened the development of larvæ by prolonging (by lamps) the conditions of daylight.

HERTWIG, O. & R. Ueber den Befruchtungs- und Teilungsvorgang bei tierischen Eies unter dem Einfluss äusserer Reagentien. Jen. Z. nat. xx, pp. 120–124 & 477–510, 7 pls.

——. Untersuchungen zur Morphologie und Physiologie der Zelle. Heft v. Jena: 8vo, 156 pp., 7 pls., 8/-.

Influence of chemical, thermal, and mechanical agencies on fertilisation and segmentation.

KELLER, C. Die Wirkung des Nahrungsentzuges auf *Phylloxera vastatrix*. Zool. Anz. x, pp. 583–588.

Stoppage of nutrition causes the parthenogenesis to cease.

KOCH, G. v. Die Gorgoniden des Golfes von Neapel, &c. (*cf. Cœlenterata*).

Influence of warmth, air, &c., p. 68.

KRUKENBERG, C. F. W. Die Beeinflussung des Salzgehaltes der lebenden Gewebselemente durch den Salzgehalt der Umgebung. Vergleichend-Physiolog. Studien, ii (4) pp. 1–58. [*Cf. Cœlenterata.*]

LABOULBÈNE, A. Sur l'état larvaire des Helminthes nématodes parasites du genre Ascaride. C.R. civ, pp. 1593–1595.

With favourable temperature, the embryo of *Ascaris lumbricoides* forms in 30–40 days; with low temperature and damp atmosphere may be retarded as long as five years (Davaine).

LEONARD, A. Der Einfluss der Jahreszeit auf die Leberzellen von *Rana temporaria*. Arch. Anat. Phys. Suppt. Bd., pp. 28–47, 1 pl.

Two annual periods: July to November, growth; December to May, utilising of stores. Dependence of renewal of hepatic cells and of blood on nutritive change.

LIST, J. H. Ueber die Variation der Laichzeit bei Labriden. Biol. Centralbl vii (2), p. 64.

According to temperature, the spawning period varies more than six weeks.

MACÉ, —. L'hétérogamie de l'*Ascaris dactyluris*. C.R. civ, pp. 306–308.

MAGGIORANI, C. Influenza del magnetismo sulla embriogenesi. Contributo alle ricerche biologiche. Atti Rend. Acc. Rom. i, pp. 123–143, 1 pl.

MARCACCI, A. Azione degli Alcaloidi sulle piante, sulle fermentazioni, e sulle uova, alla luce e nella oscurita. P. v. Soc. Tosc. v, p. 285.

E.g., ova of *Amphibia* under action of quinine did not develop in light, but passed through several stages in darkness.

——. De quelques anomalies obtenues dans les œufs de poule en les soumettant au mouvement. Arch. Ital. Biol. ix (1), p. 58.

Movement during first two days produces abnormalities of thorax, beak, claws, eyes, &c.

MAUPAS, E. Sur la puissance de multiplication des Infusoires ciliés. C.R. civ, pp. 1006–1008.

Reproductive power of Ciliata depends—(1) on the quality and quantity

of the food, (2) on the temperature, (3) on the alimentary adaptation of the buccal organ. With a vegetarian diet, rate of reproduction much less and size smaller.

NOLL, —. Über den Einfluss äusserer Kräfte auf die Gestaltung der Pflanzen. Biol. Centralbl. vii, pp 699–701.

Inter alia—discussing *Protozoa*, protoplasmic layers, &c., in relation to environment.

PACKARD, A. S. On the Cave Fauna of North America, with remarks on the anatomy and origin of blind forms. Abstr. in Am. Nat. xxi (1) pp. 82 & 83.

POULTON, E. B. An Enquiry into the Cause and Extent of a Special Colour-relation between certain exposed Lepidopterous Pupæ and the Surfaces which immediately surround them. Phil. Trans. vol. 178B, pp. 311–441.

——. Further experiments upon the Protective Value of Colour and Markings in Insects. Rep. Brit. Ass. pp. 763–765.

——. Further Experiments upon the Colour-relation between Phytophagous Larvæ and their surroundings. *T. c.* p. 756.

——. An Inquiry into the Cause and Extent of a special Colour Relation between certain exposed Lepidopterous Pupæ and the Surfaces which immediately surround them. P. R. S. xlii, pp. 94–108.

Influence of surroundings (coloured light) on pupæ can only be explained by the supposition of a complicated physiological and apparently nervous circuit.

——. Notes upon lepidopterous larvæ, &c. Tr. E. Soc. iii, pp. 281–321, 1 pl.

Relation between phytophagous larvæ and various species of food-plant. Origin of carnivorous habits. Light-seeking. Appreciation of gravitation, &c.

——. The Experimental Proof of the Protective Value of Colour and Markings in Insects in reference to their Vertebrate Enemies. P. Z. S. ii, pp. 191–274.

——. Gilded Chrysalides. Abstr. in Nature, xxxv, pp. 470 & 471 ; P. R Inst. pp. 33–36.

PREYER, W. Die Bewegungen der Seesterne. MT. z. Stat. Neap. vii, pp. 191–233, 1 pl.

[*Cf. Echinodermata.*] Various effects of mechanical, electrical, thermal, and chemical stimuli. Attraction of Asterids to light. Sensitiveness to chemical constitution of the sea-water.

QUINQUAUD, C. E. De l'action du froid sur l'organisme animal vivant. C.R civ, pp. 1542–1544.

Hyper-excitation, progressive super-oxygenation, &c.

REGNARD, —. Les phénomènes de la vie sous les hautes pressions. C.R. Soc. Biol. iv, pp. 265–269.

SCHNEIDER, R. Ein bleicher *Asellus* in den Gruben von Freiburg im Erzgebirge. SB. Ak. Berlin, pp. 723–742, 1 pl.

Tendency of subterranean forms to resort to young or embryonic conditions.

SEELAND, v. —. Ueber die Nachwirkung der Nahrungsentziehung auf die Ernährung. Biol. Centralbl. vii, pp. 145–158, 184–192, 214–224, 246–256, & 271–281.

Experiments with fowls, &c.

URECH, —. Bestimmung der successiven Gewichtsabnahme der Puppe von *Pontia brassicæ* bei verschiedenen constant gehaltenen Temperaturen. Act. Soc. Helv. pp. 55 & 56.

Influence of temperature and humidity on the duration of the pupa period.

VARIGNY, A. DE. [*Cf. Cœlenterata.*] Biol. Centralbl. vii (4), pp. 127 & 128.

Effects on vitality, movements, &c., of organisms, resulting from change of chemical environment, salivity, &c.

4. *Heredity.*

BLOCHMANN, F. Ueber das regelmässige Vorkommen von bakterienähnlichen Gebilden in den Geweben und Eiern verschiedener Insecten. Z. Biol. vi, 1, pp. 1–15, 1 pl.

If *Bacteria*, then clear evidence of their inheritance.

DETMER, W. Zum Problem der Vererbung. Arch. ges. Phys. xli, 5, 6 pp. 203–215.

Emphasizes against Weismann:—(1) the intimate histological influences of external conditions on organism; (2) the importance of correlation in allowing an influence to saturate from one part to another, and thus to the sex-cells; (3) the suggestiveness of the persistence of certain phenomena (in plants) after the inciting conditions have ceased.

DINGFELDER, J. Beitrag zur Vererbung erworbenen Eigenschaften. Biol. Centralbl. vii, 14, pp. 427–432. [*Cf.* ZACHARIAS, O. Biol. Centralbl. vii, pp. 575 & 776.]

Transmission of curtailed tails through two generations of dog, starting from a female artificially truncated.

DÖDERLEIN, L. Über schwanzlose Katzen. Zool. Anz. x, pp. 606 & 607.

Caution as to conclusions as to inheritance from cases of tail-less cats.

°DOLLINGER, —. Sind die angebornen und die später erworbenen Verkrümmungen erblich? Wien. Med. Bl. x, 19, p. 599.

GALTON, F. Pedigree Moth-breeding, as a means of verifying certain important Constants in the General Theory of Heredity. Tr. E. Soc. Part 1, pp. 19–28.

HÉRON-ROYER. Sur la reproduction de l'albinisme par voie héréditaire chez l'Alyte accoucheur et sur l'accouplement de ce Batrachien. Bull. Soc. Z. Fr. xi, pp. 671–679.

HOFFMANN, H. Kulturversuchen über Variation im Pflanzenreiche. Bot. Z. pp. 260, 772 & 773.

Inheritance of acquired characters in plants and in animals.

°KHAWKINE, M. W. W. Lois de l'hérédité appliquées aux organismes unicellulaires. Zapiski Novoross. Obsch. Estestv. xii, i, pp. 237-258, 1 pl.

KOLLMANN, J. Vererbung erworbener Eigenschaften. Briefliche Mittheilung. Biol. Centralbl. vii, pp. 531–534.

Tail-less Cats.

KRAUSE, W. "Die Continuität des Keimplasmas," &c. Göttingen gel. Anz. No. 13, pp. 526–528.

Review of Weismann's theory.

MCKENDRICK, J. G. On the Modern Cell Theory, and Theories as to the Physiological Basis of Heredity. P. Phil. Soc. Glasg. xix, 55 pp.

Valuable historical summary, and general conclusions.

MINOT, C. S. The Physical Basis of Heredity. Science, viii, p. 125.

Nature, vol. xxxv. Correspondence, p. 53, p. 125, p. 345, n.

Heredity in abnormal-toed cats.

°ORTH, J. Ueber die Entstehung und Vererbung individueller Eigenschaften. Festschrift A. v. Kölliker, pp. 27. Leipzig: 8vo.

POULTON, E. B. Observations on Heredity in Cats with an abnormal number of toes. Nature, xxxv, pp. 38–41.

——. Notes upon Lepidopterous Larvæ, &c. Tr. Entom. Soc. part iii, pp. 281–321, 1 pl.

The hereditary transmission of pink tubercles on the larvæ of *Saturnia carpini*.

RICHTER, W. Zur Theorie von der Kontinuität des Keimplasmas. Biol. Centralbl. vii: 2, pp. 40–50; 3, pp. 67–80; 4, pp. 97–108.

Mainly historical and critical, supporting Weismann. Special notice of connective tissue variations in man. The same variations occur independently of local inheritance, in mechanical response to functional demands. The local modification cannot be said to be directly inherited, but is the result of an associated quality of connective tissue expressing itself through a definite law of growth.

SEDGWICK, A. On the Development of the Cape Species of Peripatus. Q. J. Micr. Sci. xxvii, pp. 467–550, 4 pls.

Syncytial nature of the embryo. At no period of development are the cells isolated units.

°WEIGERT, C. Neuere Vererbungstheorien. Abt. II. Die vererblichen Veränderungen der lebenden Wesen JB. ges. Med. No. 8 (Bd. 215) pp. 193–206.

WEISMANN, A. Ueber die Zahl der Richtungskörper und über ihre Bedeutung für die Vererbung. Fischer, Jena, 75 pp.

The germinal cells of a single individual do not involve similar hereditary tendencies. Sexual reproduction increases the possibility of individual variation.

C.—SPECIAL SUBJECTS.

1. *Protoplasm and the Cell.*

°ALTMANN, R. Die Genese der Zelle. Pp. 235–259 of Beiträge zur Physiologie,—Carl Ludwig gewidmet. Leipzig: 8vo, 330 pp., 4 pls.

ARNOLD, J. Ueber Theilungsvorgänge an der Wanderzellen, ihre progressiven und regressiven Metamorphosen. Arch. mikr. Anat. xxx (2) pp. 205–310, 5 pls.

Important observations on amitotic division. Details on fragmentation. The active movements of the nucleus. Irregularities in fragmentation, persistence of certain phases, the polynuclear state. The probable occurrence of mitosis as well as fragmentation. Degenerative and progressive changes.

BAMBEKE, C. v. Des déformations artificielles du noyau. Arch. Biol. vii (2) pp. 349–387, 3 pls.

Artificial deformations of nuclear filaments, &c. A constituent viscous substance.

VAN BENEDEN, ED., & NEYT, AD. [See Oogenesis.]

"Central corpuscle" a constant organ of cell. Mechanics of cell-division.

°BERGONZINI, C. La riproduzione cellulare. La Rassegna Sci. med. ii (6) pp. 249–257.

BOVERI, T. Zellen-Studien. Jen. Z. Nat. xxi, pp. 433–515, 4 pls.; Biol. Centralbl. viii, pp. 17–19. [See Oogenesis.]

BRINCK, J., & KRONECKER, H. Ueber synthetische Wirkung lebender Zellen. Verh. Phys. Ges. Berlin, Febr.; Arch. Anat. Phys. iii & iv, pp. 347–349.

Concerns physiolcgy of digestion.

CARNOY, J. B. Variation des cinèses; Terminologie concernant la division.—Réponse à Flemming. La Cellule, iii (2) pp. 285–324.

——. Normalité des figures cinétiques. *T. c.* pp. 274–284.

——. Quelques observations sur la division cellulaire chez les animaux. La Cellule, iii (2) pp. 225–246.

Formation of cellular plate.

°CORNIL, V. Structure du noyau des cellules géantes. Bull. Soc. Anat. Paris, lxii (1) pp. 340 & 341.

DENYS, G. Division des cellules géantes de la moelle des os. (60 Vers. Deut. Naturf.) Anat. Anz. ii, pp. 765–767.

Not by indirect fragmentation (Arnold), but by direct division (stenosis) and indirect division (kinesis). Discussion on direct division.

DRASCH, O. Zur Frage der Regeneration und der Aus- und Rückbildung der Epithelzellen. SB. Ak. Wien, xciii (3), pp. 200–213.

ERRERA, L. Ueber Zellenformen und Seifenblasen. Biol. Centralbl. vii, pp. 728–731. 60 Vers. Deut. Naturf.

Molecular statics of cell.

°——. Eine fundamentale Gleichgewichtsbedingung organischer Zellen. Ber. deut. Bot. Ges. iv, p. 441.

FLEMMING, W. Neue Beiträge zur Kenntniss der Zelle. Arch. mikr. Anat. xxix, pp. 389–463, 4 pls.

Details of nuclear division in spermatogenesis of Salamander.

FOÀ, P. Sur la structure des globules rouges du sang. Arch. Ital. Biol. ix (1) pp. 28 & 29.

Minute histology of corpuscles.

FOKKER, A. P. Sur les Hématocytes. C.R. xv, pp. 353–356.

"Protoplasm (blood) from a healthy organism, placed in a nutritive medium, with exclusion of microbes, may remain alive and develope a vegetative form peculiar to these conditions"!

——. Untersuchungen über Heterogenese. I. Protoplasmawirkungen. II. Die Hæmatocyten. Groningen: 8vo, 53 & 87 pp., 1 pl.

——. Sur les fermentations par le protoplasme d'un animal récemment tué. C.R. civ, pp. 1730–1732.

States that fermentations are produced by the protoplasm alone of the normal tissue of a recently killed animal.

FÜTTERER, —. Ueber karyokinetische Vorgänge in einem Riesenzellensarkom (Epulis). SB. Ges. Würzb. pp. 63 & 64 & 65–67.

Inter alia—denial of the existence of the 'indirect fragmentation described by Arnold as one of the modes of nuclear division.

°GAULE, J. Der Oekus der Zellen. Pp. 132–149 of Beiträge zur Physiologie,—Carl Ludwig gewidmet. Leipzig: 8vo, 330 pp., 4 pls.

GEHUCHTEN, A. v. Étude sur la structure intime de la cellule musculaire striée. Anat. Anz. No. 26, pp. 792–802, 9 figs.

GOODALE, G. L. A method for subjecting living Protoplasm to the action of different liquids. Am. J. Sci. xxxii, pp. 144 & 145.

HABERLANDT, G. Ueber die Beziehungen zwischen Function und Lage des Zellkernes bei der Pflanzen. Jena: 8vo, 135 pp., 2 pls.

Treating of plant cells, but of general problems; the *rôle* of the nucleus as bearer of the "idioplasm"; connection of cell-position with growth, &c.

HALIBURTON, W. D. On Muscle-Plasma. J. Physiol. viii (3, 4), pp. 133–202.

Influence of cold on coagulation ; influence of neutral salts ; properties of saline extracts of muscles which have undergone rigor mortis, muscle clot, ferment, proteids, &c.

*HANSTEIN, J. v. Das Protoplasma als Träger der pflanzlichen und thierischen Lebensverrichtungen. 2 unveränd Ausg. Heidelberg : 1887 (Nov. 1886), 8vo, 187 pp.

HERTWIG, O. & R. [See Oogenesis.] Also separate under the title Untersuchungen zur Morphologie und Physiologie der Zelle. 5 Heft. Jena : 8vo, 8/-.

HENKING, H. Gibt es freie Kernbildung ? Int. Monatschr. f. Anat. iv (7 & 8), pp. 335–340.

KHAWKINE, W. [See Reproduction.]

On the "pressure" of cell-division in *Euglena* and *Astasia*.

KLEBS, G. Ueber den Einfluss des Kernes in der Zelle. Biol. Centralbl. vii, pp. 161–168.

Vitality of cell-portions without nucleus.

KORSCHELT, E. Ueber die Bedeutung des Kernes für die thierische Zelle. SB. nat. Fr. No. 7, pp. 127–136 ; Nat. Rundschau. ii (46), pp. 330, 409–413.

——. [See Oogenesis.] On Behaviour of cells and nuclei in formation of the "rays" (Eistrahlen) of the ovum of *Nepa*.

"The nuclei exercise a direct and essential influence on the secretory activity of the cell." Processes from the nuclei persist while the formation of chitin goes on. The formation of chitin is not only peculiar in being intra-cellular, but the formation begins not in a single cell, but in two which fuse intimately, forming a single cell with two nuclei.

LAHOUSSE, E. Contribution à l'étude des modifications morphologiques de la cellule hépatique pendant la sécrétion. Arch. Biol. pp. 167–185, 1 pl.

LIST, J. H. Ueber einzellige Drüsen im Blasenepithele der Amphibien. Arch. mikr. Anat. xxix, pp. 147–156, 1 pl.

——. Die Rudimentzellentheorie und die Frage der Regeneration geschichteter Pflasterepithelien. SB. Ak. Wien, xciii (3) pp. 5–9.

LŒWENTHAL, N. Le protoplasme réticulé des cellules interstitielles de l'ovaire. (C.R. Soc. Vaud.) Arch. Sci. nat. xviii, pp. 558 & 559.

LUKJANOW, S. M. Beiträge zur Morphologie der Zelle. Arch. Anat. Phys. Suppt. Bd. pp. 66–70, 7 pls.

Intimate structure of glandular and epithelial cells in the mucous membrane of the stomach of *Salamandra maculata*. Especial attention to paraplasmic inclosures.

[Lukjanow, S. M.] Beiträge zur Morphologie der Zelle. Zweite Abhandlung. Ueber die Kerne der glatten Muskelzellen bei *Salamandra maculata*. Arch. mikr. Anat. xxx, pp. 545–558, 2 pls.

Form, minute structure, and disposition of the nuclei.

Macallum, A. B. On the nuclei of the striated muscle-fibre of *Necturus* (*Menobranchus*) *lateralis*. Q. J. Micr. Sci. xxvii, pp. 461–466, 1 pl.

Structure of nuclei in above; furrows due to pressure from muscular reticulum; striations also; in some cases the reticulum in, not on the nucleus. Muscular reticulum is simply the modified cytoplasma. The nuclei may contract and extend (not passively) with the muscular reticulum.

Maisonneuve, P. La cellule, d'après les travaux récents. Rev. Sci. vii, pp. 390–395.

Marshall, C. F. Observations on the structure and distribution of striped and unstriped muscle in the animal kingdom, and a theory of muscular contraction. Q. J. Micr. Sci. No. cix, (xxviii), pp. 75–107, 1 pl.

Regular intracellular network; contraction probably by longitudinal fibrils of same; in invertebrate unstriped muscle no network; in vertebrate unstriped longitudinal only.

Möbius, K. Ueber directe Teilung des Kernes bei der Querteilung von *Euplotes harpa*, Stn. SB. Ges. Nat. Berlin, No. 6.

Nansen, Fr. The Structure and Combination of the Histological Elements of the Central Nervous System. Bergens Mus. Aarsber. pp. 29–215, 11 pls.

Details as to hyaloplasma, spongioplasma, &c., of nerve tubes.

Noll, F. Experimentelle Untersuchungen über das Wachstum der Zellmembran. Abh. Senck. Ges. xv, pp. 101–162, 1 pl.

Pilliet, A. Sur l'évolution des cellules glandulaires de l'estomac chez l'homme et les vertébres. J. de l'Anat. Phys. xxiii (3), pp. 463–497, 1 pl.

Platner, G. Die Karyokinese bei den Lepidopteren. Naturforscher xx, p. 315.

Summary by F. Schwarz of Platner's conclusions as to the streaming of the protoplasm as a condition of nuclear division, &c.

Ranvier, L. Le mécanisme de la sécrétion. J. Microgr. xi, pp. 7–15, 62–70, 99–108, 142–150, 261–269, 289–299, 327–334, 357–364, 385–393, 421–434, & 453–463. [*Cf.* C.R. civ, pp. 819–822.]

Roscoe, H. E. President's Address. Rep. Brit. Ass. pp. 3–28.

Inter alia—notes on constitution of protoplasm.

Schäfer, E. A. The Present Aspect of the Cell Question. Nature, xxxvi, p 592; Rep. Brit. Ass. p. 763.

Schultze, O. Ueber die Karyokinese in den ersten Zellen ("Furchungskugeln") des Axolotl. SB. Ges. Würzb. pp. 2–4.

(1) Corroboration of Bellonci's observations. (2) The framework of the resting nucleus does not modify into the nuclear coil, which appears

to originate afresh from the grouping of Pfitzner's granules in the periphery of the nucleus. (3) Importance of the attractive spheres or centres.

[Schultze, A.] Ueber Lageveränderungen des Kernes in der Zelle. *T. c.* pp. 4 & 5.

(*a*) Passive displacements, from accumulations of fat, mucus, &c. (*b*) Active displacements, in maturation and fertilisation of ovum : (1) rotation of nucleus (Auerbach) in fertilisation of *Rhabdonema nigrovenosa* ; (2) in association with polar globule extrusion—*e.g.*, in *Siredon* (Schultze). Explained in terms of Hertwig's law that the stretching of the nucleus must take place in the direction of the greatest aggregation of protoplasm.

Schwarz, F. Die morphologische und chemische Zusammensetzung des Protoplasmas. Breslau : 8vo, 16/-. (Sep. Abd. Cohn's Beitr. Biol. Pflanzen, Bd. v, Heft. 1, pp. 1–244, 8 pls.)

An important memoir, dealing especially with the vegetable cell. (I) The alkaline and acid reactions. (II) Chlorophyll bodies. (III) Nucleus. (IV) Cytoplasm. (V) Reactions and properties of protein substances.

Sedgwick, A. [See Oogenesis.]

The rarity of complete cleavage, its possible mechanical explanation, 'an intensely active force in the centre of the cell which compels for the moment the assumption of this (clean-rounded) form in the protoplasm over which it has dominion.'

St. George, v. la Valette. Zelltheilung und Samenbildung bei *Forficula auricularia*. Festschrift A. v. Kölliker, pp. 49–61, 2 pls.

Tangl, F. Ueber das Verhältniss zwischen Zellkörper und Kern während der mitotischen Theilung. Arch. mikr. Anat. xxx, pp. 529–545, 1 pl.

Exact connection between the nucleus and the body of the cell during mitosis. With dissolution of the achromatic nuclear membrane, the sharp boundary between nucleus and cell-body disappears ; during mitosis the connection between cell-body and nucleus is much more intimate than during resting stage.

Toupet, —. Résultats de quelques recherches sur la karyokinèse. Bull. Soc. Anat. Paris, lxii (1) pp. 419 & 420.

Waldeyer, W. Ueber Karyokinese. Arch. Anat. Phys. i & ii, pp. 1–30.

Historical summary of researches, with interpolated criticisms.

——. Die Karyokinese. Naturf. xx (28) pp. 247–249.

Summary of Waldeyer's paper.

Ward, Marshall. Review of Berthold. G. Studien über Protoplasma mechanik. Nature, xxxv, pp. 300–303.

Went, F. A. F. C. Beobachtungen über Kern- und Zelltheilung. Ber. Deutsch. bot. Ges. v, pp. 247–258.

ZACHARIAS, E. Beiträge zur Kenntniss des Zellkerns und der Sexualzellen. Bot. Z. pp. 281–288, 297–304, 313–319, 329–337, 345–356, 361–372, & 377–388, 1 pl.

(1) nuclein and plastin, (2) the nucleus, (3) sex-cells.

2. *Oogenesis.*

BEDDARD, F. E. Structure and Development of the Ovum in an Annelid (*Eudrilus*). J. Anat. Phys. xxii (1) pp. 9–14, 1 pl.

Especially the degeneration and dissolution of germinal cells round about the ovum, probably at once of nutritive and mechanical advantage.

VAN BENEDEN, ED., & NEYT, AD. Nouvelles recherches sur la fécondation et la division mitosique chez l'Ascaride megalocéphale. Bull. Ac. Belg. xiv (8) pp. 215–294, 6 pls.

Confirmation of previous results, as to formation of pronucleus, kinetic prophases, theory of fertilisation, metaphasis and anaphasis. Special discussion of the attractive spheres; their importance as permanent organs of the cell. "All the internal movements which are associated with the cellular division have their immediate cause in the contractility of the fibres of the reticular protoplasm which form two antagonistic groups; the central corpuscle performs in the system the *rôle* of an organ of insertion." Abundant criticism of other observers, especially of Carnoy and Zacharias.

BLOCHMANN, F. Ueber die Richtungskörper bei Insekteneiern. Biol. Centralbl. vii (4), pp. 108–111.

Polar globules in 3 classes of Insects. (1) In 5 classes ovum nucleated. (2) In *Musca vomitoria* polar globules formed, not extruded; in winter ova of *Aphis aceris*, &c., two polar globules. (3) In at least some parthenogenetic ova only one globule; in normally fertilised, two.

——. Zur Kenntniss der Fortpflanzung von *Euglypha alveolata*, Duj. Morph. JB. xiii (1), pp. 173–183, 1 pl.

Compares curious extrusion of dead nucleus of an aborted bud in *Euglypha* with polar body formation.

——. Ueber die Richtungskörper bei Insekteneier. *Op. cit.* xii, pp. 544–574, 2 pls.

In *Orthoptera* and *Hemiptera* (*Blatta* and Aphides) normal polar globule formation; in *Diptera* (*Musca*) secondary modifications. In *Blatta* certainly, in *Musca* probably, the exit point of directive corpuscle marks the animal pole, and the dorsal side of future embryo. In parthenogenetic ova of Aphides only one polar globule; two in the ova which require fertilisation.

——. Ueber das Vorkommen bakterienähnlicher Körperchen in den Geweben und Eiern verschiedener Insekten. Biol. Centralbl. vii, pp. 606–608.

BÖHM, A. A. Ueber die Befruchtung des Neunaugeneies. SB. bayer. Ak., Heft 1, pp. 53–62.

Spreading out of germinal vesicle at animal pole, restriction of area of fertilisation by fresh membrane covering pole-plasma, retraction of the latter, apposition and final fusion of spermato- and karyo-merites.

BORN, G. Ueber die Furchung des Eies bei Doppelbildungen. Bresl. ärztl. Z. No. 15ff.

BOVERI, T. Zellen-Studien. Heft 1. Die Bildung der Richtungskörper bei *Ascaris megalocephala* und *Ascaris lumbricoides*. Jen. Z. Nat. xxi, pp. 433–515, 4 pls.

(*a*) Two types of ovum—one (Van Beneden's) with a single chromatic element, the other (Carnoy's) with two. (*b*) Separation of two polar bodies by true mitotic division, not by pseudokaryokinesis. (*c*) The chromatic elements are halved in volume not in number, the female nucleus contains as many elements as the germinal vesicle; and other important results.

——. Ueber Differenzirung der Zellkerne während der Furchung des Eies von *Ascaris megalocephala*. Anat. Anz. ii, pp. 688–693.

——. Ueber die Bedeutung der Richtungskörper. Münch. Med. Wochenschr. xxxiii, pp. 920 & 921.

——. Ueber die Befruchtung der Eier von *Ascaris megalocephala*. SB. Ges. Morph. Bd. ii, May, 1887, pp. 101–106.

CALDWELL, W. H. The Embryology of *Monotremata* and *Marsupialia*. Part I. Phil. Trans. clxxviii B, pp. 463–486, 3 pls [*cf.* P. R. Soc. xlii, pp. 177–180].

Inter alia—description of young ova and follicular cells.

CARINI, A. Zur Lehre über die Reife der Eier. MT. Embr. Inst. Wien, ii, pp. 69–76.

History of contributions towards the determination of the maturity of the ovum. Susceptibility to eosin in follicles—a characteristic.

CARNOY, J. B. Conférence donné à la société Belge de Microscopie. Quelques Observations sur la division cellulaire chez les animaux La Cellule, iii (2), pp. 225–246.

(1) Results very much in variance with Van Beneden's. (2) Variations of polar kinesis considerable, three types. (3) In animals cell-division is accomplished by constriction, or by aid of a cellular plate, or by both processes at once; the cellular plate occurs in all kinds of cells.

——. Les Globules polaires de l'*Ascaris clavata*. *T. c.* pp. 247–273.

(*a*) Formation of polar bodies in *Ascaris clavata* and in *A. lumbricoides*. (*b*) Variations in polar kinesis. (*c*) Response to Flemming.

——. Some remarks on the recent researches of Zacharias and Dr. Boveri upon the Fecundation of *Ascaris megalocephala*. Rep. Brit. Ass. pp. 756–758.

(1) On kinetic phenomena of maturation—results very divergent from those of Van Beneden. (2) Three different types of polar kinesis within

genus *Ascaris*. (3) The divisional cell-plate is to be seen in all kinds of cells. "Plasmodiæresis" is accomplished by constriction, or by aid of a cellular plate, or by both processes at once.

CHWOROSTANSKY, C. Entwicklungsgeschichte des Eies bei den Hirudineen. Zool. Anz. x, pp. 365–369.

The germogen is a product of the growth of the sub-epithelial cell-stratum.

CUÉNOT, L. Formation des organes génitaux et dépendances de la glande ovoide chez les Astérides. C.R. civ, pp. 88–90.

The ovum is morphologically the homologue of the blood-corpuscles, and the ovarian cells which do not become ova altogether resemble blood-corpuscles.

°CONN, H. W. Life-history of *Thalassema*. Stud. Biol. Lab. J. Hopkins Univ. iii (1886), pp. 351–399, 4 pls.; J. R. Micr. Soc. iii, pp. 396–398.

Polar bodies not formed unless spermatozoon enters egg; they are not "male" portions.

DEWITZ, J. Kurze Notiz über die Furchung von Froscheiern in Sublimatlösung. Biol. Centralbl. vii (3), pp. 93 & 94.

Corrosive sublimate solution provoking segmentation in unfertilized ov

DUBOIS, R. De la fonction photogénique dans les œufs de Lampyre. Bull. Soc. Z. Fr. xii, pp. 137–144.

Ova removed from ovaries of *Lampyris* are luminous; luminosity, both in fertilised and in non-fertilised, persists in laid eggs till the embryo escapes.

EISIG, H. Die Capitelliden des Golfes von Neapel, &c. [See *Vermes*.] Oogenesis, pp. 671 & 675–678, &c.

FIEDLER, R. Ueber die Entwicklung der Geschlechtsproducte bei *Spongilla*. Zool. Anz. x, pp. 631–636.

Argues—against Goette—the unicellular nature of the ovum of *Spongilla*.

——. On the Development of the Sexual Products in *Spongilla*. (Transl.) Ann. N. H. xx, pp. 435–440.

GARNAULT, P. Sur la structure et le développement de l'œuf et de son follicule chez les Chitonides. C.R. cv, pp. 621–623.

Studied in *Chiton cinereus* and *fascicularis*. Ova arise from germinal epithelium; follicular cells are homologous with ova, the corpuscles moving to the periphery of the ovum are only intravitelline albuminoid, not nuclear bodies. In other points Sabatier contraverted.

GERUCHTEN, A. v. Nouvelles observations sur la vésicule germinative et les globules polaires de l'*Ascaris megalocephala*. Anat. Anz. ii, pp. 751–760, 11 figs.

Results mainly corroborating Carnoy, and also in part Zacharias, therefore divergent from van Beneden and also from Boveri. Important note on the different results obtained by different methods.

HALLEZ, P. Sur les premiers phénomènes du développement des Dendrocœles d'eau douce. C.R. civ, pp. 1732–1735.

Description of ova, fertilisation, segmentation, &c.

HAMANN, O. Die Wandernden Urkeimzellen und ihre Reifungsstätten bei den Echinodermen. Ein Beitrag zur Kenntnis des Baues der Geschlechtsorgane. Z. wiss. Zool. xlvi (1) pp. 80–98, 1 pl.

——. Die Urkeimzellen (Ureier) im Thiereich und ihre Bedeutung. Jen. Z. Nat. Bd. xxi, pp. 516–538.

——. Vorläufige Mittheilungen zur Morphologie der Ophiuren. Nachr. Ges. Götting. 14, pp. 394–400.

Ova and sperms arise from primitive germinal cells (Urkeimzellen), which wander into the developing genital sacs, and there differentiate, by growth into ova, by division into sperms.

HENNEGUY, L. F. Le vésicule de Bâlbiani. Bull. Soc. Philom. xi, 2, pp. 116–119.

Vesicle of Balbiani near germinal vesicle on young primordial ova (of Guinea Pigs and Rats), compared with accessory nuclear body in spermatogonia.

HERTWIG, O. & R. Untersuchungen zur Morphologie und Physiologie der Zelle, Heft. v. Jena: 8vo; or Ueber den Befruchtungs- und Theilungsvorgang des thierischen Eies unter der Einfluss äusserer Agentien. Jen. Z. Nat. xx, pp. 120–241 & 477–510, 5 pls.

Influence of chemical, thermal, and mechanical agencies on (1) fertilisation, (2) internal phenomena of fertilisation, (3) segmentation. *Inter alia*, conditions of polyspermy, pathological figures (as given by Carnoy), formation of double monsters.

KERSCHNER, L. Keimzelle und Keimblatt. Z. wiss. Zool. xlv (4) pp. 672–693; Arb. Zool. Graz. Bd. ii, Heft 2, pp. 53–74.

General considerations. [See Sex and Reproduction.]

KORSCHELT, E. Uber einige interessante Vorgänge bei der Bildung der Insekteneier. Z. wiss. Zool. xlv (2) pp. 327–397, 2 pls. 4 cuts.

Peculiar formation of chitin in "egg-rays" (Eistrahlen); mode of exit from ovary; fate of empty follicles; peculiarities in follicles, &c. [See Insects.]

——. Zur Bildung der Eihüllen, der Mikropylen und Chorionanhänge bei der Insekten. Nova Acta Ac. L.-C. Nat. cur. Bd. li, pp. 183–252, 5 pls.

The vitelline membrane is a thickening of a thin layer of the vitellus, peripherally differentiated as a clear fringe. The chorion is strikingly plastic in its formation; details thereof. Formation of micropyles. The chorion structures which arise as cuticular formations on the external surface of cells; contrasted with the ovum-rays (Eistrahlen) of *Nepa* which arise *within* modified epithelial cells, and exhibit in other respects an altogether unique formation of chitin.

°Legge, F. Seconda contribuzione alla conoscenza dell'ovo nel *Gallus domesticus*. Bull. Accad. Med. Roma, No. 6.

°——. Il nucleo vitellino. *Ibid.*

Leichmann, G. Über Bildung von Richtungskörpern bei Isopoden. Zool. Anz. x, pp. 533 & 534.

Formation of directive spindle and extrusion of two polar globules in *Asellus aquaticus*.

Leydig, F. Zur Kenntniss des thierischen Eies. Zool. Anz. x, pp. 608–612 & 624–627.

The cellular nature of the primordial ovum ; primitive division of cell-mass into primordial germ cells and follicular matrix cells. The origin of the *membrana granulosa*. Description of different forms of ova, of their minute structure, of the forms of the germinal vesicle and spot, of the yolk and its enclosures.

List, J. H. Uber Bastardierungsversuche bei Knochenfischen (Labriden). Biol. Centralbl. vii, pp. 20 & 21.

Hybrid fertilisation seems to accelerate development.

——. Zur Entwicklungsgeschichte der Knochenfische (Labriden). I. Th. Morphologische Ergebnisse. Z. wiss. Zool. xlv (4)pp. 595–645, 3 pls., 9 cuts.

Inter alia, description of maturation, &c., of ova ; prevention of polyspermy by blocking of micropylar canal ; contraction of ovum after fertilisation.

Nagel, W. Das Menschliche Ei. SB. Ak. Berlin, xxxvii, pp. 759–761.

Neyt, Ad. [See Van Beneden.]

Nussbaum, M. Vorläufiger Bericht über die Ergebnisse einer mit Unterstützung der Königlichen Akademie Ausgefuhrten Reise nach Californien. SB. Ak. Berlin, li, p. 1051–1055.

Polar body formation in *Lepas*, as described by author in *Ascaris nigrovenosa*. The extrusion of polar bodies, the first and the second division occur in the further longitudinal axis, and the position of the polar globules represents the future position of the head portion of the embryo.

Paladino, G. Ulteriori ricerche sulla distruzione e rinnovamento continuo del parenchimo ovarico nei mammiferi. Anat. Anz. ii, pp. 835–842.

The constant double processes of degeneration and neogenesis.

Roux, W. Beiträge zur Entwickelungsmechanik des Embryo, No. 4, Die Richtungsbestimmung der Medianebene des Froschembryo durch die Copulationsrichtung des Eikernes und des Spermakernes. Arch. mikr. Anat. xxix, pp. 157–213, 1 pl.

The manner in which the disposition of the median plane of the Frog embryo is determined by the direction of conjugation of male and female nuclei. The axis from black to white pole represents the dorso-ventral direction of the real, the cephalo-caudal direction of the final

embryo. The meridian plane in which the two nuclei conjugate becomes the median plane of the embryo. The fertilised side of the ovum becomes ventro-caudal, the other dorso-cephalic.

[Roux, W.] Zur ersten Entwicklung des braunen Grasfrosches. Biol. Centralbl. vii, 14, pp. 420–425.

Report and criticism of O. Schultze; asserting especially against the latter that the Frog ovum first assumes during fertilisation the position determining the lie of the embryo, or the corresponding disposition of the different egg-substances.

Scharff, R. On the intra-ovarian egg of some Osseous Fishes. Q. J. Micr. Sci. xxviii, pp. 53–74, 1 pl.

On nucleus and early changes; formation of yolk spherules; egg-membranes; follicular layer; and development. Ova of gurnard especially; nucleoli unimportant; dark central protoplasm perhaps due to nucleus; granular zona radiata; follicular layer probably from connective tissue.

Schultze, O. Zur ersten Entwicklung des braunen Grasfrosches. (Festschrift für A. v. Kölliker: Leipzig.) Biol. Centralbl. vii (14) pp. 420–425.

—. Ueber Axenbestimmung des Froschembryo. *T. c.* pp. 577–588.

Reply to Roux. Axis of ovum from dark to clear pole corresponds to dorsoventral axis of embryo.

——. Untersuchungen über die Reifung und Befruchtung des Amphibieneies. (Erste Abhandlung.) Z. wiss. Zool. xlv (2) pp. 177-226, 3 pls.

Description of ovarian ovum, maturation, fertilisation, &c. Emphasizes the mingling of nuclear- and cell-substance previous to fertilisation, the disappearance of any separation between nuclear sap and egg-substance. Description of the polar mitoses; the directive spindle, at first tangential, becomes radial; division at right angles to its longitudinal axis. Denial of the justice of van Beneden's term "pseudokaryokinesis." Summary of what is known as to polar globules in Vertebrates.

Sedgwick, A. The Development of the Cape Species of *Peripatus*. Q. J. Micr. Sci. xxvii, pp. 467–550, 4 pls.

Inter alia—the uniquely large size of the egg; the almost complete absence of yolk; the syncytial connectedness of segmentation; the rarity of complete cleavage; general considerations.

Stuhlmann, F. Zur Kenntniss des Ovariums der Aalmutter (*Zoarces viviparus*, Cuv.). Abh. Ges. Hamb. x, 48 pp., 4 pls.

Tourneux, —., & Hermann, —. Disparation de la Zone pellucide de l'œuf de la lapine. C.R. Soc. Biol. iv, pp. 34–36.

Urech, F. Détermination et étude de la diminution successive du poids de la chrysalide de *Pontia brassicæ*. Arch. Sci. nat. xviii (11), pp. 433–436.

WEISMANN, A. Ueber die Zahl der Richtungskörper und über ihre Bedeutung für die Vererbung. Jena : 8vo, 75 pp.

In fertilised ova, two polar bodies ; in parthenogenetic, only one. The first polar body represents the extrusion at maturity of the too active "oogenetic" protoplasm of the nucleus. The second is the extrusion of part of the germ-plasma itself, whereby the original mass is reduced by half. In parthenogenesis the whole germ plasma is retained.

——. On the Signification of the Polar Globules. Nature, xxxvi, pp. 607–609 ; Rep. Brit. Ass. p. 763.

WHITMANN, C. O. Oökinesis. J. Morph. i (2), pp. 227–252.

A critical analysis of the phenomena of maturation and impregnation, discussing especially—(I) Movements of the Germinal Vesicle and Pronuclei ; (II) Receptivity of the ovum for spermatozoa ; (III) The Pole of impregnation.

"The primary cause of centrifugal movement must be in the germinal vesicle itself." "The period of receptivity" (to spermatozoa) "may be said to date, not from the expulsion of the polar globules, but from the moment the conditions of centripetal attraction are reversed in the germinal vesicle." The evidence in favour of attractive action at a distance.

°WIELOWIEJSKI, H. Ueber den Bau des Ovariums bei Insekten. Au. Ak. Krakaw, xv, 109 pp., 4 pls.

°——. Studien der tierischen Zelle. Teil I. Untersuchungen betreffend das tierische Ei. *T. c.* 94 pp., 3 pls.

ZACHARIAS, O. Neue Untersuchungen über die Copulation der Geschlechtsprodukte und den Befruchtungsvorgang bei *Ascaris megalocephala*. Arch. mikr. Anat. xxx (1), pp. 111–182, 3 pls.

(1) Description of ova and spermatozoa ; the dualism in the maturing ovum ; the germinal spot, or "mitoblast," a structure *sui generis*. (2) The conjugation of the sex-cells ; penetration of sperm, at first pseudopodic, afterwards passive. (3) Formation and expulsion of polar bodies ; the division radial, not tangential ; the primitive dualism is preserved. (4) The act of fertilisation ; the union is double, not single ; there are two pairs of conjugating elements, male and female semimitoblasts. (5) Two segmentation nuclei at first result ; these hitherto mistaken for pronuclei.

——. Ueber die feineren Vorgänge bei der Befruchtung des Eies von *Ascaris megalocephala*. Zool. Anz. x, pp. 164–166.

——. Die Befruchtungserscheinungen am Ei von *Ascaris megalocephala*. Anat. Anz. ii, pp. 787–792.

3. *Spermatogenesis.*

BEAUREGARD, H. Recherches sur les Insectes vésicants (suite). J. de l'Anat. Phys. xxiii (2), pp. 124–163, 6 pls.

In testicular tubules large cells form groups of smaller ; these multiply by division. Spermatic spheres arise ; these are enveloped in a fine layer

with a nucleus. The layer arises from one half of the original male ovule, of which the other half divided to form the sphere of "spermatoblasts." The development of the spermatoblasts into spermatozoa.

[Beauregard, H.] Note sur la spermatogenèse chez la Cantharide. C.R. Soc. Biol. iv, No. 21.

Benda, C. Untersuchungen über den Bau des functionirenden Samenkanälchens einiger Saügethiere und Folgerungen für die Spermatogenese dieser Wirbelthierklasse. Arch. mikr. Anat. xxx (1), pp. 49–110, 3 pls.

Spermatogenesis of Ox, Rabbit, Guinea-pig, Boar, Rat, Mouse, Dog, Cat. Mother-cells (*Stammzellen*) distinguished from basal-cells (*Fusszellen*). The mother-cells multiply; some form sperm cells; these unite with basal-cells, and are modified into spermatozoa. These four acts are associated with successive displacements; there is an unbroken succession of stages, and the secretory periods are different in different parts of the tubules. The nucleus forms both head and tail; the sperm-cells, during modification, remain in organic connection with the basal-cells, with which they eventually, actively or passively, lose their connection, and are pressed out laterally by the proliferation of adjacent elements. Some of the multiplied mother-cells form reserve cells for the next secretion.

——. Zur Spermatogenese und Hodenstruktur der Wirbeltiere. Anat. Anz. ii, pp. 368–370.

Mainly a summary of his previous researches.

°Biondi, D. Ueber die Entwicklung der Samenfäden beim Menschen. Vorläufige Mitteilung. Bresl. ärztl. Zeitschr. No. 7; Allg. med. Central Ztg. lvi, 27.

Bolles-Lee, A. La spermatogénèse chez les Némertiens, á propos d'une Theorie de Sabatier. Rec. z. Suisse, iv (3), pp. 409–431, 1 pl.

Antagonistic to Sabatier's account. The sperm-sac is not a mass of non-nucleated protoplasm, but a mass of distinctly nucleated cells. At a later stage, from the periphery centralwards, (*a*) one or two layers of spermatogonia; (*b*) a larger region with more crowded and connected spermatocytes, and (*c*) towards the lumen spermatides maturing into spermatozoa. Discussion of the *nebenkern*.

——. La Spermatogénèse chez les Chétognathes. La Cellule, iv (1), pp. 107–133, 2 pls.

Sagitta bipunctata and *S. minima*. Polyplasts with non-nucleated blastophore break up in cœlome into spermatocytes, which multiply by karyokinesis. Accessory nuclear body in spermatides, and some generations of spermatocytes. Spermatozoa have nuclear head, procephalic filament, tail, undulatory membrane, no transverse striation. Grouped round polyplast, with heads outwards, accessory nuclear body inwards. Blastophore, or blastophores (they may become multiple) are absorbed, or rejected, at end of spermatogenesis.

BROCH, G. Ueber die doppelten Spermatozoen einiger exotischer Prosobranchier. Zool. Jahrb. ii (3, 4), pp. 615–625, 1 pl., and 5 figs.

Vermiform as well as filiform spermatozoa in *Pteroceras lambis*, *Strombus lentiginosus*, *Cypræa caput serpentis*, *C. annulus*, *C. lurida*. Doubt cast on v. Brunn's interpretation of them as aborted ova, and suggesting derivation of *Prosobranchiata* from hermaphrodite forms.

CAMPBELL, H. D. Zur Entwicklungsgeschichte der Spermatozoiden. Ber. Deutsch. Bot. Ges. Hft. 3.

EISIG, H. Die Capitelliden der Golfes von Neapel. Fauna und Flora des Golfes von Neapel. Berlin.

Spermatogenesis, pp. 140–143 (*Notomastus*); p. 199 (*Dasybranchus*); p. 226 (*Mastobranchus*) &c.; comparative survey, p. 671. [See *Vermes*.]

FIEDLER, R. Ueber die Entwicklung der Geschlechtsproducte bei *Spongilla*. Zool. Anz. x, pp. 631–636.

Spermatogenesis after Polejaeff's second type. No special covering-cell.

FLEMMING, W. Weitere Beobachtungen über die Entwicklung der Spermatosomen bei *Salamandra maculosa*. Arch. mikr. Anat. xxxi (1) pp. 71–97, 1 pl. [See Cell.]

Head of sperm from entire chromatin of spermatide; middle portion and tail-filament probably nuclear in origin; nucleoli without morphological *rôle*; regular disposition of spermatides round cavity in spermatocyst. Antagonistic to Wiedersperg (1886).

FRAIPONT, J. Le Genre *Polygordius*. Une Monographie. XIV. Fauna und Flora des Golfes von Neapel, pp. 1–127, 16 pls. [See *Vermes*].

Description and figure of spermatogenesis, p. 39.

FÜRST, C. M. Ueber die Entwicklung der Samenkörperchen bei den Beutelthieren. Arch. mikr. Anat. xxx (3), pp. 336–365, 3 pls.

——. Bidrag till kännedom om sädeskropparnas struktur och utveckling. Or Contribution à la connaissance de la structure et du développement des corpuscles séminaux. Nord. med. Ark. Stockholm, Bd. xix, pp. 1–51, 4 pls.

GILSON, G. The Spermatogenesis of Acarians and the Laws of Spermatogenesis in general. Rep. Brit. Ass. pp. 758 & 759.

"The development of spermatozoa includes several different processes of cellular genesis and differentiation," of which no general formula can be given.

HAMANN, O. Die wandernden Urkeimzellen und ihre Reifungsstätten bei den Echinodermen. Z. wiss. Zool. xlvi, pp. 80–98, 1 pl.

Early stages of spermatogenesis in Echinoderms.

JENSEN, O. S. Untersuchungen über die Samenkörper der Säugethiere, Vögel, und Amphibien. I. Säugethiere. Arch. mikr. Anat. xxx (3), pp. 379–425, 3 pls.

Ontogeny of spermatozoa in Rat, Horse, Sheep, and partially in Man. Fibrillar composition of the axial filament, apposition not twisting of the

thread-like halves, the lumen up the entire axis, the spiral thread round connecting portion, all minutely described.

KOROTNEFF, A. DE. Sur la Spermatogénese. C.R. cv (20), pp. 953–955.

Alcyonella fongosa, after V. la Valette St. George's formula.

PRENANT, A. Note sur la cytologie des éléments séminaux chez la Scolopendre. C.R. Soc. Biol. iv, No. 31.

——. Recherches sur la signfication des éléments de tube séminifère adulte des mammifères (sur la question de la cellule de soutien). Inf. Mouatschr. Anat. Phys. Bd. iv, Heft 9 & 10, pp. 358–370 & 397–409, 2 pls.

——. Cytologie des éléments séminaux chez les Gastéropodes. C.R. Soc. Biol. iv, pp. 723–726.

——. Étude sur la structure du tube séminifère des Mammifères. Paris: 8vo, 128 pp., 3 pls.

REINHARD, W. Kinorhyncha (Echinoderes), ihr anatomischer Bau und ihre Stellung im System. Z. wiss Zool. xlv (3), pp. 401–467, 3 pls., 2 cuts.

Inter alia—spermatogenesis, pp. 428–434.

SANFELICE, A. Sopra la cellule germinali del testicolo. Boll. Soc. Nat. Napoli, i, fasc. 1.

——. Intorno alla regenerazione del testicolo. *Op. cit.* fasc. 2, pp. 93–112.

ST. GEORGE, VON LA VALETTE. Spermatologische Beiträge. Arch. mikr. Anat. xxx (3) pp. 426–434, 1 pl.

Fifth communication, dealing with *Lepidoptera*. Previous results confirmed.

°——. Zelltheilung und Samenbildung bei *Forficula auricularia*. Festschrift A. v. Kölliker, pp. 49–61, 2 pls.

°TERFOE, O. Recherches sur la spermatogénèse chez *Asellus aquaticus*. Bruxelles: 8vo, 26 pp., 3 pls.

UNGAR, —. Ueber Erkennung von Spermatozoen. Verh. Ver. Rheinl. xliii (2), p. 301.

WALDEYER, W. Bau und Entwicklung der Samenfäden. Anat. Anz. ii, pp. 345–368.

Important summary of present state of our knowledge.

ZACHARIAS, E. Beiträge zur Kenntniss des Zellkerns und der Sexualzellen. Bot. Z. [see Cell], pp. 354–356 & 361–367.

4. *Sex and Reproduction.*

°ARRIGONI DEGLI ODDI ETT. Note ed osservazioni sopra un ibrido non ancora descritto, e sull' ibridismo in generale. (Extr., Ateneo veneto. genn., febr. 1887.) Venezia: 8vo, 10 pp.

BERGENDAL, D. Zur Kenntniss der Landplanarien. Zool. Anz. x, pp. 218–224.

Reproduction by transverse division (*Bipalium*); all the forms were sexually immature.

BLOCHMANN, F. Ueber die Geschlechtsgeneration von *Chermes abietis*, L. Biol. Centralbl. vii (14), pp. 417–420.

Like *Phylloxera*. (1) A wintering, wingless, parthenogenetic generation; (2) from this a winged, parthenogenetic generation; from this a sexual, wingless generation, from fertilised ova of which (1) results.

——. On the Sexual Generation of *Chermes abietis*, Linn. [Translation.] Ann. N. H. xx, pp. 390–392.

BORNEMANN, J. G. [See *Coelenterata*.]

Protopharetra is the vegetative "Amme" of *Archæocyathus*. Alternation of generations from the Cambrian period.

BRISCHKE, C. G. A. Ueber Parthenogenesis bei den Blattwespen. Schr. Ges. Danz. vi (4), pp. 168–172.

BROOK, G. Notes on the Reproduction of the Lost Parts in the Lobster (*Hommarus vulgaris*). P. Phys. Soc. Edinb. ix, pp. 370–385, 1 pl.

°CATTANEO, G. L'origine dei Sessi. Extr. d. Rev. Filos. sc. Vol. 5 (Dec. 1886).

CHESHIRE, F. R. On Fertile Workers. Nature, xxxvi, pp. 47 & 48.

CUNNINGHAM, J. T. The Reproduction of *Myxine*. Zool. Anz. x, pp. 241–244 & 390–392.

In relation to WEBER, M.

°DELBŒUF, J. La matière brute et la matière vivante. Paris: 8vo.

Speculations on reproduction, sexuality, death, &c.

EGGER, E. Ein Fall von Regeneration der Gliedmassen bei Reptilien. Arb. z. Inst. Würzb. viii (2) pp. 201–211, 1 pl.

Apparent regeneration of hind leg in *Lacerta vivipara*.

EISIG, H. Die Capitelliden des Golfes von Neapel. Fauna und Flora des Golfes von Neapel. Berlin: 4to, 2 vols., 906 pp., 37 pls. [See *Vermes*.]

In *Capitella* the mature males, apparently, copulate with immature forms of both sexes, as well as with females; thus the genital tubes of almost all forms are filled with spermatozoa (pp. 791–793). In *Clitomastus* the genital products are got rid of by the separation by constriction of an abdominal portion of the body; the advantage of this to the organism; the transition from this to the "alternation of generations" in *Syllidæ* (pp. 794 & 795); the duration, &c., of sexual maturity.

EMERY, C. La luce negli amori delle Lucciole. Bull. Ent. Ital. xviii, pp. 406–411.

Colour of love-lights identical in the two sexes, intensity much the same, that of the female more restricted. The rhythm of the male is more rapid, and the flashes briefer, while that of the female is longer, more distant, and more tremulous.

°Fokker, A. P. Untersuchungen über Heterogenese. Protoplasma Bildungen. Groningen: 8vo.

Fraipont, J. Le Genre *Polygordius*. Une Monographie. xiv. Fauna und Flora des Golfes von Neapel. Berlin: pp. 1–127, 16 pls. [See *Vermes*.]

In *P. neapolitanus* and *P. appendiculatus*, the mature females break up and die in dehiscing their ova, p. 41.

Fredericq, L. L'autotomie chez les étoiles de mer. Rev. Sci. xxxix (19) pp. 589–592.

Giard, A. L'autotomie dans la série animale. *T. c.* pp. 629 & 630.

Graells, D. M. P. Teorias, suposiciones, discordancias, misterios, comprobaciones, e ignorancia sobre cuestiones biologico-ontogenicas y fisiologicas de los Afidios. Mem. Ac. Madrid, xiii, part 1*a*, pp. 1–45, 1 pl.

Dealing with the reproduction of *Aphides*. [See Insects.]

Gruber, A. Ueber die Bedeutung der Conjugation bei den Infusorien. Ber. Freiburg Ges. ii, pp. 31 & 32.

——. Der Conjugationsprocess bei *Paramœcium aurelia*. Ber. Freiburg Ges. ii, pp. 43–60, 2 pls.

——. Sexuelle Fortpflanzung und Conjugation. Humboldt, vii, Hft. 1, 3 pp.

Hallez, P. L'amputation spontanée des pattes chez les Crustacés. Rev. Sci. xxxix (3) pp. 92 & 93.

Hatschek, B. Ueber die Bedeutung der geschlechtlichen Fortpflanzung. Prag. med. Wochschr. 46; Ann. N. H. i. (1888), pp. 163 & 164.

The import of sexual reproduction is as a remedy against the operation of injurious variations.

Heckert, G. Zur Naturgeschichte des *Leucochloridium paradoxum*. Zool. Anz. x, pp. 456–461.

Huber, O. Uber Brunstwarzen bei *Rana temporaria*, L. Z. wiss. Zool. xlv (4) pp. 664–668, 1 pl.

Jhering, H. v. Nochmals der "Generationswechsel" bei Termiten. Ent. Nachr. xiii, pp. 179–182.

Keller, C. Die Wirkung des Nahrungsentzuges auf *Phylloxera vastatrix*. Zool. Anz. x, pp. 583–588.

Stoppage of nutrition causes the parthenogenesis to cease.

Kerschner, L. Keimzelle und Keimblatt. Z. wiss. Zool. xlv (4) pp. 672–693; Arb. Zool. Graz. ii (2) pp. 53–74.

General considerations on reproduction, heredity, differentiation, &c., based on a study of the development of *Hydra*. "Preservation of the indifference of the germinal cells is the ultimate import (*Endleistung*) of every differentiation, and therefore of that of the germinal layers. Omne vivum, omnis cellula—ovum."

KHAWKINE, W. Recherches biologiques sur *l'Astasia ocellata*, n. sp., et *l'Euglena viridis*, Ehr. 2 Partie. Ann. Sci. Nat. i, pp. 319–376, 1 pl.

Division due to pressure. In abundant nutrition, want of equilibrium between endo- and ectoplasm; in famine, a "vegetative pressure" effects the same result.

KORSCHELT, E. Die Gattung *Dinophilus* und der bei ihr auftretende Geschlechtsdimorphismus. Eine kritische Zusammenfassung neuerer und älterer Forschungsergebnisse. Zool. JB. ii, pp. 955–967, 1 fig.

In some species the sexes are like one another, while in others there is extreme dimorphism.

KÜNSTLER, J. La génération alternante chez les vertébrés. Rev. Sci. (3) vii, pp. 11–14.

LIST, J. H. Ueber Bastardierungsversuche bei Knochenfischen. Biol. Centralbl. vii, 1, pp. 20 & 21.

In *Labridæ* (*Crenilabrus*) apparent acceleration of development when ova fertilised by sperms of another species. Other irregularities.

MACÉ, —. L'hétérogamie de l'*Ascaris dactyluris*. C.R. ciii, pp. 306–308.

In *Ascaris dactyluris* young develop and mature within body of mother at expense of her tissues. They are, without exception, females.

MAUPAS, E. Théorie de la sexualité des Infusoires ciliés. [*Cf.* p. 175.] C.R. cv (7), pp. 356–359.

Conjugation an essential rejuvenescence of the species; the cycle of continued division strictly limited; continued division without conjugation with unrelated forms, ends in loss of powers both of nutrition and reproduction.

——. Sur la conjugaison du *Paramæcium bursaria*. C.R. cv (20), pp. 955–957.

MONIEZ, R. Les mâles du *Lecanium hesperidium* et la parthénogénèse. C.R. civ, pp. 449–451.

The discovery of small males within the females, with spermatozoa developed before appendages, casts doubt on the reality of this (and probably other) alleged cases of parthenogenesis.

NELSON, J. The Significance of Sex. Am. Nat. xxi, pp. 16–42, 138–162, & 219–238, 4 pls.

Historical summary in regard to cell-division, fertilisation, &c.

NUSSBAUM, M. Ueber das Regenerationsvermögen abgeschnitten Polypenarme. Verh. Ver. Rheinl. xxiv (SB. Ges. Bonn. pp. 10 & 11).

Cut-off tentacles of *Hydra*, being incomplete samples, cannot regenerate a body.

——. Ueber die Theilbarkeit der lebendigen Materie. II Mittheilung. Beiträge zur Naturgeschichte des Genus *Hydra*. Arch. mikr. Anat. xxix, pp. 265–366, 7 pls.

Full details as to regeneration and wound-healing.

PREYER, W. Die Bewegungen der Seesterne. MT. z. stat. Neap. vii, pp. 191–233, 1 pl. [See Environment.]

Regeneration of lost parts.

REES, J. VAN. Over Oorsprong en Beteekenis der sexueele Voortplanting en over den directen Invloed van den Voedingstoestand op de Cel-deeling. Amsterdam : 8vo, 32 pp.

RYWOSCH, D. Ueber die Geschlechtsverhältnisse und den Bau der Geschlechtsorgane der Microstomiden. Zool. Anz. x, pp. 66–69.

Inter alia—relation between sexual and asexual reproduction. Multiplication by cross-division stops when the reproductive organs are developed.

SAINT-JOSEPH, LE BARON DE. Les Annélides polychètes des côtes de Dinard. Ann. Sci. Nat. i, pp. 127–270, 6 pls.

In *Syllidæ*: (1) direct reproduction; (2) alternate generation and fission, and then budding from a single stolon; (3) successive alternating generations, at first by fission with a single stolon, then by budding with a single stolon, and lastly by budding with several stolons in a chain; (4) viviparous in two cases; (5) by lateral gemmation.

SARASIN, P. & F. Knospenbildung bei Seesternen. Zool. Anz. x, pp. 674 & 675.

Linckia multifora, forming a new star at the end of one of its five united arms.

SCHARFF, R. On *Ctenodrilus parvulus*, n. sp. Q. J. Micr. Sci. cviii, pp. 591–603, 1 pl.

Notes on the remarkable reproduction by fission.

SEMON, R. Die indifferente Anlage der Keimdrüsen beim Hühnchen und ihre Differenzierung zum Hoden. Jen. z. Nat. xxi (1, 2), pp. 46–83.

Ontogeny of testes.

SIMROTH, H. Ueber die Genitalentwicklung der Pulmonaten und die Fortpflanzung des *Agriolimax laevis*. Z. wiss. Zool. xlv (4) pp. 646–663, 1 pl.

Peculiar reproductive conditions in above-mentioned form. The occurrence of adult forms entirely female. The possibly parthenogenetic development of the ova.

STRUBELL, A. Ueber den Bau und die Entwicklung von *Heterodera schachtii*, Schmidt. Zool. Anz. x, pp. 42–46 & 62–66.

Heterodera schachtii, first larval form free, agile, male-like, but sexually indifferent; becoming parasitic the sexes are differentiated, the male undergoes most change, the female remains rather larva-like.

VILLOT, A. Revision des Gordiens. Ann. Sci. Nat. i, pp. 271–318, 3 pls.

The females are always less deeply-coloured than the males.

WAGNER, V. La regénération des organes perdus chez les Araignées. Bull. Mosc. i, No. 4, pp. 871–899, 1 pl.

Emphasizes especially the role of the blood corpuscles in the regenerative reproduction, and the conditions admitting of new growth.

WEBER, M. Ueber Hermaphroditismus bei Fischen. 2 Mitth. Tidschr. Nederl. Dierk. Ver. Di, p. 7 [*cf.* Zool. Anz. x, pp. 318–321].

WEISMANN, A. Ueber die Zahl der Richtungskörper, &c. [See Oogenesis.]

Sexual reproduction requires that half of the germ plasma be extruded (in the second polar globule) from the egg, so that the remaining half may again reach the required size by uniting with the sperm-nucleus. Parthenogenetic ova retain the whole germ-plasma, and get rid only of the "oogenetic" nuclear plasma in their first and only polar globule.

MAMMALIA.

BY

R. LYDEKKER, B.A., F.G.S.

THE year 1887 is remarkable for the great number of new generic and specific names that have been proposed, as is shown by the following table. It should, however, be mentioned that a few of the fossil species should have been recorded in the last volume, and that the following numbers do not include a considerable number of generic and specific terms, proposed without due definition by HEUDE (*infrà*, p. 45) :—

YEAR	NEW GENER	RECENT	FOSSIL	NEW SPECIES	RECENT	FOSSIL
1886	32	5	27	99	23	76
1887	105	5	100	259	45	214

Of the recent genera one is founded on an entirely new form, while the other four have been created by the division of an old genus. Among the fossil forms, 7 new generic terms have been proposed for previously-named forms; while the remaining 93 are regarded as indicating entirely new groups; although several of them have been already either definitely or provisionally relegated to the rank of synonyms. In addition to the above, SEELEY proposes a new generic and specific name for a specimen which he regards as Mammalian, although this reference cannot, at present, be regarded as definite. By far the greater number of fossil generic and specific names have been proposed by AMEGHINO upon the evidence of specimens in the Museum at La Plata, from the Tertiaries of Patagonia, and other parts of South America; but since, with a few exceptions, these names are unaccompanied by figures, it is impossible, in most cases, to form any judgment as to their right to stand, and the question arises whether science gains any advantage by the publication of such long strings of names, when there is no immediate prospect of the appearance of illustrations.

One of the most important memoirs published during the year is that on the homology of the dentition of the *Dasyuridæ*, by O. Thomas, which treats not only of that family but also of the other Marsupials, and, to a minor degree, of the other Orders. Another important contribution is that by Winge, on the Recent and Pleistocene Rodents of Santa Lagoa. Numerous additions to our knowledge of recent *Chiroptera* and *Rodentia* have been made by Thomas, Noack, Collett, Ramsay, and others. Dobson has described several new *Insectivora*; while Scully contributes an interesting memoir on the Mammals of Afghan-Turkistan. Meyer continues his magnificent illustrations of the antlers of the European Deer; and Selenka those of the fœtal development of various typical forms. The Marsupials have especially received the attention of Collett, De Vis, Ramsay, and Thomas.

Among memoirs treating exclusively of fossil forms, especial attention may be directed to the valuable list of all known species by Roger, which is brought up to the commencement of 1887. The Catalogue of fossil species, represented in the Collection of the British Museum, has been completed during the year. Schlosser has contributed an important memoir on the *Primates*, *Chiroptera*, and *Insectivora* of the European Tertiaries; while the magnificent work of Depéret on the Tertiary Mammals of the Rhone Basin, also claims attention. The veteran, Van Beneden, has published another fasciculus of his great work, illustrating the *Cetacea* of the Belgian Crag. In America, Cope has published new schemes for the classification of the *Artiodactyla* and *Perissodactyla*; while Marsh and Osborn have respectively contributed important information as to the Mesozoic Marsupials, both of that country and of Europe. Burmeister has continued his illustrations of the Pleistocene Mammals of South America. Finally, mention has been already made of the memoirs of Ameghino on the Mammals of the same continent.

I.—THE GENERAL SUBJECT.

Albarran, J. Du Developpement des Dents de Seconde Dentition. C.R. Soc. Biol. (8) iv, pp. 492–496.

Ameghino, F. Apuntes Preliminares sobre Algunos Mamiferos Estinguidos del Yacimiento de Monte Hermoso. Boll. Mus. La Plata, i (April), pp. 1–20, pls. i & ii.

Describes a number of forms from the Tertiaries of S. America, of which the jaws and skull of two are figured. [See *Canidæ*, *Chinchillidæ*, *Octodontidæ*, *Caviidæ*, *Typotheriidæ*, *Macraucheniidæ*, *Camelidæ*, *Glyptodontidæ*, and *Dasypodidæ*.]

——. Enumeracion Sistematica de las Especies de Mamiféros Fósiles coleccionados por C. Ameghino en los Terrenos Eocenos de la Patagonia. *Op. cit.* (Dec.) 26 pp.

Enumerates 122 species, of which a large proportion (as well as genera) are new. [See *Marsupialia*, *Rodentia*, *Creodonta*, *Toxodontia*, *Perissodactyla*, and *Edentata*.]

ANGIOLELLA, G. Sull' Intima Struttura dei Corpuscoli Rossi dei Sangui. Boll. Soc. Nat. Nap. i, pp. 67–74.

The structure of the Mammalian red blood-corpuscles is discussed in the course of this paper.

BAUR, G. On the Morphology of Ribs. Am. Nat. xxi, pp. 942–945.

Concludes that ribs are intervertebral elements.

BECHTEREW, W. Ueber die hinteren Nervenwurzeln, ihre Endigung in der grauen Substanz des Rückenmarkes, und ihre centrale Fortsetzung im letzteren. Arch. Anat. Phys. An. Abth. 1887, pp. 126–136, pl. x.

BLASCHKO, A. Beiträge zur Anatomie der Oberhaut. Arch. mikr. Anat. xxx, pp. 495–528, pls. xxvii–xxx.

Observations on the structure of epidermal structures in the human subject.

BENDA, C. Untersuchungen über den Bau der functionirenden Samenkanälchens einiger Säugethiere und Folgerungen für die Spermatogenese dieser Wirbelthierklasse. Arch. mikr. Anat. xxx, pp. 49–110, pls. v–vii. [Results summarized in Am. Nat. xxi, pp. 946–948.]

BLANFORD, W. T. Critical notes on the Nomenclature of Indian Mammals. P. Z. S. 1887, pp. 620–638.

The forms treated of comprise *Macacus ferox*, Shaw (*M. silenus*, auct., *nec* Linn.), *M. irus*, Cuv. (*M. cynomolgus*, auct., *nec* Linn.), *M. rhesus*, *Presbytes thersites*, Blyth, *Semnopithecus chrysogaster*, *Felis bengalensis*, *F. jerdoni*, *Herpestes mungo* (*H. griseus*, auct., *nec* Geoffr.), *Canis vulpes*, and the genera *Putorius*, *Mustela*, *Xantharpyia*, *Cynonycteris*, *Hipposideros*, and *Phyllorhina*. [See *Cercopithecidæ*, *Viverridæ*, *Felidæ*, *Canidæ*, and *Rhinolophidæ*.]

°BOUVIER, A. Les Animaux de la France, pt. 1, Mammifères. Paris.

BRONN, H. G. Klassen und Ordnungen des Thier-Reichs. Vol. v, Säugethiere (see LECHE).

BROWNE, M. Notes on the Vertebrate Animals of Leicestershire. Zool. xi, p. 51.

°BUCKLEY, A. B. Animals from the Life. London : 4to.

BURT, G. W. Remarks on Classification of *Vertebrata*. Am. Nat. xxi, pp. 913–916.

CAPON, G. Saggio di Anatomia Generale ed Istiologia del Sistema Ossea. Atti Soc. Ven.-Trent. x, pp. 1–170.

A sketch of the chief features observable in the histology of the Vertebrate skeleton.

COLLETT, R. On a Collection of Mammals from Central and Northern Queensland. Zool. Jahrb. ii, pp. 829–940, 3 woodcuts.

Mentions 52 species, including 1 *Canis*, 5 *Muridæ*, 4 *Pteropodidæ*, 5 *Vespertilionidæ*, 1 *Rhinolophus*, 2 *Emballonuridæ*, 1 *Halicore*, 7 *Dasyuridæ*, 2 *Peramelidæ*, 11 *Macropodidæ*, 11 *Phalangeridæ*, 1 *Echidna*, and

1 *Ornithorhynchus*. An adult and a young skull of *Dendrolagus lumholtzi* are figured, pp. 898–901.

COPE, E. D. The Origin of the Fittest. London & New York : 8vo, xix, 467 pp., illustr.

A series of essays on evolution, mainly reprints of previous papers. The following chapters are devoted to the *Mammalia* :—7. The homologies and origin of the types of molar teeth. 8. The relation of Man to the Tertiary *Mammalia*. 10. The evidence for evolution in the history of the extinct Mammals. 13. On the trituberculate tooth in the *Mammalia*. 14. The origin of the specialized teeth of the *Carnivora*. 15. The origin of the foot-structure of the Ungulates. 16. The effect of impact and strain on the feet of *Mammalia*.

DEPÉRET, C. Récherches sur la Succession des Faunes de Vertébrés Miocènes de la Vallée du Rhone. Arch. Mus. Lyon, iv, pp. 46–313, pls. ix–xxv.

A comprehensive memoir on the Vertebrates of the Upper and Middle Tertiaries of the Rhone Valley, with figures of remains of new and other species, and lists of the equivalent faunas of other regions. [See *Mustelidæ*, *Sciuridæ*, *Myoxidæ*, *Muridæ*, *Lagomyidæ*, *Bovidæ*, *Tragulidæ*, *Physeteridæ*, and *Delphinidæ*.]

——. Sur la Faune de Vertébrés Miocènes de la Grive-St.-Alban, Isère. C.R. civ, pp. 379–831.

——. Sur les Horizons Mammalogiques Miocènes du Bassin du Rhone. Bull. Soc. géol. xv, pp. 507–513.

In this and the preceding memoir the author gives a list of the Mammals of La Grive-St.-Alban, with preliminary mention of 5 of the new species described in the first-mentioned memoir.

DÖDERLEIN, L. Phylogenetische Betrachtungen. Biol. Centralbl. vii, pp. 394–401.

Instances the development of particular features in several groups, such as the auditory bulla in the *Oreodontidæ*, the canines of the *Felidæ*, and the antlers of the *Cervidæ*, and draws conclusions therefrom.

DONNEZAN, A. Raport sur les Concours et Les Travaux Scientifiques de l'Année 1886. Bull. Soc. Agric. Sci. Pyren.-Orient, xxviii, pp. 127–140.

Notices recent discoveries of French Tertiary Mammals, and figures a mandible of *Ursus arvernensis* and *Semnopithecus monspessulanus*.

DAIGHT, T. Notes on Muscular Abnormalities. J. Anat. Phys. xxii, pp. 96–102.

Notes in Man the absence of the flexor carpi radialis, duplicity of the vastus externus, and presence of an interclavicularis anticus digastricus, and sternalis.

EBERSTELLER, —. Zur Anatomie und Morphologie der Insula Reillii. Anat. Anz. ii, pp. 739–750, with woodcuts.

Considers that the "Island" is double; and that the oblique grooves in the Sylvian fissure in the higher Primates are not equivalent to the grooves found in other forms. [See GULDBERG.]

EIMER, G. H. T. Ueber der Zeichnung der Tiere, Humboldt, 1887, pp. 136–143, with 8 woodcuts.

A discussion on classification and phylogeny. Figures are given of the external form of *Viverra*, *Felis*, *Hyæna*, and *Canis*.

FELIX, W. Die Länge der Muskelfaser bei dem Menschen und einiger Säugethiere. Kölliker's Festschrift, pp. 281–289.

Compares the relative lengths of the muscular fibres in Man, Cat, Dog, Pig, Ox, &c.

FICALBI, E. Sulla Ossificazione delle Capsule Periotiche nell' Uomo e negli Altri Mammiferi. Atti Ac. Med. Roma (2) iii, pp. 1–78, pl. i.

A critical memoir on the mode of ossification of the bones of the periotic capsule.

GAUDRY, A. Les Ancêtres de Nos Animaux. Paris: (1888), 12mo, pp. 1–294, woodcuts 48.

Copies were received in England early in December, 1887, and the work is mentioned in C.R. of that year. Mainly a *resumé* of previous works, and a description of the palæontological galleries of the Paris Museum.

——. Sur l'Age de la Faune de Pikermi de Lebéron, et de Maragha. Bull. Soc géol. (3) xiv, pp. 288–294 (1886). [Omitted from Zool. Rec. xxiii.]

Recapitulates the arguments in favour of the Miocene age of these deposits.

GRÜBER, W. Beobactungen aus der Menschlichen und Vergleichenden Anatomie, pts. vii & viii. Berlin: 4to, illustr.

Part vii (1886) discusses and figures abnormalities of structure in the metacarpals. Part viii is devoted to the description of the flexor brevis, and the abnormal opponens digiti quinti in Man and other Mammals.

GULDBERG, A. G. Zur Morphologie der Insula Reilli. Anat. Anz. ii, pp. 659–665, with 3 woodcuts.

The author mainly draws his conclusions from the structure of this part in the *Primates* and the *Artiodactyla*. [See EBERSTELLER.]

HAAS, H. J. Die Leitfossilien. Leipsic: 8vo, 328 pp., woodcuts.

A chapter on fossil *Mammalia*, with figures, is given, pp. 265–280.

HADDON, A. C. Suggestion respecting the Epiblastic Origin of the Segmental Duct. Sci. P. R. Dubl. Soc. v, pp. 463–470, pl. x, and woodcut.

The origin of the duct in Rodents is especially referred to, and a figure given of an embryo Rabbit.

——. An Introduction to the Study of Embryology. London: 8vo, 336 pp., illustr.

HARRISON, A. On the Colouration of Mammals. Science, ix, p. 36.

Infers that external markings follow the course of nerves and are related to the position of muscles.

HARTING, J. E., BUXTON, E. N., & SETON-KARR, H. American Hunting Trophies (Catalogue of American Exhibition). New York and London: 8vo, 63 pp., woodcuts.

Illustrated with figures of the heads of *Cervus canadensis, Alces machlis, Cariacus, Ovis*, &c.

HARVIE-BROWN, J. A., & BUCKLEY, T. E. A Vertebrate Fauna of Sutherland, Caithness, and West Cromarty. Edinburgh: 8vo, 344 pp., pls.

Pp. 70–96 are devoted to the Mammals, and the following families recorded: *Rhinolophidæ*, 2 sp.; *Vespertilionidæ*, 13 sp.; *Erinaceidæ*, 1 sp.; *Talpidæ*, 1 sp.; *Soricidæ*, 3 sp.; *Felidæ*, 1 sp.; *Canidæ*, 2 sp. (1 extinct); *Mustelidæ*, 6 sp.; *Trichechidæ*, 1 sp.; *Phocidæ*, 5 sp.; *Balænidæ* (including *Balænopteridæ*), 6 sp.; *Physeteridæ*, 5 sp.; *Delphinidæ*, 10 sp.; *Suidæ*, 1 sp. (extinct); *Cervidæ*, 4 sp. (1 extinct); *Bovidæ*, 1 sp.; *Sciuridæ*, 1 sp.; *Castoridæ*, 1 sp. (extinct); *Myoxidæ*, 1 sp.; *Muridæ*, 8 sp.; *Leporidæ*, 3 sp.

HEILPRIN, A. The Geographical and Geological Distribution of Animals (International Scientific Series). London: (1887), 8vo, 435 pp. and map.

Pp. 333–403 are devoted to the *Mammalia*.

HEYDEN, —. Die Ausstellung der zoologischen Sammlungen des berühmten Reisenden in Centralasien General N. M. Przewalski. Zool. Gart. xxviii, pp. 210–214.

This collection contains 115 species of Mammals, represented by 702 specimens, of which 303 are of large or medium size, and the remainder small.

HICKS, H. On some Further Researches in Bone-Caves in North Wales. P. Geol. Ass. x, pp. 14–18.

Mentions the species of Mammals occurring in these deposits.

——. Report of the Committee appointed for Exploring the Caves of North Wales. Rep. Brit. Ass. 1886, pp. 219–223 (1887).

Contains a list of 16 species of Mammals of which the remains occur in these caves.

HOCHSTETTER, F. Ueber das normale Vorkommen von Klappen in den Magenverzweigungen der Pfortader beim Menschen und einigen Säugethieren. Arch. Anat. Entw. 1887, pp. 137–142, pl. xi.

Records the presence of valves in the branches of the portal vein.

——. Ueber die Bildung der hinteren Hohlvene bei den Säugetieren. Anat. Anz. ii, pp. 517–520, with woodcuts.

A discussion on the mode of development of the vena cava.

HOFFMANN, B. Ueber Säugethiere aus dem Ostindischen Archipel (Mäuse, Fledermäuse, Büffel). Abh. zool. Mus. Dresden, No. 3, pp. 30, and pl.

Commences with a discussion of the characters of the *Muridæ* (especially those of Celebes); then follows a list of 21 species of *Mus* in the

Dresden Museum; after which we have a description of 6 species of that genus, of which 1 is new. Nine species of *Chiroptera* are then noticed, the memoir concluding with a description of the Anoa of Celebes. [See *Muridæ* and *Bovidæ*.]

HOFMANN, A. Ueber einige Säugethierreste aus der Braunkohle von Voitsberg und Steiregg bei Wies, Steiermark. JB. geol. Reichsanst. xxxvii, pp. 207–218, pls. x–xii.

From the Middle Miocene of Styria records the following forms, of which several are figured, viz.: *Felis* sp., *Cephalogale brevirhinus*, *Mustela taxodon*, *Lutra valetoni*, *Stenofiber jaegeri*, *Mastodon angustidens*, *Palæomeryx* sp., *Hyotherium soemmerringi*, *Rhinoceros* (? 2) sp. [See *Ursidæ*.]

HOWES, G. B. The Morphology of the Mammalian Coracoid. J. Anat. Phys. xxi, pp. 190–198, pl. viii; also Rep. Brit. Ass. 1886, pp. 686 & 687.

Shows that the coracoid process in many *Eutheria* (*e.g.*, *Leporidæ*) ossifies from two distinct centres; and concludes that the smaller centre represents the Reptilian coracoid.

IVERSEN, M. Bemerkungen ueber die dorsalen Wurzeln des Nervus hypoglossus. Ber. Freiberg. Ges. ii, pp. 33–36.

JACCARD, A. Notice sur les Vertébrés Œningiens du Locle. Arch. Sci. Nat. (3) xvii, p. 327.

Mentions remains of *Listriodon*, *Rhinoceros*, *Machærodus*, *Palæomeryx*, *Antilope*, and *Hipparion*, from the Upper Miocene of Œningen, in Switzerland.

JEGOROW, J. Récherches Anatomo-Physiologiques sur le Ganglion Ophthalmique. Arch. slav. Biol. iii, pp. 50–129, pls. viii–x, and pp. 293–321.

The continuation of a paper published in an earlier volume of the same serial.

JENSEN, O. S. Untersuchungen über die Samenkörper der Säugethiere, Vögel, und Amphibien. Arch. mikr. Anat. xxx, pp. 379–425, pls. xxii–xxiv.

A criticism given by O. Zacharias, in Biol. Centralbl. vii, pp. 661–664.

JENTINK, F. A. Catalogue Ostéologique des Mammifères. Mus. Hist. Nat. Pays-Bas. vol. ix, 360 pp., 12 pls.

This work is a catalogue of the osteological specimens of Mammals preserved in the Museum of Natural History of the Pays-Bas at Leiden; it includes 5,189 specimens, which are referred to 1,247 species. Skulls of the following forms are figured, viz.: *Paradoxurus murschenbroeki* (pls. i & ii), *Arctictis binturong* (pl. iii), *Hyrax stampfli* and *H. dorsalis* (pl. iv), *Anomalurus fraseri* and *A. beecrofti* (pl. v), *Xerus capensis* and *X. erythopus* (pl. vi), *Hallomys audberti*, *Mus meyeri* and *M. muelleri* (pl. vii), *Acanthion muelleri* (pl. viii), *Lepus netscheri* (pl. ix), *Manis longicaudata* and *M. tricuspis* (pl. x), *Cuscus orientalis* and *C. maculatus* (pls. xi & xii). Generic terms are in most cases employed in a very restricted sense; and the Ungulates are divided into the *Ruminantia* and *Pachydermata*, the

latter comprising *Equidæ*, *Suidæ*, *Rhinocerotidæ*, *Hippopotamidæ*, and *Elephantidæ*. A notice of this work is given in Ann. Sci. Nat. iv, pp. 174–176.

[Jentink, F. A.] On Mammals from Mossamedes. Notes Leyd. Mus. ix, pp. 171–180.

Records 3 *Carnivora*, 8 Ungulates, 6 Rodents, 3 Insectivores, and of Bats.

Jones, J. M. The Mammals of Bermuda, in Jones & Goode, Contrib. Nat. Hist. Bermuda, i, pp. 143–161. [Not seen.]

9 species are mentioned.

Julin, J. De la Signification Morphologique de l'Epiphyse (Glande Pineal) des Vertébrés. Bull. Sci. Nord. 1887, pp. 54–141, pls. i–iii.

Pp. 111 & 112 are devoted to the pineal gland of Mammals. The author concludes that the hypothetical *Protochorda*[*ta*] possessed a functional median eye connected with the brain, and that the pineal gland is a remnant of this organ.

Kastschenko, N. Das Schicksal der embryonalen Schlundspalten bei Säugethieren (Zur Entwicklungsgeschichte des mittleren und äusseren Ohres, der Thyreoidea und der Thymus. Carotiden anlage). Arch. mikr. Anat. xxx, pp. 1–26, pls. i & ii.

Kaufmann, E. Ueber die Bedeutung der Riech- und Epithelienzellen der Regio Olfactoria. MT. Embr. Inst. Wien (2) ii, pp. 33–50.

——. Ueber ringförmige Leisten in der cutis des äusseren Gehörganges. *T. c.* pp. 51–60.

Kittl, E. Beiträge zur Kenntniss der fossilen Säugethiere von Maragha in Persien. Pt. I. *Carnivora*. Ann. Nat Hofmus. ii, pp. 317–338, pls. xiv–xviii.

Discusses the general relations of the fauna, and describes 3 *Felidæ*, 1 *Viverridæ*, 1 *Hyænidæ*, and 2 *Mustelidæ*, of which some are new. [See *Felidæ* and *Mustelidæ*.]

Kocyan, A. Die Säugethiere der Nord-Tatra. Term. füzetek, xi, pp. 41–56.

Enumerates the Mammalian fauna of Hungary, which comprises 8 *Chiroptera*, 7 *Insectivora*, 13 *Carnivora*, 15 *Rodentia*, and 4 *Ungulata*.

Kolbe, H. J. Ueber die Zoogeographischen Elementen in der Fauna Madagaskars. SB. nat. Fr. 1887, pp. 147–177.

Koneff, H. Beiträge zur Kenntniss der Nervenzellen in den peripheren Ganglien. MT. Ges. Bern. 1886, pp. 13–90, with plate and woodcuts.

Discusses the structure of the spinal and Gasserian ganglia in different Mammals; with a plate of the cortical brain-layer in an anthropoid ape.

Kuskow, N. Beiträge zur Kenntniss der Entwickelung des elastischen Gewebes im Ligamentum Nuchæ und im Netzknorpel. Arch. mikr. Anat. xxx, pp. 32–37, pl. iv.

LANTZ, A. Sur les Mammifères et les Oiseaux de l'Isle de la Réunion. Bull. Soc. Acclim. (4) iv, pp. 657–659.

Mentions domestic Goats, Horses, *Lepus nigricollis*, *Centetes spinosus*, and Oxen.

LATASTE, F. Catalogue Critique des Mammifères Apelagiques Sauvages de la Tunisie. Exploration Scientifique de la Tunisie. Paris: 8vo, 42 pp.

Records 5 *Chiroptera*, 4 *Insectivora*, 15 *Carnivora*, 16 *Rodentia*, and 6 *Ungulata*.

——. Étude de la Dent Canine applique au cas presenté par le genre Damane complétée par les Definitions des Catégories de Dents communes à plusieurs Ordres de la classe des Mammifères. Zool. Anz. x, pp. 265–271 & 281–292.

Summarises the author's previous observations on the dentition of *Hyrax*, and gives a definition of the four series of Mammalian teeth. A discussion on the carnassial teeth of the *Carnivora* is appended, together with various modes of writing dental formulæ.

LAULANIÉ, —. Sur l'Evolution et la Valeur de l'Epithelium Germinatif dans le Testicule des Mammifères. C.R. Soc. Biol. (8) iv, pp. 183–185.

[illegible] W. Säugethiere (Bronn's Klassen. u. Ordnungen, vol. vi, pt. 5), 2. [illegible] f. (1887). *Mammalia*.

——. Über einige von Emin Pascha gesammelte Africanische Säugethier. Zool. Jahrb. ii, pp. 115–126, pls. iii & iv.

Mentions 1 *Crocidura*, 1 *Nyctinomus*, 1 *Megaderma*, 2 *Sciurus* (fig.), 1 *Xerus*, 1 *Myoxus*, 3 *Mus*, 1 *Meriones*, 2 *Geogychus* (fig.), 1 *Aulacodus*, and 1 *Lepus*. [See *Sciuridæ* and *Spalacidæ*.]

LEIDY, J. Fossil Bones from Florida. P. Ac. Philad. 1887, pp. 309 & 310.

Notices remains of *Rhinoceros*, *Mastodon*, *Hipparion*, and *Auchenia*. The genus *Eusyodon* is abolished, and a new species of *Hipparion* described. [*Vide Suidæ* and *Equidæ*.]

LLERENA, J. Un Ensayo sobre la Historia Geológica de las Pampas Argentinas. An. Soc. Arg. 1887, pp. 34–48.

Gives a list of species of Mammals said to be characteristic of the different horizons. *Canis azaræ* is said to characterize the Upper Pliocene; while *Toxodon platensis* ranges from the same beds to those containing *Megamys*, which are correlated with the Miocene.

LOCKWOOD, C. B. Development and Transition of the Testis, Normal and Abnormal. J. Anat. Phys. xxii, pp. 38 & 77, pl. ii, and woodcuts.

LYDEKKER, R. Catalogue of the Fossil *Mammalia* in the British Museum. Part iv, containing the sub-order *Proboscidea*. London: 1886, 8vo, xxii, 236 pp., woodcuts. [Omitted from last RECORD.]

Records all the specimens in the collection of the Museum, and gives a synopsis of the named species. [See *Elephantidæ*.]

[LYDEKKER, R.] Catalogue of the Fossil *Mammalia* in the British Museum. Part v, containing the Group *Tillodontia*, the Orders *Sirenia*, *Cetacea*, *Edentata*, *Marsupialia*, *Monotremata*, and Supplement. London: 8vo, xxxvi, 346 pp., woodcuts.

This part completes the work. Considerable emendations are proposed in regard to the generic and specific characters of the Australian Pleistocene Marsupials. Three new specific names are proposed. [See *Erinaceidæ*, *Anoplotheriidæ*, and *Tritylodontidæ*.]

——. The Fossil *Vertebrata* of India. Rec. Geol. Surv. Ind. xx, pp. 51–80.

Gives a brief account of the Tertiary *Mammalia*, with a synopsis of all the species.

MARSHALL, A. M., & HURST, C. H. A Junior Course of Practical Zoology. London: 1887, 8vo, 440 pp., 48 figs.

The anatomy of *Lepus cuniculus* described.

MARTIN, K. Fossile Säugethier-reste von Java und Japan. Samm. Geol. Mus. Leid. (1) iv, pp. 25–68, pls. ii–ix; and JB. Mijnwzer. Nederl. Ind. 1887, pp. 1–45, pls. ii–ix.

Describes remains of Stegodont and other Elephants, together with those of *Sus*, *Bison*, and *Cervus* from beds of Pliocene age. [See *Suidæ*, *Bovidæ*, *Cervidæ*, and *Elephantidæ*.]

MEYNERT, T. Die anthropologische Bedeutung der partiellen Gehirnentwicklung, nebst Untersuchungen über der Windungstypus der Hinterhauptlappens der Säugethiere, etc. (*Aus.* JB. f. Psychatrie). Vienna: 1887, 8vo.

MIVART, ST. GEORGE. Article Skeleton. Encyclopædia Britannica, vol. xxii.

References to the Mammalian skeleton are made in this article.

MÜHLBERG, F. Ausgestorbene und Aussterbende Thiere. Ber. St. Gall. Gess. 1887, pp. 284–320.

Discusses the extinction of *Rhytina gigas*, the practical extermination of *Bison europæus*, the present distribution of *Alces machlis*, *Canis lupus*, *Felis catus*, *Capra ibex*, *Castor fiber*, *Rupicapra tragus*, *Capreolus caprea*, *Ursus arctos*, and *Mus rattus*.

NAZAROW, P. S. Récherches Zoologiques des Steppes des Kerguiz. Bull. Mosc. 1886, pp. 638–382 (1887).

Reference is made to many of the Mammals inhabiting these regions.

NEUMAYR, M. Erdgeschichte, vol. ii. Leipsic: 1887, 8vo, pp. 1–879, woodcuts.

Numerous figures are given of fossil Mammals.

NEVILL, H. On Preservation, under ordinary circumstances, of Bone of *Mammalia*. Taprobanian, ii, pp. 70–72.

Discusses the relative probability of the preservation of the remains of different groups of Mammals.

NEWTON, E. T. A Classification of Animals. London: 1880, 8vo, pp. 1–15.

——. Comments on the Mammalian Fauna of the Ffynon-Beuno Cave. Geol. Mag. iv, pp. 94 & 95.

A criticism on this notice is given by H. Hicks on pp. 105 & 106 of the same volume.

——. Note on the Bones found in the Denebolcs in Hangman's Wood. Tr. Ess. Club, 1887, pp. 257–259.

Records remains of Man, Horse, Ox, Sheep, Pig, Goat, Dog, Fox, Cat, Badger, Polecat, Weasel, Rabbit, and Hare.

NICHOLSON, H. A. A Manual of Zoology. Edinburgh & London: 8vo, 7th ed., 940 pp., 555 woodcuts.

Pp. 715-875 are devoted to the *Mammalia*.

NICOLAS, A. Sur l'Appareil Copulateur du Bélier: Contribution à l'Étude des Organes Erectiles. J. de l'Anat. Phys. 1887, pp. 544–566, pls. xxvi & xxvii.

NITSCHE, H. Die Altersbestimmung der Schwarz- und Gemswilde nach dem Gebiss. Deutsch. Jäg-Zeit. ix, pp. 1–16, woodcuts.

Shows the age at which the replacement of the deciduous and the development of the permanent teeth takes place in *Sus* and *Rupicapra*, the full dentition of the latter not being acquired till the fifth year.

NOACK, T. Beiträge zur Kenntniss der Säugethier-Fauna von Ost- und Central-Africa. Zool. Jahrb. ii, pp. 193–302, pls. viii–x.

Records 36 Ungulates, 2 Edentates, 33 Rodents, of which several are new, 20 *Carnivora*, 5 *Insectivora*, 20 *Chiroptera*, of which one is new, and 6 *Primates*. [See *Muridæ*, *Myoxidæ*, *Sciuridæ*, *Macroscelididæ* *Pteropodidæ*, *Rhinolophidæ*, *Vespertilionidæ*, *Emballonuridæ*, and *Simiidæ*.]

——. Neues aus der Tierhandlung von K. Hagenbeck, sowie aus dem Zoologischen Garten in Hamburg. Zool. Gart. xxviii, pp. 194–210 & 273–279.

Mentions a number of *Carnivora* and *Ungulata*; a description being given of *Gazella granti*, and allied forms which may or may not be distinct. A separate paper, under the same title, is given by this author in the volume cited, pp. 341–356, in which observations are made on species of *Paradoxurus* and other *Viverridæ*, *Felis chaus*, *Cynomys*, *Sciurus*, *Sus leucomystax* and *papuensis*, *Potamochœrus africanus*, *Dasyurus maugei*, and *Didelphys azaræ*.

OSBORN, H. F. The Origin of the Corpus Callosum; a contribution upon the cerebral Commissures of the *Vertebrata*. Morph. JB. xii, pp. 530–543, pl. xxv, and woodcuts.

The conclusion of the paper recorded in Zool. Rec. xxiii, *Mamm.* p. 28.

——. The Origin of the Tritubercular Type of Mammalian Tooth. Science, x, p. 300.

Comments upon and confirms Cope's theory of the origin of the Mammalian tritubercular tooth from the conical Reptilian tooth; illustrations being drawn from the Mesozoic Marsupials.

PALADINO, G. Ulteriori ricerche sulla distruzione e rinnovamento continuo del parenchima ovarico nei Mammiferi. Anat. Anz. ii, pp. 835–842.

A continuation of a previous paper by the writer, published in 1881.

PATERSON, A. M. The Limb-Plexuses of Mammals. J. Anat. Phys. xxii, pp. 611–634, pl. xiv.

PATTERSON, R. L. Some Account of the Whale and Seal Fisheries: Past and Present. Rep. Belfast N. H. Club, 1887, pp. 112–114.

PAULISCH, O. Das vordere Ende der Chorda dorsalis und der Franck'sche Nasenkamm. Arch. Anat. Phys. An. Abth. 1887, pp. 187–215, pl. xiii.

PAYNE, F. F. The Mammals and Birds of Prince of Wales' Sound, Hudson's Strait. P. Canad. Inst. (3) v, pp. 111–123.

Mentions *Ursus maritimus*, *Canis occidentalis*, *C. lagopus*, *Gulo luscus*, *Rangifer tarandus*, *Lepus glacialis*, *Myodes torquatus*, *Phoca barbata*, *P. grœnlandica*, *P. fœtida*, *Balœna mysticetus*, *Monodon monoceros*, and *Beluga catodon*.

PENGELLY, W. Kent's Cavern, Torquay. Rep. Cornwall Polytechn. 1886, pp. 46–65.

Reference made to the Mammals from this cave.

——. Notice of the *Mammalia* found in Beech Cavern, Brixham Cav. Devon. Geol. Mag. (3) iv, pp. 514 & 515.

PFITZER, —. Ueber Hand- und Fuss skelete einiger Säugethiere. Tag. deut. nat. Ver. 1887, pp. 251 & 252.

Describes abnormalities in the skeleton of *Elephas*, *Ursus*, and *Lutra*.

PILLICT, A. Sur l'Evolution des Cellules Glandulaires de l'Estomac chez l'Homme et chez les Vertébrés. J. de l'Anat. Phys. 1887, pp. 463–497, pl. xxiii.

PODWYSSOZKI, W. Ueber die Beziehungen der quergestreiften Muskeln zum Papillärkorper der Lippenhaut. Arch. mikr. Anat. xxx, pp. 327–335, pl. xvii.

A discussion on the nature of the striped muscular fibres in the papillæ of the skin of the lips of the human subject.

PÖHLIG, H. Sur le Pliocene de Maragha (Perse) et sur les Elephants Fossiles de la Caucasie et de la Perse. Bull. Soc. géol. (3) xiv, pp. 285–288 (1886). [Omitted from Zool. Rec. xxiii.]

Discusses the Maragha Mammalian Fauna, and the Fossil Elephants of Europe. In the former, the name "*Palæohys*" *maraghanus* is given as apparently a new genus, although the genus is stated to occur in the Siwaliks.

PRENANT, A. Récherches sur la signification des Eléments du Tube Séminifère adulte des Mammifères. Month. Int. J. Anat. Hist. iv, pp. 358–370 & 397–409, pls. xiv & xv.

——. Sur un Point de la Structure du Tube Séminifère chez les Mammifères. C.R. Soc. Biol. (8) iv, pp. 167–169 & 318–320.

RAMER, B. Sur l'Age des Argiles du Cantil et sur les débris fossiles q'elles ont fournis. Bull. Soc. géol. (3) xiv, pp. 357–360, pl. xvii (1886). [Omitted from Zool. Rec. xxiii.]

Notices the Mammalian remains previously recorded, and describes a mandible which is referred to a new species of *Aceratherium*. [See *Rhinocerotidæ*.]

RAMSAY, E. P. Description of Two new Species of Marsupials (*Perameles* and *Antechinus*), and of a new species of *Mus* (*M. burtoni*) from the neighbourhood of Derby, N.W.A. P. Linn. Soc. N.S.W. (2) ii, pp. 551–553, pl. xvii. [See *Peramelidæ*, *Dasyuridæ*, and *Muridæ*.]

RANVIER, L. Etude anatomique des Glandes Connues sous les noms de Sous-Maxilliaire et Sublinguale, chez les Mammifères. Trav. Lab. Histol. 1886–87, pp. 31–64, and woodcuts.

The relations and position of the above-mentioned glands figured in *Mus*, *Cavia*, *Erinaceus*, *Talpa*, *Vespertilio*, *Mustela*, *Canis*, *Felis*, *Sus*, *Ovis*, and Man.

RAVN, E. Vorläufige Mitteilung über die Richtung der Scheidewand zwischen Brust- und Bauchhöhle im Säugetier-Embryonen. Biol. Centralbl. vii, pp. 425–427.

REGNIER, P. Considerations Anatomiques et Physiologiques sur l'Articulation Scapulo-humerale. J. de l'Anat. Phys. 1887, pp. 530–543, and woodcuts.

REINKE, F. Untersuchungen über die Horngebilde der Säugethierhaut. Arch. mikr. Anat. xxx, pp. 181–204, pl. xi.

RETTERER, E. Des Phanères chez les Vertébrés et de leurs Tissus Producteurs. Bibl. haut. études xxxiii, art. 3.

Describes the nature and development of the follicular organs which develope horns, nails, &c., in various groups of *Mammalia*.

——. Sur le Développement du Tissu Erectile dans les Organes Copulateurs chez les Mammifères. C.R. Soc. Biol. (8) iv, pp. 399–404.

——. Sur l'Origine et l'Evolution variable de la Charpente qui existe dans le Gland des Mammifères. *T. c.* pp. 427–429.

——. Note sur le Développement du Pénis et du Squelette du Gland chez certains Rongeurs. *T. c.* pp. 496–498.

——. Texture des Tissus Érectiles dans les Organes d'Accouplement chez les Mammifères. *T. c.* pp. 694–698.

RICHARDSON, R. On the Antiquity of Man and the discovery of Fossil *Mammalia* in Devonshire and Scotland. Tr. Edin. Geol. Soc. v, pp. 335–349.

Records *Alces machlis*, *Rangifer tarandus*, *Cervus elaphus*, *C. giganteus* (*megaceros*), *Equus caballus* (*fossilis*), *Castor fiber*, and *Phoca* (*Pagomys*) *fa[illegible]is*.

RICHETS, B. M. The Relative size of the Red Blood Corpuscles and Brain. J. Cincinn. Soc. x, pp. 27–33.

The relative dimensions given in 21 species of Mammals.

RIEHM, G. Repetitorium der Zoologie. Göttingen: 1887, 8vo, 169 pp., 243 woodcuts.

A classification of the *Mammalia* is given on pp. 161–169.

ROBINSON, A. The Position and Peritoneal Relations of the Mammalian Ovary. J. Anat. Phys. xxii, pp. 169 & 170, pl. v.

ROCHEBRUNE, A. T. Faune de la Sénégambie. Suppl., Fasc. 1. Paris: 1886–87, 8vo, 190 pp., 32 pls.

In this memoir the author proposes to divide the genus *Colobus* into seven genera, and to make it the type of a distinct family—*Colobidæ*. [See *Cercopithecidæ*.]

RÖMER, A. Ueber die Wirbelthiere des Mosbacher Diluvial-Sandes. Tag. deut. nat. Ver. 1887, pp. 257 & 258.

Gives a list of 30 species of Mammals from the Diluvial sand, and 7 from the Loess.

ROGER, O. Verzeichniss der bisher bekannten fossilen Säugethiere. Verh. nat. Ver. Augsb. 1887, 162 pp.

A most valuable list of all named species of fossil *Mammalia* up to the middle of 1887, with references. A number of new genera and species of Fossil *Carnivora* are enumerated from MS. of Max Schlosser, but these cannot be considered as published.

ROJECKI, F. Note sur des Plexus Artériels observés chez les Makis et les Singes. C.R. Soc. Biol. (8) iv, pp. 541 & 542.

RUDINGER, —. Ueber Polydactylie. SB. Ges. Morph. iii, pp. 118 & 119.

SCHIEFFERDECKER, P. Beiträge zur Kenntniss des Baus der Nervenfaseren. Arch. mikr. Anat. xxx, pp. 435–494, pl. xxvi.

SCHLOSSER, MAX. Die Affen, Lemuren, Chiropteren, Insectivoren, Marsupialier, Creodonten, und Carnivoren, des Europäischen Tertiärs, pt. i. Beitr. Pal. Oesterr.-Ung. vi, 1, pp. 1–224, pls. i–v.

A general review of the fossil representatives of these groups (except the *Carnivora*) found in Europe, together with observations on some of the American forms. Several new genera and species are named, and some emendations made in regard to families. [See *Lemuridæ*, *Rhinolophidæ*, *Vespertilionidæ*, *Erinaceidæ*, *Dimylidæ*, *Soricidæ*, *Talpidæ*, *Adapisoricidæ*, *Leptictidæ*, *Didelphyidæ*, *Hyænodontidæ*, *Proviverridæ*, *Amblyctonidæ*, and *Mesonychidæ*.]

SCHWERI, J. Unsere freilebenden Wirbelthiere (Vögel, Säugethiere, und Reptilien) nach ihrem Nutzen und Schaden betrachtet. Zurich: 1887, 8vo, 170 pp.

SCOTT, W. B., & OSBORN, H. F. Preliminary Account of the Fossil Mammals from the White River Formation in the [Cambridge] Museum of Zoology. Bull. Mus. C. Z. xii, pp. 151–171, pls. i. & ii.

Describes specimens referable to twenty genera, of which some are new, and also figures a restoration of *Hoplophoneus* and *Menodus*. [See *Suidæ*, *Menodontidæ*, and *Rhinocerotidæ*.]

[Scott, W. B., & Osborn, H. F.] Preliminary Report on the Vertebrate Fossils of the Uinta Formation, &c. P. Am. Phil. Soc. 1887, pp. 255–264.

Records 13 genera and 15 species of Mammals, of which several are new. [See *Ursidæ*, *Sciuridæ*, *Oreodontidæ*, and *Lophiodontidæ*.)

Scully, J. On the Mammals and Birds collected by Captain C. E. Yate, of the Afghan Boundary Commission. J. A. S. B. lvi, pp. 68–89; Ann. N. H. pp. 368–374.

The Mammals recorded are 1 Insectivore, 3 Carnivores, 7 Rodents (2 new), and 2 Ungulates. [See *Sciuridæ* and *Muridæ*.]

Shore, W. T. Relations of the *Mammalia* to the *Ichthyopsida* and *Sauropsida*. J. Anat. Phys. xxii, pp. 362–373.

Considers that the *Mammalia* are more nearly related to the *Ichthyopsida* than to the *Sauropsida*, great stress being laid on the two occipital condyles of the first and second groups.

Spronek, C. H. H. Auftreten der ganzen Tuberositas (lateralis) der Os Metatarsale V als ein für sich bestehendes, am Metatarsale und Cuboides artikulierendes Skelett-Element. Anat. Anz. ii, pp. 734–739, with 2 woodcuts.

Considers that the proximal lateral tuberosity of the fifth metatarsal is an original tarsal element.

Stieda, L. Ueber den Haarwechsel. Biol. Centralbl. vii, pp. 353–363 & 385–394.

Strecker, C. Ueber die Condylen der Hinterhauptes. Arch. Anat. Phys. vi, pp. 301–338.

A discussion of the general features presented by the occipital condyles in the different classes of Vertebrates, one section being devoted to Mammals.

Sutton, J. B. A Critical Study in Cranial Morphology. J. Anat. Phys. xxii, pp. 28–37, woodcuts.

Adduces facts to support previous observations as to the dura mater being the external limit of the true cranium.

——. On some Specimens of Disease from Mammals in the [Zoological] Society's Gardens. P. Z. S. 1887, pp. 364–368, with 5 woodcuts.

Describes the effects of rickets in a Monkey and a Lion; abnormal cerebral growth in a Lion-cub; and hypertrophy of the papillæ of the foot of a Coati, and of the hoofs of a Goat.

Tafani, A. La Circulation dans le Placenta de quelques Mammifères. Arch. Biol. Ital. viii, pp. 49–57.

Tarnowsky, D. Ueber die Muskeln der Ohrmuschel und einige Besonderheiten des Ohrknorpels. Arch. Anat. Phys. An. Abth. 1887, pp. 35–58, pl. iv.

Observations on the muscles and cartilages of the external ear in the human subject.

THOMAS, O. On the Small *Mammalia* collected in Demerara by Mr. Sclater. P. Z. S. 1887, pp. 150–153, pl. xix.

Records 5 Chiroptera, 2 Rodents (1 new), and 1 Marsupial. [See *Muridæ*.]

THOMAS, P. Notes Additionelles sur les Vertébrés Fossiles de la Province de Constantine. Bull. Soc. géol. xv, pp. 139–141.

Notes the coexistence of *Equus* and *Hipparion*, and describes *Bubalus antiquus* from the Tertiary deposits of Constantine in Algeria.

TOURNEUX, F., & HERRMANN, G. Sur l'Évolution du Thymus chez l'Embryon Humain et chez les Mammifères. C.R. Soc. Biol. (8) iv, pp. 83–89.

TOWNSEND, C. H. Notes on the Mammals, Birds, and Reptiles of Northern California. P. U. S. Nat. Mus. 1887, pp. 159–241, woodcuts.

Records 5 Ungulates, 28 Rodents, 2 Bats, 1 Insectivore, and 16 Carnivores.

UNNA, P. G. Untersuchungen über den Bau des funktionirenden Samenkanälchens einiger Säugethiere und Folgerungen für die Spermatogenese dieser Wirbelthierklasse. Arch. mikr. Anat. xxx, pp. 49–110, pls. v–vii.

WALDEYER, —. Bau und Entwicklung der Samenfäden. Anat. Anz. ii, pp. 345–368.

WATSON, J. The Extinct Animals of the Lake District. Naturalist, 1887, pp. 39–45.

Contains a list of Mammals of the later Pleistocene.

WELLS, J. W. Three Thousand Miles through Brazil. London: 8vo, 2 vols., illustr.

A few Mammals incidentally noticed, and *Mycetes* figured.

WHITE, W. H. On the Histology and Function of the Mammalian Superior Cervical Ganglion. J. Physiol. viii, pp. 66–78.

WIEDERSHEIM, R. Der Bau des Menschen als Zeugnis für seine Vergangenheit. Ber. Freiberg Ges. ii, pt. 4, pp. 165–278.

A general survey of the chief features of human structure, and their relative importance from a classificatory point of view.

WILSON, G. H. On a Collection of Vertebrates made in the Malay Peninsula and Islands. Indian Annals, i, pp. 1–6 & 68–71.

Mentions a large number of species, of which none are new.

WILSON, E. The Bone-Cave or Fissure of Durdham Down. P. Bristol Soc. v, pp. 31–45.

Gives a list of the species of Mammals from this cave represented in the Bristol Museum.

WINDLE, B. C. A. On the Adductor Muscles of the Hand. P. Birmingh. Phil. Soc. v, pp. 377–397.

Records facts relating to these muscles in several genera of the various orders, and concludes with a table showing the variations occurring in 76 species. [See also Primates.]

Woldrich, J. N. Diluviale Funde in den Prachover Felsen Jicin in Böhmen. JB. geol. Reichsanst. xxxvii, pp. 223-232, pl. xiii, & 2 woodcuts

Records the following forms from the Bohemian Pleistocene, viz.:—*Homo*, *Lepus timidus*, *Canis vulpes* (*Vulpes vulgaris*), *Elephas primigenius*, *Rangifer tarandus*, *Ovibos moschatus* (woodcut), *Equus caballus*, *Rhinoceros* (*Atelodus*) *antiquitatis* (pl. xiii), and *Equus caballus*.

Zaluskowki, K. Bemerkungen über den Bau der Bindehaut. Arch. mikr. Anat. xxx, pp. 311-322.

A discussion on the structure of the conjunctiva in the human subject.

Zuckerkandl, E. Das Periphere Geruchsorgan der Säugethiere. Stuttgart: (1887) 8vo, 116 pp., 10 pls.

A comparative study of the bones of the nasal cavity in different groups of Mammals.

II.—FAUNAS.

A.—Recent.

British Isles. See Browne, p. 3; and Harvie-Brown & Buckley, iii.

France. See Bouvier, p. 3.

Hungary. See Kocyan, p. 8.

Central Asia. See Scully, p. 15.

Nipal. See Scully (*Chiroptera*), p. 29.

Africa. See Jentink, p. 8; Lataste, p. 9; Leche, [illegible]; Noack, p. 12; and Rochebrune, p. 14.

Réunion. See Lantz, p. 9.

Malayan Region. See Hoffmann, p. 6; and G. H. Wilson, p. 16.

China. See Heude (*Cervidæ*), p. 45.

Queensland. See Collett, p. 3; and De Vis (*Marsupialia*), p. 5.

New South Wales. See Ramsay, p. 13.

Solomon Islands. See O. Thomas (*Chiroptera*), p. 29.

Canada. See Payne, p. 12.

West Indies. See O. Thomas, p. 16; and Jones, p. 8.

California. See Townsend, p. 16.

Brazil. See Winge (*Rodentia*), p. 32.

B.—Fossil.

Europe. See Schlosser, p. 14.

British Isles. See Dawkins (*Cervidæ*), p. 45; Hicks, p. 6; Newton, p. 14; Pengelly, p. 12; Lydekker (*Cetacea*), p. 48; Richardson, p. 13; and F. Wilson, p. 16.

France. See Depéret, p. 4.

Switzerland. See Jaccard, p. 7.

Belgium. See Van Beneden (*Cetacea*), p. 49.

Germany. See Römer, p. 14; and Wöldrich, p. 17.

Styria. See HOFMANN, p. 7.
Persia. See KITTL, p. 18.
India. See LYDEKKER, p. 10.
Java and Japan. See MARTIN, p. 16.
Algeria. See P. THOMAS, p. 16.
North America. See MARSH (*Marsupialia*), p. 53; and SCOTT & OSBORN, p. 14.
South America. See AMEGHINO, p. 2; BURMEISTER (*Edentata*), p. 51; and WINGE (*Rodentia*), p. 32.

III.—SPECIAL STRUCTURES, DEVELOPMENT, &c.

ABNORMALITIES.

Muscular.—See DAIGHT, p. 4; GRÜBER, p. 5; and REX (*Hominidæ*), p. 20.

Osseous.—See GRÜBER, p. 5; GIACOMINI (*Hominidæ*), p. 20; GUZZONI, clavicle (*Hominidæ*), p. 20; and HUMPHREYS, cleft-palate (*Bovidæ*), p. 44.

Polydactylism.—See POULTON (*Felidæ*), p. 24; RUDINGER, p. 14; and SPRONEK (*Hominidæ*), p. 20.

Horns and Antlers.—See STERNDALE (*Bovidæ*), p. 45; and (*Cervi*) p. 46.

DENTITION.—See ALBARRAN, milk-series, p. 2; BARALDI (*Equidæ*), p. 41; LATASTE, canine, p. 9; NITSCHE, development, p. 11; OSBORN, p. 11; O. THOMAS (*Marsupialia*), p. 53; and WINDLE & HUMPHREYS (*Hominidæ*), p. 21.

DERMIS, EPIDERMIS, &c. (*excluding teeth*).—See BLASCHKO, p. 3; HARRISON, p. 7; KAUFMANN, p. 8; NEHRING, colour (*Felidæ*), p. 24; REINKE, p. 13; RETTERER, p. 13; RYDER, hair (*Felidæ*), p. 24; and STIEDA, hair, p. 15.

DEVELOPMENT.—See BONNET (*Artiodactyla*), p. 43; CALDWELL (*Marsupialia*), p. 53; CHIENITZ, eye (*Hominidæ*), p. 29; FICALBI, ear, p. 5; HADDON, p. 5; HANNOVER, cartilage (*Hominidæ*), p. 20; HIS, nerves and lungs (*Hominidæ*), p. 20; HOCHSTETTER, vena cava, p. 6; JANOSIK (*Hominidæ*), p. 20; KASTSCHENKO, ear, p. 8; LOCKWOOD, testes, p. 9; NORDEN, skull (*Hominidæ*), p. 20; OWEN (*Ornithorhynchidæ*), p. 56; PAULISCH, chorda dorsalis, p. 12; RETTERER, reproductive organs, p. 13; TAFANI, placental circulation, p. 15; TOURNEUX & HERRMANN, reproductive organs (*Hominidæ*), p. 21; SELENKA (*Didelphyidæ*) p. 55; UNNA, reproductive organs, p. 16; and WALDEYER, reproductive organs, p. 16.

EAR.—See FICALBI, development, p. 29; KIRCHNER, eustachian tube (*Hominidæ*), p. 20; TATAROFF, muscles, p. 15.

EYE.—See CHIENITZ, development (*Hominidæ*), p. 20; NAGEL (*Hominidæ*), p. 20; REX, abnormal muscles (*Hominidæ*), p. 20; and ZALUSKOWKI, conjunctiva, p. 17.

GLANDS.—See GIACOMINI, harderian (*Hominidæ*), p. 20; BEDDARD (*Dasyuridæ*), p. 55; BELL (*Bovidæ*), p. 45; JULIN, pineal, p. 8; KAST-

SCHENKO, p. 8; MONTIGELLI (*Chiroptera*), p. 29; PILLICT, p. 12; RANVIER, submaxillary and sublingual, p. 13; SUTTON (*Lemuridæ*), p. 22.

MUSCLES.—See BROOKS, hallux and pollux (*Simiidæ*), p. 21; DENIKER (*Simiidæ*), p. 21; FELIX, p. 5; KUNSTLER (*Sciuridæ*), p. 33; MACCORMICK (*Dasyuridæ*), p. 55; RANVIER (*Rodentia*), p. 32; RUGE (*Simiidæ*), p. 21; and WINDLE (*Hystricidæ*), p. 36.

NERVES, BRAIN, &c.—See BECHTEREW, p. 3; BENDA, p. 3; EBERSTELLER, p. 4; GULDBERG, p. 5; HIS, development (*Hominidæ*), p. 20; IVERSEN, p. 7; JEGOROW, p. 7; KONEFF, p. 8; MÜLLER (*Simiidæ*), p. 20; OSBORN, corpus callosum, p. 11; PATERSON, limb-plexuses, p. 12; PODWYSSOZKI, p. 12; QUENCE & DARIER (*Ursidæ*), p. 26; SCHIEFFERDECKER, p. 14; and STOWELL (*Felidæ*), p. 24.

OSTEOLOGY.—See BAUR, ribs, p. 3; CAPON, p. 3; HOWES, coracoid, p. 7; REGNIER, scapula and humerus, p. 13; SPRONEK, metatarsals, p. 15; STRECKER, occipital condyles, p. 15; and ZUCHERKANDL, nasal bones, p. 17.

REPRODUCTIVE ORGANS AND SPERMATOZOA.—See DUVAL (*Rodentia*), p. 30; FURST, spermatozoa (*Marsupialia*), p. 53; JENSEN, p. 7; LAULANIE, p. 9; LOCKWOOD, p. 9; NICOLAS, p. 11; OSBORN (*Marsupialia*), p. 11; PALADINO, p. 12; PRENANT, p. 12; RETTERER, p. 13; ROBINSON, p. 14; RYDER (*Rodentia*), p. 32; TOURNEUX (*Hominidæ*), p. 21; UNNA, p. 16; WALDEYER, p. 16, and (*Hominidæ*), p. 21.

VASCULAR SYSTEM AND BLOOD.—See ANGIOLELLA, corpuscles, p. 3; HOCHSTETTER, p. 6; KLOTZ, vena saphena (*Hominidæ*), p. 20; RICHETS, corpuscles, p. 13; ROJECKI, plexuses, p. 14; and TAFANI, placental circulation, p. 15.

IV.—SPECIAL WORK.

1. *PRIMATES.*

A review of all the known European Tertiary species is given by M. SCHLOSSER, Beitr. Pal. Oesterr.-Ung. vi, pt. i, pp. 1–53 (*suprà*, p. 14).

SCHLOSSER, M. Die fossilen Affen. Arch. f. Anthrop. xvii, pp. 279–300, pl. xii.

An important memoir based on the one cited above, but giving a complete list of all described forms. The *Microchœridæ* and *Hyopsidæ* are included in the *Lemuroidea*. The dentition of several genera is figured. Exclusive of the *Microchœridæ*, 29 species are enumerated. [For *Microchœridæ*, see *Insectivora*.]

I. ANTHROPOIDEA.

a. HOMINIDÆ.

BRAUNE, W., & FISCHER, O. Die Länge der Finger und Metacarpalknochen an der menschlichen Hand. Arch. Anat. Phys. An. Abth. 1887, pp. 107–118.

Chienitz, J. H. Die Area und Fovea Centralis retinæ beim menschlichen Fœtus. Month. Int. J. Anat. Hist. iv, pp. 204–226, pl. viii.

Flemming, W. Ueber den Flexor brevis pollicis und hallucis der Menschen. Anat. Anz. ii, pp. 68–77, 186–192, & 269–272, with woodcuts.

Giacomini, C. Annotazioni sull' Anatomia del Negro. Atti Acc. Tor. xxii, pp. 693–711.

Notes the existence of the Harderian gland; and the duplication of the cartilage of the *Plica semilunaris*.

——. De l'Existence de l'Os Odontoïde chez l'Homme. Arch. Biol. Ital. viii, pp. 40–48, and pls.

Describes a Cretin in which the odontoid process was found as a distinct bone.

Gruber, W. [*Vide suprà, p.* 5.]

Guzzone, A. Sur un Cas très rare d'Anomalie des Clavicules chez une Femme. Arch. Biol. Ital. viii, p. 58.

Hannover, A. Le Cartilage Primordial et son Ossification dans le Tronc et les Extremities chez l'Homme avant la naissance. Dan. Selsk. Skr. iv, pp. 267–314.

His, W. Die Entwickelung der ersten Nervenbahnen beim menschlichen Embryo. Arch. Anat. Phys. An. Abth. vi, pp. 368–378.

——. Zur Bildungsgeschichte der Lungen beim menschlichen Embryo. Arch. Anat. Phys. An. Abth. 1887, pp. 89–106, pls. vii & viii.

Janošik, J. Zwei junge menschliche Embryonen. Arch. mikr. Anat. xxx, pp. 559–595, pls. xxxiv & xxxv.

Kirchner, W. Ueber Divertikelbildung in der Tuba Eustachii des Menschen. Kölliker's Festschrift, pp. 241–252, pl. x.

Klotz, K. Untersuchungen über die Vena saphena Magna beim Menschen besonders rücksichtlich ihrer Klappenverhältnisse. Arch. Anat. Phys. An. Abth. 1887, pp. 143–158, pl. xii.

Nagel, W. Das menschliche Ei. SB. Ak. Berlin, 1887, pp. 759–761.

Nicolas, A. Observation d'Apophyse Sus-epotrochléenne Bilaterale chez l'Homme. C.R. Soc. Biol. (8) iv, pp. 107–110.

Noorden, W. Beitrag zur Anatomie der knorpeligen Schädelbasis menschlicher Embryonen. Arch. Anat. Phys. An. Abth. 1887, pp. 241–257, pl. xvi.

Rex, H. Ueber einem abnormale Augenmuskel (Musc. obliquus accessorius inferior). Anat. Anz. ii, pp. 625–630, 2 woodcuts.

Sprenek, C. H. H. Note sur un Cas de Polydactylie. Arch. Néerl. xxii, pp. 235–252, pl. xxi.

Describes and figures a human hand, with duplication of the pollex.

Suchannek, —. Ein Fall von Persistenz der Hypophysenganger. Anat. Anz. ii, pp. 520–525, with a woodcut.

Describes and figures a human presphenoid with a persistant hypapophysial canal.

TOURNEUX, F. Sur le Développement de la Verge, et specialement du Gland, du Prépuce, et de la Portion Balanique du Canal de l'Uréthre chez l'Homme. C.R. Soc. Biol. (8) iv, pp. 551–554, 604–607, & 632–636.

—, & HERRMANN, G. Sur la persistance de Vestiges Médullaires Coccygiens pendant tout le période fœtale chez l'Homme, &c., &c. J. de l'Anat Phys. 1887, pp. 498–529, pls. xxiv & xxv.

WALDEYER, —. Ueber den Placentenarkreislauf der Menschen. SB. Ak. Berlin, 1887, pp. 83–93.

WIEDERSHEIM, R. Der Bau des Menschen als Zeugniss für seine Vergangenheit. Ber. Freiburg Ges. ii, pt. 4, pp. 165–278.

WINDLE, B. C. A., & HUMPHREYS, J. Extra Cusps on the Human Teeth. Anat. Anz. ii, pp. 13–16, woodcuts.

Several instances are described and figured of extra cusps in the canine and cheek teeth.

——, & ——. Man's Lost Incisors. J. Anat. Phys. xxi, pp. 83–96; Rep. Brit. Ass. 1886, pp. 688–691 (1887).

It is considered that the missing incisor is the third of the typical series.

b. SIMIIDÆ.

BROOKS, H. ST. J. Short Muscles of the Pollex and Hallux of the Anthropoid Apes, with Special reference to the Opponens Hallucis. J. Anat. Phys. xxii, pp. 78–95, pl. iii.

DECKERT, E. Die Hautfarbe der Menschenaffen. Humboldt: 1887, pp. 181–183.

DENIKER, J. Sur le Développement des Muscles de la Face chez le Gorille. C.R. Soc. Biol. (8) iv, pp. 448–451.

MÜLLER, J. Zur Anatomie der Chimpansegehirns. Arch. f. Anthrop. xvii, pp. 73–187, pls. x & xi.

A description of all the chief structural features of the brain of the Chimpanzee, together with a notice of previous memoirs on the subject.

RUGE, G. Die vom Facialis innervirten Muskeln der Halses, Nackens, und der Schädels einer jungen Gorilla. Morph. JB. xii, pp. 459–529, pl. x.

WINDLE, B. C. A. A Note on the Extensor Tendons of the Manus of Apes. P. Birmingh. Phil. Soc. vi, pp. 1–4.

In this paper the presence or absence of variable muscles is recorded in 21 species.

Gorilla savagei. A. TÖRÖK, Month. Int. J. Anat. Hist. iv, pp. 137–151, 153–176, & 249–274, pls. iv–vi, describes the skull of a young individual, which is compared with other specimens. A description is also given of the mode of growth of the skull from the young to the adult. A mandible with two supernumerary teeth embedded in the ascending ramus is

described in Tr. Odont. Soc. ix, pp. 266. E. Charlesworth also gives notes on the structure of the Gorilla in J. Tr. Vict. Inst. pp. 82–86.

Troglodytes niger, n. var. *marungensis*, T. Noack, Zool. Jahrb. ii, pp. 291–301, Central Africa.

Hylobates entelloides : a specimen from Singapore noticed by H. Wunderlich, Ber. Senck. Ges. 1887, p. 60.

Cercopithecidæ.

Notes on the nomenclature of certain Indian species are given by W. T. Blanford (*vide suprà*, p. 3).

Semnopithecus monspessulanus : part of a mandible figured by A. Donnezan (*vide suprà*, p. 4).

Macacus monspessulanus, n. sp., C. Depéret, Bull. Soc. Anthrop. Lyon, vi, pp. 40–42, Pliocene, Perpignan, France.

Cercopithecus boutourlinii, n. sp., E. H. Giglioli, Zool. Anz. 1887, pp. 509 & 510, Central Africa. [See also Ann. N. H. xx, p. 449.]

Colobus ursinus, *C. angolensis*, figured by Rochebrune, Faune de la Sénégambie (*suprà*, p. 10), pls. viii & ix.

Procolobus, n. g., Rochebrune, *t. c.* p. 97. Type, *Colobus verus* (pl. i).

Tropicolobus, n. g., Rochebrune, *t. c.* p. 102. Type, *Colobus rufimitratus* (pl. ii).

Piliocolobus, n. g., Rochebrune, *t. c.* p. 105. Type, *Colobus ferrugineus* (pl. iii). Includes *C. tholloni* (pl. v), and *C. kirki* (pl. vi).

Piliocolobus bouvieri, n. sp., Rochebrune, *t. c.* p. 108, pl. iv, Senegambia.

Pterycolobus, n. g., Rochebrune, *t. c.* p. 125. Type, *Colobus vellerosus* (pl. x).

Guereza, Gray. *Colobus rueppeli*, *C. caudatus*, and *C. occidentalis*, figured by Rochebrune, *t. c.* pls. xi–xiii, under this generic name.

Colobus pologomus and *C. chrysurus* noticed by Rochebrune, *t. c.* pp. 144 & 162.

Cebidæ.

Brachyurus calvus, figured by F. E. Beddard, P. Z. S. 1887, p. 119, pl. xii, with a few notes on its anatomy.

Hapalidæ.

Hapale jacchus : notes on its myology are given by B. C. A. Windle, P. Birmingh. Phil. Soc. v, pp. 277–281.

II. LEMUROIDEA.

Lemuridæ.

Sutton, J. B. On the Arm-glands of the Lemurs. P. Z. S. 1887, pp. 369–372, with 3 woodcuts.

Describes and figures these glands in *Hapalemur*, *Chirogaleus*, and *Lemur*.

Necrolemur zitteli, n. sp., M. SCHLOSSER, Beitr. Pal. Oester-Ung. vi, p. 47, Quercy Phosphorites, France.

Cænopithecus lemuroides, identified by SCHLOSSER, *l. c.*, with *Adapis*.

Microchocrus erinaceus and its allies are placed here by SCHLOSSER, *t. c.*, but are referred by R. LYDEKKER to the *Insectivora* (*vide infrà*, p. 27).

INCERTÆ SEDIS.

Plesiadapis: a note on its affinities given by V. LEMOINE, Bull. Soc. géol. xv, pp. 147–149. The author concludes that it is allied to the Lemuroids, with affinities to the Marsupials, and proposes to divide it into the two following subgenera. Another note by the same writer is also given in C.R. civ, p. 190.

Tricuspidens, n. subg., V. LEMOINE, *t. c.* p. 149. Type, *P. remensis*.

Subunicuspidens, n. subg., V. LEMOINE, *ibid.* Type, *P. daubiei*.

2. *CARNIVORA.*

FLEISCHMANN, A. Zur Entwickelungsgeschichte der Raubthiere. Biol. Centralbl. vii, pp. 9–12. [Results summarised in Am. Nat. xxi, pp. 394–396.]

[illegible]SCH, M. Versuch zur Ermittelung der Homologie der Fissura parieto-occipitalis bei den Carnivoren. Kölliker's Festschrift, pp. 371–386, pl. xvi.

SCHÄCHT, H. Die Raubsäugethiere der Teutoberger Waldes. Zool. Gart. xxviii, pp. 203–210 & 242–252.

Mentions *Felis catus* and *Canis vulpes*.

Notes on the *Carnivora* of Central Africa are given in Zool. Gart. xxviii, pp. 200–221.

I. CREODONTA (PRIMIGENIA).

SCOTT, W. B. On some New and Little-known Creodonts. J. Ac. Philad. ix, pp. 155–185, pls. v–vii.

Discusses the characters of *Mesonyx*, *Didymictis*, *Miacis*, and *Hyænodon*, and shows that in typical species of the latter the scaphoid and lunar were united.

A synopsis of the Tertiary European species is given by M. SCHLOSSER, Beitr. Pal. Oesterr.-Ung. vi, i, pp. 162–224. Remarks on the group and diagnoses of some of the genera are also given by R. LYDEKKER, Cat. Foss. M[illegible] Brit. Mus. v, pp. 305–309 (*vide supra*, p. 10).

a. HYÆNODONTIDÆ.

Hyænodon filholi, n. sp., M. SCHLOSSER, Beitr. Pal. Oesterr.-Ung. vi, i, p. 189, Quercy Phosphorites, France.

Pseudopterodon ganodus, n. g. & sp., M. SCHLOSSER, *t. c.* pp. 199–201, Quercy Phosphorites.

Dasyurodon flonheimensis n. g. & sp., A. Andreæ, Abh. Senck. Ges. 1887, pp. 125-133, pl. iv, Lower Miocene (Middle Oligocene), Rheinhessen; identified by M. Schlosser, Beitr. Pal. Oesterr.-Ung. vi, i, p. 223, with *Apterodon gaudreyi*, Fischer, and regarded as probably identical with *Pterodon* or *Oxyæna*.

Incertæ Sedis.

Cladosictis patagonica, n. g. & sp., F. Ameghino, Bol. Mus. La Plata i (Dec.), p. 7, Tertiary, Patagonia.

Hathliacynus lustratus, n. g. & sp., Ameghino, *t. c. ibid.*

Agustylus cynoides, n. g. & sp., Ameghino, *t. c. ibid.*

Borhyæna tuberata, n. g. & sp., Ameghino, *t. c.* p. 8, *ibid.*

Anatherium defossus, n. g. & sp., Ameghino, *t. c. ibid.*

Acrocyon sectorius, n. g. & sp., Ameghino, *t. c. ibid.*

Acyon tricuspidatus, n. g. & sp., Ameghino, *t. c. ibid.*

Sipalocyon gracilis, n. g. & sp., Ameghino, *t. c. ibid.*

II. CARNIVORA VERA.

Notes on the nomenclature of Indian species of *Felidæ*, *Viverr.*, *Canidæ*, and *Mustelidæ* are given by W. T. Blanford (*vide suprà*, p. 3).

b. Felidæ.

Nehring, A. Ueber der Sohlenfärbung am Hinterfusse von *Felis catus*, *F. caligata*, *F. maniculata*, and *F. domestica*. SB. nat. Fr. 1887, pp. 26 & 27, woodcut; and Humboldt, 1887, p. 437.

Ryder, J. A. On the First and Second Sets of Hair-Germs developed in the Skin of Fœtal Cats. P. Ac. Philad. 1887, pp. 56–59.

Felis catus: its facial nerve described by T. B. Stowell, P. Am. Phil. Soc. xxiv, pp. 8–18, and pl. Eyrich, Zool. Gart. xxviii, pp. 219 & 220, states that 606 individuals were killed between April 1st, 1885, and March 1st, 1886, in Germany.

Felis domestica: instances of polydactylism are recorded by E. B. Poulton, Anat. Anz. i, p. xi (1886); Humboldt, 1887, p. 436; and Rep. Brit. Assoc. 1886, p. 692. Tailless races are discussed by O. Zacharias, MT. Ver. Frankfort-a.-O. v, pp. 185 & 186; and also by L. Döderlein, in Zool. Anz. x, pp. 606–608.

Felis pardus: A. Zipperlen, Zool. Gart. xxviii, p. 259, records its breeding in captivity.

Felis bengalensis: notes on its variations are given by W. T. Blanford, P. Z. S. 1887, pp. 627–631.

Felis lynx: the last example known in Baden was killed in 1834; Eyrich, Zool. Gart. xxviii, p. 220.

Felis canadensis: the cranial characters of this and other species of Lynx discussed by F. W. True, in P. U. S. Nat. Mus. 1887, pp. 8 & 9.

Machærodus orientalis, n. sp., KITTL, Ann. Hofmuseum Wien, ii, pp. 329 & 330, pls. xiv & xv, Pliocene, Persia.

Machærodus catocopsis, n. sp., E. D. COPE, Am. Nat. xxi, pp. 1019 & 1020, Pliocene, Kansas.

Ælurictis [*Ailurictis*], n. g., TROUESSART, Bull. Soc. Angers, xv (1885), Cat. of Mamm. p. 92; to replace *Ælurogale*, Filhol, which is preoccupied. [Omitted from Zool. Rec. xxii, although the memoir is cited, *Mamm.* p. 79, No. 320.]

c. URSIDÆ + CANIDÆ.

Ursus americanus: a malformed skull described by E. SCHÄFF, Zool. Gart. xxviii, p. 272.

Ursus arvernensis: an imperfect mandible figured by A. DONNEZAN (*vide suprà*, p. 4).

Ursus spelæus: remains described by D. ANUTSCHIN, from caves in the Transcaucasus, Bull. Mosc. pp. 216 & 375. A small race described by A. GAUDRY, C.R. civ, pp. 740–743, from Gargas: also recorded from a cave in Bingen, by BERTKAU, Verh. Ver. Rheinl. iv, p. 159.

Hyænarctos, sp.: upper molar from the Red Crag, figured by W. REED, Proc. Phil. Soc. 1886, pl. i.

Amphicyon (?) *vulpinus*, n. sp., W. B. SCOTT & H. F. OSBORN, P. Am. Phil. Soc. 1887, p. 255, Up. Eocene, N. America.

Cephalogale brevirhinus, n. sp., A. HOFMANN, JB. geol. Reichsanst. xxxvii, pp. 208–210, Miocene, Styria.

Canis aureus, J. KUHN, Zool. Gart. xviii, pp. 161–163, has a note on a fertile mongrel produced by this species and the common Dog. See also Biol. Centralbl. vii, pp. 158–160.

Canis (?) *acutus*, n. sp., F. AMEGHINO, Bol. Mus. La Plata, i, p. 1, Tertiary, S. America.

Canis ingæ: a mummy described by A. NEHRING, SB. nat. Fr. 1887, pp. 139–141.

Canis jubatus: skull described by NEHRING, *t. c.* pp. 47 & 48.

Canis japonicus: its distinctness from *C. rutilans* and *C. alpinus* insisted upon by NEHRING, *t. c.* pp. 66–69, who regards it as more nearly allied to *C. pallipes*.

Canis lupus: a note on its interbreeding with the Dog and Fox given by T. NOACK, Zool. Gart. xxviii, p. 106.

Canis pallipes: F. ROSE, J. Bomb. N. H. Soc. ii, pp. 147 & 148, has notes on a hybrid.

Canis vulpes: a skull with only five lower incisors described by E. SCHÄFF, Zool. Gart. xxviii, p. 270. A note on the nomenclature given by W. T. BLANFORD, P. Z. S. pp. 635 & 636, who proposes to adopt the name *Vulpes alopex*.

NEHRING, A. Zur Abstammung der Hunde-Rassen. Zool. Jahrb. iii, pp. 51–58.

Discusses the relation of *Canis ingæ*, *C. lupus*, *C. rutilans*, and *C. jubatus*.

QUENCE, E., & DARIER, J. Note sur l'Existence d'un Plexus Nerveux dans la Paroi du Canal Thoracique du Chien. C.R. Soc. Biol. (8) iv, pp. 529–531.

ROMANES, G. J. Experiments on the Sense of Smell in Dogs. J. L. S. xx, pp. 65–70.

d. MUSTELIDÆ.

NEHRING, A. Ueber die Musteliden Sudamericas. Humboldt, 1887, pp. 414–417.

A general notice of the Mustelines of this continent.

Meles maraghanus, n. sp., KITTL, Ann. Hofmuseum Wien, ii, p. 337, pl. xv, fig. 4, Pliocene, Persia.

Meles polaki, n. sp., KITTL, *t. c.* i, p. 7 (1886) [omitted from Zool. Rec. xxiii] : figured, *op. cit.* ii, pp. 335 & 336, pl. xvii, figs. 3–6, Pliocene, Persia.

Meles taxus: a note on the size attained by the skull of recent examples, given by E. SCHÄFF, Zool. Gart. xxviii, pp. 59 & 60, where it is shown that the dimensions are equal to those of the largest Pleistocene skulls.

Mustela filholi, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 129, Miocene, France.

Mustela martes: notes on an abnormal skull are given by E. SCH[illegible] Zool. Gart. xxviii, pp. 269 & 270.

Mustela (*Putorius*) *itatsi* : its affinity discussed by F. LATASTE, Bull. Sci. Nord. x, pp. 169–198.

Mustela putorius : a note on its racial and individual variations, by A. DRION, Bull. Ac. Belg. xiv, pp. 365–368, in which a pale and a dark race are distinguished.

Galictis crassidens : A. NEHRING, Zool. Gart. xxviii, pp. 252–254, has notes on its habits.

Lutra vulgaris, recorded by E. T. NEWTON, Geol. Mag. iv, p. 145, pl. iv, from Norfolk Pleistocene. A note on specimens captured in Essex by E. A. FITCH, Tr. Ess. Club, 1887, p. 105.

A. NEHRING, SB. nat. Fr. 1887, pp. 21–25, discusses the relations of the S. American Otters, to which Gray applied the names *Lutronectes*, *Lontra*, and *Pteronura*.

III. CARNIVORA PINNIPEDIA.

e. OTARIIDÆ.

Otaria. M. SCHLOSSER, Zool. Anz. x, pp. 69 & 70, corrects a previously published statement as to the dental formula.

Otaria (*Arctocephalus*) *gracilis*, n. sp., H. NEHRING, SB. nat. Fr. 1887, p. 142, and Arch. f. Nat. 1887, p. 75, pl. ii, Pacific.

Otaria (*A.*) *hookeri* : note on living specimens in London, by P. L. SCLATER, P. Z. S. 1887, p. 139.

Otaria (*Arctophoca*) *falclandica* : notice by A. NEHRING, SB. nat. Fr. 1887, pp. 207 & 208, of a specimen from Rio Janeiro, referred to this species.

f. Phocidæ.

The German forms described by A. Nehring, MT. der Sektion f. Küsten- und Hochseefischerei, 1887, No. 2, 16 pp., and woodcuts.

Monachus tropicalis, described and figured by J. A. Allen, Bull. Am. Mus. Nat. Hist. ii, pp. 1–34, pls. i–v. Notes on its life-history by L. Ward, Am. Nat. xxi, pp. 257–264, pl. xii.

Phoca vitulina: A. Nehring, Zool. Gart. xxviii, pp. 193 & 194, has notes on its food; and another note is given by Goffart, *t. c.* pp. 325–327. T. Noack has a description of its characters during the breeding season; Zool. Gart. xxviii, pp. 367–370.

Halichœrus grypus: notes on its carnivorous habits, and figure of the skull given by A. Nehring, Zool. Gart. xxviii, pp. 1–10, 40–45, & 74–79. An additional note by the same author, *t. c.* pp. 189–193. E. Friedel, *t. c.* p. 258, mentions a stranded specimen brought to Berlin.

3. *INSECTIVORA.*

A synopsis of the European Tertiary species given by M. Schlosser, Beitr. Pal. Oesterr.-Ung. vi, 1, pp. 80–144 (*suprà*, p. 14), together with a notice of those of the N. American Tertiaries, and a discussion of the dentition and family characters of the existing genera.

a. Dimylidæ.

The European Miocene genera *Dimylus* and *Cordylodon* are referred by M. Schlosser, *t. c.* p. 103, to this new family.

b. Microchœridæ.

The European Eocene genus *Microchœrus* referred by R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, p. 303, to this new family; M. Schlosser places it, however, in the *Lemuroidea* (*vide suprà*, p. 23).

c. Erinaceidæ.

Neurogymnurus major, n. sp., R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, p. 302, Up. Eocene, Hants.

Erinaceus pictus, *E. grayi*, and *E. jerdoni*. The skulls and feet figured, and the animals described, by J. A. Murray, Indian Annals, pp. 137–139, and plate, in illustration of the use of the flesh in Indian medicine.

d. Macroscelididæ.

Rhynchocyon reichardi, described and figured by T. Noack, Zool. Jahrb. ii, p. 260, pls. viii & x, figs. 50–54, Central Africa.

Macroscelides alexandri, skull described and figured by Noack, *t. c.* p. 264, pl. ix, figs. 14 & 15.

e. Talpidæ.

Talpa meyeri, n. sp., M. Schlosser, *t. c.* p. 132, Miocene, Germany.

Talpa europæa: a paper on its habits by J. E. Harting, Zool. xi, pp. 442–448, plate vi. A parti-coloured individual mentioned by H. Landois, Zool. Gart. xxviii, p. 258.

Dimecodon pilirostris described by F. True, P. U. S. Nat. Mus. 1887, pp. 97 & 98. [Quoted as n. sp. in Zool. Rec. xxiii.]

Plesiosorex: Fraas's identification of this form with *Parasorex* is shown by R. Lydekker, Geol. Mag. iv, pp. 47 & 48, to be incorrect.

f. Soricidæ.

Dobson, G. E. On the genus *Myosorex*, with description of a new species from the Rio del Rey (Cameroons) district. P. Z. S. 1887, pp. 575–578.

Gives the distinctive characters of *M. varius* and *M. morio*, and the description of a new species (*infrà*).

Sorex cœrulescens: the use of the secretions in Indian medicine noticed by J. A. Murray, Indian Annals, i, pp. 83–85; a description of the species is also given.

Sorex alpinus, recorded by E. Schulze, Z. Naturw. lx, p. 187, from Brocken in the Hartz.

Sorex neumayrianus, n. sp., M. Schlosser, *t. c.* p. 122, Miocene, Germany.

Sorex schlosseri (Roger) = *Trimylus schlosseri*, referred by Schlosser, *t. c.* p. 125, to this genus.

Crocidura doriana, n. sp., G. E. Dobson, Ann. Mus. Genov. iv, p. 564, Shoa.

Crocidura beccarii, n. sp., Dobson, *t. c.* p. 567, Sumatra.

Crocidura paradoxura, n. sp., Dobson, *t. c.* p. 566, Sumatra.

Crocidura bovei, n. sp., Dobson, *t. c.* vol. v, pp. 425 & 426, Africa.

Crocidura lasiura, recorded by H. H. Giglioli & T. Schlosser, P. Z. S. 1887, p. 581, from Corea.

Myosorex johnstoni, n. sp., G. E. Dobson, P. Z. S. 1887, pp. 577 & 578, woodcut of skull, Cameroons.

Orthaspidotherium and *Pleuraspidotherium*, Lemoine, from Lower Eocene of Rheims, are referred to this family by Schlosser, *t. c.* p. 125.

g. Adapisoricidæ.

Adapisorex, Lemoine, referred by M. Schlosser, *t. c.* p. 138, to a new family allied to *Soricidæ*.

h. Leptictidæ.

The name *Ictopsidæ* is proposed by M. Schlosser, *t. c.* p. 140, to replace *Leptictidæ* of Cope, which the former writer had previously shown to belong to this order.

4. *CHIROPTERA.*

Delsaux, E. Sûr la Respiration des Chauves-Souris pendant leur Sommeil Hibernal. Arch. Biol. vii, pp. 205–215.

Monticelli, F. S. Note Chirotterologiche. Ann. Mus. Genov. (2) v, pp. 517–524, with woodcuts.

Discusses *Vesperugo nanus*, *Vespertilio dogalensis* (n. sp.), *Phyllorhina tridens*, *Nycteris thebaica*, *Rhinopoma microphyllum*, *Epomophorus minor*, *E. labiatus*, and *Cynonycteris straminea*.

——. Sulle Glandole Facciale dei Chirrotteri. Rivist. Ital. Sci. Nat. ii, pt. 1 (1886). [Omitted from Zool. Rec. xxiii.]

Summarizes previous observations on the facial glands of *Chiroptera*, and concludes that they exhibit secondary sexual characters.

Scully, J. On the *Chiroptera* of Nipal. J. A. S. B. lvi, pp. 233–259.

A critical paper; commencing with a definition of the application of the term Nipal, and a review of previous work on the subject. The total number of species recorded is 19, and includes 1 *Pteropus*, 1 *Cynonycteris*, 1 *Cynopterus*, 3 *Rhinolophus*, 3 *Phyllorhina*, 2 *Vesperugo*, 1 *Harpyocephalus*, 4 *Vespertilio*, and 1 *Miniopterus*. Of these 19, 3, namely *Pteropus medius*, *Cynonycteris amplexicaudata*, and *Cynopterus marginatus*, must, however, be regarded as stragglers, and not true members of the Nipalese fauna. *Vespertilio nipalensis* is the only form peculiar to the district; but *Rhinolophus macrotis* is only known from Nipal, and the more westerly hill station of Masuri. Nearly all Hodgson's names are relegated to the rank of synonyms.

Thomas, O. On the Bats collected by Mr. C. M. Woodford in the Solomon Islands. P. Z. S. 1887, pp. 320 & 327, pls. xxv & xxvi, and 3 woodcuts.

Describes 7 species of *Megachiroptera* and 4 of *Microchiroptera*, of which two are new and figured. [See *Pteropodidæ*, *Rhinolophidæ*, *Vespertilionidæ*, and *Emballonuridæ*.]

Weithofer, A. Zur Kentniss der fossilen Chiropteren der französischen Phosphorite. SB. Ak. Wien, xcvi, pp. 341–360, and plate; also in Anz. Ak. Wien, 1887, pp. 285 & 286.

The relationship of *Pseudorhinolophus* to *Rhinolophus* and *Phyllorhina* is discussed, and new genera and species of *Rhinolophidæ* and *Phyllostomatidæ* are proposed. [See *Rhinolophidæ*, *Emballonuridæ*, and *Phyllostomatidæ*.]

For the Bats of Celebes see Hoffmann (*suprà*, p. 6). A synopsis of the European Tertiary forms is given by M. Schlosser (*suprà*, p. 14, *et infrà*). W. S. Dallas has a popular article on Bats in "Short Studies from Nature"; London: 8vo. J. E. Harting, Zool. xi, pp. 161–172, pl. iii, describes the British species [see also F. A. Jentink, *suprà*, p. 8]. Lord Lilford has notes on European Bats, Zool. xi, p. 61. C. W. Brazenor, *t. c.* p. 151, G. H. C. Haigh, *t. c.* pp. 142, 273, & 293, J. E.

Kelsall, *t. c.* pp. 89 & 346, and H. A. Macpherson, *t. c.* p. 152, have also notes on British species. For the Bats of Queensland, see R. Collett (*suprà*, p. 3). Notes on the nomenclature of certain Indian genera are given by W. T. Blanford (*vide suprà*, p. 3).

I. MEGACHIROPTERA.

a. Pteropodidæ.

Pteropus grandis, n. sp., O. Thomas, Ann. N. H. xix, p. 417; P. Z. S. 1887, pl. xxv: Solomon Is.

Pteropus rayneri, recorded by Thomas, P. Z. S. 1887, pp. 322–324, from Solomon Is.

Pteropus natalis, n. sp., Thomas, *t. c.* p. 511, pl. xli, Christmas I.

Pteropus medius: the use of the flesh in Indian medicine noticed by J. A. Murray, Indian Annals, i, pp. 25 & 26; a description of the species is also given.

Epomophorus minor, described and skull figured by T. Noack, Zool. Jahrb. ii, p. 268, pl. x, figs. 28–30.

Nesonycteris woodfordi, n. g. & sp., Thomas, Ann. N. H. xix, p. 417; P. Z. S. 1887, pp. 323 & 324, pl. xxvi: Solomon Is.

II. MICROCHIROPTERA.

b. Rhinolophidæ.

Pseudorhinolophus antiquus, n. g., M. Schlosser, Beitr. Pal. Oester.-Ung. vi, i, pp. 61–64; type, *Rhinolophus antiquus*, Filhol, Quercy Phosphorites. Other unnamed species are indicated, and *Vespertilio morloti*, Pictet, from the Eocene of Switzerland, is referred to the same genus. [See Weithofer, *op. cit.*]

Rhinolophus ferrum-equinum, figured by J. E. Harting, Zool. xi, pl. i; and this species and *R. hipposideros* described by the same, *t. c.* pp. 1–3.

Rhinolophus (?) *dubius*, n. sp., A. Weithofer, Anz. Ak. Wien, 1887, p. 285, and SB. Ak. Wien, xcvi, p. 351, Quercy Phosphorites, France.

Phyllorhina commersoni, n. var. *marungensis*, T. Noack, Zool. Jahrb. ii, p. 272, pl. x, figs. 31–31.

Phyllorhina diadema and *P. cervina*, recorded by O. Thomas, P. Z. S. 1887, p. 326, from Solomon Is.

Hipposideros: W. J. Blanford, P. Z. S. 1887, p. 637, proposes that this name should supersede *Phyllorhina*.

Alastor heliophygus, n. g. & sp., A. Weithofer, SB. Ak. Wien, xcvi, p. 350, the generic name being given in Anz. Ak. Wien, 1887, p. 285; Quercy Phosphorites, France.

c. Vespertilionidæ.

Vespertilio oxygnathus, n. sp., F. S. Monticelli, Ann. Acc. asper. Nat. (3) i, pp. 82–86, pl. vii, Italy.

Vespertilio dogalensis, n. sp., MONTICELLI, Ann. Mus. Genov. (2) v, pp. 518–522, Aden.

Vespertilio longicrus, described by F. W. TRUE, P. U. S. Nat. Mus. 1887, pp. 6 & 7.

Vespertiliavus, n. g., M. SCHLOSSER, *t. c.* pp. 70–72, type *Vespertilio bourguignati* (misquoted *brongniarti*), FILHOL, Quercy Phosphorites.

Vesperugo (*Vesperus*) *innesi*, n. sp., F. LATASTE, Ann. Mus. Genov. iv, pp. 625–630, woodcuts, Egypt.

Vesperugo noctula, described and figured by J. E. HARTING, *t. c.* p. 3, pl. iii, and a notice of its northern range by the same writer, *t. c.* pp. 260–262.

Vesperugo abramus, recorded by O. THOMAS, P. Z. S. 1887, p. 326, from Solomon Is.

Scotophilus minimus, n. sp., T. NOACK, Zool. Jahrb. ii, p. 280, pl. x, figs. 36 & 37, Central Africa.

d. EMBALLONURIDÆ.

Emballonura nigrescens, recorded by O. THOMAS, P. Z. S. 1887, p. 326, from Solomon Is.

Taphozous mauritianus, described and skull figured by T. NOACK, Zool. Jahrb. ii, p. 282, pl. x, figs. 34 & 35.

Taphozous perforatus, n. var. *assabensis*, F. R. MONTICELLI, Ann. Ac. asper. Nat. (3) i, pp. 78–80, pl. vii, S. Africa.

Taphozous (?) sp.: a humerus from the Quercy Phosphorites, provisionally referred to this genus, described and figured by A. WEITHOFER, SB. Ak. Wien, xcvi, p. 352.

c. PHYLLOSTOMATIDÆ.

The question whether the Vampires feed on fruit is rediscussed by E. A. GÖLDI, Zool. Gart. xxviii, pp. 163–172, and the conclusion reached that this is the case in some instances.

Necromanter adiehaster, n. g. & sp., A. WEITHOFER, Anz. Ak. Wien, 1887, p. 286, and SB. Ak. Wien, xcvi, p. 353, Quercy Phosphorites, France.

5. *RODENTIA.*

DUVAL, M. Sur les Premières Phases du Développement du Placenta du Cobaye. C. R. Soc. Biol. (8) iv, pp. 148–150.

——. Sur les Premières Phases du Développement du Placenta du Lapin. *T. c.* pp. 425–427.

KUNSTLER, J. Contribution a l'Étude de l'Appareil Masticateur chez les Rongeurs. Ann. Sci. Nat. (Zool.) (7) iv, pp. 150–166, pl. x.

The first instalment of a memoir which is devoted to the consideration of *Arctomys marmotta*.

LATASTE, F. Notes sur differentes espèces de l'ordre des Rongeurs observées en Captivité. Act. Soc. L. Bord. (4) x, pp. 291–320.

Mentions *Sciurus vulgaris*, *Spermophilus citillus*, *Arctomys marmotta*, *Myoxus glis*, and *Eliomys quercinus*.

RANVIER, L. Des Muscles Rouges et des Muscles Blancs chez les Rongeurs. C.R. civ, p. 79.

RYDER, J. A. A Theory of the Origin of Placental Types, and on certain Vestigiary Structures in the Placenta of the Mouse, Rat, and Field-Mouse. Am. Nat. xxi, pp. 780–784, two woodcuts.

——. The Inversion of the Germinal Layers in *Hesperomys*. *T. c.* pp. 863 & 864, woodcut. [See also A. C. HADDON, *suprà*, p. 5.]

SOUZA, A. DE. Sur la Presence d'un Os Pleural chez les Cobayes. C.R. Soc. Biol. (8) iv, pp. 675 & 676.

WINGE, H. Jordfundne og nulevende Gnavere (Rodentia) fra Lagoa Santa, Minas Geraes, Brazil; mid Udsigt over Gnavernes indbyrdes Slægtskab. *Ex.* Mus. Lund. iii, pp. 1–178, pls. i–viii.

This memoir on the fossil and living Rodents of Lagoa Santa, general remarks on the classification and mutual affinities of the var[illegible] families, is an important contribution to the literature of the order, sin[illegible] it contains not only a full account of the specimens obtained by Ri[illegible]hardt and Lund in Lagoa Santa, and now preserved in the Copenhage[illegible] Museum; but also gives a revised classification, based mainly on the structure of the infraorbital foramen and the characters of the teeth. The arrangement of the families and genera differs considerably from that usually adopted: the most marked new features being the reference of *Pedetes* to the *Anomaluridæ*; the association of *Spalax* and *Sminthus* with *Dipus*, of *Bathyergus* with *Hystrix*, and of *Rhizomys* with the *Muridæ*. Of the 51 species recorded from Lagoa Santa, a large proportion are from the Pleistocene cave-deposits, but 27 are also recent. Full descriptions, with figures of the skulls, feet, &c., are given of all these forms, including the new species. The latter comprise 13, which are entirely fossil, and 4 which are also recent. [See *Muridæ*, *Caviidæ*, and *Octodontidæ*.]

I. RODENTIA SIMPLICIDENTATA.

a. ANOMALURIDÆ.

Anomalurus pusillus, n. sp., O. THOMAS, Ann. N. H. xx, p. 440, Central Africa.

Anomalurus beecrofti, recorded by O. THOMAS, P. Z. S. 1887, p. 121, from the Cameroons.

b. SCIURIDÆ.

An account of the genera included in the subfamily *Sciurinæ* is given by O. THOMAS in the Encyclopædia Britannica, vol. xxii, art. Squirrel. The skull of *Sciurus bicolor* is figured, and a figure of the Burmese

Squirrel given. T. W. Mills has a paper on the habits of Squirrels in Can. Rec. ii, pp. 502–504.

Sciurus vulgaris: a skull described by E. Schäff, Zool. Gart. xxviii, pp. 271 & 272, with an additional ossification in the parietal region. Notes on its habits in captivity are given by G. Josephy, Zool. Gart. xxviii, pp. 148–150.

Sciurus whiteheadi, n. sp., O. Thomas, Ann. N. H. xx, p. 127, Borneo.

Sciurus jentinki, n. sp., O. Thomas, *t. c.* p. 128, Borneo.

Sciurus spermophilinus, n. sp., C. Déperet, Arch. Mus. Lyon, iv, p. 152, Miocene, France.

Sciurus boehmi, described by T. Noack, Zool. Jahrb. ii, p. 251, Central Africa.

Sciurus lemniscatus, described and figured by W. Leche, *t. c.* p. 117, pl. iii.

Spermophilus bactrianus, n. sp., J. Scully, J. A. S. B. lvi, pp. 70 & 71, and Ann. N. H. xx, pp. 381 & 382, Afghân Turkestan.

Plesiarctomys sciuroides, n. sp., W. B. Scott & H. F. Osborn, P. Am. Phil. Soc. 1887, p. 256, Up. Eocene, N. America.

Arctomys marmotta: J. Kunstler, Ann. Sci. Nat. (7) iv, pp. 150–166, pl. x, describes and figures the muscles of the jaws. E. Schäff, Arch. f. Nat. 1887, pp. 118–132, considers that remains from the German Pleistocene should probably be referred to this species. A. Nehring, Arch. nat. Fr. 1887, p. 1, discusses whether remains from the Pleistocene of the Ural and the Rhine Valley belong to this species or to *A. bobac*. A. Girtonner, Zool. Gart. xxviii, pp. 20–27 & 46–54, describes Marmot-warrens.

c. Castoridæ.

Castor fiber: remains from the Post-Tertiary of Rome, described and figured by E. Clerici, Boll. Com. Ital. (2) viii, pp. 278–284, pl. viii.

Castor canadensis. W. Blasius, JB. Ver. Braunschw. iv, pp. 73–83, discusses the question of its right to distinction from *C. europæus*, and comes to the conclusion that it is a valid species.

d. Myoxidæ.

Myoxus niteloides, n. sp., C. Déperet, Arch. Mus. Lyon, iv, p. 154, Miocene, France; also Bull. Soc. géol. xv, p. 508, and C.R. civ, p. 379.

Myoxus glis: E. Schäff, Zool. Gart. xxviii, pp. 327–333, has notes on its habits in captivity.

Eliomys quercinus: notes on this species given by F. Helm, Zool. Gart. xxviii, pp. 217–219.

Eliomys dryas: notes on, by — Altum, Zool. Gart. xxviii, pp. 135–139.

Eliomys microtis, n. sp., T. Noack, Zool. Jahrb. ii, p. 248, pl. ix, figs. 19–22, Central Africa.

e. Muridæ.

For the Mice of Queensland, see R. Collett, *suprà*, p. 3.

Mailles, C. Acclimatation et Domestication de quelques Rongeurs de la Famille des Muridés. Bull. Soc. Acclim. (4) iv, pp. 280–289 & 416–423.

Mentions *Mus decumanus*, *M. rattus*, *M. sylvaticus*, *M. musculus*, *M. minutus*, *Meriones shawi*, *M. longifrons*, and *Gerbillus simoni*.

Chiropodomys penicillatus: its distribution discussed by G. Doria, Ann. Mus. Genov. (2) iv, pp. 631–635.

Neotoma bryanti, n. sp., C. H. Merriam, Am. Nat. xxi, pp. 191 & 192, California.

Hydromys chrysogaster: its anatomy described by B. C. A. Windle, P. Z. S. 1887, pp. 53–65, with woodcuts.

Cricetodon rhodanicus, n. sp., C. Depéret, Arch. Mus. Lyon, iv, p. 159, Miocene, France; also Bull. Soc. géol. xv, p. 506, and C.R. civ, p. 379.

Hesperomys (*Rhipidomys*) *sclateri*, n. sp., O. Thomas, P. Z. S. 1887, p. 152, pl. xix, Demerara.

Hesperomys (*Vesperimys*) *taylori*, n. sp., Thomas, Ann. N. H. xix, p. 66, Texas.

Hesperomys simplex, n. sp., H. Winge, *t. c.* (*suprà*, *p.* 32) p. 11, Pleistocene and recent, Brazil.

Hesperomys molitor, n. sp., H. Winge, *t. c.* p. 14, Pleistocene, Brazil.

Hesperomys tenes, n. sp., H. Winge, *t. c.* p. 15, Pleistocene, Brazil.

Habrothrix cursor, n. sp., H. Winge, *t. c.* p. 25, Pleistocene, Brazil.

Habrothrix clivigenis, n. sp., H. Winge, *t. c.* p. 27, Pleistocene, Brazil.

Habrothrix angustidens, n. sp., H. Winge, *t. c.* p. 28, Pleistocene, Brazil.

Oxymicterus breviceps, n. sp., H. Winge, *t. c.* p. 34, Pleistocene, Brazil.

Oxymicterus cosmodus, n. sp., H. Winge, *t. c.* p. 39, Pleistocene, Brazil.

Scapteromys labiosus, n. sp., H. Winge, *t. c.* p. 39, Pleistocene, Brazil.

Scapteromys fronto, n. sp., H. Winge, *t. c.* p. 44, Pleistocene, Brazil.

Calomys anoblepas, n. sp., H. Winge, *t. c.* p. 44, Pleistocene, Brazil.

Calomys plebeius, n. sp., H. Winge, *t. c.* p. 47, Pleistocene, Brazil.

Calomys saltator, n. sp., H. Winge, *t. c.* p. 48, Brazil. (Probably the same as *C. laticeps*, auct.)

Calomys rex, n. sp., H. Winge, *t. c.* p. 50, Pleistocene, Brazil.

Calomys coronatus, n. sp., H. Winge, *t. c.* p. 51, Pleistocene, Brazil.

Mus musculus: a note on a peculiarity in the renal structure given by C. Benda, in Anat. Anz. ii, p. 425.

Mus sylvaticus, described and figured by G. T. Rope, Zool. xi, pp. 201–207, pl. iv.

Mus decumanus: a specimen with abnormal colouration and hypertrophied lower incisor, described by E. Schäff, Zool. Gart. xxviii, pp. 270 & 271.

Mus decumanus, n. var. *major*; B. Hoffmann, Abh. Zool. Mus. Dresden, No. 3, p. 18, Celebes.

Mus rattus, recorded by G. B. Hamilton, Zool. xi, p. 425, from Wexford.

Mus rattus, n. var. *celebensis*; B. Hoffmann, *t. c.* p. 18, fig. 4, Celebes.

Mus chrysocomus, n. sp., B. Hoffmann, *t. c.* p. 20, fig. 1, Celebes.

Mus meyeri, skull figured by Hoffmann, *t. c.* fig. 2.

Mus macropus, skull figured by HOFFMANN, *t. c.* fig. 5.

Mus musschenbroeki, skull figured by HOFFMANN, *t. c.* fig. 3.

Mus macleari, n. sp., O. THOMAS, P. Z. S. 1887, p. 513, pl. xliii, Christmas I.

Mus univittatus, recorded by THOMAS, *t. c*, p. 121, from the Cameroons.

Mus sabanus, n. sp., THOMAS, Ann. N. H. xx, p. 269, N. Borneo.

Mus kaiseri, n. sp., T. NOACK, Zool. Jahrb. ii, p. 228, pl. ix, figs. 8–10, Central Africa.

Mus rufinus, n. var. *marungensis*, NOACK, *t. c.* p. 231, pl. ix, figs. 1–3, Central Africa.

Mus tompsoni, n. sp., K. H. BENNETT, P. Linn. Soc. N.S.W. (2) ii, pp. 447–447, Western New South Wales.

Mus burtoni, n. sp., E. P. RAMSAY, P. Linn. Soc. N.S.W. (2) ii, p. 553, pl. xvii, N.W. Australia.

Pelomys reichardi, n. sp., NOACK, *t. c.* p. 235, Central Africa.

Gerbillus boehmi, n. sp., NOACK, Zool. Jahrb. ii, p. 241, pl. ix, figs. 11–13, Central Africa.

Mystromys longicaudatus, n. sp., NOACK, *t. c.* p. 246, pl. ix, figs. 16–18, Central Africa.

Hapalotis boweri, sp. n., E. P. RAMSAY, P. Linn. Soc. N.S.W. (2) i, pp. 1153–1154, pl. xviii, N.W. Australia.

...olis icola: a synopsis of the species given by F. LATASTE, Ann. Mus. art. Genov. iv, pp. 259–274, in which the name *Microtus* is used in place of *Arvicola*.

Arvicola glareolus: notes on its range given by W. BORRER & H. H. SLATER, Zool. xi, pp. 462 & 463; described and figured by J. E. HARTING, Zool. xi, pp. 361–371, pl. v.

Arvicola agrestis: albino specimens described by H. LAMB, Zool. xi, p. 152.

Arvicola amphibius: a note on this species given by — DUNN, in P. Phys. Soc. Edin. 1887, pp. 325–327.

Lasiopodomys, n. subg., F. LATASTE, Ann. Mus. Genov. iv, p. 275; type, *Arvicola brandti*.

Fiber zibethicus: its method of opening the shells of *Unio* described by A. C. AIGAR, J. Trenton N. H. Soc. 1887, pp. 58 & 59.

Ellobius intermedius, n. sp., J. SCULLY, J. A. S. B. lvi, pp. 73 & 74, and Ann. N. H. xx, pp. 364–368, Herat.

f. GEOMYIDÆ.

Dipodomys deserti, n. sp., F. STEPHENS, Am. Nat. xxi, pp. 42–49, pl. v, N. America.

g. SPALACIDÆ.

Georychus damarensis and *G. ochraceocinereus*, figured by W. LECHE, Zool. Jahrb. ii, pp. 120–124, pl. iv.

h. DIPODIDÆ.

Dipus microtis, n. sp., A. REICHENOW, Zool. Anz. x, pp. 369 & 370. Habitat not given.

i. Octodontidæ.

Dactylomys typus: specimen described by F. A. Jentink, Notes Leyd. Mus. ix, pp. 224 & 225.

Echinomys brevicauda: specimen described by Jentink, *t. c.* pp. 225.

Phloromys latidens, n. g. & sp., F. Ameghino, Bol. Mus. La Plata, i (April), p. 4, Tertiary, S. America.

Pithanotomys columnaris, n. g. & sp., F. Ameghino, *t. c.* p. 5, Tertiary, S. America.

Tribodon clemens, n. g. & sp., F. Ameghino, *t. c.* p. 7, Tertiary, S. America.

Ctenomys magellanicus n. var. *minutus*, A. Nehring, SB. nat. Fr. 1887, pp. 45–47, Rio Grande do Sul.

Mesomys mordax, n. sp., H. Winge, *t. c.* p. 72, Pleistocene, Brazil.

Dicolpomys fossor, n. g. & sp., H. Winge, *t. c.* p. 99, Pleistocene, Brazil.

Adelphomys candidus, n. g. & sp., Ameghino, Bol. Mus. La Plata, i (December), p. 10, Tertiary, Patagonia.

Stichomys regularis, n. g. & sp., Ameghino, *t. c. ibid.*

Stichomys constans, n. sp., Ameghino, *t. c. ibid.*

Spaniomys riparius, n. g. & sp., Ameghino, *t. c. ibid.*

Spaniomys modestus, n. sp., Ameghino, *t. c. ibid.*

Neoremys australis, n. g. & sp., Ameghino, *t. c. ibid.*

Neoremys indivisus, n. sp., *N. decisus*, n. sp., Ameghino, *t. c.* p. 11, *ibid.*

Seleromys angustus, n. g. & sp., Ameghino, *t. c. ibid.*

j. Hystricidæ.

Erithizon epixanthus: its myology described by B. C. A. Windle, J. Anat. Phys. xxii, pp. 126–123.

Acaremys murinus, n. g. & sp., F. Ameghino, Bol. Mus. La Plata, i (December), p. 9, Tertiary, Patagonia.

Acaremys minutus, n. sp., *A. minutissimus*, n. sp., Ameghino, *t. c. ibid.*

Sciamys principalis, n. g. & sp., Ameghino, *t. c. ibid.*

Sciamys varians, n. sp., Ameghino, *t. c. ibid.*

Steiromys detentus, n. g. & sp., Ameghino, *t. c. ibid.*

Steiromys duplicatus, n. sp., Ameghino, *t. c. ibid.*

k. Chinchillidæ.

Megamys (?) *formosus*, n. sp., F. Ameghino, Bol. Mus. La Plata, i (April), p. 1, Tertiary, S. America.

Prolagostomus pusillus, n. g. & sp., Ameghino, *op. cit.* (December) p. 11, Tertiary, Patagonia.

Prolagostomus divisus, n. sp., *P. profluens*, n. sp., *P. imperialis*, n. sp. Ameghino, *t. c.* pp. 11 & 12, *ibid.*

Pliolagostomus notatus, n. g. & sp., Ameghino, *t. c.* p. 12, *ibid.*

Perimys erutus, n. g. & sp., Ameghino, *t. c. ibid.*

Perimys onustus, n. sp., Ameghino, *t. c. ibid.*

Sphiggomys zonatus, n. g. & sp., AMEGHINO, *t. c. ibid.*
Scoteumys minutus, n. g. & sp., AMEGHINO, *t. c. ibid.*
Sphæramys irruptus, n. g. & sp., AMEGHINO, *t. c.* p. 13, *ibid.*
Sphodromys scalaris, n. g. & sp., AMEGHINO, *t. c. ibid.*

l. CAVIIDÆ.

Cavia [illegible], n. sp., H. WINGE, *t. c.* p. 66, Pleistocene, Brazil.

Cavi[illegible]*ata*, n. sp., F. AMEGHINO, Bol. Mus. La Plata, i (April), p. 6, Tertiary, S. America.

Phregatherium cataclisticum, n. g. & sp., AMEGHINO, *t. c. ibid.*

Eocardia montana, n. g. & sp., AMEGHINO, An. Mus. La Plata, i, pp. 55 & 56, Tertiary, S. America, here referred to *Toxodontia*, but transferred to *Caviidæ* in Bol. Mus. La Plata, i (December), p. 13.

Eocardia divisa, n. sp., *E. perforata*, n. sp., AMEGHINO, Bol. Mus. La Plata, i (December), p. 13, Tertiary, Patagonia.

Schistomys vero, n. g. & sp., AMEGHINO, *t. c. ibid.*

Phanomys mixtus, n. g. & sp., AMEGHINO, *t. c. ibid.*

Hedymys integrus, n. g. & sp., AMEGHINO, *t. c.* p. 14, *ibid.*

II. RODENTIA DUPLICIDENTATA.

m. LAGOMYIDÆ.

Lagodus fontannesi, n. sp., C. DEPÉRET, Arch. Mus. Lyon. iv, p. 171, Pliocene, France; also Bull. Soc. géol. xv, p. 506, and C.R. civ, p. 379.

Lepus timidus: K. ECHSTEIN, Zool. Gart. xxviii, p. 255, has a note on an individual remarkable for its grey colour.

6. *INCERTÆ SEDIS.*

Group TILLODONTIA.

Psittacotherium megalodus, n. sp., E. D. COPE, Am. J. Sci. xxi, p. 469, Lower (Puerco) Eocene, New Mexico.

7. *UNGULATA.*

PAVLOW, M. Étude sur l'Histoire Palæontologique des Ongules en Amerique et en Europe. Bull. Mosc. 1887, pp. 343–373, pl. vii.

Discusses the relations and affinities of the Lower Eocene forms.

MARSH, O. C. Notice of New Fossil Mammals. Am. J. Sci. xxxiv, pp. 323–331, with 12 woodcuts.

Describes a *Bison*, *Aceratherium*, and several species of *Menodontidæ* (*Brontotheriidæ*), some of which are referred to new genera and species. The paper is reviewed by E. D. COPE in Am. Nat. xxi, pp. 926 & 927, who identifies several of such new species with some previously described by himself. [See *Bovidæ*, *Rhinocerotidæ*, and *Menodontidæ*.]

Schlosser, M. Erwiederung gegen E. D. Cope. Morph. JB. xii, pp. 575–580.

Criticises Cope's views as to the relations of the *Ungulata* as evidenced by their extremities.

I. PROBOSCIDEA.

The fossil specimens in the British Museum, and a synopsis of species, given by R. Lydekker in Cat. Foss. Mamm. Brit. Mus. pt. iv (*vide suprà*, p. 9). C. Depéret (*vide suprà*, p. 4) describes and figures the Tertiary species of the Rhone valley; and K. Martin (*infrà*) those of Java and Japan.

a. Elephantidæ.

Richter, F. Die Elephant in Krieg und Frieden, und seine Vermendung in unsern Afrikanischen Kolonien. Hamburgh: 8vo, 1887.

Howorth, H. H. The Mammoth and the Flood: an Attempt to Confront the Theory of Uniformity with the Facts of Recent Geology. London: 8vo.

An interesting account is given of the occurrence of bones and [illegible] carcasses of the Mammoth in the Arctic Regions, and of the trade in fossil ivory. The Pleistocene Mammalian faunas of different regions are also contrasted.

Toll, E. Bericht über die Ausgrabung einer angeblich vollständigen Mammuth-cadavers im Tschendon-Gebiet. Beitr. Russ. Reiches, iii, pp. 174–182.

Records the finding of the carcass of a Mammoth in an ice-cliff in Siberia.

Elephas indicus: a note on its breeding, by G. Bidie, P. Z. S. p. 560.

Elephas primigenius: a tusk from Rammisberg in Emmenthal described by A. Baltzer, MT. Ges. Bern. for 1886, pp. 188–193; a young tusk, with an enamel-cap, noticed by H. Pohlig, SB. niederrhein. Ges. 1887, p. 254.

Elephas trogontherii: molars from the Pleistocene of Rixdorf, near Berlin, described by H. Pohlig, SB. niederrhein Ges. 1887, pp. 274–279, under this name, and stated to be intermediate between typical examples of those of *E. primigenius* and *E. meridionalis*; teeth of similar type occurring in the Norfolk Forest-bed. [See also Verh. Ver. Rheinl. iv, pp. 272–279; and Z. geol. Ges. xxxix, pp. 798–807.]

Elephas antiquus: a tooth from Freyberg described by F. Fritsch, Z. Naturw. lx, p. 86; section of a tooth from the Red Crag, referred to this species, figured by W. Reed, York. Phil. Soc. 1886, pl. i.

Elephas antiquus, n. var. *minor*, H. Pohlig, Verh. Ver. Rheinl. iv, p. 115, Pleistocene, Sevilla, Spain (? = var. *nanus*, Acconci, 1881).

Elephas (*Stegodon*) *trigonocephalus*, n. sp., K. Martin, Samm. Geol. Mus. Leid. (1) iv, p. 36, pls. ii–v, Pliocene, Java.

Mastodon cautleyi, n. sp., R. LYDEKKER, Pal. Ind. 10, iii, p. xiv (1886), Pliocene, India. [Omitted from Zool. Rec. xxiii.]

Mastodon punjabiensis, n. sp., R. LYDEKKER, Cat. Foss. Mamm. Brit. Mus. iv, p. 60 (1886), Pliocene, India. [Omitted from Zool. Rec. xxiii.]

Mastodon angustidens, recorded by M. VACEK, Ver. geol. Reichsanst. 1887, p. 120, from Alpine Miocene.

Mastodon longirostris, recorded by VACEK, *t. c.* p. 156, from Lignites of Carinthia.

Mastodon humboldti: remains from Mexico, which have been referred to this species, are noticed by F. RÖMER, JB. Min. 1887, i, p. 114.

b. DINOTHERIIDÆ.

Dinotherium giganteum: remains recorded by — VILANOVA, Arch. Sci. nat. (3) xvii, p. 356, from the Tertiary of Valladolid and Aragon in Spain.

II. HYRACOIDEA.

c. HYRACIDÆ.

LATASTE, Zool. Anz. x, pp. 265–271, endeavours to show that the [illegible]er deciduous maxillary tooth is a canine.

Dendrohyrax emini, n. sp., O. THOMAS, Ann. N. H. xx, p. 440, Central Africa.

III. TOXODONTIA.

AMEGHINO, F. Observaciones Generales sobre el órden de Mammiféros Estinguidos Sud-Americanos llamados Toxodontes (*Toxodontia*). An. Mus. La Plata, 66 pp., woodcuts.

Gives an introductory chapter on the affinities of the group, together with a synopsis of the named forms, amounting to 38 in number. [See *Toxodontidæ* and *Typotheriidæ*.]

d. TOXODONTIDÆ.

Toxodon ensedanensis, n. sp., AMEGHINO, An. Mus. La Plata, i, p. 38, Tertiary, S. America.

Toxodon protoburmeisteri (!), n. sp., AMEGHINO, *t. c.* p. 41, *ibid.*

Toxodon bilobidens, n. sp., AMEGHINO, *t. c.* p. 41, *ibid.*

Protoxodon patagonensis, n. g., AMEGHINO, *t. c.* p. 62, *ibid.*; type, *Toxodon patagonensis*, Moreno.

Protoxodon conspurcatus, n. sp., *P. marmoratus*, n. sp., *P. obliteratus*, n. sp., AMEGHINO, Bol. Mus. La Plata, i (December), p. 16, Tertiary, Patagonia.

Adelphotherium ligatum, n. g. & sp., AMEGHINO, *t. c. ibid.*

Acrotherium rusticum, n. g. & sp., AMEGHINO, *t. c. ibid.*

Gronotherium decrepitum, n. g. & sp., AMEGHINO, *t. c. ibid.*
Adinotherium magister, n. g. & sp., AMEGHINO, *t. c. ibid.*
Adinotherium splendidum, n. sp., *A. proximum*, n. sp., *A. ferum*, n. sp., *A. nitidum*, n. sp., AMEGHINO, *t. c.* pp. 17 & 18, *ibid.*
Phobeotherium sylvaticum, n. g. & sp., AMEGHINO, *t. c.* p. 18, *ibid.*
Atrypotherium bifurcatum, n. g. & sp., AMEGHINO, *t. c. ibid.*
Scopotherium cyclops, n. g. & sp., AMEGHINO, *t. c. ibid.*
Rhadinatherium limitatum, n. g. & sp., AMEGHINO, *t. c. ibid.*

e. TYPOTHERIIDÆ.

Xotodon foricurvatus, n. g., AMEGHINO, An. Mus. La Plata, i, p. 53, Tertiary, S. America. Type, *Toxodon foricurvatus*, AMEGHINO.
Pachyrucus bonariensis, n. sp., AMEGHINO, *t. c.* p. 58, *ibid.*
Pachyrucus typicus, n. sp., AMEGHINO, Bol. Mus. La Plata, i (April), p. 15, *ibid.*
Hegetotherium mirabile, n. g. & sp., AMEGHINO, *op. cit.* (December), p. 14, Tertiary, Patagonia.
Stenotephanos speciosus, n. sp., AMEGHINO *t. c. ibid.*
Lithops praevius, n. g. & sp., AMEGHINO, *t. c.* p. 15, *ibid.*
Interatherium supernum, n. sp., AMEGHINO, *t. c. ibid.*
Protypotherium prerutilum, n. sp., *P. attenuatum*, n. sp., AMEGHINO, *t. c. ibid.*
Typotherium mæandrum, n. sp., AMEGHINO, An. Mus. La Plata, i, p. 6, *ibid.*
Typotherium insigne, n. sp., AMEGHINO, *t. c.* p. 10, *ibid.*
Typotherium exiguum, n. sp., AMEGHINO, *t. c.* p. 11, *ibid.*

IV. PERISSODACTYLA.

COPE, E. D. The *Perissodactyla*. Am. Nat. xxi, pp. 985–1007 & 1060–1076, pls. xxx–xxxiv, 44 woodcuts.

The *Perissodactyla* and *Artiodactyla* are regarded as branches of a larger group, termed *Diplarthra*. The former is divided into 11 families, viz., *Lophiodontidæ*, *Triplopodidæ*, *Cænopodidæ*, *Hyracodontidæ*, *Rhinocerotidæ*, *Tapiridæ*, *Chalicotheriidæ*, *Macraucheniidæ*, *Menodontidæ*, *Palæotheriidæ*, and *Equidæ*. Of these the *Cænopodidæ* include the genera *Cænopus* and *Dihoplus*; the former being represented by *Aceratherium occidentale* of Leidy, and the latter by the form usually known as *Rhinoceros schleiermacheri*. The *Hyracodontidæ* include *Hyracodon*, *Metamynodon*, and *Amynodon*. The Rhinoceroses, in addition to the already mentioned *Cænopus* and *Dihoplus*, are split into *Aceratherium*, *Aphelops*, *Peraceras*, *Diceratherium*, *Ceratorhinus*, *Atelodus*, *Rhinoceros*, and *Celodonta*. The *Chalicotheriidæ* are regarded as connecting the *Lophiodontidæ* with the *Menodontidæ*. A genealogical tree is given on p. 1075, in which 2 species of *Equus* are represented as being derived from different generic ancestors. In addition to skulls, teeth, and limbs figured in the woodcuts, the plates comprise skeletons of *Hyracotherium*, *Hyrachyus*, and *Menodus*, and skulls of *Symborodon*.

f. Tapiridæ.

Tapirus, sp.: recorded by M. Vacek, Verh. geol. Reichsanst. 1887, p. 155, from Lignites of Carinthia.

g. Lophiodontidæ.

Hyrachyus obliquidens, n. sp., Scott & Osborn, P. Am. Phil. Soc. xxiv, p. 258, Up. Eocene, N. America.

Prothyracodon intermedium, n. g. & sp., Scott & Osborn, *t. c.* p. 260, *ibid.*

Isectolophus annectans, n. g. & sp., Scott & Osborn, *t. c.* p. 260, *ibid.*

Pouech, —. Sur des Ossements de *Lophiodon* trouvees aux environs de Mirepoix (Ariège), et sur le niveau Géologique des Couches qui les renferment. Bull. Soc. géol. (3) xiv, pp. 277–284 (1886). [Omitted from Zool. Rec. xxiii.]

Records the remains of *Lophiodon* from these deposits, and discusses their age.

h. Equidæ.

Baldi, G. Alcune Ricerche contribuenti alla Conoscenza della Tavola Triturante o Macinante dei Denti Mascellari negli Equidi. Atti Soc. Tosc. viii, pp. 343–441, pls. xi–xiii.

An elaborate paper on the origin of the structure of the molars of the *Equidæ*, with figures of the molars of *Equus*, *Hipparion*, and *Anchitherium*.

Flower, W. H. On Horses of the Past and Present. Rep. Wellington Soc. 1886, pp. 23–25.

A sketch of the genealogy of the Horse, and its relations to other Perissodactyles.

Hoffmann, L. Das Exterieur des Pferdes. Allgemeines über die Pferdegattung und über die Pferdekorper, &c. Berlin: 1887, 8vo.

Steel, J. H. Wild Horses. J. Bomb. N. H. Soc. ii, pp. 253–269.

Mainly discusses the feral races of Tartary.

Equus caballus. J. H. Steel, J. Bomb. N. H. Soc. ii, pp. 198–205, has notes on Horses from a zoological point of view, in which the frequent occurrence of striped and dun breeds in India is mentioned. The same writer, *t. c.* pp. 27–30, has also notes on the "Bots" of the Horse.

Equus przewalski: a note on this form given in Zool. Gart. xxviii, pp. 354 & 355.

Equus onager: its parasites discussed by J. H. Steel, J. Bomb. N. H. Soc. ii, pp. 30–32.

Equus asinus, var. *somalicus*: J. Menges, Zool. Gart. xxviii, pp. 261–268, has notes on this variety.

Equus sp.: a tooth from beds in Upper Nubia described and figured by R. Lydekker, J. G. S. xliii, pp. 161–164.

Equus: a fossil species recorded by M. Wilckens, Anz. Ak. Wien, 1887, p. 42, from Persia.

Hipparion (*Hippotherium*) *plicatilis*, n. sp., J. Leidy, P. Ac. Philad. 1887, p. 310 (woodcut), Miocene of Florida.

i. Rhinocerotidæ.

The species from the Miocene of the Rhone Valley are described by C. Depéret (*vide suprà*, p. 4).

Rhinoceros sondaicus: its internal anatomy described and figured by F. E. Beddard & F. Treves, Tr. Z. S. xii, pp. 183–198, pls. xxxiii–xxxviii.

Rhinoceros sansaniensis, recorded by M. Vacek, Verh. geol. Reichsanst. 1887, p. 156, from Lignites of Carinthia.

Rhinoceros megarhinus (*merckî*): teeth referred to this species described by H. Polig, SB. niederrhein. Ges. 1887, pp. 275–279, from the Pleistocene of Rixdorf, near Berlin. Also in Verh. Ver. Rheinl. iv, pp. 272–279, and Z. geol. Ges. xxxix, pp. 798–807.

Rhinoceros (*Atelodus*) *antiquitatis*: remains from the Pleistocene of Bohemia described and figured by J. N. Woldrich (*vide suprà*, p. 17). T. Stezel, Ber. Ges. Chemn. x, pp. 140–143, pl. i, describes and figures a lower molar from the Pleistocene of Chemnitz (as *R. tichorhinus*).

Aceratherium acutum, n. sp., O. C. Marsh, Am. J. Sci. xxxiv, 325 & 326, figs. 3 & 4, Pliocene, Rocky Mountains. Identified by E. D. Cope, Am. Nat. xxi, p. 926, with his *Aphelops fossiger*.

Aceratherium gaudryi, n. sp., B. Rames, Bull. Soc. géol. (3) xiv, p. 360, pl. xvii, Miocene, Cantal, France. [Omitted from Zool. Rec. xxiii.]

Metamynodon planifrons, n. g. & sp., Scott & Osborn, Bull. Mus. Zool. Camb. xii, p. 165, Miocene, N. America.

Hyracodon major, n. sp., Scott & Osborn, *t. c.* p. 170, *ibid.*

Hyracodon (?) *planiceps*, n. sp., Scott & Osborn, *t. c.* p. 170, *ibid.*

Elasmotherium sibericum: A. Gaudry, C.R. cv, pp. 845–847, has a note on a skull discovered in Russia in 1886, and recently presented to the Paris Museum.

j. Menodontidæ.

Menodus tichoceras, n. sp., Scott & Osborn, Bull. Mus. Zool. Camb. xii, p. 159, Miocene, N. America.

Menodus dolichoceras, n. sp., Scott & Osborn, *t. c.* p. 160, *ibid.*

Menodus platyceras, n. sp., Scott & Osborn, *t. c.* p. 160, *ibid.*

Brontops robustus, n. g. & sp., O. C. Marsh, Am. J. Sci. (3) pp. 326–328, figs. 5 & 6, Miocene, Nebraska.

Brontops dispar, n. sp., Marsh, *t. c.* p. 328, fig. 8, Miocene, Dakota.

Menops varians, n. g. & sp., Marsh, *t. c.* pp. 328 & 329, figs. 9 & 10, Miocene, Dakota. Identified by E. D. Cope, Am. Nat. xxi, p. 926, with *Symborodon trigonoceras*, Cope.

Titanops curtus, n. g. & sp., Marsh, *t. c.* p. 330, fig. 11, Miocene, Dakota. Identified by Cope, *t. c.*, with *Menodus platyceras*.

Titanops elatus, n. sp., Marsh, *t. c.* p. 331, fig. 12, Miocene, Dakota.

Allops serotinus, n. g. & sp., Marsh, *t. c.* p. 331, Miocene, Dakota.

k. Macrauchenidæ.

Macrauchenia antiqua, n. sp., F. Ameghino, Boll. Mus. La Plata, i (April), p. 16, Tertiary, S. America.

Theosodon lydekkeri, n. g. & sp., Ameghino, *op. cit.* (December), p. 19, Tertiary, Patagonia. This genus may be allied to *Homalodontotherium*, which is placed by Ameghino in this family.

l. Proterotheriidæ.

The type genus was originally referred by its discoverer to the *Artiodactyla*, but is now made the type of a new family of *Perissodactyla*.

Proterotherium cavum, n. sp., F. Ameghino, Boll. Mus. La Plata, i (December), p. 19, Tertiary, Patagonia.

Proterotherium australe = *Anchitherium* (*Anisolophus*) *australe*, Burmeister, referred by Ameghino, *t. c.*, to this genus.

Thoatherium minusculum, n. g. & sp., Ameghino, *t. c.*, *ibid.*

Diadophorus velox, n. g. & sp., Ameghino, *t. c.* p. 20, *ibid.*

Diadophorus majusculus, n. sp., Ameghino, *t. c.*, *ibid.*

Licaphrium floweri, n. g. & sp., Ameghino, *t. c.*, *ibid.*

Licaphrium parvulum, n. sp., Ameghino, *t. c.*, *ibid.*

m. Incertæ Sedis.

Planodus ursinus, n. g. & sp., Ameghino, *t. c. ibid.*

Adelotherium scabrosum, n. g. & sp., Ameghino, *t. c. ibid.*

Adrastotherium dimotum, n. g. & sp., Ameghino, *t. c. ibid.*

V. ARTIODACTYLA.

Bonnet, —. Ueber den Primitivstreifen und die Chorda bei Wiederkäuern. SB. Ges. Morph. ii, pp. 106 & 107.

Coleman, J. Englische Viehrassen,—Rinder, Schafe, und Schweine. Translated into German by J. Hoffmann. Stuttgart : 1887.

Cope, E. D. The Classification and Phylogeny of the *Artiodactyla*. P. Am. Phil. Soc. xxiv, pp. 377–400.

A critical paper, in which the suborder is divided into the following families, viz. :—*Pantolestidæ*, *Anoplotheriidæ*, *Dichobunidæ*, *Cænotheriidæ*, *Xiphodontidæ*, *Suidæ*, *Elotheriidæ*, *Listriodontidæ*, *Merycopotamidæ*, *Dichodontidæ*, *Oreodontidæ*, *Poëbrotheriidæ*, *Protolabididæ*, *Camelidæ*, *Eschatiidæ*, *Tragulidæ*, *Moschidæ*, *Giraffidæ*, *Bovidæ*, and *Cervidæ*. Several phylogenetic tables are given.

n. Bovidæ.

Auld, R. C. Hornless Ruminants. Am. Nat. xxi, pp. 730–746, 885–902 & 1076–1098, with woodcuts.

Chiefly concerned with the "polled" races of Oxen.

BLAAUW, F. E. Sur les Antilopes, Gnous, et divers Animaux. Bull. Soc. Acclim. (4) iv, pp. 536–539.

BÜCHNER, E. Zur Geschichte der Kaukasischen Ture (*Capra caucasica* and *C. cylindricornis*). Mém. Ac. Pétersb. xxxv, No. 8, pls. i & ii.

[See *Capra caucasica*.]

DARESTE, M. Récherches sur les Bœufs à tête de Bouledogue. C.R. civ, 1742–44.

Describes the so-called Ñatos of Chili.

HUET, M. List des Espèces dans la Famille des Antilopides Presentée par Regions—Afrique Orientale, Bull. Soc. Acclim. (4) iv, pp. 65–84; Afrique Occidentale, *t. c.* pp. 265–280 & 466–490; Amerique, *t. c.* pp. 490–492, and woodcuts.

Figures of 32 species of Antelopes are given, a large number of the species being included in the genus *Antilope*, which is therefore used in the Linnean sense.

Bos taurus: a report of the present condition of the Chillingham Wild Herd, in Zool. xi, p. 401; R. SERVICE, *t. c.* pp. 448–453, records the former existence of wild cattle in Scotland; an instance of cleft palate in a calf described and figured by — HUMPHREYS in Tr. Odont. Soc. ix, p. 141 (plate); note on a malformed calf by E. BRUGNION, Bull. Vaud (3) xxiii, pp. 127 & 128.

Bos taurus, var. *primigenius*, recorded by T. W. SHORE, Geol. Mag. (3) iv, p. 518, from Pleistocene of Southampton.

Bison alticornis, n. sp., O. C. MARSH, Am. J. Sci. xxxiv, pp. 333 & 334, figs. 1 & 2, Pliocene, Colorado.

Bison sivalensis recorded by K. MARTIN, Samm. Geol. Mus. Leid. (1) iv, p. 61, from Pliocene of Java.

Bison latifrons, described and the horn-cores figured by H. P. SMITH, J. Cincinn. Soc. x, pp. 19–24, pl. i.

Bubalus æquinoctialis described in Bull. Soc. Acclim. 1887, p. 86.

Bubalus (*Anoa*) *depressicornis*, described and skull and teeth figured by B. HOFFMANN, Abh. Zool. Mus. Dresden, No. 3, p. 26, and plate.

Ovibos moschatus: an imperfect skull from the Pleistocene of Hameln on the Weser, described and figured by H. C. STRUCKMANN. Z. geol. Ges. xxxix, pp. 601–604, pl. xxvi.

Ovibos cavifrons: an imperfect skeleton from the Pleistocene of Iowa, described by W. J. MCGEE, Am. J. Sci. xxxiv, pp. 217–220.

Budorcas taxicolor: horns of two shapes are described and figured by A. O. HUME, P. Z. S. 1887, pp. 483–486, and woodcuts, which, it is suggested, may belong to the two sexes of this species.

Protragoceros chantrei, n. sp., C. DEPÉRET, Arch. Mus. Lyon. iv, p. 249. Miocene, France; also in Bull. Soc. géol. p. 505 (erroneously as a new genus), and C.R. civ, p. 379.

Cephalopus mergens: a note on this species by A. MAIRET, Bull. Soc. Acclim. 1887, pp. 238 & 239.

Gazella granti, described by T. NOACK, Zool. Gart. xxviii, pp. 274 & 275, with notice of two allied forms, of which one may be distinct.

Gazella walleri : remarks on by J. MENGES, *t. c.* pp. 54–59.

Antilope bezoartica: a female with abnormal horns described and figured by R. A. STERNDALE, in J. Bomb. N. H. Soc. ii, p. 46, and plate.

Rupicapra tragus : the succession of its teeth described by H. NITSCHE (*vide suprà*, p. 11).

Haplocerus montanus: F. J. BELL, P. Z. S. 1887, p. 579, exhibits the tegumentary glands of the head.

Capra hircus : J. H. STEEL, J. Bomb. N. H. Soc. ii, p. 283–285, and plate, describes and figures a specimen with horny growth on the lobe of the ear.

Capra caucasica and *Ægoceros pallasi* are shown by P. L. SCLATER, P. Z. S. 1887, pp. 552 & 553, to be distinct species; his former identification of the two having been found erroneous. *C. pallasi*, of SCHINZ, is also shown to be the same as *C. sibirica*. A translation of an article by H. Dinnik is given by D. MORGAN, Ann. N. H. xix, pp. 450–460, pl. xiv, to illustrate this redetermination. The skulls of both forms are also described and figured by E. BÜCHNER, Mém. Ac. Pétersb. xxxv, No. 8 (*vide suprà*, p. 44) ; the latter under the name of *C. cylindricornis*. [See MENZBIER, *infrà*.]

Capra severtzovi, n. sp., M. MENZBIER, P. Z. S. 1887, pp. 618–620 ; founded upon *C. caucasica* of Dinnik, but not of Guldenstädt.

Ovis cycloceros. P. L. SCLATER, P. Z. S. 1887, p. 639, has notes upon a skull from near Attock, which he identifies with the so-called *O. blanfordi* of Hume.

Ovis gmelini (*orientalis*) : a note on this Persian Wild Sheep is given by A. NEHRING, Zool. Gart. xxviii, pp. 378–380, mainly commenting on the paper by POHLIG, noticed in Zool. Rec. xxiii, *Mamm.* p. 30. A skull noticed by POHLIG, Verh. Ver. Rheinl. iv, p. 118.

o. GIRAFFIDÆ.

Giraffa camelopardalis. W. L. SIEGEL, Zool. Gart. xxviii, pp. 80–83, has notes on a young individual in the Zoological Gardens at Hamburg.

p. CERVIDÆ.

DAWKINS, W. B. British Pleistocene *Mammalia* ; pt. vi, *Cervidæ*. Pal. Soc. 1887, pp. 1–29, pls. i–vii.

Describes and figures antlers of *Alces latifrons*, and of 4 species of *Cervus*.

HEUDE, P. Problema Philipinense sur Cervinorum Cranium, &c., in Mémoires concernant L'Histoire Naturelle de l'Empire Chinois, ii, pt. 1, 11 pls. Zi-Ka-Wei : 1887, 4to.

Gives figures of the skulls and teeth of a number of Rusine Deer from the Philippines, to which some 20 new specific names are applied under the generic headings of *Ussa*, *Sambur*, *Hyelaphus*, and *Melanaxis*. Since, however, these so-called genera and species are founded upon variations in the antlers and dentition, which are evidently mainly of merely individual value, and have no definitions given with them, they cannot be quoted *in extenso*.

MEYER, A. B. Die Hirschgeweih-Sammlung in königlichen Schlosse zu Moritzburg bei Dresden-Spau, Neue Folge.

Contains thirty plates of antlers of *Cervus elaphus*; the last two being abnormal examples.

J. E. HARTING has a paper on the Deer of Epping Forest; Tr. Ess. Club, Feb. 1887, with figure of head of *C. dama*. E. RIVIÈRE describes antlers from the Pleistocene of the Paris basin; C.R. civ, p. 1382. S. CARTER, Zool. xi, p. 321, has notes on the growth of the antlers of *C. elaphus*. [See also HARTING, *suprà*, p. 6.]

Cervus aristotelis. Abnormal antlers figured by R. A. STERNDALE in J. Bomb. N. H. Soc. ii, p. 46, and plate.

Cervus lydekkeri, n. sp., K. MARTIN, Samm. Geol. Mus. Leid. (1) iv, p. 63, pl. vii, fig. 1, Pliocene, Java.

Cervus giganteus (*euryceros*): a metatarsus which H. NEHRING thought showed the marks of a flint implement, is noticed by A. WOLLEMANN, in Sitz. niederrhein. Ges. 1887, pp. 280 & 281, where it is suggested the markings may have been caused by the teeth of a Lion. The same specimen is also noticed in Verh. Ver. Rheinl. iv, p. 280.

Cervus (*Elaphurus*) *davidianus*. An example in the Zoological Gardens at Berlin, described and figured by F. C. NOLL, Zool. Gart. xxviii, pp. 101–105.

Alces machlis. C. GREVÉ has notes upon the characters of wild specimens, Zool. Gart. xxviii, pp. 112–115.

Capreolus capræa: an hermaphrodite described by K. ECKSTEIN, Zool. Gart. xxviii, pp. 258 & 259. Record of a specimen killed near Berlin, given by E. FRIEDEL, *t. c.* p. 321.

Rangifer tarandus. Remains recorded by J. SIMPSON, Tr. Geol. Soc. Edinb. v, p. 286, from the Pentland Hills; also by J. HENDERSON, *t. c.* p. 302; and by J. W. MACADAM, from Dumfriesshire.

q. CAMELIDÆ.

Camelus dromedarius, its "Bots" described by J. H. STEEL, J. Bomb. N. H. Soc. ii, pp. 27–30.

Eoauchenia primitiva, n. g. & sp., F. AMEGHINO, Boll. Mus. La Plata, i, p. 16, Tertiary, S. America.

r. TRAGULIDÆ.

Leptotragulus proavus, n. g. & sp., W. B. SCOTT & H. F. OSBORN, P. Am. Phil. Soc. xxiv, p. 258, Up. Eocene, N. America.

Hyomoschus jourdani, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 265, Miocene, France.

s. OREODONTIDÆ.

Protoreodon parvus, n. g. & sp., W. B. SCOTT & H. F. OSBORN, P. Am. Phil. Soc. xxiv, pp. 257, Up. Eocene, N. America. Considered by COPE, in p. 384 of same volume, to be allied to *Xiphodon*.

t. Anoplotheriidæ.

Xiphodon cayluxensis, n. sp., R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, p. 334, Quercy Phosphorites.

u. Hippopotamidæ.

Hippopotamus amphibius. Notes on its breeding in captivity are given in Zool. Gart. xxviii, pp. 320 & 321.

Hippopotamus liberiensis: skull described by W. H. Flower, P. Z. S. 1887, pp. 612–614. The specimen is remarkable for having two lower incisors on one side; from which and other characters the author concludes that there is no reason for retaining the name *Choropsis*.

v. Suidæ.

Gourdon, —. Note sur les débris de Mammiféres Miocénes de Sud-Ouest. Bull. Soc. géol. (3) v, pp. 735–738.

Notices specimens from Gers referred to *Palæochœrus* and *Listriodon*.

Sus scrofa: an abnormal skull described and figured by H. Landois, C.B. ver. Rheinl. 1887, pp. 56–58. The date of appearance of its teeth described by H. Nitsche, (*vide suprà*, p. 11).

[illegible] hysudricus, recorded by K. Martin, Samm. Geol. Mus. Leid. (1) iv, [illegible]9, from the Pliocene of Java.

Hyotherium perimense, n. sp., R. Lydekker, J. G. S. xliii, pp. 20 & 21, woodcut, Pliocene, India.

Hyotherium (?) *americanum*, n. sp., Scott & Osborn, Bull. Mus. Zool. Cam. xii, p. 155, Miocene, N. America.

Eusyodon maximus (see Zool. Rec. xxiii, *Mamm.* p. 56, misprinted *Euryodon*), shown by Leidy, P. Ac. Philad. 1887, p. 309, to have been founded on the lower canine (incisor) of a Rhinoceros.

w. Listriodontidæ.

Listriodon splendens, recorded by M. Neumayr, Ver. geol. Reichsanst. 1887, pp. 302 & 303, from the Leitha-kalk.

8. *SIRENIA.*

A paper on living forms of the order is given by T. Noack in Zool. Gart. xxviii, pp. 293–302. The recently extinct *Rhytina* is mentioned, and *Dinotherium* apparently included in this order.

The fossil forms contained in the British Museum are recorded by R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, pp. 5–15, with 3 woodcuts (*vide suprà*, p. 10).

Zigno, A. Quelques Observations sur les Sireniens Fossiles. Bull. Soc. géol. (3) xv, pp. 728–732, pl. xxvii.

In this memoir the author gives the chief characters of the extinct genera, and figures skulls of *Halitherium*, *Felsinotherium*, *Manatus Rhytina*, and *Halicore*.

MEYER, A. B. Die Hirschgeweih-Sammlung in königlichen Schlosse zu Moritzburg bei Dresden-Spau, Neue Folge.

Contains thirty plates of antlers of *Cervus elaphus*; the last two being abnormal examples.

J. E. HARTING has a paper on the Deer of Epping Forest; Tr. Ess. Club, Feb. 1887, with figure of head of *C. dama*. E. RIVIÈRE describes antlers from the Pleistocene of the Paris basin; C.R. civ, p. 1382. S. CARTER, Zool. xi, p. 321, has notes on the growth of the antlers of *C. elaphus*. [See also HARTING, *suprà*, p. 6.]

Cervus aristotelis. Abnormal antlers figured by R. A. STERNDALE in J. Bomb. N. H. Soc. ii, p. 46, and plate.

Cervus lydekkeri, n. sp., K. MARTIN, Samm. Geol. Mus. Leid. (1) iv, p. 63, pl. vii, fig. 1, Pliocene, Java.

Cervus giganteus (*euryceros*): a metatarsus which H. NEHRING thought showed the marks of a flint implement, is noticed by A. WOLLEMANN, in Sitz. niederrhein. Ges. 1887, pp. 280 & 281, where it is suggested the markings may have been caused by the teeth of a Lion. The same specimen is also noticed in Verh. Ver. Rheinl. iv, p. 280.

Cervus (*Elaphurus*) *davidianus*. An example in the Zoological Gardens at Berlin, described and figured by F. C. NOLL, Zool. Gart. xxviii, pp. 101–105.

Alces machlis. C. GREVÉ has notes upon the characters of wild specimens, Zool. Gart. xxviii, pp. 112–115.

Capreolus caprea: an hermaphrodite described by K. ECKSTEIN, Zool. Gart. xxviii, pp. 258 & 259. Record of a specimen killed near Berlin, given by E. FRIEDEL, *t. c.* p. 321.

Rangifer tarandus. Remains recorded by J. SIMPSON, Tr. Geol. Soc. Edinb. v, p. 286, from the Pentland Hills; also by J. HENDERSON, *t. c.* p. 302; and by J. W. MACADAM, from Dumfriesshire.

q. CAMELIDÆ.

Camelus dromedarius, its "Bots" described by J. H. STEEL, J. Bomb. N. H. Soc. ii, pp. 27–30.

Eoauchenia primitiva, n. g. & sp., F. AMEGHINO, Boll. Mus. La Plata, i, p. 16, Tertiary, S. America.

r. TRAGULIDÆ.

Leptotragulus proavus, n. g. & sp., W. B. SCOTT & H. F. OSBORN, P. Am. Phil. Soc. xxiv, p. 258, Up. Eocene, N. America.

Hyomoschus jourdani, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 265, Miocene, France.

s. OREODONTIDÆ.

Protoreodon parvus, n. g. & sp., W. B. SCOTT & H. F. OSBORN, P. Am. Phil. Soc. xxiv, pp. 257, Up. Eocene, N. America. Considered by COPE, in p. 384 of same volume, to be allied to *Xiphodon*.

t. Anoplotheriidæ.

Xiphodon cayluxensis, n. sp., R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, p. 334, Quercy Phosphorites.

u. Hippopotamidæ.

Hippopotamus amphibius. Notes on its breeding in captivity are given in Zool. Gart. xxviii, pp. 320 & 321.

Hippopotamus liberiensis: skull described by W. H. Flower, P. Z. S. 1887, pp. 612–614. The specimen is remarkable for having two lower incisors on one side; from which and other characters the author concludes that there is no reason for retaining the name *Choeropsis*.

v. Suidæ.

Gourdon, —. Note sur les débris de Mammiféres Miocénes de Sud-Ouest. Bull. Soc. géol. (3) v, pp. 735–738.

Notices specimens from Gers referred to *Palæochœrus* and *Listriodon*.

Sus scrofa: An abnormal skull described and figured by H. Landois, C.B. ver. Rheinl. 1887, pp. 56–58. The date of appearance of its teeth described by H. Nitsche, (*vide suprà*, p. 11).

[illegible] lysudricus, recorded by K. Martin, Samm. Geol. Mus. Leid. (1) iv, [illegible]lis[illegible]9, from the Pliocene of Java.

art *Hyotherium perimense*, n. sp., R. Lydekker, J. G. S. xliii, pp. 20 & 21, woodcut, Pliocene, India.

Hyotherium (?) *americanum*, n. sp., Scott & Osborn, Bull. Mus. Zool. Cam. xii, p. 155, Miocene, N. America.

Eusyodon maximus (see Zool. Rec. xxiii, *Mamm.* p. 56, misprinted *Euryodon*), shown by Leidy, P. Ac. Philad. 1887, p. 309, to have been founded on the lower canine (incisor) of a Rhinoceros.

w. Listriodontidæ.

Listriodon splendens, recorded by M. Neumayr, Ver. geol. Reichsanst. 1887, pp. 302 & 303, from the Leitha-kalk.

8. *SIRENIA.*

A paper on living forms of the order is given by T. Noack in Zool. Gart. xxviii, pp. 293–302. The recently extinct *Rhytina* is mentioned, and *Dinotherium* apparently included in this order.

The fossil forms contained in the British Museum are recorded by R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, pp. 5–15, with 3 woodcuts (*vide suprà*, p. 10).

Zigno, A. Quelques Observations sur les Sireniens Fossiles. Bull. Soc. géol. (3) xv, pp. 728–732, pl. xxvii.

In this memoir the author gives the chief characters of the extinct genera, and figures skulls of *Halitherium*, *Felsinotherium*, *Manatus Rhytina*, and *Halicore*.

MEYER, A. B. Die Hirschgeweih-Sammlung in königlichen Schlosse zu Moritzburg bei Dresden-Spau, Neue Folge.

Contains thirty plates of antlers of *Cervus elaphus*; the last two being abnormal examples.

J. E. HARTING has a paper on the Deer of Epping Forest; Tr. Ess. Club, Feb. 1887, with figure of head of *C. dama*. E. RIVIÈRE describes antlers from the Pleistocene of the Paris basin; C.R. civ, p. 1382. S. CARTER, Zool. xi, p. 321, has notes on the growth of the antlers of *C. elaphus*. [See also HARTING, *suprà*, p. 6.]

Cervus aristotelis. Abnormal antlers figured by R. A. STERNDALE in J. Bomb. N. H. Soc. ii, p. 46, and plate.

Cervus lydekkeri, n. sp., K. MARTIN, Samm. Geol. Mus. Leid. (1) iv, p. 63, pl. vii, fig. 1, Pliocene, Java.

Cervus giganteus (*euryceros*): a metatarsus which H. NEHRING thought showed the marks of a flint implement, is noticed by A. WOLLEMANN, in Sitz. niederrhein. Ges. 1887, pp. 280 & 281, where it is suggested the markings may have been caused by the teeth of a Lion. The same specimen is also noticed in Verh. Ver. Rheinl. iv, p. 280.

Cervus (*Elaphurus*) *davidianus*. An example in the Zoological Gardens at Berlin, described and figured by F. C. NOLL, Zool. Gart. xxviii, pp. 101–105.

Alces machlis. C. GREVÉ has notes upon the characters of wild specimens, Zool. Gart. xxviii, pp. 112–115.

Capreolus caprœa: an hermaphrodite described by K. ECKSTEIN, Zool. Gart. xxviii, pp. 258 & 259. Record of a specimen killed near Berlin, given by E. FRIEDEL, *t. c.* p. 321.

Rangifer tarandus. Remains recorded by J. SIMPSON, Tr. Geol. Soc. Edinb. v, p. 286, from the Pentland Hills; also by J. HENDERSON, *t. c.* p. 302; and by J. W. MACADAM, from Dumfriesshire.

q. CAMELIDÆ.

Camelus dromedarius, its "Bots" described by J. H. STEEL, J. Bomb. N. H. Soc. ii, pp. 27–30.

Eoauchenia primitiva, n. g. & sp., F. AMEGHINO, Boll. Mus. La Plata, i, p. 16, Tertiary, S. America.

r. TRAGULIDÆ.

Leptotragulus proavus, n. g. & sp., W. B. SCOTT & H. F. OSBORN, P. Am. Phil. Soc. xxiv, p. 258, Up. Eocene, N. America.

Hyomoschus jourdani, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 265, Miocene, France.

s. OREODONTIDÆ.

Protoreodon parvus, n. g. & sp., W. B. SCOTT & H. F. OSBORN, P. Am. Phil. Soc. xxiv, pp. 257, Up. Eocene, N. America. Considered by COPE, in p. 384 of same volume, to be allied to *Xiphodon*.

t. Anoplotheriidæ.

Xiphodon cayluxensis, n. sp., R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, p. 334, Quercy Phosphorites.

u. Hippopotamidæ.

Hippopotamus amphibius. Notes on its breeding in captivity are given in Zool. Gart. xxviii, pp. 320 & 321.

Hippopotamus liberiensis: skull described by W. H. Flower, P. Z. S. 1887, pp. 612–614. The specimen is remarkable for having two lower incisors on one side; from which and other characters the author concludes that there is no reason for retaining the name *Choropsis*.

v. Suidæ.

Gourdon, —. Note sur les débris de Mammiféres Miocénes de Sud-Ouest. Bull. Soc. géol. (3) v, pp. 735–738.

Notices specimens from Gers referred to *Palæochœrus* and *Listriodon*.

Sus scrofa: an abnormal skull described and figured by H. Landois, C.B. ver. Rheinl. 1887, pp. 56–58. The date of appearance of its teeth described by H. Nitsche, (*vide suprà*, p. 11).

[illegible] hysudricus, recorded by K. Martin, Samm. Geol. Mus. Leid. (1) iv, [illegible], from the Pliocene of Java.

Hyotherium perimense, n. sp., R. Lydekker, J. G. S. xliii, pp. 20 & 21, woodcut, Pliocene, India.

Hyotherium (?) *americanum*, n. sp., Scott & Osborn, Bull. Mus. Zool. Cam. xii, p. 155, Miocene, N. America.

Eusyodon maximus (see Zool. Rec. xxiii, *Mamm.* p. 56, misprinted *Euryodon*), shown by Leidy, P. Ac. Philad. 1887, p. 309, to have been founded on the lower canine (incisor) of a Rhinoceros.

w. Listriodontidæ.

Listriodon splendens, recorded by M. Neumayr, Ver. geol. Reichsanst. 1887, pp. 302 & 303, from the Leitha-kalk.

8. *SIRENIA.*

A paper on living forms of the order is given by T. Noack in Zool. Gart. xxviii, pp. 293–302. The recently extinct *Rhytina* is mentioned, and *Dinotherium* apparently included in this order.

The fossil forms contained in the British Museum are recorded by R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, pp. 5–15, with 3 woodcuts (*vide suprà*, p. 10).

Zigno, A. Quelques Observations sur les Sireniens Fossiles. Bull. Soc. géol. (3) xv, pp. 728–732, pl. xxvii.

In this memoir the author gives the chief characters of the extinct genera, and figures skulls of *Halitherium*, *Felsinotherium*, *Manatus Rhytina*, and *Halicore*.

a. Rhytinidæ.

Rhytina gigas. A paper on its extermination is given by J. Stejneger, Am. Nat. xxi, pp. 1047–1054, in which it is concluded that the species was extirpated in the last century, and that Nordenskiöld's assertion that the last individual was killed in 1854 is erroneous.

b. Halicoridæ.

Halicore australis. Pelvis figured and described by H. L. Ward, Science, ix, p. 536.

Prohalicore dubaleni, n. g. & sp., L. Flot, Bull. Soc. géol. xv, pp. 134–138, pl. i, Pliocene, France.

c. Halitheriidæ.

Studer, T. Ueber den Steinkern der Gehirnraumes einer Sirenoide aus dem Muschelsandstein von Wurenlos (Kt. Aargau). Abh. schw. pal. Ges. xiv, art. 3, 20 pp., 2 pls.

Describes part of the brain-capsule and a maxilla of a Sirenian, referred to *Halianassa studeri*, Meyer, which is regarded as entitl[illegible] generic distinction from *Halitherium*. Figures are also given of a cast [illegible] the brain of this form, and of *Eotherium*.

9. *CETACEA.*

The fossil species in the British Museum are described by R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, pp. 16–84, with 12 woodcuts (*suprà*, p. 10).

For notes on the Fisheries see R. J. Patterson (*suprà*, p. 12).

Hansen, A. La Septicièmie inoculée a des Baleines par les Fleches dont si servant les Pécheurs. Arch. Biol. vi, pp. 584–587.

Lebouco, H. La Nageoire Pectorale des Cétacés au point de vue phylogénique. Anat. Anz. ii, pp. 202–208.

The author states that he considers that the manus of the *Cetacea* has preserved extremely primitive characters, and that it could not have been derived from that of any existing type of Mammal.

Lydekker, R. *Cetacea* of the Suffolk Crag. J. G. S. xliii, pp. 17–19, pl. ii, and woodcuts.

Records 38 species from these deposits referable to the genera *Balæn*[illegible]*idæ* in *Megaptera*, *Balænoptera* (including *Plesiocetus*), *Cetotherium*, *Herpetocetus*, *Eucetus*, *Homocetus* (subsequently referred to *Physeterula*), *Balænodon*, *Physodon*, *Hoplocetus*, *Hyperoodon*, *Choneziphius*, *Mesoplodon*, *Squalodon*, *Orca*, and *Globicephalus*. The tympanic and periotic bones of several of the genera are figured, as well as a tooth of *Orca*.

WEBER, M. Ueber die Cetoïde Natur der Promammalia. Anat. Anz. ii, pp. 42–55.

Regards the *Cetacea* as the most primitive existing Mammals, and allied to extinct Mesozoic groups. They are considered to be related to the *Ungulata* and *Carnivora*, but most nearly to the latter; and it is thought that the Pinniped *Carnivora* and the *Ungulata* are their direct descendants.

A. H. CLARK has notes on the American Whale-Fishery, Science, ix, pp. 320–324; A. H. COCKS, on the Finwhale Fishery of 1886, in Lapland, Zool. xi, p. 207; and T. SOUTHWELL, *t. c.* p. 182, on the Seal and Whale Fishery of the same year.

A paper on a parasite (*Cyamus*) of the *Cetacea* is published by C. F. LÜTKEN, Dan. Selsk. Skr. iv, pp. 317–322, with plate.

I. MYSTACOCETI.

a. BALÆNIDÆ.

BENEDEN, P. J. VAN. Description des Ossements Fossiles des Environs d'Anvers, pt. 5. Ann. Mus. Belg. xiii, pp. 1–139, pls. i–lxxv (1886).

Contains descriptions and figures of the genera *Amphicetus*, *Heterocetus*, *Plesiocetus*, *Idiocetus*, and *Isocetus* (*vide infrà*).

HUBBARD, O. P. Note on the Skeleton of a Whale found over 130 years since in the St. Lawrence River Valley, near Quebec. Am. J. Sci. xxxlii, p. 242.

Balæna mysticetus. A memoir on its natural history given by P. J. VAN BENEDEN, in Mém. Ac. Belg. xl, art. 1, 55 pp., containing a summary of the chief facts relating to its structure and habits.

Balænoptera rostrata: H. BEAUREGARD, C.R. Soc. Biol. (8) iv, pp. 419 & 420, has notes on a young individual captured off Audierne (Finistère). F. H. BALKWILL, Zool. xi, pp. 262 & 263, records a specimen exhibited at Plymouth. Record of a specimen stranded in Holland is given in Zool. Gart. xxviii, p. 155.

Balænoptera musculus. T. SOUTHWELL, Naturalist, 1887, pp. 139 & 140, records the stranding of a specimen at Skegness.

Balænoptera borealis. W. H. FLOWER, P. Z. S. 1887, p. 564, notices a specimen captured in the Thames.

Megaptera boops. A memoir on its natural history, given by P. J. VAN BENEDEN, in Mém. Ac. Belg xl, art. 2, 42 pp., containing a summary of the chief facts relating to its structure and habits.

Megaptera longimana. Its anatomy described and figured by J. STRUTHERS, J. Anat. Phys. xxii, pp. 109–125, pls. v & vi.

Cetotherium rathkei: remains provisionally referred to this species recorded by P. J. VAN BENEDEN, Z. geol. Ges. xxxix, pt. 1, pp. 88–95, from the Pliocene of the Caucasus. Also others which may belong to *Squalodon*.

Amphicetus rotundus, n. sp., P. J. VAN BENEDEN, Ann. Mus. Belg. xiii, p. 18, pls. xiv–xvii (1886), Pliocene, Antwerp. *A. later* figured by VAN

BENEDEN, *t. c.* pls. i–iii. *A. verus* by the same, *t. c.* pls. iv–viii. *A. ellitus* by the same, *t. c.* pls. ix–xii.

Heterocetus sprangi, n. sp., P. J. VAN BENEDEN, *t. c.* p. 36, pls. xxx–xxxiii, Pliocene, Antwerp. *H. affinis*, figured by VAN BENEDEN, *t. c.* pls. xix–xxiv. *H. brevifrons* by the same, *t. c.* pls. xxv–xxix.

Mesocetus longirostris, *M. pinquis*, *M. latifrons*, figured by VAN BENEDEN, *t. c.* pls. xxxiv–liii.

Idiocetus laxatus, n. g., P. J. VAN BENEDEN, *t. c.* pp. 61, 63, pls. liv–lxiii, Pliocene, Antwerp; type, *Mesocetus laxatus*, van Bened. *I. longifrons* figured by VAN BENEDEN, *t. c.* pls. lxiv & lxix.

Isocetus depauwi, n. g. & sp., P. J. VAN BENEDEN, *t. c.* pp. 77 & 78, pls. lxx–lxxv, Pliocene, Antwerp.

II. ODONTOCETI.

b. PHYSETERIDÆ.

Physodon lorteti, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 276, Miocene, France.

c. SQUALODONTIDÆ.

Squalodon tiedmanni, n. sp., J. A. ALLEN, Bull. Mus. N. H. ii, pp. [illegible] pls. v & vi, Eocene, N. America.

Squalodon (*Rhizoprion*) *bariensis*: the type skull described and figured by E. LORTET, Arch. Mus. Lyon, iv, pp. 315–319. It is proposed that the name *Rhizoprion* should replace *Squalodon*.

d. DELPHINIDÆ.

LÜTKEN, C. F. Kritiske Studier over nogle Tandhvaler af Slægterne *Tursiops*, *Orca*, og *Lagenorhynchus*. Dan. Selsk. Skr. vi, pp. 337–397, pls. i & ii, and woodcuts.

A critical discussion on the characters and species of the genera mentioned, illustrated by plates of *Orca gladiator* and *Lagenorhynchus albirostris*, and numerous woodcuts of the osteology. Considers that *L. clanculus* is a good species.

Orca gladiator figured by LÜTKEN, *t. c.* pl. i. Its occurrence on the Norwegian Coast noticed by J. E. HARTING, Zool. xi, p. 383.

Orca citoniensis recorded by R. LYDEKKER, J. G. S. xliii, p. 15, from the Suffolk Crag.

Globicephalus uncidens = *Delphinus uncidens*, Lankester, referred to this genus by LYDEKKER, *t. c.* p. 16.

Grampus griseus: its osteology described by F. H. BALKWILL, Rep. Plym. Inst. ix, pp. 413–477, with woodcuts.

Grampus rissoanus: stranding of a specimen on the North American coast, recorded by A. HEILPRIN, P. Ac. Philad. 1887, p. 49.

Lagenorhynchus albirostris, figured by LÜTKEN, *t. c.* pl. ii. Notes on the skull of a specimen captured on the Irish coast, given by R. L. PATTERSON, Rep. Belfast N. H. Club, 1887, p. 114 (as *Delphinus*).

Sotalia lentiginosa : R. A. STERNDALE, J. Bomb. N. H. Soc. ii, pp. 51 & 52, describes a specimen captured on the Indian coast (as *Delphinus*).

Rhinodelphis sassariensis, n. sp., G. CAPELLINI, Mem. Acc. Bologn. of the pp. 103–110, pl. viii, Pliocene, Italy. Preliminary notice in Rend. d. Bologna, 1886–87, pp. 47 & 48.

Delphinus (?) restitutensis, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 281, Miocene, France.

Delphinus delphis. Observations on a specimen captured in the Firth of Forth are given by W. TURNER in P. Phys. Soc. Edinb. 1887, pp. 346–348.

10. *EDENTATA*.

The fossil forms contained in the British Museum recorded by R. LYDEKKER, Cat. Foss. Mamm. Brit. Mus., pt. v, pp. 85–144, with 8 woodcuts (*vide suprà*, p. 10).

BURMEISTER, H. Atlas de la Description Physique de la République Argentine, sec. 2, vol. iii. Ostéologie des Gravigrades, pt. i. Buenos Ayres : (1886) text, 4to, atlas, folio, pp. 1–125, pls. xii–xvi.

Figures skulls of *Bradypus*, *Cholœpus*, *Scelidotherium*, and *Mylodon*.

a. BRADYPODIDÆ.

Skulls of *Bradypus* and *Cholœpus* are figured by H. BURMEISTER, *t. c.*

b. MEGATHERIIDÆ.

Skulls of *Mylodon* and *Scelidotherium* are described and figured by BURMEISTER, *t. c.* The MS. names *Scelidotherium magnum* and *Mylodon oweni* given by Bravard are revived for species which are identical with *S. tarijense* and *M. lettsomi* (see LYDEKKER, Cat. Foss. Mamm. Brit. Mus. v, p. xvi).

BURMEISTER, H. Neue Beobachtungen an *Cœlodon*. SB. Ak. Berlin, 1887, pp. 857–862, with woodcut.

Describes a jaw which he refers to a new species of *Cœlodon* (*infrà*), and proposes the following arrangement of the family :

I. COLATODONTA—*Scelidotherium*, *Mylodon*, *Megalonyx*, *Cœlodon*.
II. OXYODONTA—*Oracanthus* (preoccupied), *Megatherium*.

Cœlodon tarijensis, n. sp., H. BURMEISTER, SB. Ak. Berlin, 1887, p. 859, Pleistocene, S. America.

Schismotherium fractum, n. g. & sp., F. AMEGHINO, Bol. Mus. La Plata, i (December), p. 21, Tertiary, Patagonia.

Eucholœops ingens, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

Eucholœops infernalis, n. sp., *E. adteger*, n. sp., AMEGHINO, *t. c.*, *ibid.*

Hapalops rectangularis, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

Hapalops indifferens, n. sp., *H. ellipticus*, n. sp., AMEGHINO, *t. c.*, *ibid.*

Trematherium intermixtum, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

Nematherium angulatum, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

BENEDEN, *t. c.* pls. i–iii. *A. verus* by the same, *t. c.* pls. iv–viii. *A. ælitus* by the same, *t. c.* pls. ix–xii.

Heterocetus sprangi, n. sp., P. J. VAN BENEDEN, *t. c.* p. 36, pls. xxx–xxxiii, Pliocene, Antwerp. *H. affinis*, figured by VAN BENEDEN, *t. c.* pls. xix–xxiv. *H. brevifrons* by the same, *t. c.* pls. xxv–xxix.

Mesocetus longirostris, *M. pinquis*, *M. latifrons*, figured by VAN BENEDEN, *t. c.* pls. xxxiv–liii.

Idiocetus laxatus, n. g., P. J. VAN BENEDEN, *t. c.* pp. 61, 63, pls. liv–lxiii, Pliocene, Antwerp; type, *Mesocetus laxatus*, van Bened. *I. longifrons* figured by VAN BENEDEN, *t. c.* pls. lxiv & lxix.

Isocetus depauwi, n. g. & sp., P. J. VAN BENEDEN, *t. c.* pp. 77 & 78, pls. lxx–lxxv, Pliocene, Antwerp.

II. ODONTOCETI.

b. PHYSETERIDÆ.

Physodon lorteti, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 276, Miocene, France.

c. SQUALODONTIDÆ.

Squalodon tiedmanni, n. sp., J. A. ALLEN, Bull. Mus. N. H. ii, pp. [illegible], pls. v & vi, Eocene, N. America.

Squalodon (*Rhizoprion*) *bariensis*: the type skull described and figured by E. LORTET, Arch. Mus. Lyon, iv, pp. 315–319. It is proposed that the name *Rhizoprion* should replace *Squalodon*.

d. DELPHINIDÆ.

LÜTKEN, C. F. Kritiske Studier over nogle Tandhvaler af Slägterne *Tursiops*, *Orca*, og *Lagenorhynchus*. Dan. Selsk. Skr. vi, pp. 337–397, pls. i & ii, and woodcuts.

A critical discussion on the characters and species of the genera mentioned, illustrated by plates of *Orca gladiator* and *Lagenorhynchus albirostris*, and numerous woodcuts of the osteology. Considers that *L. clanculus* is a good species.

Orca gladiator figured by LÜTKEN, *t. c.* pl. i. Its occurrence on the Norwegian Coast noticed by J. E. HARTING, Zool. xi, p. 383.

Orca citoniensis recorded by R. LYDEKKER, J. G. S. xliii, p. 15, from the Suffolk Crag.

Globicephalus uncidens = *Delphinus uncidens*, Lankester, referred to this genus by LYDEKKER, *t. c.* p. 16.

Grampus griseus: its osteology described by F. H. BALKWILL, Rep. Plym. Inst. ix, pp. 413–477, with woodcuts.

Grampus rizsoanus: stranding of a specimen on the North American coast, recorded by A. HEILPRIN, P. Ac. Philad. 1887, p. 49.

Lagenorhynchus albirostris, figured by LÜTKEN, *t. c.* pl. ii. Notes on the skull of a specimen captured on the Irish coast, given by R. L. PATTERSON, Rep. Belfast N. H. Club, 1887, p. 114 (as *Delphinus*).

Sotalia lentiginosa : R. A. STERNDALE, J. Bomb. N. H. Soc. ii, pp. 51 & 52, describes a specimen captured on the Indian coast (as *Delphinus*).

Rhinodelphis sassariensis, n. sp., G. CAPELLINI, Mem. Acc. Bologn. of the pp. 103–110, pl. viii, Pliocene, Italy. Preliminary notice in Rend. R. Bologna, 1886–87, pp. 47 & 48.

Delphinus (?) restitutensis, n. sp., C. DEPÉRET, Arch. Mus. Lyon, iv, p. 281, Miocene, France.

Delphinus delphis. Observations on a specimen captured in the Firth of Forth are given by W. TURNER in P. Phys. Soc. Edinb. 1887, pp. 346–348.

10. *EDENTATA*.

The fossil forms contained in the British Museum recorded by R. LYDEKKER, Cat. Foss. Mamm. Brit. Mus., pt. v, pp. 85–144, with 8 woodcuts (*vide suprà*, p. 10).

BURMEISTER, H. Atlas de la Description Physique de la République Argentine, sec. 2, vol. iii. Ostéologie des Gravigrades, pt. i. Buenos Ayres : (1886) text, 4to, atlas, folio, pp. 1–125, pls. xii–xvi.

Figures skulls of *Bradypus*, *Cholœpus*, *Scelidotherium*, and *Mylodon*.

a. BRADYPODIDÆ.

Skulls of *Bradypus* and *Cholœpus* are figured by H. BURMEISTER, *t. c.*

b. MEGATHERIIDÆ.

Skulls of *Mylodon* and *Scelidotherium* are described and figured by BURMEISTER, *t. c.* The MS. names *Scelidotherium magnum* and *Mylodon oweni* given by Bravard are revived for species which are identical with *S. tarijense* and *M. lettsomi* (see LYDEKKER, Cat. Foss. Mamm. Brit. Mus. v, p. xvi).

BURMEISTER, H. Neue Beobachtungen an *Cœlodon*. SB. Ak. Berlin, 1887, pp. 857–862, with woodcut.

Describes a jaw which he refers to a new species of *Cœlodon* (*infrà*), and proposes the following arrangement of the family :

I. COLATODONTA—*Scelidotherium*, *Mylodon*, *Megalonyx*, *Cœlodon*.
II. OXYODONTA—*Oracanthus* (preoccupied), *Megatherium*.

Cœlodon tarijensis, n. sp., H. BURMEISTER, SB. Ak. Berlin, 1887, p. 859, Pleistocene, S. America.

Schismotherium fractum, n. g. & sp., F. AMEGHINO, Bol. Mus. La Plata, i (December), p. 21, Tertiary, Patagonia.

Eucholœops ingens, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

Eucholœops infernalis, n. sp., *E. adteger*, n. sp., AMEGHINO, *t. c.*, *ibid.*

Hapalops rectangularis, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

Hapalops indifferens, n. sp., *H. ellipticus*, n. sp., AMEGHINO, *t. c.*, *ibid.*

Trematherium intermixtum, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

Nematherium angulatum, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

Nematherium sinuatum, n. sp., AMEGHINO, *t. c.*, *ibid.*
Planops longirostratus, n. g. & sp., AMEGHINO, *t. c.*, p. 23, *ibid.*
Xyophorus rostratus, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*
Xyophorus simus, n. sp., AMEGHINO, *t. c.*, *ibid.*
Entelops dispar, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

INCERTÆ SEDIS.

Scotæops simplex, n. g. & sp., AMEGHINO, *t. c.* p. 24, *ibid.*
Phorusrhachos longissimus, n. g. & sp., AMEGHINO, *t. c. ibid.*

c. MYRMECOPHAGIDÆ.

Cyclopurus didactylus: note on its placentation, by J. A. RYDER, P. Ac. Philad. 1887, pp. 115–118.

d. GLYPTODONTIDÆ.

Proho[plo]phorus figuratus, n. g. & sp., F. AMEGHINO, Bol. Mus. La Plata, i (April), p. 17, Tertiary, S. America.
Dadicurus antiquus, n. sp., F. AMEGHINO, *t. c.* p. 18, Tertiary, S. America.
Propalæhoplophorus australis, g. n., AMEGHINO, *op. cit.* (Decem p. 24. Type, *Hoplophorus australis*, Moreno.
Propalæhoplophorus incisivus, n. sp., AMEGHINO, *t. c.*, Tertiary, Patagonia.

e. DASYPODIDÆ.

Chlamydotherium (?) *australe*, n. sp., F. AMEGHINO, Bol. Mus. La Plata, i (December), p. 25, Tertiary, Patagonia.
Peltephilus strepens, n. g. & sp., AMEGHINO, *id. ibid.*
Peltephilus pumilus, n. sp., AMEGHINO, *t. c.*, *ibid.*
Stegotherium tessellatum, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*
Eutatus œnophorum, n. sp., *E. lagena*, n. sp., *E. distans*, n. sp., *E. bipunctatus*, n. sp., AMEGHINO, *t. c.* pp. 25 & 26, *ibid.*
Dasypus (*Euphractus*) *patagonicus*, n. sp., *D. proximus*, n. sp., *D. exilis*, n. sp., AMEGHINO, *t. c.* p. 26, *ibid.*
Proeuphractus recens, n. sp., AMEGHINO, *op. cit.* (April), p. 19, Tertiary, S. America.
Macroeuphractus retusus, n. g. & sp., AMEGHINO, *t. c.*, *ibid.*

11. *MARSUPIALIA.*

The fossil species in the British Museum are catalogued and revised by R. LYDEKKER, Cat. Foss. Mamm. Brit. Mus. v, pp. 146–299, 18 wood-cuts (*vide supra*, p. 10), considerable emendations being made in regard to the genera of the *Macropodidæ*. *Sceparnodon*, of Owen, from the Australian Pleistocene, is provisionally identified with *Phascolonus* of the same.

CALDWELL, W. H. The Embryology of *Monotremata* and *Marsupialia*. Pt. i. Phil. Trans. 1887, pp. 463–486, pls. xxix–xxxi.

A full account of the author's discovery of the oviparous reproduction of the *Monotremata*, together with a description of the egg-membranes and the ova up to the first stages of segmentation in the two orders. A comparison of the egg-membranes with those of other *Placentalia* is also given, with a table of the precise homologies. The memoir concludes with a summary of the results reached and a full bibliography.

DE VIS, C. W. On New or Rare Vertebrates from the Herbert River, North Queensland. P. Linn. Soc. N.S.W. (2) ii, pp. 1128–1137.

Records *Halmaturus*, *Phalangista*, *Pseudochirus*, and *Dromicia*, two species being new. [See *Phalangeridæ*.]

FÜRST, M. C. Ueber die Entwicklung der Samenkörperchen bei den Beutelthieren. Arch. mikr. Anat. xxx, pp. 336–365, pls. xviii–xx.

Discusses the development of the spermatozoa in the Marsupials.

MARSH, O. C. American Jurassic Mammals. Am. J. Sci. xxxiii, pp. 327–348, pls. vii–x; reprinted in Geol. Mag. iv, pp. 241–247 & 289–299, pls. vi–ix.

In this paper the polyprotodont forms are referred to a distinct order under the name of *Pantotheria*; while the diprotodont genera are placed in a group termed *Allotheria*, which is regarded as a suborder of *Marsupialia*. [See *Plagiaulacidæ*, *Bolodontidæ*, and *Amphitheriidæ*.]

OSBORN, H. F. A Pineal Eye in the Mesozoic *Mammalia*. Science, ix, pp. 92, 114, & 538.

Infers that *Tritylodon*, and probably other Mesozoic Mammals, had a median eye, like that of *Hatteria*; but subsequently finds that this is not the case.

——. On the Structure and Affinities of the Mesozoic *Mammalia*. P. Ac. Phil. 1887, pp. 282–292, 3 woodcuts.

An abstract of a fuller memoir. Divides these forms into the *Multituberculata* and a second unnamed group, which is split up into Carnivorous, Omnivorous, Insectivorous, and Herbivorous sub-groups. It is suggested that the Triassic forms may constitute a distinct order—*Protodonta*. [See *Bolodontidæ* and *Amphitheriidæ*.]

——. The Fœtal Membranes of the Marsupials—The Yolk-Sac Placenta in *Didelphys*. Journ. Morph. i, pp. 374–382, pl. xvii, and woodcuts.

Describes the development of *Didelphys*, which is contrasted with that of other Marsupials.

THOMAS, O. On the Homologies and Succession of the Teeth in the *Dasyuridæ*. P. R. Soc. 1887, pp. 310–312, and Phil. Trans. 1887, pp. 443–462, pls. xxvii & xxviii.

An important memoir, endeavouring to trace the homology of the teeth throughout the *Mammalia*, and showing that the milk-dentition must be regarded as a series added to the permanent one. The succes-

sion of the teeth in the Mesozoic forms is also described, and graphic formulæ are given to show the relations of the milk and permanent series.

A criticism is given by E. D. Cope, Am. Nat. xxi, pp. 1101–1103, where it is argued that the tooth regarded by Flower and Thomas as the first true molar is really the last premolar.

I. DIPROTODONTIA.

a. Phalangeridæ.

Pseudochirus forbesi, n. sp., O. Thomas, Ann. N. H. xix, pp. 146 & 147, New Guinea.

Pseudochirus mongan, n. sp., C. W. De Vis, P. Linn. Soc. N.S.W. (2) ii, p. 1130, Queensland.

Dromicia frontalis, n. sp., De Vis, *t. c.* p. 1134, Queensland.

Phascolarctus cinereus: its milk-dentition described by O. Thomas, P. Z. S. 1887, pp. 338 & 339, woodcut.

Thylacoleo carnifex: mandible described and figured by R. Owen, Phil. Trans. 1887, pp. 1–3, pl. i.

b. Macropodidæ.

Dendrolagus lumholtzi: skull of adult and young figured by R. Co[illegible], Zool. Jahrb. ii, pp. 898–901.

Diprotodon australis, recorded by E. T. Hardman, Rep. Brit. [illegible] 1886, p. 671 (1887), from Kimberley District, W. Australia.

c. Plagiaulacidæ.

Ctenacodon potens, n. sp., O. C. Marsh, Am. J. Sci. xxxiii, p. 333, Jurassic, N. America.

Abderites meridionalis, n. g. & sp., F. Ameghino, Bol. Mus. La Plata, i (December), p. 5, Tertiary, Patagonia.

Acdestis oweni, n. g. & sp., Ameghino, *t. c.*, *ibid.*

Palæotheutes lemoinei, n. g. & sp., *P. pachygnathus*, n. sp., *P. intermedius*, n. sp., *P. pressiforatus*, n. sp., *P. minutus*, n. sp., Ameghino, *t. c.* p. 6, *ibid.*

d (?). Microbiotheriidæ.

Microbiotherium patagonium, n. g. & sp., Ameghino, *t. c.* p. 6, Tertiary, Patagonia.

Microbiotherium tehuelchum, n. sp., Ameghino, *t. c.* p. 7, *ibid.*

Stilotherium dissimile, n. g. & sp., Ameghino, *t. c.* p. 7, *ibid.*

e. Tritylodontidæ.

Tritylodon fraasi, n. sp., R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, p. 201, Trias, Würtemberg.

f. Bolodontidæ.

Dentition of *Bolodon* figured by H. F. Osborn, P. Ac. Phil. 1887, p 285, fig. 1.

Allodon fortis, n. sp., O. C. MARSH, Am. J. Sci. xxxiii, p. 331, Jurassic, N. America, referred to this family by H. F. OSBORN, *t. c.*

g. (?). CHIROGIDÆ.

Chirox plicatus: palate described and figured by E. D. COPE, Am. Nat. xxi. & 567, where it is proposed that it should form the type of family, *Chirogidæ*.

II. POLYPROTODONTIA.

h. DASYURIDÆ.

Dasyurus viverrinus: the myology of its limbs described by A. MACCORMICK, J. Anat. Phys. xxii, pp. 103-137, pl. iii, & pp. 199-226, pl. ix.

Antechinus (*Podabrus*) *froggati*, n. sp., E. P. RAMSAY, P. Linn. Soc. N.S.W. (2) ii, p. 552, North-West Australia.

Myrmecobius fasciatus: a gland above the sternum described and figured by F. E. BEDDARD, P. Z. S. 1887, pp. 527-531, with two woodcuts.

i. PERAMELIDÆ.

publis*agale leucura*, n. sp., O. THOMAS, Ann. N. H. 1887, pp. 397-399, t...ralia.

Perameles auratus, n. sp., E. P. RAMSAY, P. Linn. Soc. N.S.W. (2) ii, p. 551, North-West Australia.

j. TRICONODONTIDÆ.

Priacodon ferox, n. g. & sp., O. C. MARSH, Am. J. Sci. xxxiii, p. 341, Jurassic, N. America.

k. DIDELPHYIDÆ.

SELENKA, E. Studien über Entwickelungsgeschichte der Thiere. Pt. v, Das Opossum (*Didelphys virginiana*). Wiesbaden: 1887, 4to, pp. 101-172, pls. xxv-xxx. [See also OSBORN, *supra*.]

Gives a full history, with plates, of the development of the Opossum.

A synopsis of the European Tertiary species is given by M. SCHLOSSER, Beitr. Pal. Oesterr.-Ung. vii, pp. 144-161; and many are recorded by R. LYDEKKER, Cat. Foss. Mamm. Brit. Mus. v, pp. 278-289, where they are all included in the type genus. The same work also catalogues the S. American Pleistocene species.

Didelphys lanigera: a specimen described, and its skull figured, by F. A. JENTINK, Notes Leyd. Mus. ix, pp. 225-228, pl. iii.

l. AMPHITHERIIDÆ.

Includes the *Amblotheriidæ*, *Dryolestidæ*, *Phascolotheriidæ* (*Tinodontidæ*), *Diplocynodontidæ*, and *Dromatheriidæ*, of American writers. [See LYDEKKER, Cat. Foss. Mamm. Brit. Mus. v, p. 269; and MARSH & OSBORN, *t. c.*]

sion of the teeth in the Mesozoic forms is also described, and graphic formulæ are given to show the relations of the milk and permanent series.

A criticism is given by E. D. Cope, Am. Nat. xxi, pp. 1101–1103, where it is argued that the tooth regarded by Flower and Thomas as the first true molar is really the last premolar.

I. DIPROTODONTIA.

a. Phalangeridæ.

Pseudochirus forbesi, n. sp., O. Thomas, Ann. N. H. xix, pp. 146 & 147, New Guinea.

Pseudochirus mongan, n. sp., C. W. De Vis, P. Linn. Soc. N.S.W. (2) ii, p. 1130, Queensland.

Dromicia frontalis, n. sp., De Vis, *t. c.* p. 1134, Queensland.

Phascolarctus cinereus : its milk-dentition described by O. Thomas, P. Z. S. 1887, pp. 338 & 339, woodcut.

Thylacoleo carnifex : mandible described and figured by R. Owen, Phil. Trans. 1887, pp. 1–3, pl. i.

b. Macropodidæ.

Dendrolagus lumholtzi : skull of adult and young figured by R. Co[illegible], Zool. Jahrb. ii, pp. 898–901.

Diprotodon australis, recorded by E. T. Hardman, Rep. Brit. [illegible] 1886, p. 671 (1887), from Kimberley District, W. Australia.

c. Plagiaulacidæ.

Ctenacodon potens, n. sp., O. C. Marsh, Am. J. Sci. xxxiii, p. 333, Jurassic, N. America.

Alderites meridionalis, n. g. & sp., F. Ameghino, Bol. Mus. La Plata, i (December), p. 5, Tertiary, Patagonia.

Acdestis oweni, n. g. & sp., Ameghino, *t. c.*, *ibid.*

Palæotheutes lemoinei, n. g. & sp., *P. pachygnathus*, n. sp., *P. intermedius*, n. sp., *P. pressiforatus*, n. sp., *P. minutus*, n. sp., Ameghino, *t. c.* p. 6, *ibid.*

d (?). Microbiotheriidæ.

Microbiotherium patagonium, n. g. & sp., Ameghino, *t. c.* p. 6, Tertiary, Patagonia.

Microbiotherium tehuelchum, n. sp., Ameghino, *t. c.* p. 7, *ibid.*

Stilotherium dissimile, n. g. & sp., Ameghino, *t. c.* p. 7, *ibid.*

e. Tritylodontidæ.

Tritylodon fraasi, n. sp., R. Lydekker, Cat. Foss. Mamm. Brit. Mus. v, p. 201, Trias, Würtemberg.

f. Bolodontidæ.

Dentition of *Bolodon* figured by H. F. Osborn, P. Ac. Phil. 1887, p. 285, fig. 1.

Allodon fortis, n. sp., O. C. MARSH, Am. J. Sci. xxxiii, p. 331, Jurassic, N. America, referred to this family by H. F. OSBORN, *t. c.*

g. (?). CHIROGIDÆ.

Chirox plicatus: palate described and figured by E. D. COPE, Am. Nat. xxi. & 567, where it is proposed that it should form the type of amily, *Chirogidæ*.

II. POLYPROTODONTIA.

h. DASYURIDÆ.

Dasyurus viverrinus: the myology of its limbs described by A. MACCORMICK, J. Anat. Phys. xxii, pp. 103-137, pl. iii, & pp. 199-226, pl. ix.

Antechinus (*Podabrus*) *froggati*, n. sp., E. P. RAMSAY, P. Linn. Soc. N.S.W. (2) ii, p. 552, North-West Australia.

Myrmecobius fasciatus: a gland above the sternum described and figured by F. E. BEDDARD, P. Z. S. 1887, pp. 527-531, with two woodcuts.

i. PERAMELIDÆ.

publis*agale leucura*, n. sp., O. THOMAS, Ann. N. H. 1887, pp. 397-399, rt...ralia.

Perameles auratus, n. sp., E. P. RAMSAY, P. Linn. Soc. N.S.W. (2) ii, p. 551, North-West Australia.

j. TRICONODONTIDÆ.

Priacodon ferox, n. g. & sp., O. C. MARSH, Am. J. Sci. xxxiii, p. 341, Jurassic, N. America.

k. DIDELPHYIDÆ.

SELENKA, E. Studien über Entwickelungsgeschichte der Thiere. Pt. v, Das Opossum (*Didelphys virginiana*). Wiesbaden: 1887, 4to, pp. 101–172, pls. xxv–xxx. [See also OSBORN, *supra*.]

Gives a full history, with plates, of the development of the Opossum.

A synopsis of the European Tertiary species is given by M. SCHLOSSER, Beitr. Pal. Oesterr.-Ung. vii, pp. 144–161; and many are recorded by R. LYDEKKER, Cat. Foss. Mamm. Brit. Mus. v, pp. 278–289, where they are all included in the type genus. The same work also catalogues the S. American Pleistocene species.

Didelphys lanigera: a specimen described, and its skull figured, by F. A. JENTINK, Notes Leyd. Mus. ix, pp. 225-228, pl. iii.

l. AMPHITHERIIDÆ.

Includes the *Amblotheriidæ*, *Dryolestidæ*, *Phascolotheriidæ* (*Tinodontidæ*), *Diplocynodontidæ*, and *Dromatheriidæ*, of American writers. [See LYDEKKER, Cat. Foss. Mamm. Brit. Mus. v, p. 269; and MARSH & OSBORN, *t. c.*]

Asthenodon segnis, n. g. & sp., O. C. Marsh, Am. J. Sci. (3) xxxiii, p. 336, Jurassic, N. America.

Laodon venustus, n. g. & sp., Marsh, *t. c.* p. 337, *ibid.*

Enneodon crassus, n. g. & sp., Marsh, *t. c.* p. 339, *ibid.*

Enneodon affinis, n. sp., Marsh, *t. c.* p. 339, *ibid.*

Paurodon valens, n. g. & sp., Marsh, *t. c.* p. 342, *ibid.*

Amphitylus, n. g., H. F. Osborn, P. Ac. Phil. 1887, p. 283, Lower Jurassic, England.

Microconodon tenuirostris, described and figured by H. F. Osborn, P. Am. Phil. Soc. xxiv, pp. 109–111, and plate.

Dromatherium sylvestre, described and figured by Osborn, *t. c.*

m. INCERTÆ SEDIS.

Kurtodon, n. g., H. F. Osborn, Amer. Nat. xxi, p. 1020, Purbeck, England, founded upon jaws referred by Owen to *Stylodon*.

Athrodon, n. g., Osborn, P. Ac. Phil. 1887, p. 290. This name being pre-occupied, was withdrawn by its author in favour of the preceding one.

It is suggested by R. Lydekker, Preface to Cat. Foss. Mamm. Brit. Mus. v, that this genus may be founded upon specimens belonging to one of the genera of the *Amphitheriidæ*.

12. *MONOTREMATA.*

Haacke, W. Eierlegende Säugethiere. Humboldt, 1887, pp. 213–215, with woodcut.

See also Caldwell, *Marsupialia*.

a. Ornithorhynchidæ.

Ornithorhynchus paradoxus, a newly-excluded young, described by R. Owen; P. R. Soc. xlii, pp. 391 & 392, and Ann. N. H. xx, pp. 249 & 250.

b. Echidnidæ.

Echidna oweni (*ramsayi*): remains of this species, from the Pleistocene of New South Wales, are noticed by R. Owen, P. R. Soc. 1887, p. 390.

Echidna hystrix: notes on the anatomy of the inner soft parts are given by H. C. Chapman, P. Ac. Philad. 1887, pp. 334 & 335, pls. xiv & xv.

13. *INCERTÆ SEDIS.*

Seeley, H. G. On Parts of the Skeleton of a Mammal from Triassic Rocks of Klipfontein, Fraserberg, South Africa (*Theriodesmus phillarchus*), illustrating the Reptilian Inheritance in the Mammalian Hand. P. R. Soc. xliii, p. 472.

Abstract of a paper describing the impression of a pectoral limb, which the author regards as Mammalian.

Theriodesmus phillarchus, n. g. & sp., Seeley, *t. c.*, Karoo System, South Africa (miss-spelt *phylarchus*).

AVES.

BY

A. H. Evans, M.A., F.Z.S.

Probably the most noteworthy events of 1887 to the majority of Ornithologists, exclusive of works already in course of publication, are the issue of the first parts of Buller's "History of the Birds of New Zealand," 2nd ed., and Pelzeln, Lorenz, & Madarász's "Monographie der *Trochilidæ*"; while Meyer's "Auer-, Rackel-, und Birk-wild," which was published as a whole, ranks with them as a specimen of splendid pictorial art. To our fellow-workers in America, Ridgway's "Manual of North American Birds" will appear equally important; while the Anatomist and Physiologist will set great store by the articles of Cazin (Recherches sur l'appareil gastrique des Oiseaux); Haswell (Early stages of development in the Emu); Menzbier (Osteology of the Penguin); and Shufeldt (Anatomy in general). To all the two papers of Wray (on the Wings of Birds, and on the Structure of Feathers) will be invaluable, adding, as they do, so much to our knowledge of the subject; while those of Marey, on the Flight of Birds, are of scarcely less interest. Besides this, Seebohm has brought out a work on the "Geographical Distribution of the Family *Charadriidæ*," and Salvadori a "Catalogue of Italian Birds," corresponding to the List of the British Ornithologists' Union; while the long-delayed determination of the bird-bones, found many years ago by Lund in Brazilian caves, has at last been effected by Olauf Winge, with results that are disappointing to those who hoped for much light to be thrown thereby on the ancient fauna of the country, though no blame is on that account due to the author. No volume of the "Catalogue of the Birds in the British Museum" has appeared, but the following works have advanced a stage:—Giglioli & Manzella (Iconografia dell' Avifauna Italica); Godman & Salvin (Biologia Centrali-Americana); Gould [Sharpe] (Birds of New Guinea); Lord Lilford (Coloured Figures of the Birds of the British Islands); Sharpe & Wyatt (Monograph of the Family of Swallows); Newton [A.] (Articles in the Encyclopædia Britannica); Gould [Sharpe] (Supplement to the *Trochilidæ*); and Booth (Rough Notes on the Birds of the British Islands); of which the last two are now concluded.

Amongst the periodical literature of the year we find continuations of

HARGITT's "Notes on Woodpeckers" (Ibis), and of PELZELN & LORENZ's "Types of the Ornithological Collection" (Ann. Hofmus. Wien), while R. BLASIUS gives us an excellent monograph of the Nutcracker (Ornis), and ARÉVALO a work on the Birds of Spain (Mem. Ac. Madrid).

The number of papers in Anatomy, Physiology, &c., shows a considerable diminution, as compared with 1886; but many of them are quite as important as those of the preceding year. There are articles on Oology by CAMPBELL and NORTH (Australasia); and on extinct species by SEELEY and WEETMAN, in the first of which a new Species of Bird is described from the Wealden; while WINGE mentions another from the bone-caves of Brazil, as well as two forms, also extinct.

The attention of Explorers, as shewn in the publications of 1887, seems to have been chiefly turned of late to E. Equatorial and W. Africa, Siberia and Japan, Central Asia, Borneo, Sumatra, the Malay countries, and Central America.

The chief works published during the past year, as far as they relate to GEOGRAPHICAL AREAS, &c., may be found under the names below; while reference should also be made to BLASIUS [R.], BULLER, GODMAN & SALVIN, GOULD, HARGITT, GURNEY [J. H.], LILFORD [Lord], MEYER, NEWTON [A.], OLPHE-GALLIARD, PELZELN & LORENZ, PELZELN, L[illegible] & MADARÁSZ, PLESKE, SCLATER [P. L.], SEEBOHM, SHARPE & WY[illegible] SMITH [A. C.], TRISTRAM, and VIAN.

PALÆARCTIC REGION: Booth (Britain), Büchner (Russia), Dalla-Torre & Tschusi (Austro-Hungary), Deditius [Przevalski] (Central Asia), Dubois (Belgium), Feilden (Hudson's Bay), Gätke (Heligoland), Giglioli & Manzella (Italy), Giglioli & Salvadori (Corea, &c.), Gröndal (Iceland), Gurney [J. H., Jun.] & Southwell (Britain), Hartert (Prussia), Harvie-Brown & Buckley (Britain), Istvántól (Hungary), Jurinac (Croatia), Kadich (Herzegovina), Lescuyer (France), Leverkühn (Germany), Lilford (Britain and the Mediterranean), Lorenz [Th.] (Caucasus), Martin (France), Menzbier (Central Asia), Meyer & Helm, Müller [W.] (Germany), Nazarow (Central Asia), Olphe-Galliard (France and Turkestan [Severtzoff]), Palmén (Siberia), Przevalski [Morgan] (Central Asia), Rabé (France), Radde (Caucasus), Reid [S. G.] (Teneriffe), Salvadori (Italy), Saunders (Britain), Schneider (Germany and Switzerland), Schrenck [Bunge] (New Siberian Is. and Jana district), Seebohm (Liu-kiu Is., &c.), Seunik (Bosnia and Herzegovina), Stejneger (Japan, Liu-kiu Is., Commander Is.), Taczanowski (Corea), Tait (Portugal), Troil (Iceland), Tschusi (Austro-Hungary), Wilson (Switzerland), Winge (Denmark).

ETHIOPIAN: Bocage (I. of St. Thomas, W. Africa), Gurney [Ay-na- (Transvaal, &c.), Hartlaub [Emin Bey], Matschie [Böhm] (E. Equat. Africa), Milne-Edwards & Oustalet (Comoro Is.), Reichenow [Fischer & Bohndorff], Schalow [Böhm] (E. Equat. Africa), Seebohm (Natal), Shelley (Cameroons and *Ploceidæ* of Region), Sousa (Dahomey, Prince's Island, Mosambique), Symonds (Orange Free State).

INDIAN: Anderson (Mergui Archipelago), Barnes (India), Büttikofer

(Sumatra), Davidson, Hume, Littledale, MacGregor, Murray, Reid [G.] (India), Salvadori (Sumatra, Burma), Scully (Afghanistan), Sharpe (Borneo, Indian Ocean, Perak, &c.), Styan (China), Taylor [C. W.] & [J. H.] (India), Vorderman (Borneo).

Australian : Buller (New Zealand), Campbell (Australia), Filhol (Campbell I. and New Zealand), Gould (New Guinea), North (Australia and Pacific), Ogilvie-Grant, Stejneger (Pacific).

Nearctic : Beckham, Brewster, Bryant (U.S.), Chamberlain (Canada), Clark, Coale, Cooper, Emerson, Goss, Lawrence [G. N.], Lloyd (U.S.), McIlwraith (Canada), Ridgway, Scott, Sennett, Townsend (U.S.).

Neotropical : Berlepsch (Paraguay, &c.), Cory (West Indies), Godman & Salvin (Central America), Jhering (Brazil), Lawrence [G. N.] (Central America), Ridgway (Central and S. America), Sclater [W. L.] (Guiana), Stahl (Porto Rico).

For extinct species see : Seeley, Weetman, Winge.

For anatomical, morphological, physiological, and pathological papers, see : Béraneck, Bertinet, Bignon, Bräss, Bronn [Gadow], Budge, Caruccio, Cazin, Chatin, Dareste, Eckstein, Gotti, Gruenhagen, Haij, Haswell, Jegorow, Kastschenko, Korschelt, Lucas, Mackay, Magnien, Mall, Marey, Menzbier, Newberry, Parker, Paterson, Richter, Rumszewicz, Seebohm, Semon, Shufeldt, Studer, Torneux & Herrmann, Uskow, Wray.

THE GENERAL SUBJECT.

With Titles of Separate Works and of the more Important Papers published in Proceedings of Societies, &c.

Report on the Migration of Birds in the Spring and Autumn of 1886. By J. A. Harvie-Brown, J. Cordeaux, R. M. Barrington, A. G. More, & W. Eagle Clarke. Eighth Report. Edinburgh : 1887, 8vo, 174 pp.

x. Jahresbericht (1885) des Ausschusses für Beobachtungsstationen der Vögel Deutschlands. J. f. O. 1887, pp. 338–615. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 3.]

Berichtigungen zum ix. Jahresbericht. *T. c.* p. 616.

Adamson, C. M. Some more Illustrations of Wild Birds, shewing their natural habits. London & Newcastle : 1887, sm. 4to, 24 pls.

Aitken, E. H. [See *Cinnyris* (*Nectariniidæ*).]

[Shen, J. A. [See *Spinus* (*Fringillidæ*), *Colinus* (*Tetraonidæ*).]

Anderson, J. List of Birds, chiefly from the Mergui Archipelago, collected for the trustees of the Indian Museum, Calcutta. J. L. S. xxi (1887), pp. 136–153.

Supplementary to Hume & Davidson's work on the Birds of Tenasserim, and including one species new to that district, *Butreron cappelli* (*Columbidæ*). [See also *Rhytidoceros* (*Bucerotidæ*).]

ANTHONY, A. W. [See *Leucosticte* (*Fringillidæ*).]

ARÉVALO, J. Aves de España. Mem. Ac. Madrid, xi [1887], pp. i–vi & 7-474.

An important addition to our libraries, comprising the whole area of Spain and the islands. The introduction covers a wide field, and treats of the muscular and nervous organization of Birds, their digestive, circulatory, respiratory, and reproductive organs; as well as of their nesting and incubation, intelligence and instinct. Besides this it includes sections on monstrosities, migration, distribution, classification, and bibliography. The body of the work contains a good account of the 401 species admitted to the Spanish list, in which, however, there is nothing that requires special mention here. 16 varieties are added.

ARNOLD, E. L. Bird Life in England. London: 1887, 8vo, 326 pp.

ARRIGONI DEGLI ODDI, E. [See SICHER, E., and *Passer* (*Fringillidæ*).]

ATKINSON, G. F. Preliminary Catalogue of the Birds of N. Carolina, with Notes on some of the Species. Contributed from the Biological Laboratory of the Univ. of N. C. No. VI. Journal of Elisha Mitchell Scientific Soc. 1887, pt. 2.

255 spp. and subspp. are included, while 20 are omitted from the lists of Coues, Sennett, and Cairnes.

AYRES, W. [See GURNEY, J. H.]

BACKHOUSE, J., JUN. Observations in the Eastern Pyrenees. Ibis, 1887, pp. 66–74.

Gives a list of 82 species.

——. [See also *Puffinus* (*Procellariidæ*).]

BALL, J. Notes of a Naturalist in South America. London: 1887, sm. 8vo, xiii & 416 pp., map. [See *Rhea* (*Rheidæ*).]

BARNES, H. E. [See *Ploceus* (*Ploceidæ*), *Grus* (*Gruidæ*), *Parra* (*Parridæ*), *Ægialitis* (*Charadriidæ*).]

BARTLETT, A. D. [See *Paradisea* (*Paradiseidæ*).]

BECKHAM, C. W. Additional Notes on the Birds of Pueblo County, Colorado. Auk, 1887, pp. 120–125. [*Cf.* Zool. Rec. xxii, *Aves*, p. 3.]

21 species.

——. Additions to the Avifauna of Bayou Sara, Louisiana. *T. c.* pp. 299–306. [*Cf.* Zool. Rec. xix, *Aves*, p. 2.] [See *Helinæa* (*Mniotiltidæ*).]

BECKWITH, W. E. Notes on Shropshire Birds. Tr. Shropshire Soc. x pp. 383–398. [Continued from vol. iv (1881), p. 328.]

BEDDARD, F. E. [See *Fratercula* (*Alcidæ*), anat.]

BELL, F. J. [See *Lagopus* (*Tetraonidæ*).]

BELLONCI, G. Di una connessione fra il foglietto corneo e il midollare dei giovani embrioni di anitra e di pollo. Rend. Ist. Bologna 1886–1887, pp. 98 & 99.

Béraneck, E. Étude sur les replis médullaires du poulet. Rec. Z. Suisse, iv, pp. 305–364, pl. xiv.

Berlepsch, H. v. Systematisches Verzeichniss der von Herrn Ricardo Rohde in Paraguay gesammelten Vögel. J. f. O. 1887, pp. 1–37, pl. i. Appendix: pp. 113–134, containing a list of all the species (357) hitherto found in the district, another of 42 doubtful species described by Azara, and a third of 113 likely to occur.

The specimens were collected in December, January, and February, at Lambaré near Asuncion, and on other parts of the river Pilcomayo. They number 116, and especial interest attaches to the fact that the majority of them were obtained in or shortly after the breeding season—in several cases with their nests and eggs. They also afford a clearer view of the ornithology of this partially-worked neighbourhood, when compared with the lists of Felix de Azara and others.

——. [See *Thamnophilus rohdei*, n. sp. (*Formicariidæ*), *Saltator*, *Euphonia* (*Tanagridæ*), *Sporophila*, *Coryphospingus* (*Fringillidæ*), *Molothrus* (*Icteridæ*), *Tigrisoma* (*Ardeidæ*), *Gallinago* (*Scolopacidæ*).]

——. [See also *Trochilidæ*, for a number of new species, &c.]

Bertinet, —. Sur le vol des Oiseaux. C.R. cv, pp. 1089–1092.

Bessels, [Mlle.]. Sur les cellules aériennes du crâne des Oiseaux. C.R. Soc. Biol. (8) iv, pp. 36 & 37.

Blake, E. W., Jun. Summer Birds of Santa Cruz Island, California. Auk, 1887, pp. 328–330.

[See *Arenaria* (*Charadriidæ*).]

Blake, H. A. Flamingoes at Home. The Nineteenth Century (Dec.), 1887, pp. 886–890.

A very good account of the breeding of *Phœnicopterus ruber*. The birds had their legs folded under them while sitting.

Blasius, R. Die Vogelwelt der Stadt Braunschweig und ihrer nächsten Umgebung. JB. Ver. Braunschw. 1886–1887, pp. 59–114.

A short, but useful, list of 212 species, with notes on their status, breeding, &c.

——. [See *Nucifraga* (*Corvidæ*), *Mergus* (*Anatidæ*), *Sterna*, *Anous*, *Gygis* (*Laridæ*).]

—— & Hayek, G. v. iii. Bericht über das permanente internationale ornithologische Comité und ähnliche Einrichtung in einzelnen Ländern. Ornis, 1887, pp. 619–632. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 6.]

Bligh, S. [See *Baza* (*Falconidæ*).]

Bocage, J. v. Barboza du. Additamento à fauna ornithologica de S. Thomé. J. Sci. Lisb. 1887 [xlvi], pp. 81–83. [6 spp.]

——. Sur quelques oiseaux recueillis dans l'Afrique équatoriale (pays du Muata-Yamvo) par M. A. Sesinando Marques. *T.c.* pp. 84–86 [6 spp.].

——. [See also *Certhilauda duponti*, n. subsp. (*Alaudidæ*), *Cinnyris newtoni* (*Nectariniidæ*), *Prinia molleri* (*Timeliidæ*), n. spp.]

BÖHM, R. [THE LATE]. [See SCHALOW, H., & MATSCHIE, P.]

BOHNDORFF, F. [See REICHENOW, A.]

BOOTH, E. T. Rough Notes on the Birds Observed during Twenty Years' Shooting and Collecting in the British Islands. London: 1887, fol., pts. xiv & xv (concluding the work), discontinuous pagination. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 6.]

Containing Goldfinch, Hawfinch, Shag, Bewick's Swan, Tufted Duck, Long tailed Duck, Golden Plover, Grey Plover, Grey Phalarope (pl.), Lesser Tern, White-winged Black Tern, Black Tern, Kittiwake (pl.), Glaucous Gull (pl.), Black-headed Gull (2 pls.), Stormy Petrel (pl.), Great Northern Diver, Common Guillemot (2 pls.), [pt. xiv]: Snow Bunting, Bittern, Common Sheld-Duck, Wigeon, Mallard, Dunlin, Ruff (pl.), Common Tern; also title-pages, contents, lists of plates, &c. [pt. xv].

BOWKER, J. H. Notices on the Migration of Birds in Durban, Natal. [*Ciconia alba* and *Haliastur vocifer*.] Ornis, 1886, pp. 615–617.

BRÄSS, M. Einiges über die Nahrung der Vögel. Monat. Schutze Vogelw. 1887, pp. 132–142.

BREWSTER, W. [See *Symphemia semipalmata inornata* (*Scolopacidæ*), *Phalænoptilus nuttalli nitidus* (*Caprimulgidæ*), *Vireo noveboracensis maynardi* (*Vireonidæ*), n. subspp.]

BRONN, H. G. [See GADOW, H.]

°BROWN, H. Arizona Bird Notes [chiefly winter]. For. & Str. xxvii, No. 24, p. 464.

BROWN, T. A List of the Birds of Tynron Parish. Tr. Dumfries Soc. 1885–6, pp. 113–121.

[See *Muscicapa* (*Muscicapidæ*).]

BROWNE, F. C. [See *Ibis* (*Ibididæ*).]

BROWNE, M. Dates of Arrivals of Summer Birds of Passage in Leicestershire, from 1843–1855 and 1877–1886. Tr. Leicester Soc. 1886, p. 28.

BRYANT, W. E. Additions to the Ornithology of Guadelupe Island. Bull. Cal. Ac. Sci. ii (1887), pp. 269–318.

[See *Carpodacus*, *Junco* (*Fringillidæ*), *Regulus* (*Sylviidæ*), *Salpinctes* (*Troglodytidæ*), *Colaptes* (*Picidæ*).]

°——. Cerros Island. For. & Str. xxvii, No. 4, pp. 62–64.

[Includes 27 species of Birds.]

——. [See also *Pyranga* (*Tanagridæ*), *Tringa* (*Scolopacidæ*).]

BÜCHNER, E. Die Vögel des St. Petersburger Gouvernements. Bei... Russ. Reiches (2) ii, pp. 1–150.

The author gives a list of 251 species, and an appendix. The breeding of *Acrocephalus dumetorum*, *Cyanecula wolfi*, *Gallinago gallinula*; the occurrence of a variety of *Parus pleskii* originally described by Menzbier; and the description of specimens of *Loxia rubrifasciata*, are the most interesting items. [Title only, in Zool. Rec. xxi, *Aves*, p. 8.]

Buckley, T. E. [See Harvie-Brown, J. A.]

Budge, A. Untersuchungen über die Entwickelung des Lymphsystems beim Hühnerembryo. Arch. Anat. Phys. (Anat.) 1887, pp. 59–88, pls. v & vi.

Buller, W. L. A History of the Birds of New Zealand. Ed. 2. Pts. i & ii London: 1887, 4to, pp. 1–72, pls. 1–8 [more than one species on each plate], cuts.

The species described, and for the most part figured in the fine plates of this work, are from the families *Corvidæ*, *Sturnidæ*, *Sylviidæ*, *Timeliidæ*, *Paridæ*, *Motacillidæ*, and *Muscicapidæ*.

Bunge, A. [See Schrenck, L. v.]

Burmeister, H. [See *Chætocercus burmeisteri*, n. sp. (*Trochilidæ*).]

Butler, A. G. British Birds' Eggs: a Handbook of British Oology. Pts. i–vi. London: 1886, 8vo, viii & 219 pp., 38 pls.

Butler, E. [See *Falco* (*Falconidæ*).]

Büttikofer, J. On a Collection of Birds made by Dr. C. Klaesi in the Highlands of Padang (W. Sumatra) during the Winter 1884–85. Notes Leyd. Mus. ix (1887), pp. 1–96.

[On this long and important paper 189 species are included, of which 1 is new to science, and 6 others are new to Sumatra. The synonymy of all the species considered doubtful is discussed at some length. [See *Hirundinapus klaesii*, n. sp. (*Cypselidæ*), *Accipiter* (*Falconidæ*), *Trogon* (*Trogonidæ*), *Hemicercus* (*Picidæ*), *Chrysococcyx* (*Cuculidæ*), *Serilophus* (*Eurylæmidæ*), *Buchanga*, *Dissemurus* (*Dicruridæ*), *Tephrodornis*, *Lanius* (*Laniidæ*), *Micropus* (*Cypselidæ*), *Pitta* (*Pittidæ*), *Myiophoneus* (*Turdidæ*), *Ortygometra* (*Rallidæ*), *Gorsachius* (*Ardeidæ*).

Campbell, A. J. Oology of Australian Birds. Supplement, Pt. ii. Vict. Nat. ii, pp. 126–130 & 163–168. [*Cf.* Zool. Rec. xx, *Aves*, p. 5.]

Notes on the breeding, eggs, &c., of a large number of species, with much new information. [See *Ptilotis* (*Meliphagidæ*), *Sitella* (*Sittidæ*), *Ptilorhis* (*Paradiseidæ*)]

——. The Field Naturalists' Club of Victoria. Expedition to King Island. Fauna—(Birds). *Op. cit.* iv, pp. 136–138.

[See *Cisticola* (*Timeliidæ*), *Puffinus* (*Procellariidæ*).] Large colonies of *Puffinus brevicaudus*, *Larus pacificus*, and *L. novæ-hollandiæ* were found breeding.

°Camuzzo, N. Gli Uccelli del basso Piemonte: Elenco. Milan: 1887, 8vo, 50 pp.

——razzi, D. Materiali par una Avifauna del Golfo di Spezia e della Val di Magra. Spezia: 1887, 8vo, 73 pp. [312 spp.]

——. Appendice. Spezia: 1887, 8vo, 3 pp.

——. Appunti ornitologici. Boll. Soc. Nat. Napoli (1) i, fasc. i [1887], pp. 50–52.

Occurrence of two examples of *Falco eleonoræ* and of *Pterocles alchata* in Italy.

CARRUCCIO, A. Sur deux cas d'inclusion de parasites nématoïdes dans des œufs de poule. [A review of an article in Boll. della R. Ac. Medica. di Roma (no year stated).] J. Microgr. 1887, pp. 407–412 & 512–514.

CAZIN, M. Recherches anatomiques, histologiques, et embryologiques sur l'appareil gastrique des Oiseaux. Ann. Sci. Nat. [Zool.] vii, 4, pp. 177–323, pls. xii–xvi.

Containing introduction, and an account of works relating to the anatomy of the stomach of Birds; the macroscopic anatomy (the stomach of the domestic Fowl, general remarks on the stomach of Birds, history of works relating to the anatomy of the stomach of Birds); the microscopic anatomy (of the domestic Fowl, Pigeon, Nicobar Pigeon, *Melopsittacus undulatus*, *Passeres*, *Picus major*, *Picus martius*, tame Duck, tame Goose, *Larus canus*, *Fratercula arctica*, *Gallinula chloropus*, *Psophia crepitans*, *Plotus melanogaster*, *Ossifraga gigantea*, *Spheniscus demersus*, *Ardea cinerea*, *Nycticorax griseus*, *Accipiter nisus*, *Buteo vulgaris*); development of the stomach of the Fowl in the embryo; conclusions (34 in number); bibliographical index.

——. Glandes gastriques à mucus et à ferment chez les Oiseaux. C[illegible] *ensis* civ, pp. 590–592.

CHADBOURNE, A. P. A List of the Summer Birds of the Presid[illegible] Range of the White Mountains, N. H. Auk, 1887, pp. 100–108.

47 species

°CHAMBERLAIN, M. A Catalogue of Canadian Birds, with notes on the Distribution of the Species. St John's, N.B.: 1887, 8vo, v & 143 pp. [556 spp.]

CHAPMAN, A. C. On the Habits and Migrations of Wildfowl. Zool. 1887, pp. 3–21.

Interesting observations on the seafowl of the Northumberland coast, from the point of view of a punt.

CHATIN, J. Œuf à coquille plissée et a triple vitellus. C.R. Soc. Biol. (8) iv, p. 466.

CHERNELHAZA, S. C. v. [See *Calamodyta* (*Sylviidæ*), *Phalaropus* (*Scolopacidæ*).]

°CLARK, H. L. The Birds of Amherst and Vicinity, including nearly the whole of Hampshire County, Mass. Amherst: 1887, 8vo, 56 pp.

CLARKE, W. E. [See *Bulweria* (*Procellariidæ*).]

COALE, H. K. Ornithological Curiosities.—A Hawk with nine? toes, and a Bobolink with spurs on its wings. Auk, 1887, pp. 331–3[illegible] 2 cuts. *ana-*

——. [See also *Junco hyemalis shufeldti*, n. subsp. (*Fringillidæ*); *Dendræca dugesi*, n. sp., *D. æstiva morcomi*, n. subsp. (*Mniotiltidæ*).]

COLENSO, W. A Description of the curiously-deformed bill of a Huia (*Heteralocha acutirostris*, Gould), an endemic New Zealand Bird. Tr. N. Z. Inst. 1886, pp. 140–145, pl. ix.

Collett, R. Om 4 for Norges Fauna nye Fugle fundne i 1885 og 1886. Forh. Selsk. Chr. 1887, No. 8.

[See *Turdus* (*Turdidæ*), *Pastor* (*Sturnidæ*), *Xema* (*Laridæ*), *Ardea* (*Ardeidæ*).]

Cooper, J. G. Additions to the Birds of Ventura County, California. Auk, 1887, pp. 85–94. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 13.]

Cory, C. B. The Birds of the West Indies, including the Bahama Islands, the Greater and the Lesser Antilles, excepting the Islands of Tobago and Trinidad. *T. c.* pp. 37–51, 108–120, 223–232, & 311–328. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 10.]

Falconidæ, *Cathartidæ*, *Columbidæ*, *Tetraonidæ*, *Phasianidæ*, *Œdicnemidæ*, *Charadriidæ*, *Scolopacidæ*, *Ciconiidæ*, *Ibididæ*, *Plataleidæ*, *Phœnicopteridæ*, *Ardeidæ*.

——. A List of the Birds taken by Mr. Robert Henderson in the Islands of Old Providence and St. Andrew's, Caribbean Sea, during the winter of 1886–87. *T. c.* pp. 180 & 181.

[See *Lampornis hendersoni* (*Trochilidæ*), *Vireosylvia canescens* (*Vireonidæ*), *Icterus lawrencii* (*Icteridæ*), *Mimus magnirostris* (*Turdidæ*), *Engyptila neoxena* (*Columbidæ*), *Dendræca flavida* (*Mniotiltidæ*) n. spp.]

——. A List of the Birds collected by Mr. W. B. Richardson, in the Island of Martinique, West Indies. *T. c.* pp. 95 & 96.

[See *Blacicus martinicensis*, n. sp.? (*Tyrannidæ*).]

——. [See also *Euetheia grandior* (*Fringillidæ*), *Rhamphocinclus sanctæluciæ* (*Turdidæ*), *Vireo caymanensis* (*Vireonidæ*), *Zenaida richardsoni*, (*Columbidæ*), n. spp.]

Coues, E. Key to North American Birds [*cf.* Zool. Rec. xxi, *Aves*, p. 10], 3rd Ed. Boston: 1887, 8vo, 895 pp., 1 col. pl., 563 cuts.

The Am. Orn. Union nomenclature is used, and species from Lower California are inserted: pp. 865–895 being a new appendix, containing descriptions of additional species.

—— [See also Newberry, J. S.]

Cox, P., Jun. Rare Birds of North-Eastern New Brunswick. Auk, 1887, pp. 205–213.

Csato, J. v.* [See *Locustella* (*Sylviidæ*).]

Dalla-Torre, K. v. Die zoologische Literatur von Tirol und Vorarlberg (bis inclusive 1885). Z. Ferdinand. Tirol Vorarlberg, iii, 30 [1886], pp. 323–407.

——. Ornithologisches aus Tirol. v. MT. orn. Ver. Wien, 1887, pp. 116 & 117. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 11.]

——. [See also *Nucifraga* (*Corvidæ*).]

——, & Tschusi zu Schmidhoffen, V. v. III. Jahresbericht (1884) des Comité's für ornithologische Beobachtungs-Stationen in Oesterreich-Ungarn. Ornis, 1887, pp. 1–156 & 161–360. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 11.]

Observations from 60 stations, preceded, as usual, by a report on the literature of the year for the kingdom.

DARESTE, C. Détermination des conditions physiologiques et physiques de l'évolution normale de l'embryon de la poule. C.R. Ass. Fr. Sci. 1886, pp. 554–566.

DAVIDSON, J. Birds-Nesting on the Ghâts. J. Bomb. N. H. Soc. 1886, pp. 175–183.

——. Notes on the Birds of West Khandesh. Ind. Ann. and Mag. N. H. i, p. 144.

Emendations of a list in Stray Feathers, vol. x, p. 279.

DEDITIUS, C. Przewalsky's neue Vogelarten Centralasiens. Vortrag des Ehrenmitgliedes der Akademie N. M. Przewalsky in der Sitzung der physikalisch-mathematischen Abtheilung in St. Petersburg vom 1–13 Januar, 1887. J. f. O. 1887, pp. 274–285. [See PRZEWALSKI, N. M.]

As the Recorder cannot quite follow the order of the new species in Przewalsky's accounts of his different journeys, and in the German translations of the same, he thinks it best to subjoin the full list here given, though the two last birds have been already recorded in Zool. Rec. xxi, *Aves*, p. 47, and xxiii, *Aves*, p. 44. [See *Leptopœcile elegans*, *L. obscura* (*Paridæ*), *Accentor koslowi* (*Sylviidæ*), *Budytes leucocephala* (*Motacillidæ*), *Lanius giganteus* (*Laniidæ*), *Leucosticte roborowskii* (*Fringillidæ*), *Otocorys teleschowi*, *Pyrgilauda barbata*, *P. kansuensis* (*Alaudidæ*), n. spp. ; *cf.* Zool. Rec. xxiii, *Aves*, p. 12, for other new species.]

°DELAS, F. DE S. DE. Aves de Cataluña que hay en el museo de historia natural de la Universidad de Barcelona. Ann. Soc. Esp. xvi, 2 pp.; and Act. Soc. Barcelona, pp. vii & viii.

Not seen by Recorder. Some error in volumes.

DELAURIER, M. Éducations d'Oiseaux exotiques faites à Angoulême. Bull. Soc. Acclim. 1887, pp. 89–96.

DOIG, S. B. [See *Pelecanidæ*.]

DRUMMOND-HAY, H. M. Notes on some rare Perthshire Birds lately placed in the Museum. Tr. & P. Perthsh. Soc. 1887, pp. 1–15.

The species are the Hawfinch, Rose-coloured Pastor, Ruddy Sheldrake, and Great Crested Grebe.

DUBOIS, A. Faune des Vertébrés de la Belgique. Oiseaux. Tome i. Brussels: 1887, roy. 8vo, xvi & 747 pp. [See *Passer montanus malaccensis*, n. subsp. (*Fringillidæ*).]

——. Compte rendu des observations ornithologiques faites en Belgique pendant l'année 1886. Bull. Mus. Belg. v [1887], pp. 99–158. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 13.]

——. [See also *Agelæus sclateri* (*Icteridæ*), *Cuculus stormsi* (*Cuculidæ*), n. spp.]

DUCKWORTH, W. [See MACPHERSON, H. A.]

DWIGHT, J., JUN. Summer Birds of the Bras d'Or Region of Cape Breton Island, Nova Scotia. Auk, 1887, pp. 13–16.

59 species.

[Dwight, J., Jun.] [See also *Ammodramus caudacutus subcirgatus*, n. subsp. (*Fringillidæ*).]

Eckstein, C. Beiträge zur Nahrungsmittellehre der Vögel. J. f. O. 1887, pp. 286–298.

A useful article on the food of Birds, containing the experience of five years.

Einer, C. H. T. Ueber die Zeichnung der Vogelfedern. Humboldt, vi, pp. 379–381.

Emerson, W. O. Ornithological Observations in San Diego County. Bull. Cal. Ac. Sci. ii (1887), pp. 419–431.

46 species were noticed on the mountains, and 63 in the Poway Valley.

Emin Pascha. [See Hartlaub, G.]

Ernst, A. Catálogo de las Aves en el Museo Nacional de Caracas. Revista Cientifica de la Univ. Central de Venezuela, i, pp. 25–44.

339 species.

Feilden, H. W. On the Zoology of Captain Markham's Voyage to Hudson's Bay, in the summer of 1886. Tr. Norw. Soc. iv, pt. iii, pp. 344–353. [Birds, pp. 348–352, 38 species.]

[See also *Upupa* (*Upupidæ*), *Hydrochelidon*, *Larus* (*Laridæ*).]

Foresti, O. Supplemento all' avifauna Cremonese. Cremona: 1886, 8vo, 11 pp.

Filhol, H. Memoires sur la Passage de Vénus. Tom. iii, pt. 2. Recherches Zoologiques, Botaniques, et Géologiques faites à l'Ile Campbell et en Nouvelle-Zélande. Birds, pp. 35–339, pls. i–xxxvii. Paris: 1885, 4to.

Ch. ii. Oiseaux. Ch. iii. Observations anatomiques relatives à diverses espèces de Manchots [*Spheniscidæ*]. [See *Phalacrocorax campbelli*, n. sp. (*Phalacrocoracidæ*).]

Finsch, O., & Blasius, R. Diego Garcia und seine Seeschwalben. Ornis, 1887, pp. 361–393, pls. i & ii, map.

[See *Sterna*, *Anous*, *Gygis* (*Laridæ*).]

Fischer, G. A. [See Reichenow, A.]

Fitch, E. A. [See *Oriolus* (*Oriolidæ*), *Ardea* (*Ardeidæ*).]

Förster, F. [See *Emberiza* (*Fringillidæ*).]

Gadeau de Kerville, H. Note sur un hybride bigénère de Pigeon domestique et de Tourterelle à collier, suivie de la recapitulation des hybrides uni- et bigénères observés jusqu'alors dans l'Ordre des Pigeons. Bull. Soc. Rouen, 1886, pp. 153–163.

Gadow, H. [Bronn, H. G.]. Klassen und Ordnungen des Thierreichs, wissenschaftlich dargestellt in Wort und Bild. Fortgesetzt von Dr. Hans Gadow in Cambridge. Sechster Band, iv. Abtheilung. Vögel: *Aves* (Rückenmark, Gehirn, Gehirnnerven), 16, 17 Lieferung pp. 321–384, pls. xxviii, xxix, & xl, 6 cuts. Leipzig und Heidelberg 1887, 8vo. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 8.]

GANZENMÜLLER, C. Kaschmir, sein Klima, seine Pflanzen- und Thierwelt. MT. geogr. Ges. Wien, xxx, pp. 579–596.

A few Birds are mentioned, pp. 594 & 595.

GARRIOCK, J. T. [See *Tringa* (*Scolopacidæ*), *Porzana* (*Rallidæ*).]

GÄTKE, H. III. Jähresbericht (1886) über den Vogelzug auf Helgoland. Ornis, 1887, pp. 394–447. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 15.]

The weather is given for each day, as well as the Birds observed, while the most important of the latter are indicated by larger type.

——. Bird Notes from Heligoland for the year 1886. The Naturalist, 1887, pp. 305–348.

Records of occurrences for each month.

°GIBBS, M. The Birds of Michigan. For. & Str. xxvi, pp. 305 & 306; xxvii, pp. 123, 124, 223, & 224. [*Cf.* Zool. Rec. xxii, *Aves*, p. 10.]

GIGLIOLI, E. H., & MANZELLA, A. Iconografia dell' Avifauna Italica, ovvero tavole illustranti le specie di uccelli che trovansi in Italia con brevi descrizioni e note. Prato (Toscano): 1887, pts. xxxiv–xxxvii, pagin. discont. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 15.]

The species figured are *Hirundo rufula*, *Aedon philomela*, *Dendrocygna javanica*, *Microcarbo pygmæus*, *Lomvia troile* (pt. xxxiv), *Lar[illegible] alis*, *Chrysomitris spinus*, *Agelæus phœniceus*, *Anser erythropus*, *Megalestes catarrhactes* (pt. xxxv), *Coracias garrula*, *Turdus iliacus*, *Dromolæa leucura*, *Columba palumbus*, *C. livia* (pt. xxxvi), *Calliope camtschatkensis*, *Phylloscopus bonelli*, *P. superciliosus*, *Chloroptila citrinella*, *Ciconia nigra* (pt. xxxvii).

GIGLIOLI, H. H. [E. H.], & SALVADORI, T. Brief Notes on the Fauna of Corea and the adjoining coast of Manchuria. P. Z. S. 1887, pp. 580–596, pl. lii. [*Cf.* TACZANOWSKI, L.]

The material for this paper was afforded by a collection made by order of Prince Thomas of Savoy, commanding the "Vettor Pisani," when on a voyage round the world. By far the greater number of specimens are Birds (47 spp.). Special interest attaches to corroborations of statements in David & Oustalet's "Oiseaux de la Chine," &c. Examples were obtained of *Cygnus davidi* and *C. bewicki* (figured), unless what is supposed to be the former is found to be a new species. [See also *Emberiza* (*Fringillidæ*), *Coreus* (*Coreidæ*), *Phasianus* (*Phasianidæ*), *Heteractitis* (*Scolopacidæ*), *Cosmonetta*, *Œdemia* (*Anatidæ*), *Podicipes* (*Podicipedidæ*).]

GODMAN, F. D., & SALVIN, O. Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. London: 1887, 4to; Zoology, pt. lv, *Aves*, pp. 449–456; pt. lvii, pp. 457–512, pls. xxxiii–xxxv. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 16.]

These parts, which conclude Vol. I of *Aves*, contain the families *Icteridæ*—genera *Dolichonyx* (continued), *Molothrus*, *Agelæus*, *Xanthocephalus*, *Sturnella*, *Leistes*, *Icterus*, *Scolecophagus*, *Dives*, *Quiscalus*: *Coreidæ*—genera *Corvus*, *Cyanocitta*, *Aphelocoma*, *Cyanolyca*, *Xanthura*, *Cyanocorax*,

Psilorhinus, Calocitta : *Alaudidæ*—genus *Otocorys*. Figures are given of *Icterus sclateri, I. auratus, Cyanocitta argentigula, C yucatanica* ; while *Icterus nelsoni*, which is not in Cat. Birds Brit. Mus. xi, is included.

GÖRING, A. [See *Trochilidæ*.]

GOSS, N. S. Additions to the Catalogue of the Birds of Kansas. Auk, 1887, pp. 7–11. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 16.]

°GOTTI, A. Della tubercolosi bacillare negli uccelli e in particolare di una enzoozia di tubercolosi in un pollaio. Rend. Ist. Bologna, 1886, pp. 62 & 63.

GOULD, J. [THE LATE]. Supplement to the *Trochilidæ*, or Humming Birds. Pt. v (conclusion). London : 1887, fol. [*Cf.* Zool. Rec. xxii, *Aves*, p. 11.]

For species figured see *Trochilidæ*. The letterpress is by R. B. SHARPE, as is the preface, &c.

——. The Birds of New Guinea and the adjacent Papuan Islands, including any new species that may be discovered in Australia. Pt. xxiii. London : 1887, fol. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 16.]

The letterpress is by R. B. SHARPE. The species (all figured) are *Paradisea lawesi, Geffroyius timorlaoensis, Cyclopsitta coccineifrons, Calliechrocelicolophus, Criniger chloris, Lamprocorax minor, Myzomela nigrita, Pachycephala iliolophus, Zosterops rendovæ, Phonygama purpureo-violacea, Pachycephala christophori, Rallicula forbesi, Cracticus rufescens.*

GREEN, J. F. Ocean Birds. With a Preface by A. G. GUILLEMARD, and a Treatise on Skinning Birds by F. H. H. GUILLEMARD, M.D. The illustrations by FRANCES E. GREEN. London : 1887, 4to, viii, 98, & v pp., vi pls.

The work is divided into three parts : I. *Procellariidæ*. II. *Pelecanidæ* [including *Fregatidæ, Sulidæ, Phaethontidæ*]. III. *Laridæ*.

GREENE, W. T. Parrots in Captivity. Vol. III. London : 1887, 8vo, viii & 144 pp., 27 pls.

There has been an interval of three years since Vol. II was published. [*Cf.* Zool. Rec. xxi, *Aves*, p. 54.]

GREVÉ, C. Zoologisches aus Moskaus Umgebung. Zool. Gart. 1887, pp. 316–318.

GRÖNDAL, B. Ornithologischer Bericht von Island (1886). Ornis, 1886, pp. 601–614.

Observations at Reykjavik and the neighbourhood (28 spp.), giving the Æve names of the Birds. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 17.]

——. Isländische Vogelnamen. *Op. cit.* 1887, pp. 587–618.

GRUENHAGEN, A. Ueber den Einfluss des Sympathicus auf die Vogelpupille. Arch. ges. Phys. xl, pp. 65–67. [See JEGOROW, J.]

GUILLEMARD, F. H. H. [See GREEN, J. F., and *Parus cypriotes*, n. sp. (*Paridæ*).]

GUPPY, H. B. The Solomon Islands and their Natives. London : 1887, 8vo, xvi & 384 pp., 8 pls., map & cuts.

[See *Geophilus* (*Columbidæ*), *Collocalia* (*Cypselidæ*).]

GURNEY, J. H. A List of Birds collected by Mr. Walter Ayres in Transvaal and in Umzeilla's Country, lying to the North-east of Transvaal, between the 23rd and 24th degrees of South Latitude and the 32nd and 33rd of East Longitude, with notes by the Collector. Ibis, 1887, pp. 47–64. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 4.]

[See *Centropus* (*Cuculidæ*), *Barbatula* (*Capitonidæ*), *Cossypha* (*Timeliidæ*), *Saxicola* (*Sylviidæ*).] 20 species are given, not before recorded by Messrs. Gurney or T. Ayres from Transvaal.

——. [See also SYMONDS, E., and *Urospizias jardinii*, n. sp. ?, pl., *Baza*, *Falco* (*Falconidæ*).]

GURNEY, J. H., JUN. Ornithological Notes from North Norfolk. Zool. 1887, pp. 140–142. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 17.]

——. [See also *Passer* (*Fringillidæ*), *Laridæ*.]

—— & SOUTHWELL, T. Fauna and Flora of Norfolk. Part XI. Birds. Section ii. Tr. Norw. Soc. iv, pt. iii, pp. 397–432. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 17.]

The total number of species is 299, but of these 11 are, for different reasons, included in square brackets and separately numbered.

HAIJ, B. Jemförande studier öfver Foglarnes Bäcken. Act. Lund. x.. No. vii, 81 pp., 4 pls.

A. General Part.—Os sacrum ; os innominatum.

B. Special Part.—Passeres, Zygodactyli, Strisores.

HANCOCK, J. L. Notes and Observations on the Ornithology of Corpus Christi and vicinity, Texas. Bull. Ridgw. Orn. Club, 2 [1887], pp. 11–23.

HANF, P. B. Ornithologische Beobachtungen am Furtteiche und dessen Umgebung von June bis December, 1886. MT. Ver. Steierm. 1886, pp. 69–73.

HARGITT, E. [See *Picidæ*, especially *Gecinus gorii*, n. sp., and *Poliopicus*.]

HARTERT, E. Vorläufiger Versuch einer Ornis [Ost- und West-] Preussens.. MT. orn. Ver. Wien, 1887, pp. 111–115, 130, 131, 145, 146, 161–164, & 173–181.

[See *Dryocopus* (*Picidæ*), *Erythropus* (*Falconidæ*), *Turdus* (*Turdidæ*), *Carpodacus* (*Fringillidæ*).]

——. Ueber die Vögel der Gegend von Wesel am Niederrhein. J. f. O. 1887, pp. 248–270.

HARTING, J. E. [See *Diomedea* (*Procellariidæ*).]

HARTLAUB, G. Dritter Beitrag zur Ornithologie der östlich-äquatorialen Gebiete Afrikas. Zool. Jahrb. ii, pp. 303–348, pls. xi–xiv, 2 cuts. [*Cf.* Zool. Rec. xix, *Aves*, p. 8.]

The Birds described were sent by Emin Bey from Ladó, and include, *Crateropus tenebrosus*, pl., *Ptyrticus turdinus*, pl. & cut, *Xenocichla*

orientalis, pl., *Pentholaa clericalis*, ♂ ♀ ad. et juv., pl., *P. baucis*, n. sp.? (*Timeliidæ*), *Symplectes eremobius*, n. sp., *Estrelda* [*Habropyga*] *nonnula*, pl., *Lagonosticta anochroa*, pl., (*Ploceidæ*), *Mirafra bucolica*, n. sp. (*Alaudidæ*). The second part consists of further remarks on the author's former papers, and includes *Sitagra pelzelni*, n. sp., pl., *Symplectes ocularius* n. var. *crocatus*, pl. & cut (*Ploceidæ*), *Ægithalus parvulus*, pl. (*Paridæ*).

[Hartlaub, G.] [See also Marshall, W., and *Nigrita* (*Ploceidæ*).]

Hartwig, W. [See *Fringilla* (*Fringillidæ*), *Sylvia* (*Sylviidæ*).]

Harvie Brown, J. A. Priest Island and its Bird Life. Tr. Norw. Soc. iv, pt. iii, pp. 310–315.

The island forms a part of Ross-shire in Scotland.

——. The Isle of May: its Faunal Position and Bird Life. P. Phys. Soc. Edinb. [President's Address], 1886–7, pp. 303–325, map, plan of island.

—— & Buckley, T. E. A Vertebrate Fauna of Sutherland, Caithness, and West Cromarty. Edinburgh: 1887, 8vo, xii & 344 pp., 11 pls., map & illustr. titlepage. [Birds, pp. 97–246.]

A welcome addition to our knowledge of the zoology of the district, [illegible] take its place by the side of the works on the fauna of various [illegible]ties lately issued. [See especially *Plectrophanes* (*Fringillidæ*).]

Hastings, W. Notes on Local Ornithology, 1883, 1884, 1885. Tr. Dumfries Soc. 1883–6, pp. 6 & 7, 45 & 46, 121–123.

Haswell, W. A. [See *Dromæus* (*Casuariidæ*).]

Hausmann, W. Tierleben und Striefzüge in unsern südlichen Karpathen. JB. sieb. Karpath. Ver. 1887, pp. 25–38.

A few Birds are mentioned, including *Tichodroma muraria* and *Accentor alpinus*.

Hayek, G. v. [See Blasius, R.]

Heckel, E. Note sur un cas de monstruosité observé dans les pattes du poulet. J. de l'Anat. Phys. xxiii, pp. 320–323, cuts.

Two of the claws united.

Heilprin, A. Explorations on the West Coast of Florida. Philadelphia 1887, 8vo, 134 pp., 19 pls.

A few Birds mentioned, p. 35.

Helm, F. [See Meyer, A. B.]

Herrmann, G. [See Torneux, F.]

Hinxman, L. N. [See *Plectrophanes* (*Fringillidæ*).]

Holmberg, E. L. Viaje á Misiones. Bol. Ac. Arg. x, pp. 5–144.

A few notices of Birds on p. 60.

Holtz, L. [See *Parus* (*Paridæ*).]

Hume, A. O. [See *Pelecanidæ* and *Pernis*, *Falco* (*Falconidæ*).]

HUNT, H. W. Notes on the Nests of Australian Birds. Vict. Nat. iv, pp. 60–64.

Somewhat popular.

HURST, C. H. [See MARSHALL, A. M.]

ISTVÁNTÓL, C. Madártani megfigyelések Pozsony vidékén 1885-ben. Verh. Ver. Presburg, New Series, Heft 6 (1884–6), pp. 41–65.

Birds of Presburg, 110 species.

——. A honi madártan történetéből. Termes. Köslöny, 1887, pp. 415–418 & 456–460.

JEGOROW, J. Ueber den Einfluss des Sympathicus auf die Vogelpupille. Arch. ges. Phys. xli, pp. 326–348, pl. v. [See GRUENHAGEN, A.]

JHERING, J. v. Ornithologische Forschung in Brasilien. Ornis, 1887, pp. 569–581. [*Cf.* Zool. Rec. xxii, *Aves*, p. 4.]

No special part is given, the Birds being included in the general remarks.

——. Die Vögel der Lagoa dos Patos. Eine zoo-geographische Studie. Z. ges. Orn. 1887, pp. 142–165, pl. i (map).

This is to be considered as an appendix to the author's (and BERLEPSCH's) paper on the Birds of Taquara. [*Cf.* Zool. Rec. xxii, *Aves*, p. 4.]

JURINAC, A. E. Prilog hrvatskoj fauni ogulinsko-slunjske okoli pećina. Rad. jugoslav. akad. lxxxiii, viii [1887], pp. 86–128.

Apparently a fauna of the country near Ogulin, in Croatia. Birds, pp. 122–126.

KADICH, H. v. Hundert Tage im Hinterland. Eine ornithologische Forschungreise in der Herzegowina. MT. orn. Ver. Wien, 1887, pp. 6–14, 23–25, 39–41, 61–63, 71, 72, 85, 86, 102–105, 121–123, 139, 140, 154–157. [*Cf.* Zool. Rec. xxii, *Aves*, p. 14.]

KASTSCHENKO, N. Das Schlundspaltengebiet des Hühnchens. Arch. Anat. Phys. (Anat.), pp. 258–300, pls. xvii–xix.

KERSCHNER, L. Zeichnung der Vogelfeder. Humboldt, vi, pp. 473 & 474. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 21.]

KINBERG, J. G. H. [See SUNDEVALL, C. J.]

°KLINE, H. A. Florida Bird Notes. For. & Str. xxvii, No. 25, p. 484.

Treats of Eagles, Hawks, and Owls.

KNAUTHE, K. Zur Fütterung des Federwildes im Winter. Monat. Schutze Vogelw. 1887, pp. 313–319.

KOENIG-WARTHAUSEN, R. Naturwissenschaftlicher Jahresbericht, 1886. JH. Vér. Württ. 1887, pp. 229–278. [Birds, pp. 229–267.]

——. Ueber die Schädlichkeit und die Nützlichkeit der Rabenvögel. *T. c.* pp. 279–289.

On the damage done by the *Corvidæ* and their utility.

KORSCHELT, —. Ueber einen Fall von "Hahnenfedrigkeit" bei der Hausente. Biol. Centralbl. vii, pp. 731 & 732.

Kotz, A. [See *Turdus* (*Turdidæ*).]

Krohn, H. Eiformen. Zool. Gart. 1887, pp. 115–118.

Laar, J. N. van de. [See *Fringillidæ*.]

Langdon, F. W. August Birds of the Chilhowee Mountains, Tennessee. Auk, 1887, pp. 125–133.

63 species or subspecies.

——. Birds. A Lecture delivered before the Cincinnati Society of Natural History. J. Cincinn. Soc. x, pp. 98–110, diagrams.

Lászlótól, W. Kerguelen Szigetén. Termes. Köslöny, 1887, pp. 138–148 & 167–179.

Mention is made of *Chionis minor*, *Aptenodytes patagonica*, *Procellaria gigantea*, *Querquedula eatoni*.

Laver, H. [See *Gallinago* (*Scolopacidæ*).]

Lawrence, G. N. [See *Margarops albiventris* (*Turdidæ*), *Troglodytes brachyurus* (*Troglodytidæ*), *Octhœca flaviventris* (*Tyrannidæ*), n. spp., *Regulus satrapa aztecus*, n. subsp. (*Sylviidæ*), *Helminthophila*, *Helinœa* (*Mniotiltidæ*).]

°Lawrence, R. B. Long Island Bird Notes. For. & Str. xxvii, No. 22, 428.

[illegible] W. V. Systematic List of Tasmanian Birds. P. R. Soc. Tasm. 1886, pp. 235–245.

[illegible] *Acanthornis*, n. g., *Ephthianura* (*Sylviidæ*).]

Lescuyer, M. F. Étangs de Baudonvilliers. Modification de la Flore et de la Faune selon que les étangs sont en eau ou à sec. Role des Hirondelles. Mélanges d'ornithologie, pt. 2, pp. 1–30.

——. Domiciles et Stations établis dans les trous d'arbres par des animaux et particulièrement par des oiseaux. *Op. cit.* pt. 3, pp. 1–31.

——. Régime alimentaire des oiseaux. *Op. cit.* pt. 4, pp. 1–34.

Leverkühn, P. Der ornithologische Nachlass Adolf Mejer's. Beiträge zur Kenntniss der Avifauna der Provinz Hannover. J. f. O. 1887, pp. 189–213.

A very useful paper to determine the dates of breeding of many species (e.g., *Acrocephalus palustris*) in N. Germany.

——. Ueber Farbenvarietäten bei Vögeln. Aus den Museen in Hannover, Hamburg, und Kopenhagen. *T. c.* pp. 79–86.

——. [See also *Turdus* (*Turdidæ*).]

Liebe, K. T. Ornithologische Skizzen. xii. Die Schnärrdrossel (*Turdus viscivorus*). xiii. Der Nachtschatten (*Caprimulgus europæus*). Monat. Schutze Vogelw. 1887, pp. 4–11 & 236–245, pls. i & ii. [*Cf.* Zool. Rec. xxiii, *Ares*, p. 23.]

Lilford [Lord]. Coloured Figures of the Birds of the British Islands. London: 1886, 8vo, pts. iv & v.

Containing *Melizophilus provincialis*, *Regulus cristatus*, *Acredula caudata* and *A. rosea*, *Parus ater* and *P. britannicus*, *Troglodytes parvulus*

Certhia familiaris, *Corvus caryocatactes*, *Alauda arborea*, *Accipiter nisus*, ♀ ad. & juv., ♂ juv. (in pt. iv), *Regulus ignicapillus*, *Phylloscopus superciliosus*, *P. minor*, *P. trochilus*, *Accentor modularis*, *Lanius collurio*, *Emberiza miliaria*, *E. hortulana*, *E. pusilla*, *E. schæniclus*, *Cypselus apus*, *Accipiter nisus*, ♂ ad. (in pt. v).

[Lilford (Lord)]. Notes on Mediterranean Ornithology. Ibis, 1887, pp. 261–283.

An interesting description of an ornithological cruise in 1882, between Cadiz and the shores of Italy, a large part of which was occupied in investigating the avifauna of the smaller islands. [See *Gypaëtus*, *Falco*, pl. (*Falconidæ*), *Larus* (*Laridæ*).]

——. Notes on the Ornithology of Northamptonshire and Neighbourhood. Zool. 1887, pp. 249–254. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 23.]

[See *Parus* (*Paridæ*), *Ampelis* (*Ampelidæ*), *Eudromias* (*Charadriidæ*).]

——. Notes on the Birds of Northamptonshire. J. Northampt. Soc. iii, pp. 225–234 & 265–275 ; iv, pp. 191–201.

——. [See also *Parus cypriotes*, n. sp. (*Paridæ*), *Otis* (*Otididæ*).]

Lister, J. J. [A Letter from] Christmas Island. Nature, 1887, pp. 203 & 204.

Littleboy, J. E. Notes on Birds observed in Hertfordshire dur[ing] year 1886. Tr. Hertf. Soc. 1887, pp. 161–168. [*Cf.* Zool. Rec. [xxiii], *Aves*, p. 23.]

Littledale, H. The Birds of South Gujerat. J. Bomb. N. H. Soc. 1886, pp. 194–200.

Includes many additions to Butler's list of the Birds of Sind, Cutch, &c., in Bombay Gazetteer.

Lloyd, W. Birds of Tom Green and Concho Counties, Texas. Auk, 1887, pp. 181–193 & 289–299.

253 species.

Lorenz, L. v. [See Pelzeln, A. v., and *Alca* (*Alcidæ*).]

Lorenz, Th. Beitrag zur Kenntniss der ornithologischen Fauna an der Nordseite des Kaukasus. Moscow: 1887, 4to, xii & 62 pp., 5 pls.

This work is a useful supplement to those of Radde and others, and in addition to an introduction by the author, contains a preface by M. Menzbier, in which 2 new species and 2 new subspecies are given. In the text many interesting details are to be found, while the plates are also good. [See *Sturnus caucasicus* (*Sturnidæ*), *Phyllopneuste lorenzi* (*Sylviidæ*), n. spp., *Mecistura irbyi*, *caucasica* (*Paridæ*), *Ruticilla erythrogaster*, *severzovi* (*Sylviidæ*), n. subspp.]

Lucas, F. A. [See *Tachycineta* (*Hirundinidæ*), *Nothura* (*Tinamid*[æ] and *Procellariidæ*.]

[Vo]gel.

Macfarland, W. [See *Trochilus* (*Trochilidæ*).]

MacFarlane, J. R. H. Notes on Birds in the Western Pacific, made in H.M.S. 'Constance,' 1883–5. Ibis, 1887, pp. 201–215.

Notes on Smyth's Channel, Coquimbo, Arica, Arequipa, Callao, Payta,

Guayaquil, Sala y Gomez I., Easter I., Ducie I., Pitcairn I., Sandwich Is., Christmas, Jarvis, and other islands of the Fanning group, Juan Fernandez, &c., chiefly about Sea Birds.

MACGREGOR, J. Notes supplementary to Major Butler's Catalogue of Birds of the Deccan and South Mahratta Country [Stray Feathers, ix, p. 367]. Str. Feath. x, pp. 435–442.

°MCILWRAITH, T. The Birds of Ontario : being a List of Birds observed in the Province of Ontario, with an Account of their Habits, Distribution, Nests, Eggs, &c. Hamilton : 1886, 8vo, 304, iv, vi, & vii pp.

MACKAY, J. Y. The Development of the Branchial Arterial Arches in Birds, with special Reference to the Origin of the Subclavians and Carotids. P. R. Soc. xlii, pp. 429–432.

An abstract of a paper in which the author controverts certain statements of Rathke.

MACPHERSON, H. A. [See *Emberiza* (*Fringillidæ*) and the family, *Saxicola* (*Sylviidæ*).]

—— & DUCKWORTH, W. Zoological Record for Cumberland. Tr. Cumberl. Westmorl. Ass. xii, pp. 29–43 [*Aves*].

MA[illegible]ÁSZ, J. v. [See PELZELN, A. v.]

Europ, N. A. Soobschcheniya ez Tachkenta. Isvest. Mosc. Univ. l, i, p. columns 169–174. [Communication (of a letter) from Taschkend.]

Birds : columns 169–172.

MAGAUD D'AUBUSSON, L. Catalogue raisonné des espèces d'oiseaux qu'il y aurait lieu d'acclimater et de domestiquer en France. Bull. Soc. Acclim. 1887, pp. 147–161, 337–348, 424–439, 599–635, & 721–740, cuts. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 41.]

MAGNIEN, L. Étude des rapports entre les nerfs craniens et le sympathique céphalique chez les Oiseaux. C.R. civ, pp. 77–79.

MALL, F. P. Entwickelung der Branchialbogen und -Spalten des Hühnchens. Arch. Anat. Phys. (Anat.) 1887, pp. 1–34, pls. i–iii.

MANZELLA, A. [See GIGLIOLI, E. H.]

MAREY, E. J. Le mecanisme du vol des oiseaux étudié par la chronophotographie. C.R. civ, pp. 210–215, 4 cuts.

——. Mouvements de l'aile de l'oiseau représentés suivant le trois dimensions de l'espace. *T. c.* pp. 323–330, 5 cuts.

——. Figures en relief, représentant les attitudes successives d'un goéland pendant une révolution de ses ailes. *T. c.* pp. 817–819.

Figures en relief répresentant les attitudes successives d'un pigeon pendant le vol. Disposition de ces figures sur un zootrope. *T. c.* pp. 1669–1671.

——. La photochronographie appliquée au problême dynamique du vol des oiseaux. *Op. cit.* cv, pp. 421–426, 1 cut.

——. De la mesure des forces qui agissent dans le vol de l'oiseau. *T. c.* pp. 504–508.

[Marey, E. J.] Du travail mécanique dépensé par le goéland dans le vol horizontal. *T. c.* pp. 594–600.

——. Le mécanisme du vol des oiseaux éclairé par la photochronographie. La Nature, xxx, pp. 8–14, 11 figs. [Reproduced in Nature, Feb. 16, 1888, pp. 369–374.]

——. Physiologie du vol des oiseaux. Rev. Sci. (3) xl, pp. 65–70.

Marshall, A. M., & Hurst, C. H. A Junior Course of Practical Zoology. London : 1887, sm. 8vo, xxiv & 440 pp., 48 figs. (cuts).

[See *Gallus* (*Phasianidæ*), *Columba* (*Columbidæ*).]

Marshall, W. Deutschlands Vogelwelt in Wechsel der Zeiten. Hamburg : 1887, 8vo, 48 pp. [On gradual changes in the German avifauna.]

——. Atlas der Tierverbreitung (Berghaus' Physikalischer Atlas, Abth. vi). Gotha : 1887, 10 pp., 9 pls. III. Verbreitung der Vögel, 2 pls.

The distribution of Birds has been worked out by G. Hartlaub & A. Reichenow.

Martin, R. Catalogue des Oiseaux de la Brenne: Ornithologie de l'arrondissement du Blanc. Bull. Soc. Z. Fr. xii [1887], pp. 1–96.

An account of 154 species which breed in the district, and 119 found on passage only. [See *Dafila* (*Anatidæ*), *Hydrochelidon* (*Laridæ*).]

Matschie, P. Verbreitung der Vögel Deutschlands in kartographischer Darstellung. I. Versuch einer Darstellung der Verbreitung von *Corvus corone*, L., *Corvus cornix*, L., und *Corcus frugilegus*, L. J. f. O. 1887, pp. 617–648, pl. iii (map).

——. Der Ornithologische Nachlass Dr. Richard Böhm's. II. Uebersicht über die letzten ornithologischen Sammlungen Dr. Richard Böhm's östlich und westlich des Tanganyika-See's, unter Berücksichtigung der Tagebücher des Reisenden zusammengestellt. *T. c.* pp. 135–156. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 34, *sub voce* Schalow.] III. Ergänzungen zu den ornithologischen Notizen aus Central-Afrika, iii. *T. c.* pp. 156–159. [*Cf.* Zool. Rec. xxii, *Aves*, p. 5.]

No. II is divided into two heads :—1, Birds of Tanganyika and the neighbourhood ; 2, Birds of Marungu. No. III is important as correcting or determining the names of many species.

°Maynard, C. J. Corrected Descriptions of five new Birds from the Bahamas. American Exch. & Mart & Household Journal, iii, No. 6, p. 69 (1887). [*Cf.* Zool. Rec. xxii, *Aves*, p. 47, *sub voce* "*Picus*."]

Mehnert, E. Untersuchungen über die Entwicklung des Os pubis der Vogel. Morph. JB. xiii, pp. 259–295.

Menzbier, M. On some new or rare Palæarctic Birds. Ibis, 1887, pp. 299–302, pl. ix.

[See *Tharrhaleus pallidus*, n. sp. (*Sylviidæ*), *Trochalopteron prjevalskii*, n. sp. (*Timeliidæ*), *Gecinus zaroudnoi*, n. sp. ? (*Picidæ*), *Phasianus Phasianidæ*), *Tetrao* (*Tetraonidæ*).]

——. [See also Lorenz, Th., Nazarow, P. S., and *Spheniscidæ* (anat.)

MERLATO, L. [See *Struthionidæ*.]

°MERRIAM, C. H. Report of the Ornithologist (of the U.S.) for the year 1886. Ann. Rep. Dep. Agric. 1886 [Washington], p. 227.

Chiefly on the destructiveness of the Sparrow (see GURNEY, J. H., Jun.).

——. On a Bird new to Bermuda, with Notes upon several Species of rare or accidental occurrence. Bull. U. S. Nat. Mus. No. 25 [1884] pp. 281–284.

——. [See also *Helminthophila* (*Mniotiltidæ*).]

MEYER, A. B. Notiz über in Ost-see-Bernstein eingeschlossene Vogelfedern. Schr. Ges. Danz. 1887, pp. 206–208, 2 cuts.

The family to which the owner of the feathers belonged is doubtful.

——. Bericht über die Verwaltung und Vermehrung der Königlichen Sammlungen für Kunst und Wissenschaft zu Dresden in den Jahren 1884 und 1885. [No date, but no doubt 1887], 47 pp.

——. Aufruf an die Besitzer von Sammlungen in Sachsen erlegten Vogel :—

——. Liste der in Dresdner Mus. sich befindenden im Kgr. Sachsen erlegten Vogel. Circs. Nos. 5 & 6, des Zool. Mus. zu Dresden, 1887.

——. On [See also *Diomedea* (*Procellariidæ*) and the family; *Tetrao*, *Lagopus* Euro; *Tetraonidæ*).]

——, & HELM, F. II. Jahresbericht (1886) der ornithologischen Beobachtungsstationen im Königreich Sachsen. Dresden : 1887, 8vo, 220 pp., map. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 26.]

The second part of this migration report continues the good work of the first, and adds several species not observed in 1885. An index is given at the end, which makes the book doubly useful.

MIDDENDORFF, E. v. Nachtrag zum I. ornithologischen Jahresbericht (1885) aus dem Gouvernement Livland (Russland). Ornis, 1887, pp. 501–508. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 26.]

Includes Curland.

MILNE-EDWARDS, A., & OUSTALET, E. Observations sur quelques espèces d'Oiseaux récemment découvertes dans l'île de la Grande-Comore. Ann. Sci. Nat. (Zool.) (vii), 2, pp. 213–238. [*Cf.* Zool. Rec. xxii, *Aves*, p. 22.]

[See *Humblotia* (*Muscicapidæ*), *Buchanga atra* n. var. *fuscipennis* (*Dicruridæ*), *Zosterops* (*Meliphagidæ*), *Circus* (*Falconidæ*).]

MOJSISOVICS, A. v. Ueber einige seltenere Erscheinungen in der Vogelfauna österreich-ungarns. MT. Ver. Steierm. 1886, pp. 74–86. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 26.]

MONTLEZUN, A. DE. Notes sur les Palmipèdes Lamellirostres, famille des anatidés sous-famille des ansérinés, genre oie (*Anser*). Bull. Soc. Acclim. 1887, pp. 540–554, 660–667 cuts [*cf.* Zool. Rec. xxiii, *Aves*, p. 27].

MOORE, T. J. [See *Phasianidæ*.]

Morcom, G. F. Notes on the Birds of Southern California. Bull. Ridgw. Orn. Club, 2 [1887], pp. 36–57.

More, A. G. Science and Art Museum, Dublin. Guide to the Natural History Department. Series I. Vertebrate Animals. (Recent.) Part I. Mammals and Birds. Dublin : 1887, 8vo, 21 pp.

Morgan, E. D. [See Prjevalski, N. M.]

Müller, A. & K. [See *Cuculus* (*Cuculidæ*).]

Müller, W. Die Vogelfauna des Grosshertzogthums Hessen. J. f. O. 1887, pp. 86–91 & 162–185.

[See *Turdus* (*Turdidæ*).]

Murray, J. A. The Zoology of Beloochistan and Southern Afghanistan. Ind. Ann. & Mag. N. H. i, pp. 49–68 & 105–131.

Nathusius, W. v. Die Kalkörperchen der Eischalen-überzüge und ihre Beziehungen zu den Harting'schen Calcosphäriten. Zool. Anz. 1887, pp. 292–296 & 311–316.

Nazarow, P. S. Recherches Zoologiques des Steppes des Kirguiz. Bull. Mosc. 1886, pp. 338–382. [Also separate.]

A most useful paper to the ornithologist, giving not only the geographical features of the country, but a list of the Birds observed with notes on their breeding. A table of the species is subjoined, in which they are placed under vertical columns, denoting the various regions in which they occur. The preface is by M. Menzbier.

Nehrkorn, A. Mittheilungen über seine Eiersammlung. JB. Ver. Braunschw. v, pp. 117–119.

Nevill, H. Ornithological Notes (Ceylon). Taprobanian, ii, pp. 131 & 132.

——. [See also *Ardea* (*Ardeidæ*), *Sterna* (*Laridæ*).]

Newberry, J. S. The Flight of Birds. Science, x [1887], pp. 299 & 300.

The writer glances at a paper by Prof. Trowbridge on the supposed discovery of a structure in the primary wing-feathers of soaring Birds, tending to maintain the extension of the bony framework of the wing indefinitely without fatigue ; and quotes at some length from another by Prof. Wyman, which describes the above structure. But a note on p. 321 of the same journal, by E. Coues, flatly contradicts the inferences drawn.

Newnham, A. Birds' Nesting Notes from Cutch. J. Bomb. N. H. Soc. 1887, p. 56.

Newton, A. Encycl. Brit. ed. 9, vol. xxii : Artt. Siskin, Skimmer [*Rhynchops* (*Laridæ*)], Skua, †Snake-bird [*Plotus*] fig., Snipe, Sparrow, Spoonbill, Stilt figg., Starling, †Stork fig., Sugar-bird [*Certhiola*], Sun-bird [*Nectariniidæ*], †Sun-bittern [*Eurypyga*] fig., Swallow, †Swan, Swift. Those marked† are important. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 27.]

NICHOLSON, F. Notes on the Ornithology of the [Manchester] District. Published for the Meeting of the British Association at Manchester. 1887, sm. 8vo, 7 pp.

NIELSEN, P. Ornithologische Beobachtungen zu Eyrarbakki in Island. Ornis, 1887, p. 157.

[See *Otus brachyotus* (*Striges*).]

NORTH, A. J. Notes on the Nests and Eggs of certain Australian Birds. P. Linn. Soc. N.S.W. ii, pp. 405–411.

Artemus melanops, *Strepera intermedia*, *S. melanoptera*, *Rhipidura diemenensis*, *Malurus cyanochlamys*, *Acanthiza inornata*, *A. uropygialis*, *Poephila acuticauda*, *Acanthorhynchus dubius*, *Zosterops flavogularis*, *Sitella pileata*, *Scythrops novæ-hollandiæ*, *Megaloprepia assimilis*, *Pezoporus formosus*. [See also *Acanthiza* (*Sylviidæ*).]

——. Contributions to the Oology of the Austro-Malayan and Pacific Regions. *T. c.* pp. 441–446.

Strix lulu, *Macropteryx mystacea*, *Merops ornatus*, *Halcyon sacra*, *Lalage terat*, *Pachycephala icteroides*, *Myiagra rufiventris*, *Piezorhynchus chalybæocephalus*, *Monarcha lessoni*, *Munia melæna*, *Pitta novæ-hiberniæ*, *Calornis metallica*, *Philemon cockerelli*, *Cinnyris corinna*, *Centropus ateralbus*, *C. phasianus polychlorus*, *Carpophaga latrans*, *Chrysæna luteovirens*, *Ptilopus* Europæ, *Demiegretta sacra*, *Ardea javanica*, *Phlegænas stairi*, *Ianthenas mentiensis*, *Amaurornis moluccana*, *Gallinula ruficrissa*, *Tadorna radjah*. The eggs were chiefly taken by J. A. Boyd & — Parkinson.

——. [See also *Melanodryas* (*Sylviidæ*), *Eudynamis* (*Cuculidæ*).]

OGILVIE-GRANT, W. R. A List of the Birds collected by Mr. Charles Morris Woodford in the Solomon Archipelago. P. Z. S. 1887, pp. 328–333, pl. xxvii.

[See *Macrocorax woodfordi*, n. sp. (*Corvidæ*), *Calornis* (*Sturnidæ*), *Rhytidoceros* (*Bucerotidæ*), *Cacatua* (*Psittaci*).] 35 species in all.

OLPHE-GALLIARD, L. Contributions à la Faune Ornithologique de l'Europe Occidentale. Bordeaux and Berlin: 1887, 8vo; pt. vi, *Anseridæ*; pt. vii, *Phœnicopteridæ*; pt. xvi, *Grallæ macrodactylæ* [*Rallidæ*]; pt. xxii, *Brevipedes* [*Caprimulgidæ*, *Hirundinidæ*, *Apodidæ* {*Cypselidæ* and *Trochilidæ*}]; 56, 31, 74, 110 pp. respectively.

Pt. xvi has a supplemental page. Species not occurring in W. Europe are added at the base of the pages, for comparison. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 28.]

——. Faune des Vertébrés du Turquestan. Les Oiseaux. (Translated from the Russian of N. A. SEVERZOFF.) Z. ges. Orn. 1887, pp. 1–141.

358 spp., with tables of distribution, vertical and horizontal. As the translator remarks (p. 141), we must compare the "Notes" of Dresser (Ibis, 1875, 1876) and other works with the above.

OUSTALET, E. [See MILNE-EDWARDS, A., and *Mycteria* (*Ciconiidæ*).]

PALMÉN, J. A. Bidrag till Kännedomen om Sibiriska Ishafskustens Fogelfauna enligt Vega-Expeditionens iakttagelser och samlingar. Vega-Exped. Vetensk. iaktt. Bd. v, pp. 242–511. Stockholm: 1887, 8vo.

Birds of Nordenskiöld's Expedition, 1878–79. This work gives a comprehensive account of the Birds of the Arctic coasts of Siberia—not confining itself to those found by the Vega's crew (80 spp.)—with a full bibliography, and 8 tables which are of importance as showing the meeting points and overlapping of Palæarctic and Nearctic forms. The author divides his subject into four parts, treating of:—1. Localities. 2. Species in detail. 3. Changes in Bird life on the North coast of the Tschuktschi Peninsula, during 1879. 4. Distribution of species over the whole Arctic Province. [See *Larus argentatus vegæ*, n. subsp. (*Laridæ*), *Charadrius*, *Charadriidæ*).]

PARKER, H. [See *Tockus* (*Bucerotidæ*).]

PARKER, W. K. On the Morphology of Birds. P. R. Soc. xlii, pp. 52–58.

An abstract of a paper, containing remarks on the vertebral column, ribs, sternum, limb-girdles, and limbs, from the end of the seventh day of incubation onwards.

PATERSON, A. M. On the Fate of the Muscle-Plate and the Development of the Spinal Nerves and Limb Plexuses in Birds and Mamm[illegible]. Q. J. Micr. Sci. xxviii, pp. 109–129, pls. vii & viii.

——. Some monstrosities in a Dorking Fowl. J. Anat. Phys. xxi (1887), pp. 180–184, pl. vi.

A supernumerary (left) leg and a double cæcal diverticulum in the (right) side of the rectum.

PAYNE, F. F. The Mammals and Birds of Prince of Wales' Sound, Hudson's Strait. P. Canad. Inst. series 3, vol. v, pp. 111–123.

Birds, pp. 119–123. [See *Saxicola* (*Sylviidæ*), *Somateria* (*Anatidæ*).]

PEACH, B. N. [See *Plectrophanes* (*Fringillidæ*).]

PEILE, F. B., List of Birds Collected in Cashmere during the summer of 1887, by. J. Bomb. N. H. Soc. 1887, p. 244.

Presented to Bombay N. H. Museum.

PELZELN, A. v., & LORENZ, L. v. Typen der ornithologischen Sammlung des k. k. naturhistorischen Hofmuseums. (II, III Theil.) Ann. Hofmuseum Wien, ii, pp. 191–216 & 339–352.

——, ——, & MADARÁSZ, J. v. Monographie der *Pipridæ* oder Manakin-Vögel. Pt. I. Budapest: 1887, 4to, pp. 1–13, pls. i–v.

[See *Pipridæ*.]

PLESKE, T. Beschreibung einiger Vogelbastarde. Mém. Ac. Pétersb. (7) xxxv, 5, 8 pp., 1 pl.

Hybrids of *Tetrao tetrix* and *Bonasa betulina* (♂ & ♀), of *Motacilla flava* var. *beema* and *M. melanocephala*, of *Parus borealis* and *Lophophanes cristatus* (♂), of *Emberiza citrinella* and *E. leucocephala*, are figured.

°Portis, A. Contribuzioni alla Ornitologia italiana. Parte II. Atti Acc. Tor. xxii, pp. 223 & 224.

On some Fossil Birds.

°Postma, G. Bijdrage tot de Kennis van den bouw van het darmkanal der Vogels. Leiden: 1887, 8vo, 132 pp.

Prjevalski, N. M. On new Species of Central-Asian Birds. (Translated from the Russian by E. Delmar Morgan.) Ibis, 1887, pp. 401–417.

[See *Leptopœcile elegans*, *L. obscura* (*Paridæ*), *Accentor kozlowi* (*Sylviidæ*), *Budytes leucocephala* (*Motacillidæ*), *Lanius giganteus* (*Laniidæ*), *Leucosticte roborowskii* (*Fringillidæ*), *Otocorys teleschowi* (*Alaudidæ*), n. spp.] *Pyrgilauda barbata*, *P. kansuensis*, are already noticed in Zool. Rec. xxiii, *Aves*, p. 44, and xxi. p. 47. [See Deditius, C.]

Rabé, F. Catalogue annoté des Oiseaux qui vivent à l'état sauvage dans le département de l'Yonne. Bull. Soc. Yonne, xli, pp. 97–240. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 30.]

The subject continued, beginning with *Alaudidæ*.

Radakow, W. N. Ob ezdanie trouda po geographetscheskomou rasprostraneniya ptets Europeiskoi Rossie. Isvest. Mosc. Univ. 1, i, columns 25–29.

[On the publication of a work on geographical distribution of Birds in European Russia.]

Radde, G. Dritter Nachtrag zur Ornis caucasica für das Jahr 1885. Ornis, 1887, pp. 457–500, map. [*Cf.* Zool. Rec. xxii, *Aves*, p. 25.]

A special part follows a general introduction, and includes *Buteo tachardus* var. *rufus*, Radde, *Calamophilus* sp. ?, *Erythrospiza rhodoptera*, *Accentor ocularis* [= *A. fulvescens*, Severz.), *Megaloperdix caucasica* [alarm note], qq. v.

——. Aus den Dagestanischen Hochalpen vom Schah-dagh zum Dulty und Bogos, Reisen ausgeführt im Sommer 1885. MT. Peterm. 1887, Ergänzungsheft, No. 85, 2 maps, 1 pl.

A general account of the journey, with a few notes on Birds.

Rahmer, C. [See *Phœnicopterus* (*Phœnicopteridæ*).]

Ramsay, E. P. [See *Epimachus macleayanæ*, n. sp. (*Paradiseidæ*).]

Rayment, G. T. R. Some Birds seen in a journey through Persia. J. Bomb. N. H. Soc. 1887, pp. 99–103.

Reichenow, A. Dr. Fischer's ornithologische Sammlungen während der letzten Reise zum Victoria Njansa, mit Benutzung der Tagebücher des Reisenden. J. f. O. 1887, pp. 38–78.

Dr. G. A. Fischer visited the southern and eastern parts of Victoria Nyanza, hitherto unknown to European ornithologists, which seem to constitute the boundary between the eastern and north-eastern Fauna of Africa. And just as Bohndorff and Böhm have determined the limits of the West-African Fauna to the N. and S. of the equator, so he has fixed them for the Central Equatorial district. Of western birds he met with *Musophaga rossæ* and *Corythaix livingstoni*, and he obtained 263

species, 82 of which were not found on his former journeys. For new species, see *Fringillidæ*, *Laniidæ*, *Ploceidæ* [*Histurgops*, n. g.], *Pycnonotidæ*, *Sylviidæ*, *Timeliidæ*, *Cypselidæ*, *Capitonidæ*, *Cuculidæ*, *Psittaci*, *Phasianidæ*.

[Reichenow, A.] Ueber eine Vogelsammlung aus dem Kongo-Gebiet. *T. c.* pp. 299–309.

The collection, which was made by F. Bohndorff, at Manyanga, Leopoldville, Stanley Falls, Kibongi, Rivariva, Kassongo, and Kibondo, includes 11 new species. [*Cf. t. c.* pp. 213–215, and see *Cotile congica* (*Hirundinidæ*), *Dendropicus tropicalis* (*Picidæ*), *Turdinus albipectus* (*Timeliidæ*), n. spp.]

——. Fortschritte in der Ornithologie während des Jahres 1886. Zool. Jahrb. ii, pp. 941–954.

——. [See also Marshall, W., and *Pitylia stictilæma*, *Habropyga tenerrima*, *Ploceus bohndorffi*, *P. anomalus* (*Ploceidæ*), *Cinnyris bohndorffi* (*Nectariniidæ*), *Calamonastes cinereus*, *Eremomela mentalis*, *Sylviella rufigenis* (*Timeliidæ*), n. spp., *Symplectes* [monograph] (*Ploceidæ*), *Colius* (*Coliidæ*).]

Reid, G. Addenda to the Birds of the Lucknow Civil Division. Str. Feath. x, pp. 444–453. [*Cf.* Zool. Rec. xviii, *Aves*, p. 22.]

Reid, S. G. Notes on the Birds of Teneriffe. Ibis, 1887, pp. 424–435.

[See *Anthus* (*Motacillidæ*), *Phylloscopus* (*Sylviidæ*), *Cypselus selidæ*), *Buteo*, *Falco*, *Pandion* (*Falconidæ*), *Columba* (*Columbidæ*).]

——. The Birds of Bermuda. Bull. U. S. Nat. Mus. No. 25 [1884], pp. 163–279. [Also as a reprint, *cf.* Zool. Rec. xiv, *Aves*, p. 19.]

Reischek, A. Description of the Little Barrier or Hauturu Island, the Birds which inhabit it, and the locality as a Protection to them. Tr. N. Z. Inst. 1886, pp. 181–184. [*Cf.* Zool. Rec. xxi, *Aves*, p. 26.]

——. Notes on Ornithology [of New Zealand]. *T. c.* pp. 184–186.

[See *Petræca toitoi*, *P. longipes* (*Sylviidæ*), *Anthornis melanura* (*Meliphagidæ*); and *cf.* Zool. Rec. xxiii, *Aves*, p. 31.]

——. Ornithological Notes. *T. c.* pp. 188–193.

[See *Creadion carunculatus*, *C. cinereus* (*Sturnidæ*), *Glaucopis wilsoni* (*Corvidæ*), *Clitonyx albic*[*ap*]*illa* (*Timeliidæ*).

Richter, W. Ueber zwei Augen vom Rücken eines Hühnchens nebst Demonstration künstlich erzeugter Missbildung (Exencephalus, Spina bifida, partielle Verdoppelung des Rückenmarks). SB. Ges. Würzb. 1887, pp. 74–77.

°——. Ueber zwei Augen am Rücken eines Hühnchens. Festchr. für Albert von Kölliker. Leipzic: 1887, 4to, 9 pp. [361–370], 1 pl.

——. Zwei Augen vom Rücken eines Hühnchens. Anat. Anz. 1. No. 12, p. 410.

Ridgway, R. A Manual of North American Birds. Illustrated by . . outline drawings of the generic characters. Philadelphia: 1887, roy. 8vo, xi & 631 pp., 124 pls.

The author includes various species not found in North America;

some for purposes of comparison, some on account of the probability of their future occurrence. In especial, he gives all the species which inhabit Socorro I., N.W. Mexico, which are undoubtedly Nearctic; and many from Mexico, Guatemala, Honduras, Cuba, and the Bahamas, where the genus is characteristically North American. These are distinguished by differences in the type. The Introduction states at length the plan of the work and the material on which it is grounded. Appendix, pp. 583–end. [See *Neofalco* (*Falconidæ*), *Nuttallornis* (*Tyrannidæ*), *Burrica* (*Fringillidæ*), *Chamæthlypis* (*Mniotiltidæ*), n. gg.; *Ortalis vetula pallidiventris* (*Cracidæ*), *Œdemia stejneri* (*Anatidæ*), *Coccyzus americanus occidentalis*, *C. maynardi* (*Cuculidæ*), *Dryobates villosus maynardi*, *D. scalaris sinaloensis*, *D. arizonæ fraterculus* (*Picidæ*), *Iache lawrencii* (*Trochilidæ*), *Platypsaris insularis* (*Cotingidæ*), *Myiodynastes audax insolens*, *Myiarchus brachyurus* (*Tyrannidæ*), *Aphelocoma californica hypoleuca*, *A. cyanotis*, *Corvus corax principalis*, *C. americanus hesperis* (*Corvidæ*), *Agelæus phœniceus sonoriensis*, *A. p. bryanti* (*Icteridæ*), *Pinicola enucleator kodiaka*, *Carpodacus mexicanus ruberrimus*, *Plectrophanes nivalis townsendi*, *Cardinalis cardinalis yucatanicus*, *Passerina parellina indigotica*, *P. sumichrasti*, *P. versicolor pulchra* (*Fringillidæ*), *Pyranga flammea*, *P. leucoptera latifasciata* (*Tanagridæ*), *Ptilogonys cinereus molybdophanes* (*Ampelidæ*), *Lanius ludovicianus* [illegible]*li* (*Laniidæ*), *Vireo crassirostris flavescens* (*Vireonidæ*), *Compsothlypis* [illegible]*oni*, *Geothlypis palpebralis* (*Mniotiltidæ*), *Thryothorus maculipectus* [illegible]*brinus*, *T. m. canobrunneus* (*Troglodytidæ*), *Polioptila cærulea cæsiogaster* (*Sylviidæ*), *Columbigallina passerina socorroensis* (*Columbidæ*), *Megascops hastatus* (*Striges*), *Phalænoptilus nuttalli californicus* (*Caprimulgidæ*), *Parus stoneyi* (*Paridæ*), *Regulus satrapa aztecus* (*Sylviidæ*), n. spp. & subspp.]

[Ridgway, R.] [See also *Berlepschia*, n. g. (*Dendrocolaptidæ*), *Cotinga ridgwayi* (*Cotingidæ*), *Dendrocincla lafresnayi*, *D. rufo-olivacea*, *D. castanoptera*, *Phacellodomus inornatus* (*Dendrocolaptidæ*), *Pyrrhuloxia sinuata beckhami*, *P. s. peninsulæ*, *Phrygilus punensis* (*Fringillidæ*), *Spindalis zena townsendi* (*Tanagridæ*), *Muscisaxicola occipitalis* (*Tyrannidæ*), *Megascops vermiculatus*, *M. hastatus* (*Striges*), *Callipepla elegans bensoni* (*Tetraonidæ*), *Porzana alfari* (*Rallidæ*), n. spp. & subspp., *Picicorvus* (*Corvidæ*), *Carpodectes* (*Cotingidæ*), *Dendrocincla* (*Dendrocolaptidæ*), *Thryothorus* (*Troglodytidæ*), *Trogon* (*Trogonidæ*), *Ardea* (*Ardeidæ*).]

——. A List of Birds breeding near Mt. Carmel, Illinois. Bull. Ridgw. Orn. Club, 2 [1887], pp. 26–35.

——. Catalogue of the Aquatic and Fish-eating Birds, exhibited by the U.S. Nat. Mus. Descrip. Cat. Rep. Exhib. U.S. pp. 139–184.

Nyan[illegible]nberg, H. v. [Baron]. Die Falkenbaize bei den Arabern in Algier. MT. orn. Ver. Wien, 1887, pp. 53, 54, 67, & 68.

Rumszewicz, K. Mieśnie śródoczne u ptaków. Pam. Akad. umiej. wydz. mat. przyr. Krakau, T. xiii, pp. 1–30, pls. i–iii.

[Minute anatomical structure of Birds.]

Russ, K. Vögel der Heimat. Wien, Prag, und Leipzig: 1887, 8vo. pp. 273–410, pls. v, ix, xii, xv, xviii–xx, xxiii, xxv, xxvi, xxviii, xxx, xxxii–xxxvii, xxxix, & xl (conclusion). [*Cf.* Zool. Rec. xxiii, *Aves*, p. 33.]

——. Die fremlandischen Stubenvögel, ihre Naturgeschichte, Pflege, und Zucht. iv, pt. 8, pp. 785–950 (conclusion). Magdeburg: 1887, 8vo. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 33.]

Saint-Marc, C. de. [See Sourbets, G.]

Salvadori, T. Elenco degli Uccelli italiani. Ann. Mus. Genov. (2) iii, pp. 5–331.

Containing 428 species, 32 of which were not in the author's list in the "Fauna d'Italia" of 1872, while 18 are now omitted from it. The divisions used are—Sedentarie, Migratorie estive, Migratorie invernali, Di passagio regolare, and Aventizie; the derivations of the Latin names of the genera and species being very well worked out. Besides this, the Italian names, distribution, and synonomy of the Birds are given, with the type of each genus.

——. Catalogo delle collezioni ornitologiche fatte presso Siboga in Sumatra, e nell' isola Nias del Sig. Elio Modigliani. *Op. cit.* (2), iv, pp. 514–563, pls. viii & ix.

[See *Syrnium niasense* (*Striges*), *Miglyptes infuscatus* (*Picidæ*), *Tephrophone insularis* (*Muscicapidæ*), *Cittocincla melanura* (*Turdidæ*), *Calornis altirostris*, *Gracula robusta* (*Sturnidæ*), *Carpophaga consobrina*, *Macropygia modiglianii* (*Columbidæ*), n. spp.

——. Viaggio di L. Fea in Birmania e regioni vicine. I. Uccelli raccolti nella Birmania superiore (1885–1886). *T. c.* pp. 568–617.

——. Viaggio di L. Fea nella Birmania e nelle regioni vicine. III. Uccelli raccolti nel Tenasserim (1887). *Op. cit.* (2) v, pp. 554–622.

——. Diagnosi di nuove specie di Uccelli del Tenasserim raccolti de Sig. L. Fea. *T. c.* pp. 514–516. [See *Merula feæ* (*Turdidæ*), *Niltava oatesi* (*Muscicapidæ*), *Pericrocotus pulcherrimus*, *P. rubro-limbatus* (*Campophagidæ*), *Aceros leucostigma* (*Bucerotidæ*), n. spp.]

——. [See also Giglioli, H. H., and *Hemixus sumatranus*, n. sp. (*Pycnonotidæ*).]

Salvin, O. [See Godman, F. D., and *Setophaga flavivertex*, n. sp. (*Mniotiltidæ*), pl.].

Sándortól, L. Ragadozó madaraink magyar elnevezései. Termes. Közlöny, 1887, pp. 283–290 & 327–335.

31 species of *Falconidæ*, 12 of *Striges*.

Saunders, H. A List of British Birds, revised to April, 1887. London 1887, 8vo, 22 pp.

Italic type and brackets are used to indicate accidentally occurring and doubtful species respectively, while those which have bred in Britain are denoted by an asterisk. A great deal of information is, therefore, com-

pressed into the smallest possible space. The Classification used is that originally proposed by Sclater, and to be found in the Br. Orn. Union list; but in some cases sub-families are added, and *Turdidæ* contains both *Turdinæ* and *Sylviinæ*. The specific name of *Limosa melanura* is changed to *belgica* (Gmel.), and *Podiceps* is rightly written *Podicipes*.

[Saunders, H.] [See also *Saxicola* (*Sylviidæ*), *Cosmonetta* (*Anatidæ*), *Sterna*, *Larus* (*Laridæ*).]

Schalow, H. Der ornithologische Nachlass Dr. Richard Böhm's. III. Biologische Beobachtungen vom Westufer des Tanganjika. J. f. O. 1887, pp. 225–244. [See Matschie, P., and *Ploceidæ*.]

——. Notizen über einige neu-caledonische Vögel. *T. c.* pp. 244–248.

——. Eine kleine Vogelsammlung, von der Insel Iona. *T. c.* pp. 186–188.

Includes the usual species found on the coast of Scotland.

Schier, W. Verbreitung der Vögel in Böhmen. MT. orn. Ver. Wien, 1887, pp. 21 & 43 (*Anseres*), 94 & 110 (*Grallatores*), 133 (*Columbæ*), 142 (*Rasores*), 158 (*Scolopaces*), 172 (*Colymbidæ*).

Schneider, G. Die Vögel, welche im Oberelsass, in Oberbaden, in den schweizerischen Cantonen Basel-Stadt und Basel-Land, sowie in den diese B[illegible] letzteres angrenzenden Theilen der Cantone Aargau, Solothurn, [illegible]and Bern vorkommen. Ornis, 1887, pp. 509–558.

A list of 263 species, with notes on their breeding, and tables of residents, migrants, &c., at the end. The writer deplores the destruction of many species, such as the larger birds of prey.

——. Verhängnissvolle Tage für die Vogelwelt, *T. c.* pp. 454 & 455.

Days which seem to have been disastrous to Birds.

Schrenck, L. v. Die von der Kaiserlichen Akademie der Wissenschaften ausgerüstete Expedition nach den Neusibirischen inseln und dem Jana-Lande. Beitr. Russ. Reiches (3), iii, pp. i–vi & 1–412, 6 maps, and various tables.

The account of the journey is by Dr. A. Bunge and Baron E. Toll, and includes from p. 65 to p. 412. A list of Birds is given on pp. 104–119, which is followed (pp. 119–139) by another of those from the Lena Delta [*cf.* Zool. Rec. xxi, *Aves*, p. 8, and xxiii, p. 8], for comparison. The former comprises 96 species, the latter 50. Pp. 272–284 consist of ornithological notes made in 1886 on Great Liakof Island, with a map.

Sclater, P. L. Characters of New Species of Birds of the Family *Tyrannidæ*. P. Z. S. 1887, pp. 47–50, pl. ix.

[See *Tænioptera holospodia*, *Euscarthmus apicalis*, pl., *Pogonotriccus gualaquizæ*, *Leptopogon godmani*, *L. oustaleti*, pl., *Phyllomyias berlepschi*, *Elainea hypospodia*, *E. flavivertex*, *Myiobius subochraceus*, *Empidonax ridgwayi*, n. spp.]

——. On *Empidonax brunneus* and its allied Species. Ibis, 1887, pp. 64–66.

[See *Tyrannidæ*.]

[SCLATER, P. L.] Remarks on the Species of the Genus *Cyclorhis* (*Vireonidæ*). *T. c.* pp. 320–324, pl. x, cuts.

——. [See also *Chætocercus burmeisteri*, n. sp. (*Trochilidæ*), *Laniarius* (*Laniidæ*), *Chrysotis* (*Psittaci*), *Phasianus principalis* (n. sp. in 1885) (*Phasianidæ*).]

SCLATER, W. L. A few Notes on British Guiana and its Birds. *T. c.* pp. 315–320.

[See *Chrysotis* (*Psittaci*).]

SCOTT, W. E. D. On the Avifauna of Pinal County, with Remarks on some Birds of Pima and Gila Counties, Arizona. Auk, 1887, pp. 16–24 & 196–205.

——. Some rare Florida Birds. *T. c.* pp. 133–135.

Gelochelidon nilotica, *Chondestes grammacus*, *Vireo altiloquus barbatulus*, *Dendræca discolor*.

——. The Present Condition of some of the Bird Rookeries of the Gulf Coast of Florida. *T. c.* pp. 135–144, 213–222, & 273–284.

A tale of extermination for the sake of plumes.

SCULLY, J. On the Mammals and Birds collected by Capt. C. E. Yate (on the Afghan Boundary Commission) in Northern Afghan[illegible] J. A. S. B. lvi, pp. 68–89. [Birds, pp. 77–89.]

SEEBOHM, H. Notes on the Birds of the Loo-choo [Liu-Kiu] Islands. Ibis, 1887, pp. 173–182. [See STEJNEGER, L.]

[See *Iyngipicus kizuki nigrescens*, n. subsp., *Picus noguchii*, n. sp., pl. (*Picidæ*), *Erithacus* (*Sylviidæ*), *Cisticola* (*Timeliidæ*).] The Birds and Insects of the Islands are closely connected with the Malayan fauna.

——. The Geographical Distribution of the Family *Charadriidæ*, or the Plovers, Sandpipers, Snipes, and their Allies. London : 1887, 4to, xxix & 524 pp., 21 pls., cuts.

The author's object is to throw light on the geographical distribution and classification of the above family—the limits of which he extends widely—and to determine the origin of the various forms. He gives tables of diagnoses of all the genera as well as the species, but plates only of those badly figured before, or not figured at all. He defines as "species" birds which do not intergrade ; as "subspecies," those which do so : though among the latter, again, he does not recognise as subspecies those which cannot be geographically defined. As regards genera, he considers them to be groups in which all the members must have a more close relationship to one another than to any other species not included. For species figured, see *Charadriidæ*, *Scolopacidæ*.

——. Notes on the Birds of Natal and adjoining parts of South Africa. Ibis, 1887, pp. 336–351.

[See *Vanellus* (*Charadriidæ*) and the family, *Scolopacidæ*, *Hirundinidæ*, *Saxicola* (*Sylviidæ*), *Struthio* (*Struthionidæ*).] On pp. 350 & 351 several corrections of points in Layard's Birds of S. Africa are given. But *cf.* *t. c.* pp. 472–474.

[Seebohm, H.] On the Birds of the Lena Delta. Tr. Norw. Soc. iv, pt. iii, pp. 301–305.

An article on Bunge's paper [*cf.* Zool. Rec. xxi, *Aves*, p. 8].

——. On the Birds of the Extreme North of Alaska. *T. c.* pp. 305–309.

A similar article on Murdoch's account of the expedition to Pt. Barrow [*cf.* Zool. Rec. xxii, *Aves*, p. 23].

——. Some Remarks on Sundevall's Account of the number of Secondaries in Birds. Ibis, 1887, pp. 286–289.

The author takes his text from the *Gallinæ*, *Grallæ*, and *Limicolæ*, and differs from Sundevall in detail, but comes to the conclusion that the comparative length of the secondaries may be a valuable aid in determining the family of a Bird, *e.g.*, *Tringa leucoptera*. The most remarkable instance of variation is the bastard secondary in *Gallinæ*.

——. On the Breeding of Arctic Birds in Scotland. Zool. 1887, pp. 21–23.

The author states that in Scotland Arctic Birds are found breeding further to the south than on the Continent, for which he accounts by the fact that the temperature in July is lower in the former place than in the latter. But this necessitates the assumption that the majority of these Birds breed in July.

——. Birds' Nests and Eggs. *T. c.* pp. 137–139.

On the reason for the colouring of eggs.

——. [See also *Pyrrhula* (*Fringillidæ*), *Merula* (*Turdidæ*), *Phasianus* (*Phasianidæ*), *Scolopax* (*Scolopacidæ*).]

Seeley, H. G. [See *Ornithodesmus cluniculus* (*forma sedis incertæ*) at the end of *Aves*.]

°Seiss, R. W. The Sport of Hawking. I & II. The Peregrine Falcon. III. The Gyr Falcon. IV. The Lanier Falcon. V. The American Merlin. For. & Str. xxvii, Nos. 13, 14, 15, 16, & 21, pp. 243, 263, 282, 283, 302, 303, 403, & 404.

Semon, R. Die indifferente Anlage der Keimdrüsen beim Hühnchen und ihre Differenzierung zum Hoden. Jen. Z. Nat. 1887, pp. 46–86, pl. v.

Sennett, G. B. Some undescribed plumages of North American Birds. Auk, 1887, pp. 24–28.

[See *Sterna* (*Laridæ*), *Aythya* (*Anatidæ*), *Colinus*, *Callipepla* (*Tetraonidæ*), *Catharistes* (*Cathartidæ*), *Parabuteo*, *Buteo*, *Polyborus* (*Falconidæ*), *Chordeiles* (*Caprimulgidæ*), *Parus* (*Paridæ*).]

——. Observations in Western North Carolina Mountains in 1886. *T. c.* pp. 240–245.

8 Birds new to the State.

——. [See also *Parus atricristatus castaneifrons*, *P. bicolor texensis* (*Paridæ*), n. subspp.]

Service, R. [See *Lagopus* (*Tetraonidæ*).]

SEUNIK, J. Beiträge zur Ornithologie Bosniens und der Hercegovina. MT. orn. Ver. Wien, 1887, pp. 76–78, 143–145, & 182.

SEVERZOFF, N. A. [THE LATE]. [See OLPHE-GALLIARD, L.]

SHARPE, R. B. Notes on a Collection of Birds made by Mr. John Whitehead on the Mountain of Kina Balu, in Northern Borneo, with descriptions of new species. Ibis, 1887, pp. 435–454, pls. xiii & xiv.

The Himalayan element is very conspicuous in this series of Birds, while a slight connection may be traced with Celebes, Java, and the Philippines—facts of the greatest importance. [See *Accipiter rufotibialis*, n. sp. (*Falconidæ*), *Oriolus vulneratus*, n. sp. (*Oriolidæ*), *Graucalus normani*, n. sp., *Chlamydochæra jefferyi*, n. g. & sp. (*Campophagidæ*), pl. *Cryptolopha montis*, n. sp., *C. schwaneri* (♂ new to science), *Tarsiger* (*Sylviidæ*), *Hemichelidon cinereiceps*, *Rhinomyias ruficrissa*, *Stoparola cerviniventris*, n. spp., *Rhipidura* (*Muscicapidæ*), *Myiophoneus* (*Turdidæ*), *Chloropsis flavocincta*, *C. kinabaluensis*, *Hemixus connectens*, n. spp. (*Pycnonotidæ*), *Staphidia everetti*, *Mixornis montana*, *Stachyris borneensis*, *Turdinus canicapillus*, n. spp. (*Timeliidæ*), *Hyloterpe hypoxantha*, n. sp. (*Laniidæ*), *Arachnothera juliæ*, n. sp. (*Nectariniidæ*), pl., *Dicæum monticolum*, n. sp. (*Dicæidæ*), *Chlorura hyperythra* (♂ ♀ ad. described for first time) (*Fringillidæ*), *Psarisomus*, *Calyptomena whiteheadi*, (*Eurylæmidæ*).]

——. Report on a Zoological Collection made by the officers of H.M.S. 'Flying Fish,' at Christmas Island, Indian Ocean. II. Birds. P. Z. S. 1887, pp. 515 & 516, pl. xliii.

[See *Turdus erythropleurus*, n. sp. (*Turdidæ*), *Carpophaga whartoni*, n. sp. (*Columbidæ*).]

——. On a Second Collection of Birds formed by Mr. L. Wray in the Mountains of Perak, Malay Peninsula. *T. c.* pp. 431–443, pls. xxxvii & xxxviii.

Specimens of 47 species were obtained at about 4400 feet above sea-level, on the Larut Range, which may be considered as a southern spur of the main range of the Peninsula, and is clothed with dense forest. Many interesting details are given. [See *Artamides larutensis* (*Campophagidæ*), *Trochalopterum peninsulæ*, pl., *Pomatorhinus wrayi*, *Corythocichla leucosticta*, *Alcippe peracensis*, *Minla soror* (*Timeliidæ*), pl., *Æthopyga wrayi* (*Nectariniidæ*), pl., n. spp., *Cyanops* (*Capitonidæ*).]

——. Notes on Specimens in the Hume Collection of Birds. No. v. On *Syrnium maingayi*. *T. c.* pp. 470–478. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 36.]

——. Ornithology at South Kensington. The English Illustr. Mag. Dec. 1887, pp. 165–175, 8 cuts.

——. The Tweeddale Collection. Nature, xxxvii, pp. 13 & 14.

——. [See also GOULD, J. [THE LATE].

SHARPE, R. B., & WYATT, C. W. A Monograph of the *Hirundinidæ*, or Family of Swallows. London : 1887, 4to, pts. v & vi, pagin. discont., 12 pls. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 36.]

For plates, see the family. *Petrochelidon timoriensis* and *Cotile anderssoni* are not figured.

SHELLEY, G. E. A Review of the Species of the Family *Ploceidæ* of the Ethiopian Region. Part II. *Ploceinæ*. Ibis, 1887, pp. 1–47, pls. i & ii. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 36.]

The author gives keys to the genera [of which he recognizes four—*Sporopipes*, *Ploceus*, *Textor*, and *Amblyospiza*—based upon structural differences ; and two—*Plocepasser* and *Malimbus*—based upon colouration] and species ; also a key to the groups [= subgenera] of *Ploceus*, and a note on *Lagonosticta nitidula*. [See *Plocepasser*, *Ploceus* (*P. gurneyi*, n. sp., pl.), *Malimbus*, pl., *Textor*.]

——. On a Collection of Birds made by Mr. H. H. Johnston on the Cameroons Mountain. P. Z. S. 1887, pp. 122–126, pls. xiii & xiv.

[See *Poliopicus johnstoni* (*Picidæ*), *Psalidoprocne fuliginosa* (*Hirundinidæ*), *Laniarius atroflavus*, pl. (*Laniidæ*), *Ploceus melanogaster*, pl., (*Ploceidæ*), n. spp., *Zosterops melanocephala*, pl. (*Meliphagidæ*), *Cinnyris hoeflichi* (*Nectariniidæ*).] An important paper, including, with the above, these Birds.

——. [See also *Sarciophorus* (*superciliosus* ?) (*Charadriidæ*).]

——. [MOLONEY, H.] Sketch of the Forestry of West Africa, with particular reference to its present principal commercial products. London : 1887, cr. 8vo, vi & 533 pp. (including 7 append.). Appendix ii. Ornithology of the Gambia, by G. E. SHELLEY, pp. 464–483.

SHUFELDT, R. W. On a Collection of Birds' Sterna and Skulls, collected by Dr. Thomas H. Streets, U.S. Navy. P. U. S. Nat. Mus. 1887, pp. 376–387, 4 cuts.

The material consists of specimens of *Urinator lumme*, *Daption capense*, *Pelecanöides urinatrix* ?, *Cepphus columba*, *Larus argentatus*, *L. californicus*, *Sula* sp. ?, *Chloephaga poliocephala*, *Ardea herodias*, *Nycticorax nycticorax nævius*, *Geococcyx californianus*, and *Corvus corax sinuatus*, while the conclusions drawn agree with those of Forbes and others, except as regards *Daption*, and, to a smaller extent, *Larus* and *Corvus*.

——. A Review of the Muscles used in the Classification of Birds. J. Comp. Med., Oct., 1887, Art. xxix, 24 pp., 13 cuts.

——. Another Muscle in Birds of Taxonomic value. Science, ix (1887), pp. 623 & 624 ; x (1887), p. 57, cuts.

——. The author proposes to call the above "dermo-tensor patagii," but T. STEJNEGER, *op. cit.* x, pp. 70 & 71, states that it is the same as "pars propatagialis m. cucullaris" of Fürbringer & Gadow, or "temporo-alaris" of Viallane, &c.

——. The "Dermo-Tensor Patagii" Muscle. An answer to L. Stejneger. Auk, 1887, pp. 353–356, cut.

[SHUFELDT, R. W.] Specific variations in the skeletons of Vertebrates. Science, ix (1887), pp. 414–416, cut.

The variations, as shown in figures of the skull of *Xanthocephalus xanthocephalus*, and other cases, are very great.

——. Individual Variation in the Skeletons of Birds. Auk, 1887, pp. 265–268, cut.

——. The Turkey-Skull. Am. Nat. 1887, p. 777.

Comparison of the skulls of wild and tame specimens.

——. A Critical Comparison of a Series of Skulls of the Wild and Domesticated Turkeys (*Meleagris gallipavo mexicana* and *M. domestica*). J. Comp. Med. July, 1887, Art. x, 16 pp., 7 cuts.

°——. A Chapter on Pterylography. For. & Str., Aug. 25th, 1887.

°——. The Pied Duck. *Op. cit.* Aug. 18th, 1887.

°——. The Future for American Ornithology. *Op. cit.* xxvii, No. 5, p. 84.

°——. Bird Notes from New Mexico. *Op. cit.* March 31st, 1887.

°——. On the Tongue of Humming Birds. *Op. cit.* July 14th, 1887.

Confirms the statements of McGillivray in Audubon's "Birds of America."

——. Contributions to Science and Bibliographical Résumé of Writings of. New York: 1887, 8vo, 20 pp. [From 1881 to date.]

——. [See also *Micropus* (*Cypselidæ*), pl., *Brachyrhamphus* (*Alcidæ*) and the family.]

SICHER, E., & ODDI, E. A. DEGLI. Alcuni Uccelli anomali. Atti Soc. Ven.-Trent. xi, pp. 1–10. [Anomali del rostro—degli arti.]

SIGEL, W. L. Zur Pflege der Amazonen- und Graupapageien. Zool. Gart. 1887, pp. 172–178.

SLATER, H. H. Notes on the Migration of Birds. J. Northampt. Soc. iv, pp. 295–307.

SMITH, A. C. The Birds of Wiltshire. Comprising all the periodical and occasional visitants, as well as those which are indigenous to the county. London & Devizes: 1887, 8vo, xxv & 588 pp.

Following a classified list of Wiltshire species, chap. i is introductory, and treats of the aspect of the county, of classification and nomenclature, structure and faculties, the beaks and feet of Birds. Chaps. xii, xiii, xiv, & xv are on Migration, Nesting of Birds in Wiltshire, A Plea for the Rooks, and A Plea for Small Birds. [See *Upupa* (*Upupidæ*).]

SMITH, G. [See *Larus* (*Laridæ*).]

SNOW, F. H. [See FORMÆ SEDIS INCERTÆ, at end of *Aves*.]

°SOURBETS, G., & SAINT-MARC, C. DE. Précis de fauconnerie, contenant les indications nécessaires pour affaiter et gouverner les principaux oiseaux de vol, suivi de l'éducation du cormoran. Niort: 1887, 8vo, 124 pp.

Sousa, J. A. de. Aves de Dahomey. J. Sci. Lisb. 1887 (xliv) pp. 217–219.

A collection sent by Francis Newton to the Lisbon Museum, from Ajuda and other places. 16 species.

——. Aves da Ilha do Principe [W. Africa] colligidas pelo sr. Francisco Newton. *Op. cit.* (xlv) pp. 42–44.

5 species.

——. Lista das Aves de Moçambique (Districto de Cabo Delgado) colligidas pelo sr. Augusto Cardoso. *T. c.* pp. 45–47.

13 species, collected at Sertão do Medo.

——. Aves de Angola. *Op. cit.* (xlvi), pp. 89–104.

[See next article; *Parisoma plumbeum*, *Dicrurus ludwigi* are new to the district.]

——. Descripção de duas especies de Aves de Angola da Exploração do sr. José d'Anchieta. *T. c.* pp. 105 & 106.

[See *Cisticola dispar*, n. sp. (*Timeliidæ*), *Chætura anchietæ*, n. sp. (*Cypselidæ*).]

Southwell, T. [See Gurney, J. H., Jun.]

Spatz, A. Beitrag zur Vogelfauna von Portorico. Ornis, 1887, pp. 448–453.

18 spec. [*Alconidæ*, *Strigidæ*, *Laniidæ*, *Sylvicolidæ*, *Alcedinidæ*, *Rallidæ*, *Ibididæ*, *Scolopacidæ*, *Charadriidæ*, *Colymbidæ*, *Laridæ*, *Pelecanidæ*.]

Stejneger, L. Birds of Kauai Island, Hawaiian Archipelago, collected by Mr. Valdemar Knudsen, with descriptions of new species. P. U. S. Nat. Mus. 1887, pp. 75–102.

A paper containing an account not only of the above collection, but also of species forwarded by the same explorer on former occasions and described in other articles. [See *Himantopus knudseni*, n. sp., *Calidris* (*Scolopacidæ*), *Chasiempis dolii*, n. sp., *Phæornis myadestina*, n. sp. (*Muscicapidæ*), *Himatione parva*, n. sp., *Oreomyza bairdi*, n. g. & sp. (*Dicæidæ*).]

——. Review of Japanese Birds. iv. Synopsis of the Genus *Turdus*. *T. c.* pp. 4 & 5. v. Ibises, Storks, and Herons. *T. c.* pp. 271–319, pl. x [*Platalea* is included under *Ibididæ*]. vi. The Pigeons. *T. c.* pp. 416–429, pl. xxii. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 38.]

The last two articles give a very elaborate and careful account of the above Birds, which should be consulted by all who are specially interested in them. Synopses are given of the families, genera, and species; and many important points are discussed at length. [See, in particular, *Turdus jouyi*, n. sp. (*Turdidæ*), *Platalea* (*Plataleidæ*), pl., *Ardetta*, *Nannocnus*, n. subg., *Gorsachius*, *Nycticorax*, n. g., *Butorides*, *Demiegretta ringeri*, n. sp., *Ardeola*, *Ardea*, *Phoyx*, n. subg., *Herodias* (*Ardeidæ*), *Ianthænas nitens*, n. sp., *Turtur stimpsoni*, n. sp. (*Columbidæ*).]

——. On a Collection of Birds made by Mr. M. Namiye, in the Islands of Idzu, Japan. *T. c.* pp. 482–487.

A list of 22 species, of which the new *Turdus celænops* is most important, as are its eggs.

[STEJNEGER, L.] A List of the Birds hitherto reported as occurring in the Liu-kiu Islands, Japan. Z. ges. Orn. 1887, pp. 166–176, pl. ii.

[See *Pericrocotus tegimæ* (n. sp., 1886), pl. (*Campophagidæ*).]

——. Further Contributions to the Avifauna of the Liu-kiu Islands, Japan, with Descriptions of New Species. P. U. S. Nat. Mus. 1887, pp. 391–415, pls. xxi (map) & xxii. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 38.]

A list of 77 species is given, with notes on a large number of them, and with measurements of closely allied forms. [See *Porzana phæopyga*, n. sp., *Euryzona sepiaria*, n. sp. (*Rallidæ*), *Turtur stimpsoni*, n. sp. (*Columbidæ*), *Sterna* (*Laridæ*), *Dendrocygna* (*Anatidæ*), *Cisticola*, *Icoturus* (*Timeliidæ*), *Zanthopygia* (*Muscicapidæ*), *Parus* (*Paridæ*), *Corvus* (*Corvidæ*).]

——. Contributions to the Natural History of the Commander Islands. No. 7.—Revised and Annotated Catalogue of the Birds inhabiting the Commander Islands. *T. c.* pp. 117–145, pls. vii–ix. [*Cf.* Zool. Rec. xxii, *Aves*, p. 30.]

[See *Larus*, *Stercorarius* (*Laridæ*), *Ægialitis* (*Charadriidæ*), *Limosa* (*Scolopacidæ*), *Philacte* (*Anatidæ*), *Falco*, *Thalassoaëtus* (*Falconidæ*), *Butalis* (*Muscicapidæ*).]

——. [See also SHUFELDT, R. W., and *Turdus celænops*, n. sp. (*Tu*
Ianthænas jouyi, n. sp. (*Columbidæ*), *Acanthis*, *Psittirostra*, *Pyrr*
(*Fringillidæ*), *Corvus* (*Corvidæ*).]

STREETS, T. H. [See SHUFELDT, R. W.]

STUDER, T. Embryonalformen einiger antarctischer Vögel, *Chionis*, Procellariden und Pinguin. MT. Ges. Bern, 1886 [1887], pp. xxv & xxvi.

STYAN, F. W. On a Collection of Birds from Foochow. Ibis, 1887, pp. 215–234 [*cf.* p. 469].

The notes are very interesting, and record several Birds new to China or the Chinese mainland, which were collected by J. D. DE LA TOUCHE; as well as information about the eggs and nests of various species, and the immature plumage of others. [See *Microhierax*, *Nisaëtus*, *Haliaëtus* (*Falconidæ*), *Graucalus* (*Campophagidæ*), *Alcippe* (*Timeliidæ*), *Hemixus* (*Pycnonotidæ*), *Lanius* (*Laniidæ*), *Monticola* (*Turdidæ*), *Parus* (*Paridæ*), *Sitta* (*Sittidæ*), *Motacilla* (*Motacillidæ*), *Zosterops* (*Meliphagidæ*).]

SUNDEVALL, C. J., & KINBERG, J. G. H. Svenska Foglarna (*Aves Scandinaviæ*). Stockholm: 1887, 4to, Häft 36–40, pp. 1165–1570 (conclusion).

The whole work ranges from 1846–1887, and has 84 coloured plates.

——. [See also *Trochalopteron cinereiceps*, n. sp., pl. (*Timeliidæ*).]

SYMONDS, E. Notes on a Collection of Birds from Kroonstad, in the Orange Free State. (Communicated by J. H. GURNEY.) Ibis, 1887, pp. 324–336.

[See *Caprimulgus* (*Caprimulgidæ*).]

SWINHOE, —. List of Birds from Sind. J. Bomb. N. H. Soc. 1887, pp. 56 & 57.

TACZANOWSKI, L. Liste des Oiseaux recueillis en Corée par M. Jean Kalinowski. P. Z. S. 1887, pp. 596–611. [*Cf.* GIGLIOLI, H. H.]

Kalinowski's collection was made between September, 1885, and March, 1887, under circumstances of great difficulty, near the chief town. The country appears to be poor in Birds, owing to its physical character; the total number of species obtained being 107, of which about a quarter are resident. These are chiefly Siberian, with a few Japanese, Chinese, and Indian. [See *Parus*, *Mecistura* (*Paridæ*), *Microsceles* (*Pycnonotidæ*), *Turdus* (*Turdidæ*), *Galerita cristata coreensis*, n. subsp. (*Alaudidæ*), *Thriponax kalinowskii*, n. sp. (*Picidæ*).]

——. Contributions à la Faune Ornithologique du Caucase. Bull. Soc. Zool. Fr. 1887, pp. 618–626.

Sylvia orphea, *Budytes taivanus*, *B. flavus beema*, *Sitta krüperi*, *Petronia brachydactyla* are added to the list of the Birds of the district, with a new subspecies, *Galerita cristata caucasica* (*Alaudidæ*). The collections were made by Mlokosiewicz near Lagodechi, and by Bilkiewicz at Lenkoran.

TAIT, W. C. A List of the Birds of Portugal. Ibis, 1887, pp. 77–96, 182–201, 302–314, & 372–400.

Notes on 219 species, with special reference to the Oporto district, in which many of them breed. Native names, &c.

TAYLOR, C. J. W. A Tentative List of the Birds of Manzeerabad, Mysore. Str. Feath. x, pp. 454–467.

TAYLOR, J. H. The Game Birds of Khorda, Orissa, India. *T. c.* pp. 526–531.

THORNE, P. M. Additions to Birds of Colorado. Auk, 1887, pp. 264 & 265.

TICHOMIROW, A. A. Zur frage über den Hermaphroditismus bei Vögeln. Moscow: 1887, 4to, 30 pp., 3 pls. & 7 cuts. [Apparently from Isvest. Mosc. Univ. lii. Original in Russian.]

TOLL, E. [See SCHRENCK, L. v.]

TOPPAN, G. L. A Contribution to our knowledge of Albinism. Bull. Ridgw. Orn. Club, 2 [1887], pp. 61–77.

TORNEUX, F., & HERRMANN, G. Sur l'existence d'un vestige caudal de la moelle épinière chez l'embryon de poulet. C.R. Soc. Biol. (8) iv, pp. 190 & 191.

TOWNSEND, C. H. Field-Notes on the Mammals, Birds [pp. 190–237], and Reptiles of Northern California. P. U. S. Nat. Mus. 1887, pp. 159–241, pl. v (map), cuts.

This claims to be a complete list of the species inhabiting the district, and contains occasional interesting notes on their nests and eggs. A sketch of the physical character of the country is prefixed, and a table of the vertical range of Birds given in conclusion. [See *Phlaeæ* (*Anatidæ*), *Trochilus* (*Trochilidæ*), *Dendræca* (*Mniotiltidæ*).

[Townsend, C. H.] List of the Midsummer Birds of the Kowak River, Northern Alaska. Auk, 1887, pp. 11-13.

52 species ; 22 breeding, including *Branta canadensis minima*.

Trillon, J. Sur les mœurs de quelques Oiseaux de l'ordre des Passereaux. Bull. Soc. Angers, xvi [1886], pp. 157–183.

Some of the commoner species.

Trimen, R. [See *Laniarius* (*Laniidæ*).]

Tristram, H. B. The Polar Origin of Life considered in its bearing on the Distribution and Migration of Birds. Pt. i. Ibis, 1887, pp. 236–242.

The author states that all life must have originated at the poles, unless we accept the theory that the axis of the earth has changed. He traces at considerable length the movements of several species of *Picidæ* and *Corvidæ*, and, in conclusion, mentions shortly various other families.

——. [See also *Zosterops hovarum*, n. sp., *Z. prætermissa*, n. sp.? (*Meliphagidæ*), *Podicipes* (*Podicipedidæ*).]

Troil, U. v. [the late]. Notes on the Fauna of Iceland. Zool. 1887, pp. 254–257.

Reprinted from the work, "Letters on Iceland," 1774 ; the Birds mentioned being Swans, Eider Ducks, and Ptarmigans.

Tschusi zu Schmidhoffen, V. v. Beiträge zur Geschichte der Ornithologie in Oesterreich-Ungarn. iii. Schlesien. MT. orn. Ver. Wien, 1887, pp. 46–48.

Giving an account of the collections in the country, and of the literature.

——. [See also Dalla Torre, K. v., and *Euspiza* (*Fringillidæ*), *Gallinago* (*Scolopacidæ*).]

Tuck, J. [See *Cosmonetta* (*Anatidæ*).]

Turner, L. M. Contributions to the Natural History of Alaska. Result of Investigations made chiefly in the Yukon District and the Aleutian Islands ; conducted under the auspices of the Signal Service, U.S. Army, extending from May, 1874, to August, 1881. Washington : 1888 [dated 1886]. sm. 4to, 226 pp., 26 pls.

This work, of which Birds [pt. v] occupy pp. 115–196 (xi pls.), gives a separate account of each species, followed by a list of those hitherto known from Alaska, with the Eskimo or Russian names of the greater part. Various duties, which interfered considerably with the explorer, prevents the information from being as full as it might otherwise have been, and makes the book a little disappointing ; but many interesting notes are given on the habits and breeding, plumage of adults and young, &c. [See especially *Leucosticte*, *Loxia*, *Pyrrhula* (*Fringillidæ*), *Motacilla*, *Anthus* (*Motacillidæ*), *Parus* (*Paridæ*), *Troglodytes* (*Troglodytidæ*), *Ulula*, *Surnia* (*Striges*), *Anas*, *Branta*, *Philacte* (*Anatidæ*), *Lagopus rupestris atkhensis* n. subsp. (*Tetraonidæ*), *Tringa* (*Scolopacidæ*), *Larus*, *Stercorarius*, *Xema* (*Laridæ*), *Brachyrhamphus*, *Simorhynchus* (*Alcidæ*).]

Uskow, N. Die Blutgefässkeime und deren Entwickelung bei einem Hühnerembryo. Mém. Ac. Pétersb. (7) xxxv, 4, 45 pp., 2 pls.

1. Die Entstellung des Gefässkeimes aus dem Mesoblast.
2. Péripherischer Theil der Embryonalplatte.
3. Die Entstehung des Gefässkeimes aus dem Hypoblast.
4. Die Bildung des Blutes und der Gefässe.

Ussher, R. J. [See *Sylvia* (*Sylviidæ*), *Colymbus* (*Colymbidæ*).]

Vian, J. Monographie des Poussins des Oiseaux d'Europe qui naissent vêtus de duvet (*Ptilopædes*, Sundval). Bull. Soc. Zool. Fr. 1887, pp. 368–451. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 41.]

The subject is continued with *Pelecanidæ*, *Phalacrocoracidæ*, *Procellariidæ*, *Laridæ*, *Anatidæ*, *Podicipedidæ*, *Colymbidæ*, and *Alcidæ*.

Vinson, A. Étude sur les Colombes des Mascareignes et les espèces importées. Bull. Soc. Acclim. 1887, pp. 640–651.

Vorderman, A. G. Liste des Oiseaux de Borneo. Tijdschr. Nederl. Ind. xlvi, pp. 217–241.

Four species are added to the Bornean fauna: *Porphyrio indicus*, *Hydrophasianus chirurgus*, *Dendrocygna vagans*, *Podicipes tricolor*.

Wallis, H. M. [See *Passer* (*Fringillidæ*).]

Weetman, S. [See *Dinornis* (*Dinornithidæ*).]

Whitaker, J. [See *Œdicnemus* (*Œdicnemidæ*).]

°Widhalm, J. Die fossilen Vogelknocken der Odessaer-Steppen-Kalk-Stein-brüche an der neuen Slobodka bei Odessa. Odessa: 1886, 4to, 9 pp., 1 pl. [Beilage zum Zapiski Novoross. Obsch. x.]

Wilkins, A. I. Otgoloske prochedchekh Wyekow. Isvest. Mosc. Univ. I, i, columns 41–62, pl. i.

[Echo of a past age.] Birds, columns 54–62, with a figure of *Podoces biddulphi*.

Wilson, S. B. Notes on some Swiss Birds. Ibis, 1887, pp. 130–150.

[See *Accentor* (*Sylviidæ*), *Chrysomitris*, *Montifringilla* (*Fringillidæ*).]

Winge, O. III. Report on Birds in Denmark in 1885. Ornis, 1886, pp. 551–600.

175 spp. As corrections of Lütken's report are added [*cf.* Zool. Rec. xxii, *Aves*, p. 20, & xxiii, p. 23], this is evidently in continuation of it. The paper is very interesting to oologists, and gives the native names; it would be of great use to persons visiting Denmark in search of eggs. An account is added of the numbers of birds killed at light-houses and light-vessels.

——. Fugle fra Knoglehuler i Brasilien ("E Museo Lundii"). 54 pp., 1 pl. Kjöbenhavn: 1887, 4to.

Gives the result of the long-desired examination of the bird-bones found by Lund in caves near Lagoa Santa in the province of Minas Geraes. At least 126 species, with additional forms of two of them, have been more or less precisely identified; but of a very large number of

Passeres the examples available do not admit of determination. About 24 of the species no longer inhabit the district, according to the observations of Reinhardt [*cf.* Zool. Rec. vii, p. 34]. These are thus grouped:—*Crypturidæ* 1, *Anatidæ* 3, *Cracidæ* 1 or 2, *Rallidæ* 3, *Limicolæ* 1, *Ardeidæ* 1, *Cathartidæ* 2, *Falconidæ* 4, *Psittaci* 3, *Caprimulgidæ* 1, *Nyctibiidæ* 1, *Troganidæ* 1, *Dendrocolaptidæ* 1. One species of *Anatidæ* [*Chenalopex pugil*], one form of *Limicolæ* [*Vanellus*], and another of *Cathartidæ* [*Catharistes*], appear to be extinct, and are described as new. The very difficult work of identifying the specimens seems to have been well done.

Wood, J. G. Birds of the Bible. [From Bible Animals.] London: 1887, 8vo, 250 pp., 32 illustr.

Wray, R. S. Note on a Vestigial Structure in the Adult Ostrich representing the Distal Phalanges of Digit III. P. Z. S. 1887, pp. 283 & 284, cut.

This structure was a rod of cartilage, containing a free second phalanx, which extended from the end of the digit.

——. On some Points in the Morphology of the Wings of Birds. Communicated by Professor Flower, P.Z.S.) P. Z. S. 1887, pp. 343–357, pls. xxix–xxxii, 2 cuts.

The writer's object in his investigations is to determine the m[illegible]me[illegible]f insertion of the feathers, their relations to one another and to the [illegible]. Taking Sundevall's treatise, "On the Wings of Birds," as a starting-po[illegible]ni- he states that that author does not fully describe or accurately figure the relations of the *remiges* to the bones of the *manus*, that he does not insist on the absolute constancy of the most proximal digital resting upon the *phalanx* of digit III, that he errs in counting one or two more dorsal greater coverts than *remiges*, and that he does not mention a small accessory *remex* which exists. The true state of the matter is then reviewed under the heads of "The Wild Duck's Wing," "Some Modifications of the Wing," "The Duckling's Wing," "The Wings of the *Ratitæ*," "The Penguin's Wing," "Origin of Wing and General Conclusions," "Wing Formula." In considering the manner in which the *manus* of Birds may have been differentiated from a reptilian webbed paw, great stress is laid on the fact that two rows of feathers on the ventral side of the wing in adult Birds (*Carinates*) are reversed in position. These he imagines to have been originally on the dorsal surface, and to have been forced down to the ventral during the development of the wing. This phenomenon was wrongly explained by Sundevall. A table of nomenclature concludes a paper of special importance upon a subject generally neglected.

——. On the Structure of the Barbs, Barbules, and Barbicels of a Typical Pennaceous Feather. Ibis, 1887, pp. 420–423, pl. xii.

Another important paper, with special reference to the interlocking of the distal and proximal barbules.

Wyatt, C. W. [See Sharpe, R. B.]

Ziemer, E. [See *Carpodacus* (*Fringillidæ*.)]

[J. K.]

CARINATÆ.

PASSERES.

OLIGOMYODI.

Cotingidæ.

antoniæ, ♀ ad. described, with remarks by J. C. Zeledon; *Ptilogonys cinereus*, U. S. Nat. Mus. 1887, p. 20.

jucayi, n. sp., W. Costa Rica and south to Columbia; *id. t. c.* vi, figs. 3 & 4 (tail).

s insularis, n. sp., Tres Marias Is., W. Mexico; *id.*, Manual p. 325.

Eurylæmidæ.

Calyptomena whiteheadi, n. sp. [♂ ♀], near *C. viridis*, Kina Balu, N. Borneo; R. B. Sharpe, P. Z. S. 1887, p. 558.

Psarisomus dalhousiæ new to Borneo; *id.*, Ibis, 1887, p. 453.

Serilophus lunatus new to Sumatra; J. Büttikofer, Notes Leyd. Mus. ix (1887), p. 44.

Pipridæ.

Pipra pileata ♂ & ♀, *P. chloris*, *P. chlorion* ♂ & ♀, *P. tschudii*, *P. griseiceps*, *Masius chrysopterus* ♂ & ♀, *M. coronulatus* figured; A. v. Pelzeln, J. v. Madarász, L. v. Lorenz, Monogr. *Pipridæ*, pls. i–v.

Pittidæ.

Pitta coronata, its nest; J. Macpherson, Str. Feath. x, p. 519. *P. cucullata* new to Sumatra; J. Büttikofer, Notes Leyd. Mus. ix (1887), p. 64.

Tyrannidæ.

Blacicus flaviventris, n. sp., Hampden, St. Andrew's, Grenada; J. G. Wells & G. N. Lawrence [Birds of Grenada, *cf.* Zool. Rec. xxiii, *Aves*, p. 41], P. U. S. Nat. Mus. pp. 617 & 618. *B. martinicensis*, n. sp.?, Martinique, W.I.; C. B. Cory, Auk, 1887, p. 96.

Elainea hypospodia, n. sp., Valencia, Venezuela; *E. flavivertex*, n. sp., near *E. gaimardi*, Upper Ucayali & Elvira, Upper Amazon; P. L. Sclater, P. Z. S. 1887, p. 49.

Empidonax ridgwayi, n. sp., Inner Colombia; *id. t. c.* p. 50. *E. bimaculatus* (D'Orb. & Lafr.) is the correct name of *E. brunneus*, Ridgway; *E. oliva* of *Muscicapa oliva*, Boddaert; *Empidochanes arenaceus*, Scl. & Salv., of *E. oliva*, Lawrence: *id.* Ibis, 1887, pp. 64–66.

Euscarthmus apicalis, n. sp., Brazil ; *id.* P. Z. S. 1887, p. 47, [bout fig. 1.

Leptopogon godmani, n. sp., Sarayacu, Ecuador ; *id. t. c.* p. 48. *L. oustaleti*, n. sp., Inner Colombia ; *id. ibid.* pl. ix, fig. 2.

Muscisaxicola occipitalis, n. sp., near *M. ruficertex*, Lake Titicaca and Ocros, Acayucho, Peru ; R. Ridgway, P. U. S. Nat. Mus. [*Chenalopex*

Myiarchus brachyurus, n. sp., Nicaragua ; *id.* Manual f *Cathartidæ* p. 334. w. The very

Myiobius subochraceus, n. sp., near *M. pulcher*, Bolivia ; len well done. P. Z. S. 1887, p. 50.

Myiodynastes audax insolens, n. subsp., S.E. Mexico ; s.] London : Manual N. A. Birds, p. 332.

Nuttallornis, n. subg. ; type, *Tyrannus borealis*, Swains. ; dult Ostrich *Oethæca flaviventris*, n. sp., loc. incert., S. America ; G. N.S. 1887, pp. Ann. N. York Ac. iv, p. 68.

Phyllomyias berlepschi, n. sp., near *P. griseo-capilla*, Sd phalanx, P. L. Sclater, P. Z. S. 1887, p. 49.

Pogonotriccus gualaquizæ, n. sp., Gualaquiza, Ecuador, and Map. Com- *t. c.* p. 48. '49

Tænioptera holospodia, n. sp., Bolivia ; *id. t. c.* p. 47.

TRACHEOPHONÆ.

Dendrocolaptidæ.

Berlepschia, n. g., for *Picolaptes rikeri*, Ridgw. [*cf.* Zool. Rec. xxiii, *Aves*, p. 54]; R. Ridgway, P. U. S. Nat. Mus. 1887, p. 151.

Dendrocincla, review of genus, key to species, &c. ; *D. lafresnayei*, n. sp., Upper Amazon ? ; *D. castanoptera*, *D. rufo-olivacea*, n. spp., Diamantina, Lower Amazon : *id. t. c.* pp. 488–497.

Phacellodomus inornatus, n. sp. [♂], Caracas, Venezuela ; *id. t. c.* p. 152.

Formicariidæ.

Thamnophilus rohdei, n. sp., near *T. major* (Vieill.), Lambaré, Paraguay ; H. v. Berlepsch [R. Rohde], J. f. O. 1887, p. 16, pl. i. [Also its nest and eggs.]

ACROMYODI.

OSCINES.

Alaudidæ.

Alauda arborea figured ; Lord Lilford, Col. Fig. Br. Birds, pt. iv.

Certhilauda duponti, n. var. *lusitanica*, Quinta do Alfeite, Lisbon ; J. V. Barboza du Bocage, J. Sci. Lisb. 1887 (xliv), pp. 214–216.

Galerita cristata coreensis, n. subsp., Séoul, Corea ; L. Taczanowski

[J. Kalinowski], P. Z. S. 1887, p. 603. *G. c. caucasica*, n. subsp., Lagodechi, Caucasus district; *id.* Bull. Soc. Z. Fr. 1887, pp. 620 & 621.

Mirafra bucolica, n. sp. [♂ & ♀], Fadjuli, Tumaja, Kabajendi, and Kudurma, E. Equat. Africa; G. Hartlaub, Zool. Jahrb. ii, p. 327.

Otocorys teleschowi, n. sp., N. Tibet and adjoining Russian territory; C. Deditius [N. Przewalsky], J. f. O. 1887, p. 285.

Pyrgilauda kansuensis, *P. barbata* [n. spp. in Zool. Rec. xxi, *Aves*, p. 47, and xxiii, p. 44]; *id. t. c.* pp. 282 & 283.

Ampelidæ.

Ptilogonys cinereus molybdophanes, n. subsp., Guatemala; R. Ridgway, Manual N. A. Birds, p. 464 (note).

Campophagidæ.

Artamides larutensis, n. sp. [♂], near *A. larvatus*, Perak, Malay territory; R. B. Sharpe [L. Wray], P. Z. S. 1887, p. 435.

Chlamydochæra jefferyi, n. g. & sp., Kina Balu Mt., N. Borneo; R. B. Sharpe, Ibis, 1887, pp. 439 & 440, pl. xiii [♂ ♀]. This new genus is near *Edoliisoma*, but differs from it in the abbreviated first primary and unv- coloration.

Graucalus normani, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo; *id. t. c.* pp. 438 & 439. *G. rex-pineti* new to Chinese Mainland; F. W. Styan, *t. c.* p. 225.

Pericrocotus pulcherrimus, n. sp., near *P. igneus*, *P. rubro-limbatus*, n. sp., near *P. griseogularis*, Mt. Mooleyit, Moulmein, Tenasserim; T. Salvadori, Ann. Mus. Genov. (2) v, p. 515. *P. tegimæ* [n. sp., 1886] figured; L. Stejneger, Z. ges. Orn. 1887, p. 175, pl. ii.

Certhiidæ.

Certhia familiaris figured; Lord Lilford, Col. Fig. Br. Birds, pt. iv.

Cærebidæ.

Certhiola, *sub voce* "Sugar-Bird"; A. Newton, Encycl. Brit. ed. 9, vol. xxii.

Pseudodacnis, n. g., for *Dacnis* [*Callispiza*, *Calliste*] *hartlaubi*; P. L. Sclater, Cat. Birds Brit. Mus. xi, p. 138 [omitted in Zool. Rec. xxiii, *Aves*, p. 44].

Corvidæ.

Blasius, R. Der Wanderzug der Tannenheher durch Europa im Herbste 1885 und Winter 1885-86. Eine monographische Studie. Ornis, 1886, pp. 437-550, pls. i-iii. [Also separate.]

An exhaustive paper on the Nutcracker, of which the author finally decides to allow two varieties, *Nucifraga caryocatactes pachyrhynchus* and *N. c. leptorhynchus*, including under them the forms recognized by C. L.

Euscarthmus apicalis, n. sp., Brazil ; *id.* P. Z. S. 1887, p. 47, without fig. 1.

Leptopogon godmani, n. sp., Sarayacu, Ecuador ; *id. t. c.* p. 48. *L. oustaleti*, n. sp., Inner Colombia ; *id. ibid.* pl. ix, fig. 2.

Muscisaxicola occipitalis, n. sp., near *M. rufivertex*, Lake Titicaca and Ocros, Acayucho, Peru ; R. RIDGWAY, P. U. S. Nat. Mus. [*Chenalopex*

Myiarchus brachyurus, n. sp., Nicaragua ; *id.* Manual f *Cathartidæ* p. 334. w. The very

Myiobius subochraceus, n. sp., near *M. pulcher*, Bolivia ; len well done. P. Z. S. 1887, p. 50.

Myiodynastes audax insolens, n. subsp., S.E. Mexico ; 3.] London : Manual N. A. Birds, p. 332.

Nuttallornis, n. subg. ; type, *Tyrannus borealis*, Swains. ; dult Ostrich

Octhœca flaviventris, n. sp., loc. incert., S. America ; G. N.S. 1887, pp. Ann. N. York Ac. iv, p. 68.

Phyllomyias berlepschi, n. sp., near *P. griseo-capilla*, Sd phalanx, P. L. SCLATER, P. Z. S. 1887, p. 49.

Pogonotriccus gualaquizæ, n. sp., Gualaquiza, Ecuador, and Map. Com- *t. c.* p. 48. '49

Tœnioptera holospodia, n. sp., Bolivia ; *id. t. c.* p. 47.

TRACHEOPHONÆ.

DENDROCOLAPTIDÆ.

Berlepschia, n. g., for *Picolaptes rikeri*, Ridgw. [*cf.* Zool. Rec. xxiii, *Aves*, p. 54]; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 151.

Dendrocincla, review of genus, key to species, &c. ; *D. lafresnayei*, n. sp., Upper Amazon ? ; *D. castanoptera*, *D. rufo-olicacea*, n. spp., Diamantina, Lower Amazon : *id. t. c.* pp. 488–497.

Phacellodomus inornatus, n. sp. [♂], Caracas, Venezuela ; *id. t. c.* p. 152.

FORMICARIIDÆ.

Thamnophilus rohdei, n. sp., near *T. major* (Vieill.), Lambaré, Paraguay ; H. v. BERLEPSCH [R. Rohde], J. f. O. 1887, p. 16, pl. i. [Also its nest and eggs.]

ACROMYODI.

OSCINES.

ALAUDIDÆ.

Alauda arborea figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. iv.

Certhilauda duponti, n. var. *lusitanica*, Quinta do Alfeite, Lisbon ; J. V. BARBOZA DU BOCAGE, J. Sci. Lisb. 1887 (xliv), pp. 214–216.

Galerita cristata coreensis, n. subsp., Scoul, Corea ; L. TACZANOWSKI

[J. Kalinowski], P. Z. S. 1887, p. 603. *G. c. caucasica*, n. subsp., Lagodechi, Caucasus district; *id.* Bull. Soc. Z. Fr. 1887, pp. 620 & 621.

Mirafra bucolica, n. sp. [♂ & ♀], Fadjuli, Tumaja, Kabajendi, and Kudurma, E. Equat. Africa; G. HARTLAUB, Zool. Jahrb. ii, p. 327.

Otocorys teleschowi, n. sp., N. Tibet and adjoining Russian territory; C. DEDITIUS [N. Przewalsky], J. f. O. 1887, p. 285.

Pyrgilauda kansuensis, *P. barbata* [n. spp. in Zool. Rec. xxi, *Aves*, p. 47, and xxiii, p. 44]; *id. t. c.* pp. 282 & 283.

AMPELIDÆ.

Ptilogonys cinereus molybdophanes, n. subsp., Guatemala; R. RIDGWAY, Manual N. A. Birds, p. 464 (note).

CAMPOPHAGIDÆ.

Artamides larutensis, n. sp. [♂], near *A. larvatus*, Perak, Malay territory; R. B. SHARPE [L. Wray], P. Z. S. 1887, p. 435.

Chlamydochæra jefferyi, n. g. & sp., Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, pp. 439 & 440, pl. xiii [♂ ♀]. This new genus is near *Edoliisoma*, but differs from it in the abbreviated first primary and uniform coloration.

Graucalus normani, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo; *id. t. c.* pp. 438 & 439. *G. rex-pineti* new to Chinese Mainland; F. W. STYAN, *t. c.* p. 225.

Pericrocotus pulcherrimus, n. sp., near *P. igneus*, *P. rubro-limbatus*, n. sp., near *P. griseogularis*, Mt. Mooleyit, Moulmein, Tenasserim; T. SALVADORI, Ann. Mus. Genov. (2) v, p. 515. *P. tegimæ* [n. sp., 1886] figured; L. STEJNEGER, Z. ges. Orn. 1887, p. 175, pl. ii.

CERTHIIDÆ.

Certhia familiaris figured; LORD LILFORD, Col. Fig. Br. Birds, pt. iv.

CÆREBIDÆ.

Certhiola, *sub voce* "Sugar-Bird"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxii.

Pseudodacnis, n. g., for *Dacnis* [*Callispiza*, *Calliste*] *hartlaubi*; P. L. SCLATER, Cat. Birds Brit. Mus. xi, p. 138 [omitted in Zool. Rec. xxiii, *Aves*, p. 44].

CORVIDÆ.

BLASIUS, R. Der Wanderzug der Tannenheher durch Europa im Herbste 1885 und Winter 1885–86. Eine monographische Studie. Ornis, 1886, pp. 437–550, pls. i–iii. [Also separate.]

An exhaustive paper on the Nutcracker, of which the author finally decides to allow two varieties, *Nucifraga caryocatactes pachyrhynchus* and *N. c. leptorhynchus*, including under them the forms recognized by C. L.

Brehm and others. He divides his subject into—i, Introduction; ii, Observations of the Nutcracker in summer 1885, and the following winter; iii, Consideration of single specimens; iv, Literature of the various forms; v, Chronological sketch of former immigrations; vi, Names in various countries; vii, Food; viii, Conclusions. [*Cf.* Zool. Rec. xxii, *Aves*, p. 37.]

Aphelocoma californica hypoleuca, n. subsp., Lower California; *A. cyanotis*, n. sp., Mexico (loc. incert.): R. RIDGWAY, Manual N. A. Birds, pp. 356 & 357.

Corvus [see MATSCHIE, P.]. *C. corax principalis*, n. subsp., Northern N. America; *C. americanus hesperis*, n. subsp., West U.S.; *id.* [RIDGWAY] *t. c.* pp. 361 & 362. *C. c. sinuatus*, anatomy, skulls figured; R. W. SHUFELDT, P. U. S. Nat. Mus. 1887, pp. 385–387. *C. corone orientalis*, Eversmann, synonymy, &c.; L. STEJNEGER, *t. c.* pp. 368 & 369. *C. japonensis*, or n. sp.? from Corea; H. H. GIGLIOLI & T. SALVADORI, P. Z. S. 1887, p. 583 (*cf. t. c.* p. 605). *C. macrorhynchus levaillanti* is the species in Liu-kiu Is.; L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 412 & 413.

Cyanocitta argentigula, *C. yucatanica*, figured [the former from type]; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lvii, pp. 501 & 498, pls. xxxiv & xxxv.

Glaucopis wilsoni, *G. cinerea*, figured; W. L. BULLER, Hist. Birds New Zealand, ed. 2, pt. i: nesting of former; A. REISCHEK, Tr. N. Z. Inst. 1886, p. 190.

Macrocorax woodfordi, n. sp., Aola, Guadalcanar, Solomon Is.; W. R. OGILVIE-GRANT [C. M. Woodford], P. Z. S. 1887, p. 332.

Nucifraga caryocatactes breeding at Lilienfeld, Lower Austria; E. PFANNL, MT. orn. Ver. Wien, 1887, pp. 69 & 83 [*cf.* p. 104, for Herzegovina]: figured; LORD LILFORD, Col. Fig. Br. Birds, pt. iv: its food; K. W. v. DALLA TORRE, Biol. Centralbl. vii, pp. 464–466.

Picicorvus columbianus from Bristol Bay Region and Kowak R., Alaska; R. RIDGWAY, Auk, 1887, pp. 255 & 256.

DICÆIDÆ.

Dicæum monticolum, n. sp. (near *D. sulaense*) [♂ ad.], Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, p. 452.

Himatione parva, n. sp., Kauai, Hawaiian Is.; L. STEJNEGER, P. U. S. Nat. Mus. 1887, p. 94.

Oreomyza bairdi, n. g. & sp., Kauai, Hawaiian Is.; *id. t. c.* pp. 98–100 [with key to the Hawaiian *Dicæidæ*].

DICRURIDÆ.

Buchanga atra var. *fuscipennis*, name given to new var. descr. C.R. 1885, p. 221; A. MILNE-EDWARDS & E. OUSTALET, Ann. Sci. Nat. (Zool.) (vii), 2, p. 225. *B. stigmatops* new to Sumatra; J. BÜTTIKOFER, Notes Leyd. Mus. ix (1887), p. 49.

Dissemurus platurus = *D. brachyphorus* (new evidence); *id. t. c.* p. 50.

Fringillidæ.

Laar, J. N. van de. De Prachtvinken. Beschrijving en verzorging der Prachtvinken en eenige andre buitenlandsche Kamervogels, zooals Widavinkes, Wever-Vogels, enz. Utrecht: 1887, 8vo, xvi & 144 pp.

Macpherson, H. A. Hybrid Finches. Tr. Norw. Soc. iv, pt. iii, pp. 367–371.

Acanthis. Further notes on the genus, and supplement [Corroborations and modifications]; L. Stejneger, Auk, 1887, pp. 30–35, 144, & 145. [*Cf.* Zool. Rec. xxi, *Aves*, p. 46, and xxii, p. 45; also Auk, 1887, p. 63.]

Ammodramus caudacutus subvirgatus, n. subsp., marshes of S. New Brunswick, P. Edward I., &c.; J. Dwight, Jun., Auk, 1887, pp. 232–239.

Burrica, n. subg.; type, *Fringilla mexicana*, Müll.; R. Ridgway, Manual N. A. Birds, p. 390.

Cardinalis cardinalis yucatanicus, n. subsp., Yucatan; *id. t. c.* p. 413.

Carpodacus amplus, nest and eggs; W. E. Bryant, Bull. Cal. Ac. Sci. ii (1887), p. 295. *C. frontalis rhodocolpus* cancelled; R. Ridgway, Manual N. A. Birds, p. 594. *C. mexicanus ruberrimus*, n. subsp., S. of Lower California; *id. t. c.* p. 391 (note). *C. rubicillus*, ♂ and ♀ figured; T. Lorenz, Beitrag Orn. Fauna Caucasus, p. 16, pl. i.

Chlorura hyperythra, ♂ ♀ ad. described for the first time; R. B. Sharpe, Ibis, 1887, p. 453 (from Kina Balu Mt., N. Borneo).

Chrysomitris citrinella, notes on breeding; S. B. Wilson, *t. c.* pp. 140 & 141. *C. spinus, sub voce* "Siskin"; A. Newton, Encycl. Brit., ed. 9, vol. xxii. Both species figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pts. xxxvii & xxxv.

Coryphospingus cristatus, synonomy, &c.; H. v. Berlepsch, J. f. O. 1887, pp. 9 & 134.

Crithagra burtoni, ♂ similar in plumage to ♀; G. E. Shelley, P. Z. S. 1887, p. 126. *C. dorsostriata*, n. sp., Kagehi, Wembære, Victoria Nyanza; A. Reichenow [G. A. Fischer], J. f. O. 1887, p. 72.

Emberiza castaneiceps, Moore, = *E. gigliolii*, Swinh.; H. H. Giglioli, T. Salvadori, & H. Seebohm, P. Z. S. 1887, p. 583. *E. citrinella* × *E. leucocephala*, hybrid figured; T. Pleske, Mém. Ac. Pétersb. (7) xxxv, 5, pl., fig. 4. *E. melanocephala* in Scotland; H. A. Macpherson, Zool. 1887, p. 193. *E. miliaria*, *E. hortulana*, *E. pusilla*, *E. schœniclus*, figured; Lord Lilford, Col. Fig. Br. Birds, pt. v.

Erythrospiza rhodoptera at Tiflis, extension of range by two degrees of latitude; G. Radde, Ornis, 1887, p. 480.

Euetheia grandior, n. sp., I. of Old Providence, Caribbean Sea; C. B. Cory, Auk, 1887, p. 245.

Euspiza aureola in Silesia; V. v. Tschusi zu Schmidhoffen, MT. orn. Ver. Wien, 1887, p. 25.

Fringilla tintillon; W. Hartwig, Zool. Gart. 1887, pp. 132–135.

Junco hyemalis carolinensis, its nests and eggs; G. B. Sennett, Auk, 1887, p. 242. *J. h. shufeldti*, n. subsp., Fort Wingate, New Mexico; H. K. Coale, *t. c.* p. 330. *J. insularis*, nest and eggs; W. E. Bryant, Bull. Cal. Ac. Sci. ii (1887), p. 301.

Leucosticte australis, ♂ ♀ & juv. in winter plumage; A. W. ANTHONY, Auk, 1887, p. 257. *L. griseinucha*, figured, description of nest and eggs; L. M. TURNER, Contr. Nat. Hist. Alaska, p. 171, Birds, pl. viii. *L. roborowskii*, n. sp., Alpine regions of Tibet; C. DEDITIUS [N. Przewalsky], J. f. O. 1887, p. 281.

Loxia curvirostra minor, 600 miles north of formerly known range; L. M. TURNER, Contr. Nat. Hist. Alaska, p. 170. *L. leucoptera*, figured; *id. t. c.* p. 171, Birds, pl. vii, fig. i.

Montifringilla nivalis, notes on breeding; S. B. WILSON, Ibis, 1887, pp. 142–146.

Passer, &c., *sub voce* "Sparrow;" A. NEWTON, Encyl. Brit. ed. 9, vol. xxii. *P. domesticus*, its misdeeds; J. H. GURNEY, Jun., London, 1887, 8vo, 9 pp. *P. italiæ*, its northern limit; H. M. WALLIS, Ibis, 1887, pp. 454 & 455: ♀ partly in plumage of ♂; E. A. DEGLI ODDI, Atti Soc. Ital. xxix, pp. 410–415. *P. montanus malaccensis*, n. var., Malacca and Java; A. DUBOIS, Faune de la Belgique, p. 574.

Passerina parellina indigotica, n. subsp., W. Mexico; *P. sumichrasti*, n. sp., Tehuantepec, S. Mexico; *Passerina* [*Cyanospiza*] *versicolor pulchra*, n. subsp., Lower California and W. Mexico; R. RIDGWAY, Manual N. A. Birds, pp. 447 & 448.

Peucæa arizonæ cancelled; *id. t. c.* p. 594.

Phrygilus gayi and its allies; *id.* P. U. S. Nat. Mus. 1887, pp. 431–435. *P. punensis*, n. sp., Lake Titicaca, Peru, and Bolivia; *id. ibid.*

Pinicola enucleator kodiaka, n. subsp., Alaska; *id.* Manual N. A. Birds, p. 388.

Plectrophanes nivalis breeding in Sutherland; J. A. HARVIE-BROWN [L. N. Hinxman & B. N. Peach], Fauna of Sutherland, &c., pp. 137–143, pl. of young bird. *P. n. townsendi*, n. subsp., Prybilof Is., Alaska, and Commander Is., Kamtschatka; R. RIDGWAY, Manual N. A. Birds, p. 403

Psittirostra psittacea, from Kauai, Hawaiian Is.; L. STEJNEGER, P. U. S. Nat. Mus. 1887, p. 389.

Pyrrhula, spp. and subspp. of the genus, n. subspp. proposed, &c.; H. SEEBOHM, Ibis, 1887, pp. 100–103. *P. cassini*, synonymy and figure; L. M. TURNER, Contr. Nat. Hist. Alaska, pp. 169 & 170, Birds, pl. vii, fig. 2. *P. cineracea*, Cabanis, = *P. cassini* (Baird); L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 103 & 104. *P. rosacea* is not a good species; *id. t. c.* p. 109.

Pyrrhuloxia sinuata beckhami, n. subsp., S. Arizona, New Mexico, and N. Mexico; R. RIDGWAY, Auk, 1887, p. 347. *P. s. peninsulæ*, n. subsp., Lower California; *id. ibid.*

Serinus hortulanus at Gt. Yarmouth; H. STEVENSON, Tr. Norw. Soc. iv, pt. iii, p. 392.

Spinus pinus breeding in Orange Co., N.Y.; J. A. ALLEN, Auk, 1887, p. 285.

Sporophila hypoleuca, synonymy, &c.; H. v. BERLEPSCH, J. f. O. 1887, p. 8.

Hirundinidæ.

The family, *sub voce* "Swallow"; A. Newton, Encycl. Brit. ed. 9, vol. xxii. They must be considered to belong to the south on account of their spring moult; H. Seebohm, Ibis, 1887, p. 340.

Atticora pileata figured; R. B. Sharpe & C. W. Wyatt, Monogr. Hirund. pt. vi.

Chelidon urbica, nest and young in October; F. R. Fitzgerald, Zool. 1887, p. 195.

Cotile littoralis, Hempr.-Ehr., is not identical with *C. minor*, Cab.; A. Reichenow, J. f. O. 1887, p. 300. *C. congica*, n. sp., Manyanga, Lower Congo; *id. ibid.* *C. rufigula*, *C. minor*, figured; R. B. Sharpe & C. W. Wyatt, Monogr. Hirund. pt. vi.

Hirundo neoxena figured; *iid. ibid.* *H. rufula* figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxiv.

Petrochelidon ruficollaris, *P. nigricans*, *P. rufigula*, *P. fulva*, figured; R. B. Sharpe & C. W. Wyatt, Monogr. Hirund. pt. v.

Progne chalybea figured; *iid., op. cit.* pt. vi.

Psalidoprocne antinorii figured; *iid. ibid.* *P. fuliginosa*, n. sp. [♂ ♀], Cameroons Mt.; G. E. Shelley [H. H. Johnston], P. Z. S. 1887, p. 123.

Tachycineta, its maxillo-palatines; R. W. Shufeldt, Science, ix (1887), p. 538; F. A. Lucas, *t. c.* p. 461, & x, p. 12. *T. leucorrhous*, *T. albiventer* figured; R. B. Sharpe & C. W. Wyatt, Monogr. Hirund. pt. v.

Icteridæ.

Agelæus forbesi, n. sp., = *A. pustulatus*, Sw., Pernambuco, Brazil; P. L. Sclater, Cat. Birds Brit. Mus. xi, p. 345 [omitted in Zool. Rec. xxiii, *Aves*, p. 47]. *A. phœniceus* figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxv. *A. p. sonoriensis*, N.W. Mexico, S. California, &c., *A. p. bryanti*, Bahamas & S. Florida, n. subspp.; R. Ridgway, Manual N. A. Birds, p. 370. *A. sclateri*, n. sp., Ecuador; A. Dubois, Bull. Mus. Belg. 1887, pp. 1 & 2, pl. 1.

Gymnostinops, n. g., for pt. of *Ostinops*; P. L. Sclater, Cat. Birds Brit. Mus. xi, p. 312 [omitted in Zool. Rec. xxiii, *Aves*, p. 47].

Icterus auratus, *I. sclateri*, figured; F. D. Godman & O. Salvin, Biol. Centr. Am. pt. lvii, pp. 473 & 476, pl. xxxiii, figs. 2 & 1. *I. nelsoni*, an addition to P. L. Sclater's list (Cat. Birds Brit. Mus. xi); *iid.* p. 472. *I. lawrencii*, n. sp., near *I. bairdi*, St. Andrew's I., Caribbean Sea; C. B. Cory, Auk, 1887, p. 178.

Molothrus brevirostris, Lafr. & D'Orb., = *M. rufo-axillaris*, Cass.; H. v. Berlepsch, J. f. O. 1887, p. 11.

Laniidæ.

Bradyornis (*Dioptrornis*) *brunnea*, n. sp., Angola [Mechow]; J. Cabanis, J. f. O. 1887, p. 92, pl. i, fig. 1. *B. microrhyncha* [♂], n. sp., Irangi, Victoria Nyanza; A. Reichenow [G. A. Fischer], *t. c.* p. 62.

Cracticus rufescens figured; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii.

Hyloterpe hypoxantha, n. sp. [♂ ad.], Kina Balu Mt., N. Borneo; *id.* Ibis, 1887, p. 451.

Laniarius atrocroceus, a second specimen; P. L. Sclater [R. Trimen], P. Z. S. 1887, p. 396. *L. atroflavus*, n. sp. [♂ ♀], Cameroons Mt.; G. E. Shelley [H. H. Johnston], *t. c.* p. 124, pl. xiii. *L. cathemagmenus*, n. sp., Loeru and Ugaia, Victoria Nyanza; A. Reichenow [G. A. Fischer], J. f. O. 1887, p. 64. [Notes are added on some other species, very close to the above.]

Lanius collurio figured; Lord Lilford, Col. Fig. Br. Birds, pt. v. *L. fuscatus*, from Foochow; F. W. Styan, Ibis, 1887, p. 225. *L. giganteus*, n. sp., Upper Yellow River and Kuku-Nor, Central Asia; C. Deditius [N. Przewalsky], J. f. O. 1887, p. 280. *L. ludovicianus gambeli*, n. subsp., California; R. Ridgway, Manual N. A. Birds, p. 467. *L. meridionalis* figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxv. *L. tigrinus* and its allies fully discussed; J. Büttikofer, Notes Leyd. Mus. ix (1887), pp. 53–56.

Pachycephala christophori figured; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii.

Telephonus minor [♀], n. sp., Kagehi, Victoria Nyanza, &c.; A. Reichenow [G. A. Fischer], J. f. O. 1887, p. 64. *T.* [illegible], pp.

Typhrodornis gularis should be separated from the species from L.; *id.* *T. frenatus* proposed for the latter; J. Büttikofer, Notes Leyd. Mus. (1887), p. 52.

Urolestes æquatorialis [♀], n. sp., Gasa-Berge, &c., Central Africa; A. Reichenow [G. A. Fischer], J. f. O. 1887, p. 65 (= *Basanistes cissoides*, Scl., P. Z. S. 1864, p. 109).

Meliphagidæ.

Anthornis melanura, nest and eggs; A. Reischek, Tr. N. Z. Inst. 1886, p. 186.

Myzomela nigrita figured; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii.

Ptilotis flava, *P. unicolor*, nests and eggs (new to science); A. J. Campbell, Vict. Nat. ii, p. 127.

Zosterops anguizæ of Milne-Edwards & Oustalet = *Z. kirki*, Shelley; A. Milne-Edwards & E. Oustalet, Ann. Sci. Nat. (Zool.) (vii) 2, p. 223 [*cf.* Zool. Rec. xxii, *Aves*, p. 40]. *Z. prætermissa*, n. sp. ?, near *Z. anjuanensis*, from I. of Anjuan, Comoro Group; H. B. Tristram, Ibis, 1887, pp. 369–371, pl. xi, fig. 1. [A synopsis of the genus is added.] *Z. hovarum*, n. sp., Madagascar; *id. t. c.* pp. 234 & 235: figured; *id. t. c.* pl. xi, fig. 2. *Z. melanocephala* figured; G. E. Shelley, P. Z. S. 1887, p. 125, pl. xiv, fig. 1. *Z. rendovæ* figured; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii. *Z. simplex*, *Z. palpebrosa*, their identity questioned, on the strength of new specimens from Foochow; F. W. Styan, Ibis, 1887, p. 227.

Paradiseidæ.

Epimachus macleayanæ [♂], n. sp., Astrolabe Mts., S.E. New Guinea; E. P. Ramsay, P. Linn. Soc. N.S.W. ii, pp. 239 & 240.

Coccidiscus pusillus shown to wear its adult (male) plumage all the year, contrary statement in F. H. H. Guillemard, Orn. Club, Bull. 2, p. 83. " p. 340; A. Du, n. subsp., Western Province of N. America; *id. t. c.* p. 82. *D. flavida*, n. sp., near *D. rufivertex*, St. Andrew's I., Caribbean Sea; C. B. Cory, Auk, 1887, p. 180. *D. nigrescens*, its nest and eggs described, probably for the first time; C. H. Townsend, P. U. S. Nat. Mus. 1887, pp. 223 & 224. *D. occidentalis*, discovery of its nest and eggs in California; W. Brewster, Auk, 1887, p. 166.

Geothlypis palpebralis, n. sp., E. Mexico and Yucatan; R. Ridgway, Manual N. A. Birds, p. 526.

Helinaia swainsoni in Louisiana, U.S.; G. N. Lawrence, Auk, 1887, p. 37: at Bayou Sara, Louisiana; C. W. Beckham, *t. c.* p. 305.

Helminthophila, the significance of certain phases in the genus; S. Trotter, *t. c.* pp. 307–310. [He considers that the scarcity and possible hybridization of the above shew a tendency to extinction.] *H. bachmani* (Aud.) rediscovered in Louisiana, U.S.; G. N. Lawrence, *t. c.* pp. 35–37: (1887, p. 165) a hooked specimen; W. Brewster, *t. c.* p. 165: a specimen from albili- Pero Key, S. Florida; C. H. Merriam, *t. c.* p. 262: others from ke Pontchartrain, Louisiana; G. N. Lawrence, *ibid.*: another in Florida; W. E. D. Scott, *t. c.* p. 348. *H. leucobronchialis*, further specimens; F. M. Chapman & E. C. Thurber, *t. c.* p. 349.

Setophaga flavivertex, n. sp., N. Colombia; O. Salvin, Ibis, 1887, pp. 129 & 130, pl. iv.

Motacillidæ.

Anthus bertheloti, its habits in the breeding season in Teneriffe; S. G. Reid, Ibis, 1887, p. 433. *A. cervinus*, figured [ad. in winter]; L. M. Turner, Contr. Nat. Hist. Alaska, p. 180, Birds, pl. ix, fig. 2. *A. novæzealandiæ* figured; W. L. Buller, Hist. Birds New Zealand, pt. ii.

Budytes leucocephala, n. sp., Zaidam, Central Asia; C. Deditius [N. Przewalsky], J. f. O. 1887, p. 279.

Ephthianura, see *Sylviidæ*.

Motacilla flava × *M. melanocephala*, hybrid figured; T. Pleske, Mém. Ac. Pétersb. (7) xxxv, 5, pl., fig. 2. *M. leucopsis*, changes of plumage; F. W. Styan, Ibis, 1887, p. 222. *M. ocularis* figured [ad. and juv. in winter]; L. M. Turner, Contr. Nat. Hist. Alaska, p. 178, Birds, pl. xi.

Muscicapidæ.

Bradyornis griseisticta?, new to Bering I., or *B. pallens*, n. sp.?; L. Stejneger, P. U. S. Nat. Mus. 1887, p. 143.

Chasiempis dolii, n. sp., Kauai I., Hawaii Archipelago; *id. t. c.* pp. 86–90. Remarks on the whole genus; *id. ibid.*

Cracticus rufescens figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiii.

Hyloterpe hypoxantha, n. sp. [♂ ad.], Kina Balu Mt., N. Borneo; *id.* Ibis, 1887, p. 451.

Laniarius atrocroceus, a second specimen; P. L. SCLATER [R. Trimen], P. Z. S. 1887, p. 396. *L. atroflavus*, n. sp. [♂ ♀]; T. BROWN, Tr. Dumfries Soc. 1885–6, p. 129; H. H. Johnston, *t. c.* p. 124, pl.

Niltava oatesi, n. sp., Mt. Mooleyit, Mooleyin, Tenasserim; T. SALVADORI, Ann. Mus. Genov. (2) v. p. 514.

Phœornis myadestina, n. sp., Kauai I., Hawaii Archipelago; L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 90–92.

Rhinomyias ruficrissa, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, p. 441.

Rhipidura albicollis new to Borneo; *id. ibid.* (Kina Balu Mt.). *R. flabellifera*, *R. fuliginosa*, figured; W. L. BULLER, Hist. Birds New Zealand, pt. ii.

Stoparola cerviniventris, n. sp. [♂], Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, p. 444.

Terpsiphone insularis, n. sp., near *T. affinis*, Nias I., Sumatra; T. SALVADORI, Ann. Mus. Genov. (2) iv, pp. 540 & 541.

Zanthopygia, sp. incert., Liu-kiu Is., Japan; L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 406 & 407.

NECTARINIDÆ.

The family *sub voce* "Sun-bird"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxii.

Æthopyga wrayi, n. sp. [♂], near *Æ. sanguinipectus*, Perak, Malay territory; R. B. SHARPE [L. Wray], P. Z. S. 1887, p. 440, pl. xxxviii, fig. 2.

Arachnothera juliæ, n. sp. [♂ ad.], Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, p. 451, pl. xiv.

Cinnyris bohndorffi, n. sp., near *C. verticalis*, Leopoldville, Congo; A. REICHENOW, J. f. O. 1887, p. 214. *C. chalybeus* new to W. Africa [Cameroons]; G. E. SHELLEY, P. Z. S. 1887, p. 125. *C. lotenia*, its nest and eggs (new to science?); E. H. AITKEN, J. Bomb. N. H. Soc. 1887, p. 52. *C. newtoni*, n. sp., near *C. hartlaubi*, I. of St. Thomas, W. Africa; J. V. BARBOZA DU BOCAGE [ex F. Newton & Moller], J. Sci. Lisb. 1887 (xliv), pp. 250 & 251: the specimens are 3 males, the female being unknown.

Melilestes iliolophus figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiii.

ORIOLIDÆ.

Oriolus vulneratus, n. sp. [♂ ad.], Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, pp. 437 & 438.

PANURIDÆ.

Calamophilus sp.? from the Russo-Persian boundary line; G. RADDE, Ornis, 1887, p. 476.

Paradiseidæ.

Epimachus macleayanæ [♂], n. sp., Astrolabe Mts., S.E. New Guinea; E. P. Ramsay, P. Linn. Soc. N.S.W. ii, pp. 239 & 240.

Paradisea apoda shown to wear its adult (male) plumage all the year, in opposition to the contrary statement in F. H. H. Guillemard's "Cruise of the Marchesa," p. 340; A. D. Bartlett, P. Z. S. 1887, p. 392.

Parotia lawesi figured; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii.

Phonygama purpureo-violacea figured; *id. ibid.*

Ptilorhis victoriæ: its egg (new to science); A. J. Campbell, Viet. Nat. ii, p. 165.

Paridæ.

Acredula caudata and *A. rosea* meet on the lower Rhine; E. Hartert, J. f. O. 1887, p. 258: figured; Lord Lilford, Col. Fig. Br. Birds, pt. iv.

(1887), *t. ilus parvulus* figured; G. Hartlaub, Zool. Jahrb. ii, p. 347, *albiloti*, fig. 3.

Acanthiparus novæ-zealandiæ figured; W. L. Buller, Hist. Birds New Zealand, pt. ii.

Leptopœcile elegans, n. sp., Upper Yellow River and the Idol Temple Tschertyngon, Central Asia; C. Deditius [N. Przewalsky], J. f. O. 1887, p. 275. *L. obscura*, n. sp., Mts. of N.E. Tibet; *id. t. c.* p. 277.

Mecistura trivirgata new to continent of Asia; L. Taczanowski [J. Kalinowski], P. Z. S. 1887, p. 604. *M. irbyi*, n. var. *caucasica*, north side of Caucasus; T. Lorenz, Beitrag Orn. Fauna Cauc., pp. 60 & 61.

Parus ater and *P. britannicus* figured; Lord Lilford, Col. Fig. Br. Birds, pt. iv. *P. atricristatus*, first plumage described; G. B. Sennett, Auk, 1887, p. 28. *P. a. castaneifrons*, n. subsp., Bee Co., Texas; *id. t. c.* pp. 27 & 28. *P. bicolor texensis*, n. subsp., Bee Co., Texas, Brownville; *id. ibid.* *P. borealis* × *Lophophanes cristatus*, hybrid figured [♂]; T. Pleske, Mém. Ac. Pétersb. (7) xxxv, 5, pl., fig. 3. *P. cinereus* and *P. minor* interbreeding in S. China; F. W. Styan, Ibis, 1887, p. 221. *P. cristatus* in Buckinghamshire; Lord Lilford, Zool. 1887, p. 250. *P. cypriotes*, n. sp., near *P. ater*, Cyprus; Lord Lilford [F. H. H. Guillemard], P. Z. S. 1887, p. 563. *P. hudsonicus*, *P. cinctus obtectus*, figured; the latter and not *P. cinctus* is the American species; L. M. Turner, Contr. Nat. Hist. Alaska, pp. 182 & 183, Birds, pl. x, figs. 1 & 2. *P. minor commixtus* is the species in Liu-kiu Is., Japan; L. Stejneger, P. U. S. Mus. 1887, pp. 410–412. *P. pendulinus* breeding in Mecklenburg; Gef. Welt, 1887, pp. 195 & 196; L. Holtz, J. f. O. 1887, -74. *P. pleskii* var., Menzbier, obtained again near St. Peters- rg; E. Büchner, Beitr. Russ. Reiches (2), ii, p. 26. *P. stoneyi*, n. sp., Kowak R., N.W. Alaska; R. Ridgway, Manual N. A. Birds, p. 591. *P. varius* new to continent of Asia; L. Taczanowski [J. Kalinowski], P. Z. S. 1887, p. 604.

PLOCEIDÆ.

The Family, see SHELLEY, G. E.

REICHENOW, A. Monographie der Gattung *Symplectes*, Sw. Zool. Jahrb. ii, pp. 625–638.

Including *S. kersteni*, *S. bicolor*, *S. chrysogaster*, *S. stictifrons*, *S. reichenowi*, *S. emini*, *S. melanotis*, *S. nigricollis*, *S. melanoxanthus*, *S. ocularius*, *S. brachypterus*, *S. aurantius*, *S. princeps*.

Estrelda nonnula figured ; G. HARTLAUB, *t. c.* p. 321, pl. xiii, fig. 5.

Habropyga tenerrima, n. sp., near *H. atricapilla*, Stanley Falls, Congo ; A. REICHENOW, J. f. O. 1887, p. 213.

Histurgops ruficauda, n. g. & sp., Wembœre and Ruwana R., Victoria Nyanza ; *id.* [G. A. Fischer], *t. c.* p. 67.

Hyphantornis sp. ?, Angola ; J. A. DE SOUSA, J. Sci. Lisb. (xliii) 1886, p. 166. *H. xanthops*, its nest and eggs; H. SCHALOW [R. Böhm], J. f. O. 1887, p. 241.

Lagonosticta ænochroa figured ; G. HARTLAUB, Zool. Jahrb. ii, p. 322, pl. xiii, fig. 6.

Malimbus rubropersonatus, n. sp., Gold Coast, figured ; G. E. SHELLEY, Ibis, 1887, p. 41, pl. ii, fig. 2.

Nigrita arnaudi, notes on ; G. HARTLAUB [Emin Pascha], J. f. O. 1887, pp. 310 & 311. *N. dorsalis*, n. sp , near *N. arnaudi*, Wembœre and Nassa, Victoria Nyanza ; A. REICHENOW [G. A. Fischer], *t. c.* p. 71.

Penthetria soror, n. sp , Kawanga, Victoria Nyanza ; *id. t. c.* p. 70.

Ploceipasser melanorhynchus is only a subspecies ; G. E. SHELLEY, Ibis, 1887, p. 5. *P. propinquatus*, Oustalet MSS., described from the type; *id. t. c.* p. 6.

Ploceus eminentissimus from Gt. Comoro ; *Sharpia ayresi* = *P. rubriceps* ; *P. bicolor*, *P. amaurocephalus*, notes on ; *Hyphantornis temporalis* = *P. baglafect* ; *P. tahatali* = *P. subaureus* ; *P. reichardi* = *P. vitellinus* ; *P. velatus*, varieties of ; *Hyphantornis fuscocastanea* = *P. tricolor* ; *Sycobius rubriceps*, perhaps = *Malimbus cassini* ; *Textor albirostris*, varieties of : *id. t. c.* pp. 15, 17, 19, 20, 21, 25, 28, 31, 38, 41, & 43.

P. angolensis, *P. capitalis*, figured ; *id. t. c.* pp. 18–34, pls. i, fig. 2, & ii, fig. 1. *P. anomalus*, n. sp., Stanley Falls, Congo ; A. REICHENOW, J. f. O. 1887, p. 214. *P. bohndorffi*, n. sp., Stanley Falls, Congo ; *id. ibid.* *P. capitalis* figured ; G. E. SHELLEY, Ibis, 1887, p. 34, pl. ii, fig. 1. *P. dimidiatus* [♀] new to science : a correction of former statement by the writer that *P. affinis*, v. Heugl., was the female of this bird ; also of another by v. Pelzeln, that he had determined the female, which proves to be a specimen of *P. fischeri*, n. sp., Kagehi, Victoria Nyanza: A. REICHENOW [G. A. Fischer], J. f. O. 1887, pp. 68 & 69. *P. gurneyi*, n. sp , from Caconda, Benguela, figured ; G. E. SHELLEY, Ibis, 1887, p. 17, pl. i, fig. 1. *P. melanogaster*, n. sp. [♂], Cameroons Mt. ; *id.* [H. H. Johnston], P. Z. S. 1887, p. 126, pl. xiv, fig. 2. *P. philippinus*, notes on its eggs, &c. ; H. A. BARNES, J. Bomb. N. H. Soc. 1887, pp. 105–107.

Pitylia stictolæma, n. sp., Leopoldsville, Congo ; A. REICHENOW, J. f. O. 1887, p. 213.

Sitagra pelzelni, n. sp., = *Hyphantornis crocata*, Hartl., Magungo, E. Equat. Africa; G. HARTLAUB, Zool. Jahrb. ii, p. 343, pl. xiv, figs. 9 & 10.

Symplectes eremobius, n. sp., E. Equat. Africa; *id. t. c.* p. 320. [A. REICHENOW says it is a young ♂ of *S. melanotis*; *t. c.* p. 638.] *S. ocularius* var. *crocatus* figured; *id. t. c.* p. 341, pl. xiv, fig. 11.

PYCNONOTIDÆ.

Chlorocichla centralis, n. sp., Loeru, Victoria Nyanza; A. REICHENOW [G. A. Fischer], J. f. O. 1887, p. 74.

Chloropsis flavocincta [♂ ad.], *C. kinabaluensis* [♀ ad. ?], n. spp., Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, p. 445.

Criniger chloris figured; *id.* [J. Gould], Birds New Guinea, pt. xxiii.

Hemixus castanonotus new to Chinese mainland; F. W. STYAN, Ibis, 1887, p. 224. *H. connectens*, n. sp. [♂ ad.], Kina Balu Mt., N. Borneo; R. B. SHARPE, *t. c.* p. 446. *H. sumatranus*, n. sp., = *Hypsipetes malaccensis*, Salvad. (*nec* Blyth), &c.; T. SALVADORI, Ann. Mus. Genov. (2) v, pp. 525–527.

Microsceles amaurotis new to continent of Asia; L. TACZANOWSKI [J. Kalinowski], P. Z. S. 1887, p. 603.

SITTIDÆ.

Sitella leucocephala: nest and eggs (new to science); A. J. CAMPBELL, Vict. Nat. ii, p. 127.

Sitta sinensis from Puching, Fokien; F. W. STYAN, Ibis, 1887, p. 221. *S. syriaca*, description of nest; J. A. MURRAY, Ind. Ann. & Mag. N. H. i, p. 59; breeding in Herzegovina; H. v. KADICH, MT. orn. Ver. Wien, 1887, pp. 41 & 105.

STURNIDÆ.

Sturnidæ, *sub voce* "Starling"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxii.

[*H*]*Aplonis caledonicus*, synonymy, &c.; H. SCHALOW, J. f. O. 1887, p. 246.

Buphaga erythrorhyncha, its habits in the Kilimanjaro district; F. J. JACKSON, Ibis, 1887, p. 367.

Calornis altirostris, n. sp., near *C. chalybæa*, Nias I., Sumatra; T. SALVADORI, Ann. Mus. Genov. (2) iv, pp. 553 & 554, pl. ix, fig. 1. *C. solomonensis*, Ramsay, = *C. cantoroides*, G. R. Gr.; W. R. OGILVIE-GRANT [C. M. Woodford], P. Z. S. 1887, p. 331.

Creadion carunculatus, nest and eggs; *C. cinereus*, young; A. REISCHEK, Tr. N. Z. Inst. 1886, pp. 188 & 189: figured; W. L. BULLER, Hist. Birds New Zealand, ed. 2, pt. i.

Gracula robusta, n. sp., near *G. javanensis*, Nias I., Sumatra; T. SALVADORI, Ann. Mus. Genov. (2) iv, pp. 554–556, pl. ix, fig. 2.

Heteralocha acutirostris, curiously-deformed bill; W. COLENSO, Tr. N. Z. Inst. 1886, pp. 140–145, pl. ix: figured [also cut of abnormal growth of bill]; W. L. BULLER, Hist. Birds New Zealand, ed. 2, pt. i.

Lamprocorax minor figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiii.

Pastor roseus new to Norway; R. COLLETT, Forh. Selsk. Chr. 1887, No. 8.

Podoces biddulphi figured; A. I. WILKINS, Isvest. Mosc. Univ. I, i, pl. i.

Sturnus caucasicus, n. sp., north side of Caucasus; T. LORENZ, Beitrag Orn. Fauna Cauc. pp. 9–11, pl. v, fig. 2.

SYLVIIDÆ.

Acanthiza inornata, eggs and nest (not coinciding with Gould's description); A. J. NORTH, P. Linn. Soc. N.S.W. ii, p. 407.

Acanthornis, n. g. for *Acanthiza magna*; W. V. LEGGE, P. R. Soc. Tasm. 1886, p. 236.

Accentor collaris, notes on breeding; S. B. WILSON, Ibis, 1887, pp. 135–137. *A. koslowi*, n. sp., Ala-schan, Tibet; C. DEDITIUS [N. Przewalsky], J. f. O. 1887, p. 277. *A. modularis* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. v. *A. ocularis*, Radde [*cf.* Zool. Rec. xxiii, *Aves*, p. 51], = *A. fulvescens*, Severz.; G. RADDE, Ornis, 1887, p. 486.

Acrocephalus dumetorum, its nest and eggs described afresh; E. BÜCHNER, Beitr. Russ. Reiches (2) ii, pp. 19–22. *A. palustris*, notes on its breeding; P. LEVERKÜHN [A. Mejer], J. f. O. 1887, p. 199; nesting in Gloucestershire; H. W. MARSDEN, Zool. 1887, p. 265. O. 1887,

Aedon philomela figured; E. H. GIGLIOLI & A. MANZELLA, Icon Nassa, Ital. pt. xxxiv.

Calamodyta melanopogon breeding near the Lake of Velencze; S. C. v. CHERNELHAZA, Z. ges. Orn. 1887, pp. 191 & 192.

Calamonastes cinereus, n. sp., Leopoldsville, Congo; A. REICHENOW, J. f. O. 1887, p. 215. *C. fischeri*, Rchw., = *Thamnobia simplex*, Cab.; *id. ibid.*

Calliope camtschatkensis figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xxxvii.

Cryptolopha montis, n. sp. [♂ ad.], near *C. castaneiceps*, Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1887, p. 442. *C. schwaneri*, ♂ ♀ described (♂ new to science); *id. t. c.* p. 443.

Cyanecula cyanea & *C. wolfi* both breed near St. Petersburg; E. BÜCHNER, Beitr. Russ. Reiches (2) ii, pp. 13 & 14.

Dromolaea leucura figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xxxvi.

Ephthianura should be in *Sylviidæ*, proposed new subfamily *Ephthianuridæ*; W. V. LEGGE, P. R. Soc. Tasm. 1886, p. 236.

Erithacus komadori is not from Corea, but from Loo-choo Is., &c.; H. SEEBOHM, Ibis, 1887, p. 175.

Locustella luscinioides, notes on; J. v. CSATÓ, MT. orn. Ver. Wien, 1887, p. 105 & 106.

Luscinia, and not *Daulias*, should be used as a generic title; T. SALVADORI, Ibis, 1887, p. 120.

Lusciola böhmi [Zool. Rec. xxiii, *Aves*, p. 52] is from Simbile, Uganda district, rather than from Marungu, E. Africa; A. REICHENOW, J. f. O. 1887, p. 93.

Melanodryas picata, its nest and eggs; A. J. North, P. Linn. Soc. N.S.W. ii, p. 554.

Melizophilus provincialis figured; Lord Lilford, Col. Fig. Br. Birds, pt. iv.

Miro australis, *M. albifrons*, figured; W. L. Buller, Hist. Birds New Zealand, ed. 2, pt. ii.

Myiomoira [= *Petræca*] *toitoi*, *M. macrocephala*, figured; *id. ibid.*

Pentholæa clericalis figured; G. Hartlaub, Zool. Jahrb. ii, p. 317, pl. xiii, figs. 7 & 8. *P. baucis*, n. sp. ?, Babira and Remo, E. Equat. Africa; *id. t. c.* p. 318.

Petræca toitoi, *P. longipes*, nests and eggs; A. Reischek, Tr. N. Z. Inst. 1886, pp. 184–186.

Phyllopneuste lorenzi (= *P. tristis* var. ?), n. sp., north side of Caucasus; T. Lorenz, Beitrag Orn. Fauna Cauc. pp. 28 & 29, pl. ii, figs. 2–4 [bird, nest, and eggs].

Phylloscopus nitidus figured; *id. t. c.* pp. 29 & 30, pl. ii, fig. 1. *P. superciliosus*, *P. minor*, *P. trochilus*, figured; Lord Lilford, Col. Fig. Br. Birds, pt. v. *P. bonellii*, *P. superciliosus*, figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxvii. *P. rufus*, its nest and eggs in Teneriffe; S. G. Reid, Ibis, 1887, pp. 431 & 432.

Poliophtila cærulea cæsiogaster, n. subsp., Bahamas; R. Ridgway, Ma[illegible] N. A. Birds, p. 569.

Sitella Viet. [illegible]

[illegible]ulus cristatus and *R. ignicapillus* figured; Lord Lilford, Col. Fig. [illegible] Birds, pts. iv & v: notes on breeding of latter; A. Walter, J. f. O. 1887, pp. 98 & 99. *R. obscurus*, nest and eggs; W. E. Bryant, Bull. Cal. Ac. Sci. ii (1887), p. 315. *R. satrapa aztecus*, n. subsp., City of Mexico; G. N. Lawrence, Ann. N. York Ac. iv, p. 66; R. Ridgway, Manual N. A. Birds, p. 891.

Ruticilla erythrogaster, n. var. *severzovi*, north side of Caucasus; T. Lorenz, Beitrag Orn. Fauna Cauc. pp. 22 & 23. *R. ochrurus* figured; *id. t. c.* pp. 24–27, pl. v, fig. 1. *R. tithys* var. *cairii*, Gerbe; V. v. Tschusi zu Schmidhoffen, J. f. O. 1887, p. 216.

Saxicola œnanthe in Canada [Pr. of Wales' Sound, Hudson's Strt.] F. F. Payne, P. Canad. Inst., series iii, vol. 5, p. 119. *S. isabellina*, from Cumberland, first record for W. Europe; H. Saunders [H. A. Macpherson], P. Z. S. 1887, p. 579. *S. monticola* and *S. leucomelæna*, plumage of female correctly given by Butler, Feilden, & Reid; H. Seebohm, Ibis, 1887, p. 345: question of interbreeding discussed, p. 346. *S. shelleyi*, difference from R. B Sharpe's description; J. H. Gurney, *t. c.* p. 55.

Sylvia heinekeni; W. Hartwig, Zool. Gart. 1887, pp. 279–282. *S. atricapilla* in Co. Waterford, Ireland, in December; R. J. Ussher, Zool. 1887, p. 37 [*cf.* p. 236].

Tarsiger hodgsoni, from Kina Balu Mt., N. Borneo; R. B. Sharpe, Ibis, 1887, p. 440 (only known from Himalayas before).

Thamnolæa subrufipennis, n. sp., near *T. cinnamomeiventris*, Ussure and Ma[illegible]gala [Usukuma], &c., Central Africa; A. Reichenow [G. A. Fischer], J. f. O. 1887, p. 78.

Tharrhaleus pallidus, n. sp., Khobdo, N.W. Mongolia; M. MENZBIER, Ibis, 1887, p. 299, pl. ix.

TANAGRIDÆ.

Arremon nigrirostris, n. sp., = *A. silens*, Scl. & Salv., S. Peru; P. L. SCLATER, Cat. Birds Brit. Mus. xi, p. 276. [Omitted in Zool. Rec. xxiii, *Aves*, p. 52.]

Delothraupis, n.g., for *Calliste* (*Pipridea*) *castaneiventris*; *id. t. c.* p. 142. [Omitted in Zool. Rec. xxiii, *Aves*, p. 52.]

Euphonia chlorotica serrirostris, from Bolivia, compared with the typical *E. chlorotica* and with *E. violaceicollis*, Cab., from Brazil; H. v. BERLEPSCH, J. f. O. 1887, p. 6.

Pyranga flammea, n. sp., Tres Marias Is., W. Mexico; R. RIDGWAY, Manual N. A. Birds, p. 457. *P. leucoptera latifasciata*, n. subsp., Costa Rica and Veragua; *id. ibid.* *P. rubriceps* in California; W. E. BRYANT, Auk, 1887, p. 78.

Saltator fuliventris, Lawr., = *S. cœrulescens* (Vieill.), juv.; H. v. BERLEPSCH, J. f. O. 1887, p. 3.

Spindalis zena townsendi, n. subsp., Abaco I., Bahamas; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 3.

. O. 1887,
Nassa,

TIMELIIDÆ.

Alcippe morrisonia new to the Chinese mainland: F. W. STYAN, Ibis, 1887, p. 222. *A. peracensis*, n. sp. [♂], Perak, Malay territory; R. B. SHARPE [L. Wray], P. Z. S. 1887, p. 439.

Argya mentalis [♀], n. sp., Soboro, Victoria Nyanza; A. REICHENOW [G. A. Fischer], J. f. O. 1887, p. 75.

Cisticola dispar, n. sp. [= *Drymœca ? infrà*]; J. A. DE SOUSA, J. Sci. Lisb. 1887 (xlvi), pp. 98 & 106. *C. brunniceps*, *C. cisticola*, their specific value; L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 407 & 408: the former is subspecifically distinct; H. SEEBOHM, Ibis, 1887, p. 175. *C. exilis* (*ruficeps*) new to Tasmania; A. J. CAMPBELL, Vict. Nat. iv, p. 138.

Clitonyx albicapilla, *C. ochrocephala*, figured, and the former name corrected from *albicilla*; W. L. BULLER, Hist. Birds New Zealand, ed. 2, pt. ii: nest and eggs of former; A. REISCHEK, Tr. N. Z. Inst. 1886, p. 192.

Corythocichla leucosticta, n. sp. [♂ ♀], near *C. striata*, Perak, Malay territory; R. B. SHARPE [L. Wray], P. Z. S. 1887, p. 438.

Crateropus tenebrosus figured; G. HARTLAUB, Zool. Jahrb. ii, p. 31[illegible] pl. xii, fig. 4. [illegible]. Wien,

Drymœca sp. ?, Caconda, Quissange, Benguella; J. A. DE SOU[illegible] Lisb. 1886 (xliii), p. 164. [= *Cisticola dispar*, n. sp. *suprà*.] T. SALV[illegible]

Eremomela mentalis, n. sp., Congo; A. REICHENOW, J. f. O. 18[illegible] p. 215.

Icoturus komadori, from Liu-kiu Is., Japan; L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 404 & 405.

Minla soror, n. sp. [♂], near *M. castaneiceps*, Perak, Malay territory; R. B. Sharpe [L. Wray], P. Z. S. 1887, p. 439, pl. xxxviii, fig. 1.

Mixornis montana, n. sp. [♀ ad.], near *M. cagayanensis*, Kina Balu Mt., N. Borneo; *id.*, Ibis, 1887, p. 448.

Pomatorhinus wrayi, n. sp. [♂ ♀], near *P. tickelli*, Perak, Malay territory; *id.* [L. Wray], P. Z. S. 1887, p. 437.

Prinia molleri, n. sp., I. of St. Thomas, W. Africa; J. V. Barboza du Bocage [ex Moller], J. Sci. Lisb. 1887 (xliv), pp. 251–253.

Ptyrticus turdinus figured; G. Hartlaub, Zool. Jahrb. ii, p. 314, pl. xi, fig. 1, cut [*cf.* Zool. Rec. xx, *Aves*, p. 27].

Sphenœacus punctatus figured; W. L. Buller, Hist. Birds New Zealand, ed. 2, pt. ii.

Stachyris borneensis, n. sp. [♂ ad.], Kina Balu Mt., N. Borneo; R. B. Sharpe, Ibis, 1887, p. 449.

Staphidia everetti, n. sp. [♂ ♀ ad.], Kina Balu Mt., N. Borneo; *id. t. c.* p. 447.

Sylviella rufigenis, n. sp., Congo; A. Reichenow, J. f. O. 1887, p. 215.

Trochalopteron cinereiceps, n. sp., Yunnan?; F. W. Styan, Ibis, 1887, p. 167 & 168, pl. vi. *T. peninsulæ*, n. sp. [♂ ♀], near *T. melanostigma*, Perak, Malay territory; R. B. Sharpe [L. Wray], P. Z. S. 1887, p. xxxvii. *T. prjevalskii*, n. sp., Mts. of Kan-sou, Mongolia; M. Berezowski & G. Bianchi, Ibis, 1887, p. 300.

Turdinus albipectus, n. sp., Stanley Falls, Congo; A. Reichenow [F. Bohndorff], J. f. O. 1887, p. 307. *T. canicapillus*, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo; R. B. Sharpe, Ibis, 1887, p. 450.

Turnagra hectori, *T. crassirostris*, figured; W. L. Buller, Hist. Birds New Zealand, pt. i.

Xenocichla orientalis figured; G. Hartlaub, Zool. Jahrb. ii, p. 316, pl. xi, fig. 2.

Troglodytidæ.

Cyphorhinus, its song; P. L. Sclater [Simson], Ibis, 1887, p. 366.

Salpinctes guadeloupensis, its nest and eggs; W. E. Bryant, Bull. Cal. Ac. Sci. ii (1887), p. 310.

Thryothorus bewickii, correct subspecific titles of its forms; R. Ridgway, Auk, 1887, p. 349. *T. maculipectus umbrinus*, Guatemala, *T. m. canobrunneus*, Yucatan, n. subspp.; *id.* Manual N. A. Birds, p. 552.

Troglodytes brachyurus, n. sp., Temax, Yucatan; G. N. Lawrence, Ann. N. York Ac. iv, p. 67. *T. alascensis* figured, its nest, eggs, and habits; L. M. Turner, Contr. Nat. Hist. Alaska, p. 181, Birds, pl. ix, fig. 1. *T. parvulus* figured; Lord Lilford, Col. Fig. Br. Birds, pt. iv.

Turdidæ.

Cittocincla melanura, n. sp., near *C. macrura*, Nias I., Sumatra; T. Salvadori, Ann. Mus. Genov. (2) iv, pp. 549 & 550, pl. viii, fig. 1.

Cossypha quadrivirgata from Transvaal [very far south]; J. H. GURNEY, Ibis, 1887, p. 54.

Margarops albiventris, n. sp. [♂ ♀], The Park, St. Andrew's, Grenada, W.I.; G. N. LAWRENCE, Ann. N. York Ac. iv, p. 23.

Merula fœæ, n. sp., near *M. pallida*, Mt. Mooleyit, Moulmein, Tenasserim; T. SALVADORI, Ann. Mus. Genov. (2) v, p. 514. *M. subalaris*, n. sp., near *M. nigriceps*, Jutuba, S. Brazil?; H. SEEBOHM, P. Z. S. 1887, p. 557. [E. Zool. Inst. Kiel.]

Mimus magnirostris, n. sp., St. Andrew's I., Caribbean Sea; C. B. CORY, Auk, 1887, p. 178.

Monticola cyanus and *M. solitaria* interbreeding in S. China; F. W. STYAN, Ibis, 1887, p. 217.

Myiophoneus borneensis, ♂ ♀ ad. described, from Kina Balu Mt., N. Borneo [*cf.* Zool. Rec. xxii, *Aves*, p. 46]; R. B. SHARPE, *t. c.* p. 444. *M. flavirostris* new to Sumatra; J. BÜTTIKOFER, Notes Leyd. Mus. ix (1887), p. 65.

Rhamphocinclus sanctæ-luciæ, n. sp., St. Lucia, W.I.; C. B. CORY, Auk. 1887, p. 94.

Turdus atrigularis new to Norway; R. COLLETT, Forh. Selsk. Chr. 1887, No. 8. *T. celænops*, n. sp., near *T. chrysolaus*, The Seven Islands, Idzu, Japan; L. STEJNEGER, Science, x (1887), p. 108: its eggs from Miyakeshima; *id.* P. U. S. Nat. Mus. 1887, p. 485. *T. erythr[illegible]* O. 1887, n. sp. [♀ ad.], near *T. pelios*, Christmas I.; R. B. SHARPE, P. Z. S. [illegible] Nassa, p. 515. *T. iliacus* breeding in Prussia; E. HARTERT, MT. orn. Ver. Wien, 1887, p. 163: figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xxxvi. *T. jouyi*, n. sp., near *T. chrysolaus*, Hondo, Japan; L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 4 & 5. *T. naumanni*, *T. ruficollis*, prevalence of intermediate varieties; L. TACZANOWSKI [J. Kalinowski], P. Z. S. 1887, p. 601. *T. pilaris* breeding in Bohemia; A. KOTZ, MT. orn. Ver. Wien, 1887, pp. 17–20 & 134; GEYER, *t. c.* p. 42; V. v. TSCHUSI ZU SCHMIDHOFFEN, *t. c.* p. 149: in Prussia; E. HARTERT, *t. c.* p. 163: in Schleswig-Holstein; P. LEVERKÜHN, Zool. Gart. 1887, p. 146: in Hesse; W. MÜLLER, J. f. O. 1887, p. 89 [*cf.* pp. 94 & 96]. *T. varius*, in Scilly Is.; T. CORNISH, Zool. 1887, p. 114. *T. viscivorus* figured; K. T. LIEBE, Monat. Schutze Vogelw. 1887, pp. 4–11, pl. i.

VIREONIDÆ.

Cyclorhis: rearrangement of species proposed, and *C. atrirostris*, n. sp., pl., Æquatoria [Ecuador], described; P. L. SCLATER, Ibis, 1887, pp. 320–324, pl. x; cuts of heads of *C. guianensis*, *C. altirostris*, *C. nigrirostris*, *C. viridis* = *C. ochrocephala*; *id. t. c.* p. 323.

Vireo caymanensis, n. sp., I. of Grand Cayman, W.I.; C. B. CORY, Auk, 1887, p. 7. *V. crassirostris flavescens*, n. subsp., Bahamas; R. RIDGWAY, Manual N. A. Birds, p. 476. *V. noveboracensis maynardi*, n. subsp., Key West, Florida; W. BREWSTER, Auk, 1887, p. 148.

Vireosylvia canescens, n. sp., St. Andrew's I., Caribbean Sea; C. B. CORY, *t. c.* p. 178.

PICARIÆ.

PICIDÆ.

HARGITT, E. Notes on Woodpeckers. No. XIII. On *Gecinus gorii* and on the male of *Poliopicus ellioti*. Ibis, 1887, pp. 74–76. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 18.] *Gecinus gorii*, n. sp. (= *G. squamatus*, Swinh., *nec* Vigors), S. Afghanistan ; *id. ibid.* ; [named *G. zaroudnoi* by M. MENZBIER, *t. c.* p. 301]. *Poliopicus ellioti*, ♂ (new to science), Landana, Congo ; *id. ibid.*

Campophilus imperialis in Northern Sonora ; R. RIDGWAY, Auk, 1887, p. 161.

Colaptes auratus laying 71 eggs in 73 days ; C. L. PHILLIPS, *t. c.* p. 346. *C. rufipileus*, eggs from Guadelupe I., Cal. (new to science) ; W. E. BRYANT, Bull. Cal. Ac. Sci. ii (1887), p. 285 (also tables of measurements, compared with *C. cafer*).

Dendropicus tropicalis, from Leopoldville, Congo, separated from *D. hemprichi*, &c., as a n. sp. ; A. REICHENOW [F. Bohndorff], J. f. O. 1887, p. 302. *D. hartlaubi*, correction ; *id. t. c.* p. 303.

Dryobates arizonæ fraterculus, S.W. Mexico, *D. scalaris sinaloensis*, A. G[illespie], *D. villosus maynardi*, Bahamas [= *Picus insularis*, Mayn., *nec* new to science], n. subspp. ; R. RIDGWAY, Manual N. A. Birds, pp. 286, 285, & p. 282.

Gecinus, see HARGITT, E., *suprà*.

Hemicercus concretus and *H. sordidus* should together include the whole genus ; J. BÜTTIKOFER, Notes Leyd. Mus. ix (1887), pp. 18–23.

Iyngipicus kizuki nigrescens, n. subsp., Naha, Loo-choo Is. ; H. SEEBOHM, Ibis, 1887, p. 177.

Miglyptes infuscatus, n. sp., Nias I., Sumatra ; T. SALVADORI, Ann. Mus. Genov. (2) iv, p. 531.

Picus noguchii, n. sp., Loo-choo Is. ; H. SEEBOHM, Ibis, 1887, p. 178.

Poliopicus, see HARGITT, E., *suprà*. *P. johnstoni*, n. sp. [♂], Cameroons Mt. ; G. E. SHELLEY [H. H. Johnston], P. Z. S. 1887, p. 122.

Thriponax kalinowskii, n. sp. [♂ ♀], Corea ; L. TACZANOWSKI [J. Kalinowski], *t. c.* pp. 607 & 608.

TROCHILIDÆ.

Species of the Family figured in Suppl. to Trochil., pt. v. [see GOULD, J. (THE LATE).] *Petasophora germana*, *Lampraster branickii*, *Heliodoxa xanthogonys*, *Helianthea osculans*, *Bourcieria insectivora*, *B. traviesi*, *Thalurania jelskii*, *Lophornis pavoninus*, *Metallura primolina*, *Adelomyia cervina*, *Callipharus nigriventris*, *Amazilia cupreicauda*.

BERLEPSCH, H. v. Kritische Uebersicht der in den sogenannten Bogota-Collectionen (S. O. Colombia) vorkommenden Colibri-Arten. J. f. O. 1887, pp. 313–336.

The author treats of 95 species, adding 2 others wrongly ascribed to Bogota, and 40 from the remaining Colombian provinces (of which 2

are in the first list). 44 of them seem to be peculiar to Colombia; 28 of them are only found in the Bogota Collections. Several alterations are made in generic names; and see *Cyanolesbia*, *Phaethornis*, *infrà*.

A. Göring, life-studies of the family; Monat. Schutze Vogelw. 1887, pp. 157–162, 184–189, 209–211, 246–251, 264, 265, & 321–323, pl. [illegible] & iv [figures of *Sparganurus phaon*, *Chrysolampis mosquitus* (coloured), and 6 other species (uncoloured).]

Bourcieria assimilis, Elliot ?, figured; H. v. Berlepsch, Z. ges. Orn. 1887, p. 180, pl. iii, fig. 2.

Chatocercus burmeisteri, n. sp., near *C. bombus*, Mts. of Tucuman; P. L. Sclater [H. Burmeister], P. Z. S. 1887, pp. 638 & 639.

Chlorostilbon comptus, n. sp., near *C. melanorhynchus*, Gould, Antioquia; H. v. Berlepsch, Ibis, 1887, p. 296. *C. subfurcatus*, n. sp., = *C. prasinus*, Salvin, *nec* (Less.), Roraima; *id. t. c.* p. 297.

Chrysolampis mosquitus var. ?, or n. sp. ?; *id.* Z. ges. Orn. 1887, p. 181: figured, see A. Göring, *suprà*.

Cyanolesbia nehrkorni, n. sp. [♂], Sta. Fé de Bogota, Colombia; *id.* J. f. O. 1887, p. 326, and Z. ges. Orn. 1887, pp. 178–180, pl. iii, fig. 1.

Diphlogœna iris buckleyi, n. subsp., Ecuador; *id.* Ibis, 1887, p. 295.

Eulampis jugularis eximius, n. subsp., I. of Nevis, W.I.; *id. t. c.* p. 294.

Iache lawrencii, n. sp., near *I. latirostris*, Trés Marias Is., W. M[illegible] f. O. 1887; *id. t. c.* p. 294; R. Ridgway, Manual N. A. Birds, p. 320. Nassa,

Lampornis hendersoni, n. sp., near *L. prevosti*, Old Providence I., Caribbean Sea; C. B. Cory, Auk, 1887, p. 177.

Phaëthornis nattereri, n. sp., near *P. longuemareus*, and long confounded with it, Matogrosso Prov., Brazil; H. v. Berlepsch, Ibis, 1887, p. 290. *P. poortmani major* (*cf.* Zool. Rec. xxii, *Aves*, p. 48) = *P. euchloris* (Reichb.); *id.* J. f. O. 1887, p. 336.

Selasphorus floressii new to California; W. E. Bryant, For. & Str. xxvi, No. 22, p. 426.

Sparganurus phaon figured; see A. Göring, *suprà*.

Trochilus alexandri, *T. anna*, *T. rufus*, *T. calliope*, habits, nests, &c.; C. H. Townsend, P. U. S. Nat. Mus. 1887, pp. 207–209. *T. colubris*, its nesting habits; W. Macfarland, J. Trenton N. H. Soc. 1887 (No. 2), pp. 55–58. *T. alexandri*, *T. costæ*, courtship, &c.; G. F. Morcom, Bull. Ridgw. Orn. Club, 2 [1887], pp. 43–45.

Cypselidæ.

Chætura anchietæ, n. sp., near *C. cassini*, Quissange, Benguella; J. A. de Sousa, J. Sci. Lisb. 1887 (xlvi), pp. 93 & 105.

Collocalia: notes on a species with edible nest; H. B. Guppy, The Solomon Islands, pp. 325–328.

Cypselus, *sub voce* "Swift"; A. Newton, Encycl. Brit ed. 9, vol. xxii. *C. apus* in the outer Hebrides; J. W. P. Campbell-Orde, Ibis, 1887, p. 363; H. A. Macpherson, *t. c.* p. 470: figured; Lord Lilford, Col. Fig. Br. Birds, pt. v. *C. niansæ* [♀], n. sp., Kagehi, Victoria Nyanza; A.

Reichenow [G. A. Fischer], J. f. O. 1887, p. 61. *C. pallidus* is resident, and *C. unicolor* breeds, in Teneriffe; S. G. Reid, Ibis, 1887, p. 434.

Hirundinapus klaesii, n. sp., near *H. nudipes*, Loeboe Gedang, W. Sumatra; J. Büttikofer, Notes Leyd. Mus. ix (1887), p. 40.

Micropus melanoleucus new to Sumatra; *id. t. c.* p. 63: observations on its habits, plumage, and external characters; R. W. Shufeldt, Ibis, 1887, pp. 151–158, pl. v [♂].

Caprimulgidæ.

Caprimulgus europæus figured; K. T. Liebe, Monat. Schutze Vogelw. 1887, pp. 236–245, pl. ii. *C. mossambicus* in the Orange Free State; E. Symonds [J. H. Gurney], Ibis, 1887, p. 327.

Chordeiles texensis, first plumage described; G. B. Sennett, Auk, 1887, p. 27.

Phalænoptilus nuttalli californicus, n. subsp., California; R. Ridgway, Manual N. A. Birds, p. 588 (note). *P. n. nitidus*, n. subsp., Texas and Arizona; W. Brewster, Auk, 1887, p. 147.

Coliidæ.

A. G.,
new to[illegible] *leucotis*, nest and eggs; A. Reichenow, J. f. O. 1887, p. 218.
p. 2[illegible]

Bucerotidæ.

Aceros leucostigma, n. sp, near *A. nipalensis*, Mt. Mooleyit, Moulmein, Tenasserim; T. Salvadori, Ann. Mus. Genov. (2) v, p. 515.

Rhytidoceros plicatus, range in Solomon Is. limited by Malayta; W. R. Ogilvie-Grant [C. M. Woodford], P. Z. S. 1887, p. 328. *R. subruficollis*, its nest and egg; J. Anderson, J. L. S. xxi (1887), p. 149.

Tockus gingalensis, its nest; H. Parker, Taprobanian, ii, p. 132.

Upupidæ.

Upupa epops in Færoes; H. W. Feilden, Zool. 1887, p. 73: breeding in Wiltshire; A. C. Smith, Birds of Wiltshire, p. 267.

Coraciidæ.

Coracias garrula figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxvi.

Trogonidæ.

Trogon ambiguus breeding in Southern Arizona; R. Ridgway, Auk, 1887, p. 161: its nestling plumage (Arizona); *id.* P. U. S. Nat. Mus. 1887, p. 147. *T. erythrocephalus* should include *T. hodgsoni* and *T. flagrans*; J. Büttikofer, Notes Leyd. Mus. ix (1887), p. 13.

Capitonidæ.

Barbatula bilineata, ♂ and ♀ from Transvaal; J. H. Gurney, Ibis, 1887, p. 52.

Cyanops ramsayi from Perak, Malay territory; R. B. Sharpe, P. Z. S. 1887, p. 442.

Megalæma caniceps new to Bombay Presidency; W. F. Sinclair, Ind. Ann. & Mag. N. H. i, p. 35.

Pogonorhynchus senex, n. sp., Ikanga in Ukamba, Africa [*cf.* J. f. O. 1878, p. 239, *sub voce P. leucocephallus*]; A. Reichenow, J. f. O. 1887, p. 59. *P. massaicus*, n. sp. [*cf.* Z. ges. Orn. 1884, p. 370, *sub voce P. frontatus*], Loeru, Massailand; *id. t. c.* p. 59.

Trachyphonus suahelicus [♀], n. sp., Usegua, Victoria Nyanza; *id. t. c.* p. 60.

Cuculidæ.

Calliechthrus leucolophus figured; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii.

Centropus fischeri, n. sp., Niakatschi and Kiniamongo, Victoria Nyanza; A. Reichenow [G. A. Fischer], J. f. O. 1887, p. 57. *C. senegalensis* [a correction]; J. H. Gurney, Ibis, 1887, p. 52.

Chrysococcyx maculatus new to Sumatra; J. Büttikofer, Notes f. O. 1887, Nassa, Mus. ix (1887), p. 26.

Coccyzus americanus occidentalis, n. subsp., West U.S., *C. maynardi*, n. sp., Bahamas and Florida Keys; R. Ridgway, Manual N. A. Birds, pp. 273 & 274.

Cuculus canorus, article on; A. & K. Müller, Monat. Schutze Vogelw. 1887, pp. 59–84, 2 cuts. *C. stormsi*, n. sp., Tanganyika, E. Africa; A. Dubois, Bull. Mus. Belg. 1887, pp. 3 & 4, pl. ii.

Eudynamis cyanocephala, its egg: A. J. North, P. Linn. Soc. N.S.W. ii, p. 554.

Geococcyx californianus, anatomy; R. W. Shufeldt, P. U.S. Nat. Mus. 1887, p. 385.

Musophagidæ.

Corythaix livingstoni confounded with *C. reichenowi* [by H. Schalow, &c.]; J. Cabanis, J. f. O. 1887, p. 92.

PSITTACI.

Agapornis fischeri [♀] n. sp., Ussure, Victoria Nyanza; *A. personata*, n. sp., Serian, Victoria Nyanza; A. Reichenow [G. A. Fischer], J. f. O. 1887, pp. 54 & 55.

Cacatua ducorpsi, range in Solomon Is. limited by Malayta; W. R. Ogilvie-Grant [C. M. Woodford], P. Z. S. 1887, p. 328.

Chrysotis bodini, its habitat determined (Barima R., Br. Guiana); W. L. Sclater, Ibis, 1887, p. 318; exhibition of specimen; P. L. Sclater, P. Z. S. 1887, p. 2.

Cyclopsitta coccineifrons figured; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii.

Geoffroyius timorlaoensis figured; *id. ibid.*

Pavocephalus simplex [♀], n. sp., Serian, Victoria Nyanza; A. Reichenow [G. A. Fischer], J. f. O. 1887, p. 55. (This may be ♀ of *P. rufiventris*.)

Psittacus erithacus from Victoria Nyanza (Kagehi), a remarkable extension of its range; *id. t. c.* p. 56.

STRIGES.

Megascops hastatus, n. sp., Mazatlan, W. Mexico and La Paz, Lower California?; R. Ridgway, Manual N. A. Birds, p. 586, and P. U. S. Nat. Mus. 1887, p. 268. *M. vermiculatus*, n. sp., Costa Rica; *id. t. c.* p. 267.

Strix nisoria in various parts of Germany; H. Schalow, J. f. O. 1887, p. 221.

Otus brachyotus in Iceland; P. Nielsen, Ornis, 1887, p. 157. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 28.]

Surnia ulula, figured; L. M. Turner, Contr. Nat. Hist. Alaska, pp. 163 & 164, Birds, pl. vi.

Syrnium niasense, n. sp., near *S. leptogrammicum* and *S. myrtha*, Nias I., [illegible] G.; T. Salvadori, Ann. Mus. Genov. (2) iv, pp. 526 & 527. *S. newtoni* [illegible]*ayi* is a good species, contrary to opinion formerly expressed; R. B. Sharpe, P. Z. S. 1887, pp. 470–478. *S. newarense*, *S. indrani*, list of specimens and remarks; *id. ibid.*

Ulula cinerea lapponica figured [♀ ad.]; L. M. Turner, Contr. Nat. Hist. Alaska, p. 162, Birds, pl. v.

ACC[illegible]ES.

Cathartidæ.

Catharistes atratus, downy stage described; G. B. Sennett, Auk, 1887, p. 25. The same and an allied undetermined species (extinct?), bones figured; O. Winge, Fugle fra Knoglehuler i Brazilien, pp. 32 & 33, pl., figs. 7 & 8.

Gyparchus papa, form maj., from bone-caves in Lagoa Santa (extinct); *id. t. c.* p. 32.

Falconidæ.

The family, see Sourbets, G., & Saint-Marc, C. de.

Accipiter nisus, ♂ ♀ (ad. and juv.) figured; Lord Lilford, Col. Fig. Br. Birds, pts. iv & v. *A. rufotibialis*, n. sp., near *A. virgatus*, Kina Balu Mt., N. Borneo; R. B. Sharpe [J. Whitehead], Ibis, 1887, p. 437. *A. stevensoni*, Gurney, = *A. virgatus* (Temm.); J. Büttikofer, Notes Leyd. Mus. ix (1887), p. 11. *A. virgatus*, further note on synonomy; J. H. Gurney, Ibis, 1887, p 362.

Baza ceylonensis, note on; *id.* [S. Bligh], *t. c.* pp. 419 & 420.

Buteo albicaudatus, downy stage and half-grown young described;

G. B. SENNETT, Auk, 1887, p. 26. *B. tachardus* var. *rufus*, Radde (*B. mènètriesi*, Bogd.); G. RADDE, Ornis, 1887, p. 470. *B. vulgaris* is the species inhabiting Teneriffe; S. G. REID, Ibis, 1887, p. 428.

Circus humbloti of Milne-Edwards & Oustalet [C.R. 1885, ci. p. 220] = *C. maillardi* var. *macrosceles*; A. MILNE-EDWARDS & E. OUSTALET, Ann. Sci. Nat. (Zool.) (vii) 2, p. 217.

Erythropus vespertinus probably nests in Prussia; E. HARTERT, MT. orn. Ver. Wien, 1887, p. 113.

Falco babylonicus, measurements, &c., of 10 specimens; A. O. HUME, Str. Feath. x, pp. 515–517. *F. babylonicus*, *F. barbarus*, distinctions, important tables of measurements, &c.; J. H. GURNEY, Ibis, 1887, pp. 158–166. *F. punicus*, Le Vaillant, = *F. brookii*, R. B. Sharpe, = the Barbary Falcon of old Engl. auth.; LORD LILFORD, *t. c.* pp. 275–277, pl. viii (figure of ♀). *F. rusticolus grebnitzkii*, *F. r. sacer*, should they be considered distinct from typical *F. rusticolus*? L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 139–141. [The former is Severtzow's new species; *cf.* Zool. Rec. xxii, *Aves*, p. 53.] *F. severus*, description, measurements, &c.; E. BUTLER, Str. Feath. x, p. 525. *F. subbuteo* occurs in Teneriffe; S. G. REID, Ibis, 1887, p. 429.

Gypaëtus barbatus remaining in the nest 4 months; LORD LILFORD [ex R. Mena], *t. c.* p. 262.

Haliaëtus leucogaster new to China; F. W. STYAN, *t. c.* p. 232 [Foochow].

Microhierax sinensis, from Foochow; *id. t. c.* p. 234.

Neofalco, n. subg.; type *Falco albigularis*, Daud.; R. RIDGWAY, Manual N. A. Birds, p. 248.

Nisaëtus fasciatus new to China; F. W. STYAN, Ibis, 1887, p. 232 [Foochow].

Pandion haliaëtus occurs in Teneriffe; S. G. REID, *t. c.* p. 430.

Parabuteo unicinctus harrisi, downy stage and first plumage described; G. B. SENNETT, Auk, 1887, p. 26.

Pernis tweeddalii [♂ ♀] figured; A. O. HUME, Str. Feath. x, p. 513, pl.

Polyborus cheriway, downy stage described; G. B. SENNETT, Auk, 1887, p. 27.

Thalassoaëtus pelagicus in Liu-kiu Is., Japan; L. STEJNEGER, P. U. S. Nat. Mus. 1887, p. 402: figured; *id. t. c.* p. 141, pl. ix.

Urospizias jardinii, n. sp. ?, bought as *Astur poliocephalus* at the late Sir W. Jardine's sale; J. H. GURNEY, Ibis, 1887, pp. 96–98, pl. iii.

STEGANOPODES.

PELECANIDÆ.

HUME, A. O. Our Indian Pelicans. Str. Feath. x, pp. 487–502.

Pelecanus javanicus, Horsfield, *P. minor*, Rüppell, *P. mitratus*, Lichtenstein, are probably only ♀ of *P. onocrotalus*; *id. t. c.* p. 496. *P. crispus*, notes on; S. B. DOIG, *t. c.* pp. 503–513: this is another name for *P. javanicus*, &c.; A. O. HUME, *t. c.* p. 503.

Phalacrocoracidæ.

The family, see Sourbets, G., & Saint-Marc, C. de.

Microcarbo pygmæus figured; E. H. Giglioli & A. Manzella, Icon. Avifaunæ, pl. xxxiv.

Phalacrocorax campbelli, n. sp., near *P. magellanicus*, Campbell I., S. Pacific; H. Filhol, Mém. Pass. Venus à l'île Campbell, iii, pt. 2, p. 55.

Plotidæ.

Plotus, sub voce "Snake-bird," fig.; A. Newton, Encycl. Brit. ed. 9, vol. xxii: manner of catching fish; J. H. Gurney [A. D. Bartlett], Ibis, 1887, p. 336.

Sulidæ.

Dysporus (*Sula*) *cyanops*, from Bombay coast; W. F. Sinclair, Ind. Ann. & Mag. N. H. i, p. 143.

Sula, sp., anatomy; R. W. Shufeldt, P. U. S. Nat. Mus. 1887, pp. 382 & 383.

HERODIONES.

Ardeidæ.

The family, see Stejneger, L.

Ardea cinerea, heronries in Essex; E. A. Fitch, Ess. Nat. 1887, p. 142. *A. deaurata*, Merrem, = *Bubulcus coromandus* (Bodd.); L. Stejneger, P. U. S. Nat. Mus. 1887, p. 309. *A. herodias*, anatomy; R. W. Shufeldt, *t. c.* p. 384. *A. purpurea* new to Norway; R. Collett, Forh. Selsk. Chr. 1887, No. 8: breeding in Ceylon; H. Nevill, 'Taprobanian,' ii, p. 35. *A. wuerdemanni* is a permanent form of *A. occidentalis*, if not a distinct species; R. Ridgway, P. U. S. Nat. Mus. 1887, pp. 112–115.

Ardeola prasinosceles, Swinh., = *A. leucoptera* (Bodd.); L. Stejneger, *t. c.* p. 306.

Ardetta luteola, name proposed for Japanese Yellow Bittern, if distinct from *A. sinensis* (Gmel.); *id. t. c.* p. 290.

Butorides schrencki is posterior to *B. javanicus amurensis* (Schrenck); it is the species found in Japan; *id. t. c.* p. 298.

Demiegretta ringeri, n. sp., near *D. jugularis*, Wagl., Tsu-shima, Goto I., Liu-kiu I., Japan region; *id. t. c.* p. 300.

Gorsachius melanolophus, *G. goisagi*, their specific differences; *id. t. c.* pp. 292–294; J. Büttikofer, Notes Leyd. Mus. ix (1887), pp. 81–91.

Herodias garzetta, synonymy; L. Stejneger, P. U. S. Nat. Mus. 1887, p. 316.

Nannocnus, n. subg. for *Ardetta eurhythma*, Swinh.; *id. t. c.* p. 291.

Nyctanassa, n. g. for *Ardea violacea*, Linn.; *id. t. c.* p. 295 (note).

Nycticorax nycticorax nævius, anatomy, skull figured; R. W. Shufeldt, *t. c.* pp. 384 & 385.

Phoyx, n. subg., for *Ardea purpu*; L. Stejneger, *t. c.* p. 311.

Tigrisoma marmoratum (Vieill.) been confounded with *T. fasciatum* (Such) and *T. brasiliense* (Linn.), ing only grounded on the young bird as described by Azara, which is almuo the young of the other species; diagnosis of the former; H. v. Berlsch, 887, pp. 30 & 31.

Ciconiidæ.

The family, *sub voce* "Stork," fig. [*Balæniceps rex*]; A. Newton, Encycl. Brit. ed. 9, vol. xxii. See also Stejneger, L.

Ciconia nigra figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxvii.

Mycteria australis in the Paris Jardin des Plantes; E. Oustalet, La Nature, 1887, 2e semestre (vol. xxix) pp. 391–394.

Scopus umbretta, account of its breeding; A. Reichenow [G. A. Fischer], J. f. O. 1887, pp. 48 & 49; H. Schalow, *t. c.* p. 227.

Plataleidæ.

The family, *sub voce* "Spoonbill"; A. Newton, Encycl. Brit. ed. 9, vol. xxii. See also Stejneger, L.

Platalea, species in Japan, beaks figured; L. Stejneger, U. S. Nat. Mus. 1887, pp. 275–285, pl. x. f. O. 188 Nassa,

Ibididæ.

The family, see Stejneger, L.

Ibis falcinellus, specimens of 1850 from New England; F. C. Browne, Auk, 1887, pp. 97–100. [*Cf. t. c.* p. 253.]

ODONTOGLOSSÆ.

Phœnicopteridæ.

Phœnicopterus jamesi [*cf.* Zool. Rec. xxiii, *Aves*, p. 61], description, head figured with that of *P. ignipalliatus* and *P. andinus*; C. Rahmer, J. f. O. 1887, pp. 160–162, pl. ii. *P. ruber*, its breeding habits; H. A. Blake, The Nineteenth Century, 1887, pp. 886–890.

ANSERES.

Anatidæ.

Anas crecca, first record from Pacific coast [Atkha I.]; L. M. Turner, Contr. Nat. Hist. Alaska, p. 132. *A. penelope* new to California; W. E. Bryant, For. & Str. xxvi, No. 22, p. 426. *A. strepera*, *Dafila acuta*, and other Ducks, said to breed in Bohemia; W. Schier, MT. orn. Ver. Wien, 1887, pp. 22, 23, 43, &c. [but *cf. t. c.* pp. 140, 179].

Anser, see Montlezun, A. *A. erythropus* figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxv.

Aythya collaris, downy stage described; G. B. Sennett, Auk, 1887, p. 24.

Branta canadensis minima breeding on Kowak R., N. Alaska; C. H. Townsend, *t. c.* p. 12: method of capture, &c.; L. M. Turner, Contr. Nat. Hist. Alaska, pp. 139–141.

Chenalopex pugil, n. sp., from bone-Caves in Lagoa Santa (extinct); O. Winge, Fugle fra Knoglehuler i Brasilien, p. 19, pl., figs. 1-6.

Chloephaga poliocephala, anatomy, skull figured; R. W. Shufeldt, P. U. S. Nat. Mus. 1887, pp. 383 & 384.

Cosmonetta histrionica, second British specimen; H. Saunders, P. Z. S. 1887, p. 319: three examples on Northumberland coast; J. Tuck, Zool. 1887, p. 71 [*cf.* p. 196]: from Corea; H. H. Giglioli & T. Salvadori, P. Z. S. 1887, p. 591.

Cygnus, sub voce "Swan"; A. Newton, Encycl. Brit. ed. 9, vol. xxii. *C. davidi*, or possibly new species, with *C. bewicki*, from Corea, heads figured; H. H. Giglioli & T. Salvadori, P. Z. S. 1887, pp. 589–590, pl. lii. [The former was identified by Père David.] *C. musicus*, an old account [Iceland]; J. E. Harting, Zool. 1887, p. 255.

Dafila acuta breeds in the Brenne district; R. Martin, Bull. Soc. Zool. Fr. 1887, p. 88.

Dendrocygna javanica from Liu-kiu Is., Japan; synonymy, primaries figured; L. Stejneger, P. U. S. Nat. Mus. 1887, pp. 397 & 398: figured; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxiv. *D. vagans* new to Borneo; A. G. Vorderman, Tijdschr. Nederl. Ind. xlvi, p. 222.

Mergus anatarius, Eimbeck (= *M. albellus* × *Glaucion clangula*), a monographical sketch; R. Blasius, Monat. Schutze Vogelw. 1887, pp. 377–406, pls. v & vi, and cut.

Œdemia deglandi [*stejnegeri*] from Corea; H. H. Giglioli & T. Salvadori, P. Z. S. 1887, p. 591 [*cf. t. c.* p. 611]. *Œ. stejnegeri* (= *Œ. deglandii*, Stej.), n. sp., Kamtschatka to Japan; R. Ridgway, Manual N. A. Birds, p. 112.

Philacte canagica on Bering I.; L. Stejneger, P. U. S. Nat. Mus. 1887, p. 135: in N. California; C. H. Townsend, *t. c.* p. 196: origin of specific name; L. M. Turner, Contr. Nat. Hist. Alaska, p. 143.

Somateria mollissima, an old account [Iceland]; J. E. Harting, Zool. 1887, p. 256. *S. spectabilis*, nests and eggs, Prince of Wales's Sound, Hudson's Strait; F. F. Payne, P. Canad. Inst., series 3, vol. 5, p. 122.

Tadorna cornuta new to Styria; S. v. Washington, MT. orn. Ver. Wien, 1887, p. 182.

COLUMBÆ.

Columbidæ.

The family, see Stejneger, L.; and for figures of separate tail-feathers, P. U. S. Nat. Mus. 1887, pl. xxii.

Butreron cappelli from Mergui Archipelago, extension of its range northwards; J. Anderson, J. L. S. xxi (1887), p. 152.

Carpophaga consobrina, n. sp., Nias I., Sumatra; T. SALVADORI, Ann. Mus. Genov. (2), iv, pp. 558 & 559. *C. whartoni*, n. sp. [♂ ad.], Christmas I.; R. B. SHARPE, P. Z. S. 1887, p. 515, pl. xliii.

Columba bollii is the species inhabiting Teneriffe, its nest and [one] egg described; S. G. REID, Ibis, 1887, pp. 425–428. *C. livia* (*domestica*) × *Turtur risorius*; A. GÜNTHER, P. Z. S. 1887, p. 503. *C. livia*, dissection; A. M. MARSHALL & C. H. HURST, Junior Course of Practical Zoology [London: 1887, 8vo], pp. 383–416, cut: figured with *C. palumbus*; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xxxvi.

Columbigallina passerina socorroensis, n. subsp., Socorro I., W. Mexico; R. RIDGWAY, Manual N. A. Birds, p. 586.

Engyptila neoxena, n. sp., near *E. collaris*, St. Andrew's I., Caribbean Sea; C. B. CORY, Auk, 1887, p. 179.

Geophilus nicobaricus, description of nut-cracking gizzard; H. B. GUPPY, The Solomon Islands, pp. 323–325.

Ianthænas (*griseigularis*?) from Borneo; A. EVERETT, Ibis, 1887, p. 363. *I. jouyi*, n. sp., near *I. ianthina*, Liu-kiu Is., Japan; L. STEJNEGER, Am. Nat. 1887, p. 583: it = *Carpophaga ianthina*, Seebohm (Ibis, 1887, p. 179), pt. = *I. ianthina*, Stej.; L. STEJNEGER, P. U. S. Nat. Mus. 1887, p. 398 [fully described, with measurements, &c.]. *I. nitens*, n. sp. (figured by Kittlitz), Boninshima; *id. t. c.* p. 421.

Macropygia modigliani, n. sp., Nias I., Sumatra; T. SALVADO[illegible]. 1887, Mus. Genov. (2) iv, pp. 559–561, pl. viii, fig. 2.

Ptilinopus fasciatus, Peale, new to New Caledonia; H. SCHA[illegible] Nassa, J. f. O. 1887, p. 245.

Treron crassirostris is distinct from *T. calva*; J. V. BARBOZA DU BOCAGE, J. Sci. Lisb. xliv (1887), p. 252.

Turtur stimpsoni, n. sp., near *T. gelastes*, Temm., Liu-kiu Is., Japan; L. STEJNEGER, P. U. S. Nat. Mus. 1887, pp. 399 & 400.

Zenaida richardsoni, possibly n. sp., I. of Little Cayman, W.I.; C. B. CORY, Auk, 1887, p. 7.

GALLINÆ.

TETRAONIDÆ.

MEYER, A. B. Unser Auer-, Rackel- und Birkwild, und seine Abarten. Vienna: 1887, text, xii & 95 pp., folio; Atlas, xvii pls., elephant folio.

The plates are of—1, *Tetrao urogallus*, of different ages; 2, [illegible] the ♀; 3, ♀ with plumage of ♂; 4, *T. tetrix* of various ages; [illegible]mally coloured specimens; 6, 7, ♀ in plumage of ♂; 8, 9, *T. tetrix-gallus* ♂; 10, *T. urogallus-tetrix* ♂; 11, 12, various unusual vari[illegible]; W. E. *T. medius* ♂; 13, *T. medius* ♀ with young in the down; 14, [illegible] *albus*; 15, *Lagopus albus-tetrix*; 16, *T. tetrix-scoticus* and *T. tetrix-[illegible]*; 17, *T. tetrix-colchicus*.

Callipepla elegans bensoni, n. subsp. [♂ ♀], Campos, Sonora; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 148–150, For. & Str. xxviii, No. 6

[1887], p. 106. *C. squamata castanogastris*, first plumage described; G. B. SENNETT, Auk, 1887, p. 25.

Colinus ridgwayi, further notes; J. A. ALLEN, *t. c.* p. 74; W. BREWSTER, *t. c.* p. 159. *C. virginianus cubanensis* from Cuba and S.W. Florida, recorded as American; R. RIDGWAY, Manual N. A. Birds, p. 188. *C. v. texanus*, first plumage described; G. B. SENNETT, Auk, 1887, p. 24.

Lagopus lagopus, method of capture; L. M. TURNER, Contr. Nat. Hist. Alaska, pp. 152-154. *L. mutus* formerly in S.W. Scotland; R. SERVICE, Zool. 1887, pp. 81–89 [*cf.* p. 194]. *L. rupestris atkhensis*, n. subsp., Atkha I.; L. M. TURNER, Contr. Nat. Hist. Alaska, pp. 155 & 156, Birds, pls. iii & iv [♂ & ♀ ad. in summer]. *L. scoticus*, under heading "Grouse disease"; F. J. BELL, Zool. 1887, pp. 265 & 266: also Rep. Brit. Ass. 1887, p. 770.

Megaloperdix caucasica, its alarm note; G. RADDE, Ornis, 1887, p. 494.

Tetrao: Henke's hybrid [*cf.* Zool. Rec. xxii, *Aves*, p. 56] asserted to be correctly described, and not an albino, as stated by Collett; K. G. HENKE, MT. orn. Ver. Wien, 1887, p. 126. *T. urogallus* × *T. medius* in Bohemia; A. FRITSCH, *t. c.* p. 127. *Tetrao* × *Phasianus*, J. ZAHRADNIK, *t. c.* p. 154. *T. tetrix* × *Bonasa betulina*, hybrids figured [♂ ♀]; T. PLESKE, Mém. Ac. Pétersb. (7) xxxv, 5, pl., fig. 1.

T. urogallus uralensis, n. subsp., S. Urals; M. MENZBIER, Ibis, 1887, p. 302. *T. mlokosiewiczi*, ♂ ♀ [ad. and juv.] figured; long article, with cuts, to compare voice-organs of this species and *T. tetrix*: T. LORENZ, Beitrag Orn. Fauna Caucasus, pp. 46–55, pls. iii & iv.

PHASIANIDÆ.

Notes on Pheasants in the Liverpool Museum, and on Fertile Crosses bred at Knowsley and elsewhere; T. J. MOORE, P. Liverp. Soc. xli, pp. lx–lxviii.

Francolinus fischeri [♀], n. sp., near *F. hildebrandti*, Ussure, Victoria Nyanza; A. REICHENOW [G. A. Fischer], J. f. O. 1887, p. 51.

Gallus bankiva var. *domesticus*, its skeleton; A. M. MARSHALL & C. H. HURST, Junior Course of Zoology [London: 1887, 8vo], pp. 355–382, 2 cuts.

Phasianus colchicus and its allies; H. SEEBOHM, Ibis, 1887, pp. 168-173 [the writer considers all true Pheasants to be only subspecifically distinct]. *P. principalis* and *P. komarowi* are identical, the former name has priority; P. L. SCLATER, P. Z. S. 1887, p. 502 [*cf.* Zool. Rec. xxii, *Aves*, p. 57]; also see M. MENZBIER, Ibis, 1887, p. 301. *P. torquatus* from Corea (confirming David); H. H. GIGLIOLI & T. SALVADORI, P. Z. S. 1887, p. 584 [*cf. t. c.* p. 610].

Pternistes rufopictus [♂], n. sp., Wembœre, Victoria Nyanza; A. REICHENOW [G. A. Fischer], J. f. O. 1887, p. 52.

Thaumalea picta × *Phasianus reevesi*; A. GÜNTHER, P. Z. S. 1887, p. 503.

CRACIDÆ.

Ortalis vetula pallidiventris, n. subsp., Yucatan; R. RIDGWAY, Manual N. A. Birds, p. 209.

FULICARIÆ.

Rallidæ.

Euryzona sepiaria, n. sp., Yayeyama I., Liu-kiu, Japan ; L. Stejneger, P. U. S. Nat. Mus. 1887, pp. 395 & 396.

Ortygometra cinerea new to Sumatra; J. Büttikofer, Notes Leyd. Mus. ix (1887), p. 80.

Porphyrio indicus new to Borneo ; A. G. Vorderman, Tijdschr. Nederl. Ind. xlvi, p. 222.

Porzana alfari, n. sp., near *P. albigularis*, Las Trojas, Pacific Coast of Costa Rica ; R. Ridgway, P. U. S. Nat. Mus. 1887, p. 111. *P. noveboracensis* and *P. carolina* new to California ; W. E. Bryant, For. & Str. xxvi, No. 22, p. 426. *P. phæopyga*, n. sp., near *P. erythrothorax*, Yayeyama I., Liu-kiu, Japan ; L. Stejneger, P. U. S. Nat. Mus. 1887, pp. 394 & 395 (with a new synopsis of the genus).

Rallicula forbesi figured ; R. B. Sharpe [J. Gould], Birds New Guinea, pt. xxiii.

ALECTORIDES.

Eurypygidæ.

Eurypyga, *sub voce* "Sun-Bittern," fig. ; A. Newton, Encycl. Brit. ed. 9, vol. xxii.

Gruidæ.

Grus antigone, irregular breeding ; H. E. Barnes, J. Bomb. N. H. Soc. 1887, p. 149.

Otididæ.

Otis tarda : notes, chiefly from Spain ; Lord Lilford, J. Northampt. Soc. iv, pp. 267–274.

LIMICOLÆ.

Œdicnemidæ.

Œdicnemus crepitans nesting in Notts ; J. Whitaker, Zool. 1887, p. 269.

Parridæ.

Hydrophasianus chirurgus new to Borneo ; A. G. Vorderman, Tijdschr. Nederl. Ind. xlvi, p. 222.

Parra indica, its breeding ; H. E. Barnes, J. Bomb. N. H. Soc. 1886, p. 221 [probably only lays 4 eggs].

Charadriidæ.

The *Charadriidæ* stated to moult their primaries in spring as well as autumn ; H. Seebohm, Ibis, 1887, p. 338.

Charadrius rubecola, C. sociabilis, C. rufiventer, C. totanirostris, C. monachus, C. obscurus, C. tenellus, Lobivanellus albiceps, L. superciliosus, Vanellus cayanus, Cursorius somalensis, C. cinctus, C. bitorquatus, figured ; *id.* Geogr. Distr. *Charadriidæ*, pls. i–xiii.

Ægialitis cantiana breeding within Indian limits ; H. E. Barnes, J. Bomb. N. H. Soc. 1887, p. 167. [Confirms V. Legge's statement about Ceylon.] *Æ. mongola* should include *Æ. pyrrhothorax*, the former is ally the bird of Pallas; L. Stejneger, P. U. S. Nat. Mus. 1887, pp. 126–128, pl. vii, figs. 3–6.

Charadrius fulvus and *C. f. virginicus*, their ranges cross to the north of Bering Sea ; J. A. Palmén, Bidrag Sibiriska Vogelfauna, pp. 342–348.

Phegornis, see *Scolopacidæ*.

Sarciophorus (*superciliosus* ?), plumage of adult ♂ described for the first time [*cf.* Zool. Rec. xxiii, *Aves*, p. 66] ; G. E. Shelley, Ibis, 1887, pp. 417–419.

Strepsilas interpres breeding in Portugal ; W. C. Tait, *t. c.* p. 386.

[illegible] to co[illegible] sp. vel form. n., from bone-Caves in Lagoa Santa (extinct ?) ; Beitrag. E, Fugle fra Knoglehuler i Brasilien, pp. 27 & 28. *V. ornatus* [illegible].o Natal ; H. Seebohm, *t. c.* p. 350.

Scolopacidæ.

The *Scolopacidæ* stated to moult their primaries in spring as well as autumn ; H. Seebohm, Ibis, 1887, p. 338.

Himantopus pectoralis; Tringa ruficollis, Phegornis mitchelli, P. cancellatus, P. leucopterus, Rhynchæa semicollaris, Scolopax rochusseni, S. saturata, figured ; *id.* Geogr. Distr. *Charadriidæ*, pls. xiv–xxi.

Calidris arenaria new to Hawaiian Is. ; L. Stejneger, P. U. S. Nat. Mus. 1887, p. 82.

Gallinago, &c., *sub voce* "Snipe" ; A. Newton, Encycl. Brit. ed. 9, vol. xxii. *G. gallinula* breeding in Bavaria ; V. v. Tschusi zu Schmidhoffen, Monat. Schutze Vogelw. 1887, pp. 198 & 199 [*cf.* pp. 131 & 94] : near St. Petersburg ; E. Büchner, Beitr. Russ. Reiches (2) ii, pp. 115 & 116. *G. major* near Colchester ; H. Laver, Ess. Nat. 1887, p. 189. *G. paraguaiæ* (Vieill.) = *Scolopax frenata*, "Illig.," Licht. ; H. v. Berlepsch, J. f. O. 1887, p. 36.

Heteractitis brevipes from Corea ; H. H. Giglioli & T. Salvadori, P. Z. S. 1887, p. 587.

Himantopus, *sub voce* "Stilt," figg. ; A. Newton, Encycl. Brit. ed. 9, vol. xxii. *A. knudseni*, n. sp., Kauai, Hawaiian Is. ; L. Stejneger [V. Knudsen], P. U. S. Nat. Mus. 1887, p. 81, pl. vi.

Limosa, key to species and synonymy ; *id. t. c.* p. 131. *L. belgica* for *L. ægocephala* ; H. Saunders, List Brit. Birds, p. 19.

Machetes pugnax figured ; E. T. Booth, Rough Notes, &c., pt. xv.

Phalaropus fulicarius figured ; *id. t. c.* pt. xiv. *P. hyperboreus* on the Lake of Velencze, Hungary (in summer); S. C. Chernelházа, Z. ges. Orn. 1887, pp. 188–190.

Scolopax rochusseni, true derivation of name ; A. B. Meyer, Ibis, 1887, p. 471. *S. saturata*, Horsf., = *S. rosenbergi*, Schl. ; H. Seebohm, *t. c.* pp. 283–285.

Symphemia semipalmata inornata, n. subsp., interior of N. America, between the Mississippi and the Rocky Mts., wintering along the coasts of the Gulf and S. Atlantic States ; W. Brewster, Auk, 1887, p. 145.

Tringa canutus breeding near St. Michael's ; L. M. Turner, Contr. Nat. Hist. Alaska, p. 148. *T. fuscicollis* in California ; W. E. Bryant, Auk, 1887, p. 79. *T. maritima* in Jersey ; J. Nicoll, Zool. 1887, p. 76. *T. subarquata* in Shetland ; J. T. Garriock, *t. c.* p. 72.

GAVIÆ.

Laridæ.

Gurney, J. H., Jun. On the Periodical Movements of Gulls (*Laridæ*) on the Coast of Norfolk. Tr. Norw. Soc. iv, pt. iii, pp. 326–333.

Anous caruleus on Christmas I. ; J. R. H. Macfarlane, P. Z. S. 1887, p. 213. *A. stolidus* in Diego Garcia ; O. Finsch & R. Blasius, J. f. O. 1887, 1887, p. 372, pl. ii, figs. 11 & 12.

Gygis candida in Diego Garcia ; *iid. t. c.* p. 375.

Hydrochelidon nigra in Færoes, wrongly recorded (Zool. 1886) as *Sterna minuta* ; H. W. Feilden, Zool. 1887, p. 73. *H. fissipes*, *H. nigra*, *H. hybrida*, breed in the Brenne district ; R. Martin, Bull. Soc. Zool. Fr. 1887, pp. 83 & 84.

Larus argentatus, n. subsp. *vegæ*, Bering Sea (= *L. cachinans*, Pallas ?) ; J. A. Palmén, Bidrag Sibiriska Fogelfauna, p. 370. *L. argentatus*, *L. californicus*, anatomy ; R. W. Shufeldt, P. U. S. Nat. Mus. 1887, pp. 381 & 382. *L. audouini* breeding on Spargi in the Mediterranean, colour of its legs and feet ; Lord Lilford, Ibis, 1887, pp. 274, 280 & 281. *L. barrovianus*, nest, eggs, young, &c. ; L. M. Turner, Contr. Nat. Hist. Alaska, p. 125 [*cf.* Zool. Rec. xxiii, *Aves*, p. 67]. *L. glaucus*, pl., *L. ridibundus* (2 pls.), figured ; E. T. Booth, Rough Notes, &c., pt. xiv. *L. melanocephalus* shot near Great Yarmouth ; H. Saunders, P. Z. S. 1887, p. 2 ; G. Smith, Tr. Norw. Soc. iv, p. 391 ; Zool. 1887, p. 69. *L. minutus* in Færoes ; H. W. Feilden, *t. c.* p. 73. *L. schistisagus*, further notes, and comparison of its primaries with those of *L. affinis* ; L. Stejneger, P. U. S. Nat. Mus. 1887, pp. 119–123, pl. viii.

Rhynchops, *sub voce* "Skimmer" ; A. Newton, Encycl. Brit. ed. 9, vol. xxii.

Rissa tridactyla figured ; E. T. Booth, Rough Notes, &c., pt. xiv.

Stercorarius, *sub voce* "Skua" ; A. Newton, Encycl. Brit. ed. 9, vol. xxii. *S.* (*Megalestris*) *catarrhactes* figured ; E. H. Giglioli & A. Manzella, Icon. Avif. Ital. pt. xxxv. *S. parasiticus* and other species of the genus probably shed part of the bill in the same way as the

Puffins, figures in illustration; L. Stejneger, P. U. S. Nat. Mus. 1887, pp. 124 & 125, pl. vii, figs. 1 & 2. *Sterna bergii* new to Japan; *id. t. c.* p. 393: breeding in Ceylon, together with *S. dougalli*; H. Nevill, Taprobanian, ii, p. 65. *S. poma[to]r[h]inus* apparently breeds at St. Michael's; L. M. Turner, Contr. Nat. Hist. Alaska, pp. 122 & 123.

Sterna fuliginosa, downy stage described; G. B. Sennett, Auk, 1887, p. 24: in Diego Garcia; O. Finsch & R. Blasius, Ornis, 1887, p. 370, pls. i & ii, figs. 7–10. *S. macrura*, a little-known state of plumage (a year after being hatched); H. Saunders, Naturalist, 1887, p. 353: at Arica, West coast of S. America; J. R. H. Macfarlane, Ibis, 1887, p. 203.

Xema sabinii new to Norway; R. Collett, Forh. Selsk. Chr. 1887, No. 8: breeding at St. Michael's; L. M. Turner, Contr. Nat. Hist. Alaska, p. 126.

TUBINARES.

Procellariidæ.

Ueber den Fang der Sturmvögel auf hoher See; A. B. Meyer, Zool. Gart. 1887, pp. 97–101.

Notes of a Bird Catcher; F. A. Lucas, Auk, 1887, pp. 1–6. [Catching *Procellariidæ* with baited hooks, at Cape Horn and Cape of Good Hope.]

Diomedea exulans, *D. brachyura*, *D. cauta*, *D. culminata*, *D. chlororhynchos*, *D. melanophrys*, *D. fuliginosa*, *Ossifraga gigantea*, [heads]. *Thalassidroma pelagica* figured; J. F. Green, Ocean Birds, pls. i–v.

Bulweria columbina, the original specimen [of Gould] rediscovered by J. Carter & W. E. Clarke, P. Z. S. 1887, p. 562.

Daption capense, anatomy, sternum figured, disagreement with Forbes' views; R. W. Shufeldt, P. U. S. Nat. Mus. 1887, pp. 378–380.

Diomedea exulans, its age; A. B. Meyer, Zool. Gart. 1887, p. 153: lives 50 years at least; J. E. Harting, Zool. 1887, p. 76.

Pelecanoïdes urinatrix?, anatomy; R. W. Shufeldt, P. U. S. Nat. Mus. 1887, pp. 380 & 381.

Procellaria pelagica figured; E. T. Booth, Rough Notes, &c., pt. xiv. [*Cf. suprâ.*]

Puffinus griseus, ♂ and ♀ shot at Flamborough and Filey; J. Backhouse, Jun., Naturalist, 1887, pp. 291 & 354. *P. nugax* (*assimilis*) new to Tasmania; A. J. Campbell, Viet. Nat. iv, p. 138.

PYGOPODES.

Podicipedidæ.

Podicipes holbölli from Corea; H. H. Giglioli & T. Salvadori, P. Z. S. 1887, p. 594. *P. occidentalis*, its breeding plumage; H. B. Tristram, Ibis, 1887, pp. 98 & 99: further discussed; R. Ridgway, *t. c.* pp. 361 & 362. *P. tricolor* new to Borneo; A. G. Vorderman, Tijdschr. Nederl. Ind. xlvi, p. 222.

COLYMBIDÆ.

Colymbus septentrionalis breeding in Ireland (Donegal); R. J. USSHER, Zool. 1887, p. 27: its anatomy, *sub nom. Urinator lumme*; R. W. SHUFELDT, P. U. S. Nat. Mus. 1887, p. 377.

ALCIDÆ.

SHUFELDT, R. W. Notes on the Visceral Anatomy of certain Auks. P. Z. S. 1887, pp. 43–47, cut.

On comparing the soft parts of *Synthliborhamphus antiquus* and *Brachyrhamphus marmoratus*, the author finds considerable variation in the lower *larynx* and the *sterno-trachealis* muscle, the former being overlaid by a mass of fat; he also notices differences in the livers, hearts, and spleens of the two species, nor do the *proventriculus*, gizzard, &c., agree exactly with those of *Mergulus alle*, as described by MacGillivray. [*Cf. Brachyrhamphus, infrà.*]

Alca torda at Norfolk, Virginia; F. S. WEBSTER, Auk, 1887, p. 158: in the Adriatic; L. v. LORENZ, SB. z.-b. Wien, 1887, pp. 55–57.

Brachyrhamphus marmoratus and *Synthliborhamphus antiquus*. [illegible] O. 1887, [illegible] Nassa, rences in visceral anatomy; R. W. SHUFELDT, Am. Nat. 1887, p. 77. *kittlitzi* figured; L. M. TURNER, Contr. Nat. Hist. Alaska, pp. 120 & 1[illegible], Birds, pl. ii.

Cepphus columba, anatomy; *id.* P. U. S. Nat. Mus. 1887, p. 381.

Fratercula arctica, a point in the structure of air sacs; F. E. BEDDARD, Rep. Brit. Ass. 1887, p. 771.

Uria troile figured (2 pls.); E. T. BOOTH, Rough Notes, &c., pt. xiv: another figure; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xxxiv.

Simorhynchus pygmæus figured; L. M. TURNER, Contr. Nat. Hist. Alaska, p. 120, Birds, pl. i.

IMPENNES.

SPHENISCIDÆ.

The Order: great differences from other types, especially in the foot- and wing-structure; P. L. SCLATER, Ibis, 1887, p. 367: anatomy, see FILHOL, H.

MENZBIER, M. Vergleichende Osteologie der Pinguine in Anwendung zur Haupteintheilung der Vögel. Bull. Mosc. 1887, pp. 483–587, pl. viii. [Also separate.]

After a full discussion of the osteology of the adult Bird (pp. 489–524), and of the young (pp. 524–530), together with a few words on fossil remains, the author of this important paper gives us his ideas on the Classification of *Aves*, and proceeds to distinguish four subclasses—

Saururæ, *Ratitæ*, *Odontotormæ*, and *Carinatæ*, which he recognizes in common with the majority of Ornithologists. He adds a fifth, *Eupodornithes*, to contain *Aptenodytes*, *Pygosceles*, *Eudyptes*, *Spheniscus*, and *Palæeudyptes*, and shows, in a table, the various formations to which the species belong. A few pages on the development of the *Ratitæ* and *Eupodornithes* conclude the article.

CRYPTURI.

Tinamidæ.

Nothura maculosa, peculiarities of osteology, shewing an approach to the Fowl; F. A. Lucas, P. U. S. Nat. Mus. 1887, pp. 157 & 158.

RATITÆ.

IMMANES.

Dinornithidæ.

Weetman, S. Notes on some Moa Remains found at the Great Barrier Island during February, 1886. Tr. N. Z. Inst. 1886, pp. 193 & 194, pl. xxii.

* Comprising 1 femur, 2 tibiæ, 1 metatarsus, and part of a rib.

MEGISTANES.

Casuariidæ.

Haswell, W. A. Observations on the Early Stages in the Development of the Emu (*Dromæus novæ-hollandiæ*). P. Linn. Soc. N.S.W. ii, pp. 577–600, pls. viii–xv, cuts.

In this paper the development of the Emu is compared with that of the Common Fowl. The eggs were incubated at 35° C. to 40° C., the natural heat being thus reproduced as nearly as possible. The period of incubation of the Emu appears to be three months, while that of the Fowl is three weeks; and in the former case the male sits upon the eggs from the time the 15th is laid until the clutch, of about 40, is complete. The female then takes his place. There is no important difference between the relation of the various parts in the Emu's egg and in that of the Fowl, while the embryo usually lies across the egg, and never lengthwise. The blastoderm of 51 hours is taken as a starting point for thorough study, and is followed by the examination of that of 70, 66, 78, 69, 65, 94, 118, 145, 121 hours and 7 days.

Ph. The writer deduces (1) that the primitive streak cannot grow for-
Reptile from the posterior border of the area pellucida, as it is usually stated
Peytoureut is formed from before backwards, simultaneously with, and on
Thèse. ace of, an extension of the area pellucida backwards in the form
1887.

of a narrow bay [here there are 6 woodcuts of the formation of the primitive streak]; (2) that, when the primitive streak is first formed, there are only two layers in the blastoderm, but they both become thickened along the axial line of the area pellucida in its posterior prolongation, and then coalesce to form the primitive streak; while the thickening of the lower layer extends forwards a short distance in front of the anterior end of the primitive streak, and constitutes the "head process."

He proceeds to discuss the formation of the mesoblast, which he thinks is not, up to a certain point, formed directly from the epiblast, but arises from the cells of the lower layer.

II. After the first few stages noticed, the blastoderm increases rapidly in size for several hours, and the development of the notochord and the destiny of the primitive streak are substantially in agreement with the statements of KÖLLIKER and BRAUN, as opposed to the views of other embryologists.

The article concludes with notes on the further development of the embryo.

RHEÆ.

RHEIDÆ.

Rhea darwini, breeding habits: J. BALL, Notes of a Naturalist in S. America, p. 261.

STRUTHIONES.

STRUTHIONIDÆ.

Struthio camelus, farming in Natal; H. SEEBOHM, Ibis, 1887, pp. 349 & 350: in Algeria; L. MERLATO, Bull. Soc. Acclim. 1887, pp. 1-8: anatomy, see WRAY, R. S.

FORMÆ SEDIS INCERTÆ.

SEELEY, H. G. On a Sacrum, apparently indicating a new type of Bird, *Ornithodesmus cluniculus*, Seeley, from the Wealden of Brook. Q. J. Geol. Soc. xliii, pp. 206–211, pl. xii.

The specimen wants the modified renal recesses of the sacral vertebræ of the sacrum, the typically Avian saddle-shaped invertebral articulation, and the large number of vertebræ commonly found in a sacrum in existing Birds. It approaches the Dinosaurs more nearly than any form hitherto found.

SNOW, F. H. On the discovery of a fossil Bird-track in the Dakota Sandstone. Tr. Kansas Ac. Sci. x. [illegible]9–524),

Describes and figures a footprint of a new fossil Bird, found Aug [illegible] fossil re- in Ellsworth Co., Kansas. [illegible]as on the [illegible]ubclasses—

REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER.

GENERAL.

GÜNTHER, A. Guide to the Galleries of Reptiles and Fishes in the Department of Zoology of the British Museum (Natural History). London : 1887, 8vo, 119 pp., figs.

The part dealing with the Reptiles is merely a reprint, with slight alterations, of the first edition, [*Cf.* Zool. Rec. xxii, *Rept.* p. 5.] Batrachians, pp. 33–46, 14 woodcuts.

MÜLLER, F. Fünfter Nachtrag zum Katalog der herpetologischen Sammlung des Basler Museum. Verh. Ges. Basel, viii, pp. 249–296, pls. i–iii.

The number of species of Reptiles and Batrachians in the Basle Museum amounted, in January, 1887, to 1472.

WILDER, B. G. Remarks on Classification of Vertebrata. Am. Nat. xxi, pp. 913–917.

The following new terms ("etymologically and descriptively correct") are introduced, but the author does not urge their adoption, except as expressive and convenient substitutes for phrases:—

Phenocœlia, *Monocœlia* (= *Acrania*).
Polycœlia (= *Craniata*).
Megaulica (= *Ichthyopsida*).
Micraulica (= *Dipnoi*, *Batrachia*, *Sauropsida*).

G. BAUR corrects some errors in his previous paper on the homologies of certain cranial bones in Reptilia and Stegocephala, and gives a synopsis of the homologies of the Opisthotic, Squamosal, and Supratemporal in those two groups. Anat. Anz. ii, pp. 657 & 658.

BAUR, G. On the Morphology of Ribs. Am. Nat. xxi, pp. 942–945.

STRECKER, C. Ueber die Condylen des Hinterhauptes. Arch. Anat. Phys. 1887, An. Abth. pp. 301–338.

Reptiles and Batrachians, pp. 303–308.

PEYTOUREAU, S. A. La glande pinéale et le troisième œil des Vertébrés. Thèse. Paris: 1887, 4to, 68 pp., figs.

LEYDIG, F. Das Parietalorgan der Wirbelthiere. Zool. Anz. x, pp. 534–539.

It seems to the author that the term "third eye" is not quite satisfactory, and he would prefer to call the organ "eye-like," and to refer it to the sensory organs of the skin.

JULIN, C. De la Signification morphologique de l'Epiphyse (Glande pinéale) des Vertébrés. II. L'Epiphyse des Amphibiens. III. L'Epiphyse des Reptiles. Bull. Sci. Nord. (2) x, pp. 81–141, pls. i–iii.

BELLONCI, G. Sulle commissure cerebrali anteriori degli Anfibi e dei Rettili. Mem. Acc. Bologn. (4) viii, pp. 49–56, pl. —.

SACCHI, M. Contribuzioni all' istologia ed embriologia dell' apparecchio digerente dei Batraci e dei Rettili. Atti Soc Ital. xxix [1886], pp. 361–409, pls. x & xi.

BOAS, J. E. V. Ueber die Arterienbogen der Wirbelthiere. Morph. JB. xiii, pp. 115–118, pl. i.

EBERTH, C. J. Zur Kenntniss der Blutplättchen bei den niederen Wirbelthieren. Kölliker Festschrift, pp. 37–48, pl. ii.

PERÉNYI, J. v. Die ectoblastische Anlage des Urogenitalsystems bei *Rana esculenta* und *Lacerta viridis* (Vorläufige Mittheilung). Zool. Anz. x, p. 66.

A semi-popular article by A. KAPPLER, Ausland, 1885, pp. 798–800, 815–818, 838–840, & 857–859, on animal life in Dutch Guiana, contains interesting notes on Reptiles and Batrachians.

On the food to be provided for Reptiles and Batrachians in confinement: J. v. FISCHER, Zool. Gart. xxviii, pp. 235–242.

FAUNÆ.

EUROPE.

CHARBONNIER, H. J. Notes on the Reptiles, Amphibia, and Fish of the Bristol District. P. Bristol Soc. (2) v, pp. 133–142.

BROWNE, M. Notes on the Vertebrate Animals of Leicestershire. Zool. xlv. *Reptilia* and *Batrachia*, pp. 57–59.

FRANZ, R. Deutschlands Schlangen, mit besonderer Würdigung des Bisses der giftigen Kreuzotter. Erfurt: 1887, 8vo, 45 pp.

WIEDEMANN, A. Die im Regierungsbezirke Schwaben und Neuburg vorkommenden Kriechthiere und Lurche. Ber. Naturw. Ver. Schwaben, xxix, pp. 163–216.

SEQUEIRA, E. Distribucão geographica dos Reptis em Portugal. Bol. Soc. Geogr. Lisb. (6) No. 5.

BÖTTGER, O. Verzeichniss der von Hrn. Dr. Heinr. Simroth aus Portugal und von den Azoren mitgebrachten Reptilien und Batrachier. SB. Ak. Berlin, 1887, pp. 175–194.

A. E. JURINAC gives a list of the Reptiles and Batrachians of Croatia. Rad jugoslav. Akad. lxxxiii, pp. 121 & 122.

Asia.

Boulenger, G. A. List of Reptiles and Batrachians from Cyprus. Ann. N. H. (5) xx, pp. 344 & 345.

Sordelli, F. Rettili di Orta-Keuei (Adrianopoli) raccolti e donati al Civico Museo di Milano dal sig. cav. Luigi De Magistris. Rend. Ist. Lomb. (2) xix, pp. 295–304 [1886].

Boulenger, G. A. A List of the Reptiles and Batrachians obtained near Muscat, Arabia, and presented to the British Museum by Surgeon-Major A. S. G. Jayakar. Ann. N. H. (5) xx, pp. 407 & 408.

——. On a Collection of Reptiles and Batrachians made by Mr. H. Pryer in the Loo Choo Islands. P. Z. S. 1887, pp. 146–150, pls. xvii & xviii.

Murray, J. A. The Reptiles of Western India, including Sind. Ind. Ann. N. H. i, pp. 6–19, 71–83, & 132–136.

Compilation.

H. M. Phipson, J. Bomb. Soc. ii, pp. 244–250, has notes on the Poisonous Snakes of the Bombay Presidency.

Haly, A. Second Report on the Collection of Lizards in the Colombo Museum. Colombo : 1887, 8vo, 4 pp.

A list, compiled from the second and third volumes of the British Museum Catalogue of Lizards.

H. Nevill, Taprobanian, ii, pp. 55–58, writes on the *Scincidæ* of Ceylon.

Boulenger, G. A. An Account of the Scincoid Lizards collected in Burma, for the Genoa Civic Museum, by Messrs. G. B. Comotto & L. Fea. Ann. Mus. Genov. (2) iv, pp. 618–624.

——. An Account of the Batrachians obtained in Burma by M. L. Fea, of the Genoa Civic Museum. *Op. cit.* v, pp. 418–424, pls. iii–v.

——. An Account of the Reptiles and Batrachians obtained in Tenasserim by M. L. Fea, of the Genoa Civic Museum. *T. c.* pp. 474–486, pls. vi–viii.

Günther, A. Notes on Batrachians from Perak. Ann. N. H. (5) xx, pp. 312–316, pl. xvi.

Boulenger, G. A. On new Batrachians from Malacca. Ann. N. H. (5) xix, pp. 345–348, pl. x.

Meyer, A. B. Verzeichniss der von mir in den Jahren 1870–1873 im Ostindischen Archipel gesammelten Reptilien und Batrachier. Abh. Mus. Dresden, 1886-87, No. 2, 16 pp.

Boettger, O. Listen von Reptilien und Batrachiern aus Niederländisch-Indien und von der Insel Salanga. Ber. Senck. Ges. 1887, pp. 37–55.

1, Salanga, pp. 37–39 ; 2, Sumatra, pp. 39–51 ; 3, Banka, p. 54 ; 4, Java, pp. 52 & 53.

BOULENGER, G. A. Note on some Reptiles from Sumatra described by Bleeker in 1860. Ann. N. H. (5) xx, p. 152.

——. On new Reptiles and Batrachians from North Borneo. *T. c.* pp. 95–97.

——. Report on a Zoological Collection made by the officers ... H.M.S. 'Flying Fish,' at Christmas Island, Indian Ocean. Reptiles. P. Z. S. 1887, pp. 516 & 517.

Only 3 species of Reptiles were obtained, 2 being new.

AFRICA.

BOCAGE, J. V. BARBOZA DU. Mélanges Erpétologiques. J. Sci. Lisb. x (No. xliv).

I. Reptiles et Batraciens du Congo. Pp. 177–192.

II. Reptiles de Dahomey. Pp. 192–197.

III. Reptiles de l'Ile du Prince. Pp. 198–201.

IV. Reptiles du dernier voyage de MM. Capello et Ivens à travers l'Afrique. Pp. 201–208.

V. Reptiles et Batraciens de Quissange (Benguella), envoyés par M. J. d'Anchieta. Pp. 208–211.

BOETTGER, O. Verzeichniss von Reptilien aus Accra an der Goldküste, Ber. Senck. Ges. 1887, pp. 55–64.

——. Diagnoses Reptilium novorum ab ill. viro Paul Hesse in finibus fluminis Congo repertorum. Zool. Anz. x, pp. 649–651.

MOCQUARD, F. Sur les Ophidiens rapportés du Congo, par la Mission de Brazza. Bull. Soc. Phil. (7) xi, pp. 62–92, pls. i & ii.

BOETTGER, O. Zweiter Beitrag zur Herpetologie Südwest- und Süd-Afrikas. Ber. Senck. Ges. 1887, pp. 135–173, pl. v.

BOULENGER, G. A. A Synopsis of the Snakes of South Africa. Zool. xlv, pp. 171–182.

A list, with keys to the identification of all the Snakes recorded from south of 25° lat. S. Altogether 50 species.

VAILLANT, L. Matériaux pour servir à l'histoire herpétologique des Iles Comores. Bull. Soc. Phil. (7) xi, pp. 131–136.

On the Lizards of the Comoro Islands.

AMERICA.

In reply to some remarks of A. Heilprin (Geogr. & Geol. Distrib. of Animals), G. A. BOULENGER gives a list of the Lizards of British Columbia, the northernmost point reached by Lizards in North America, showing that, even so far north, that part of the fauna is Neogæan. Ann. N. H. (5) xx, pp. 345 & 346.

HAY, O. P. A Preliminary Catalogue of the Amphibia and Reptilia of the State of Indiana. J. Cincinn. Soc. x, pp. 59–69.

TOWNSEND, C. H. Field-Notes on the Mammals, Birds, and Reptiles of Northern California. P. U. S. Nat. Mus. 1887, pp. 159–241.

Reptiles and Batrachians, pp. 237–241.

COPE, E. D. Catalogue of Batrachians and Reptiles of Central America and Mexico. Bull. U. S. Nat. Mus. No. 32, 1887, 98 pp.

A list, with synonyms.

——. List of Batrachia and Reptilia of the Bahama Islands. P. U. S. Nat. Mus. 1887, pp. 436–439.

GARMAN, S. On West Indian Reptiles in the Museum of Comparative Zoology at Cambridge, Mass. P. Am. Phil. Soc. xxiv, pp. 278–286.

Ophidia, *Chelonia*, and *Crocodilia*.

——. On West-Indian Reptiles and Batrachians in the Museum of Comparative Zoology at Cambridge, Mass. Bull. Essex Inst. xix, pp. 1–53.

Teiidæ, pp. 1–12; *Batrachia*, pp. 13–16; *Geckonidæ* and *Anguidæ*, pp. 17–24; *Iguanidæ*, pp. 25–51; *Scincidæ*, pp. 51–53. This contribution is remarkable for an extraordinary number of binomials, applied indifferently to species or to varieties.

——. On the Reptiles and Batrachians of Grand Cayman. P. Am. Phil. Soc. xxiv, pp. 273–277.

LIDTH DE JEUDE, T. W. VAN. On a Collection of Reptiles and Fishes, from the West Indies. Notes Leyd. Mus. ix, pp. 129–139, pl. ii.

Chiefly from Aruba and Curaçao.

COPE, E. D. Synopsis of the Batrachia and Reptilia obtained by H. H. Smith in the Province of Mato Grosso, Brazil. P. Am. Phil. Soc. xxiv, pp. 44–60.

PICAGLIA, L. Contribuzione all' Erpetologia di Bellavista (Repubblica Argentina, Provincia di Corientas). Atti Soc. Mod., Mem. (3) vi, pp. 83–96.

POLYNESIA.

H. B. GUPPY's book, "The Solomon Islands," London, 1887, 8vo, contains a chapter, pp. 308–318, on the Reptiles and Batrachians of that Archipelago.

BOULENGER, G. A. Second Contribution to the Herpetology of the Solomon Islands. P. Z. S. 1887, pp. 333–338, pl. xxviii.

On a collection from Faro and Shortland Islands; 9 species are added to the fauna of the Solomon group.

PALÆONTOLOGICAL.

RIVIÈRE, E. Faune des Oiseaux, des Reptiles et des Poissons des Grottes de Menton. C.R. Ass. Franç. xv, pp. 450–457.

Only *Rana temporaria* and *Bufo vulgaris*.

DEPÉRET, C. Recherches sur la succession des Faunes de Vertébrés Miocènes de la Vallée du Rhone. Arch. Mus. Lyon, iv, pp. 45–313.

Reptiles, pp. 288–291.

DUPONT, E. Sur les ossements de la faune maestrichtienne plus récemment dans les galeries du Musée royal à Bruxelles. Bull. Ac. Belg. (3) xiii, pp. 706–710.

KOKEN, E. Die Dinosauria, Crocodilinen und Sauropterygier des Norddeutschen Wealden. Pal. Abh. iii, pp. 311–420, pls. xxx–xxxviii.

LYDEKKER, R. The Fossil Vertebrata of India. Rec. Geol. Surv. Ind. xx, pp. 51–80.

A brief summary, in which every species of fossil vertebrate recorded from India is referred to. Reptiles, pp. 64–68; Batrachians, pp. 68, 69, & 80.

COPE, E. D. Systematic Catalogue of Species of Vertebrata found in the Beds of the Permian Epoch in North America. Tr. Am. Phil. Soc. xvi, pp. 285–297, pls. ii & iii.

REPTILIA.

BAUR, G. On the Phylogenetic Arrangement of the Sauropsida. J. Morph. i, pp. 93–104; also Biol. Centralbl. vii, pp. 481–493, and SB. Ges. Morph. iii, pp. 46–61.

The author, after criticising the latest classification of Cope, exposes his views on the classification and phylogeny of the *Reptilia*. He establishes a new order, *Proganosauria*, for the Carboniferous fossil *Stereosternum*, which was referred, with doubt, to the Batrachians by Cope, the principal character of which consists in the presence of five distinct tarsal bones in the second row.

BRONN, H. G. Klassen und Ordnungen des Thierreichs. vi. Abth. iii, *Reptilia*, by C. K. Hoffmann. Lief. 56, pp. 1777–1824.

Conclusion of the systematic, palæontological, and biological chapters on the *Ophidia*.

BEMMELEN, J. F. VAN. Die Halsgegend der Reptilien. Zool. Anz. x, pp. 88–96.

On the anatomy of the cervical region. *Hatteria* agrees in this part of its structure entirely with the typical *Lacertilia*, especially the *Geckonidæ*. It is incidentally noted that the *Varanidæ* differ so much from other *Lacertilia* in the structure and position of the heart, lungs, and arteries, as to warrant their separation in the system.

GADOW, H. Remarks on the Cloaca and on the Copulatory Organs of the Amniota. Phil. Tr. clxxviii, pp. 5–37, pls. ii–v.

From the stage exhibited by the living *Hatteria* (in which an intromittent copulatory organ is absent, the immissio seminis being secured

by the eversion of the cloacal walls), which probably represents that of the "Proreptilia" and of the true Reptiles before their separation into *Crocodilia* and *Chelonia* and into *Lacertilia* and *Ophidia* had taken place, the types of the other *Amniota* may be derived.

SACCHI, M. Contribuzione all' Istologia dell' ovidotto dei Sauropsidi. Atti Soc. Ital. xxx, pp. 273–309, pl. iv. Preliminary note in Boll. scient. ix, pp. 58–60.

SQUAMATA.

LACERTILIA.

A. STRAUCH criticises the Recorder's recent classification of this Division of Reptiles, chiefly on the ground of the alleged difficulty in ascertaining osteological characters. He proposes the following arrangement:—

I. RHIPTOGLOSSA.
Fam. 1. *Chamæleonida.*

II. PSEUDOGLOSSA.
Fam. 2. *Geckonida* (Trib. 1. *Geckonida* s. str., 2. *Eublepharida*); 3. *Agamida*; 4. *Iguanida*; 5. *Xenosaurida*; 6. *Helodermatida.*

III. LEPTOGLOSSA.
Fam. 7. *Varanida*; 8. *Teiida*; 9. *Lacertida*; 10. *Chalcidida* (Trib. 1. *Zonurida*, 2. *Gerrhonotida*, 3. *Xantusiida*, 4. *Gerrhosaurida*); 11. *Scincida* (Trib. 1. *Diploglossida*, 2. *Scincida* s. str., 3. *Pygopodida*, 4. *Anelytropida*, 5. *Aniellida*, 6. *Dibamida*); 12. *Amphisbænida.*

Mém. Ac. St. Pétersb. xxxv, No. 2.

Remarks by BOULENGER, Ann. Mag. N. H. (5) xix, pp. 383–388.

E. D. COPE, Bull. U. S. Nat. Mus. No. 32, p. 25, arranges the *Lacertilia* in the following suborders and families:—

I. RHIPTOGLOSSA. 1. *Chamæleontidæ.*
II. ACRODONTA. 2. *Agamidæ.*
III. IGUANIA. 3. *Anolidæ*; 4. *Iguanidæ.*
IV. DIPLOGLOSSA. 5. *Zonuridæ*; 6. *Pygopodidæ*; 7. *Angaidæ*; 8. *Xenosauridæ*; 9. *Helodermidæ.*
V. THECAGLOSSA. 10. *Varanidæ.*
VI. GECCOVARANI (n. n.). 11. *Uroplatidæ.*
VII. NYCTISAURA. 12. *Eublepharidæ*; 13. *Gecconidæ.*
VIII. LEPTOGLOSSA. 14. *Xantusiidæ*; 15. *Teidæ*; 16. *Lacertidæ*; 17. *Gerrhosauridæ*; 18. *Scincidæ.*
IX. TYPHLOPHTHALMI. 19. *Acontiidæ*; 20. *Anelytropidæ.*
X. ANGUISAURI (n. n.). 21. *Aniellidæ.*
XI. OPHIOSAURI. 22. *Chirotidæ*; 23. *Amphisbænidæ*; 24. *Trogonophidæ.*

BOULENGER, G. A. Catalogue of the Lizards in the British Museum (Natural History). 2nd edition. Vol. iii. *Lacertidæ, Gerrhosauridæ, Scincidæ, Anelytropidæ, Dibamidæ, Chamæleontidæ.* London: 1887, 8vo, xii, 575 pp., 40 pls.

This volume concludes the Catalogue of Lizards, and contains descriptions of 542 species. In an Appendix the additions to the British Museum Collection are enumerated that have been made since the publication of the two preceding volumes, as well as the additions to the literature. An alphabetic index to the contents of all the three volumes is appended. The total number of species of Lizards regarded as well-established amounts to 1616. 1206 are in the British Museum, represented by 9820 specimens.

FRANCOTTE, P. Contributions à l'étude du développement de l'épiphyse et du troisième œil chez les Reptiles. Bull. Ac. Belg. (3) xiv, pp. 810–840, pl. —.

Researches based upon *Anguis fragilis* and *Lacerta muralis*.

HOWES, G. B. On the Vestigial Structures of the Reproductive Apparatus in the Male of the Green Lizard. J. Anat. Phys. xxi, pp. 185–189, pl. vii.

ORR, H. A Contribution to the Embryology of the Lizard, with especial reference to the Central Nervous System and some Organs of the Head; together with Observations on the Origin of the Vertebrates. Journ. Morph. i, pp. 311–372, pls. xii–xvi.

These researches are based chiefly upon *Anolis sagræ*, D. & B.

STRAHL, H. Die Dottersackswand und der Parablast der Eidechse. Z. wiss. Zool. xlv, pp. 282–307, pl. xvi.

GECKONIDÆ.

STRAUCH, A. Bemerkungen über die Geckoniden-Sammlung im Zoologischen Museum der kaiserlichen Akademie der Wissenschaften zu St. Petersburg. Mém. Ac. St. Pétersb. xxxv, No. 2, 74 pp., 1 pl.

Remarks on the arrangement of the genera, with a dichotomical key to their determination; two new genera are established; also copious notes on new or rare species, and an enumeration of all the specimens in the St. Petersburg Museum, which is stated to contain representatives of 122 species (inclusive of the *Uroplatidæ* and *Eublepharidæ*).

Critical notes on the above contribution by G. A. BOULENGER, Ann. N. H. (5) xix, pp. 383–388.

E. B. POULTON, Nature, xxxv, p. 511, fig., notices that Geckos are able to move the upper jaw.

NICOLAS, A. Sur l'épiderme des doigts du Gecko. Month. Int. J. Anat. Hist. iv, pp. 410–420, pl. xviii.

J. V. FISCHER describes the habits of some Geckos in the Mediterranean district. Zool. Gart. xxviii, pp. 118–128 & 178–187.

Chondrodactylus weigi, n. sp., BOULENGER, P. Z. S. 1887, p. 340, Kalahari Desert.

Teratoscincus keyserlingii, Strauch (= *scincus*, Schleg.) described by Strauch, *t. c.* p. 68. *T. przewalskii*, n. sp., *id. t. c.* p. 71, Central Asia. The tail has been observed to be a sound-producing organ.

Stenodactylus lumsdenii, n. sp., Boulenger, Cat. Liz. iii, p. 479, N. Baluchistan.

Ptenodactylus, n. g. (name preoccupied by Gray, 1845), allied to *Stenodactylus* and *Ptenopus*; subdigital lamellæ smooth; fingers and toes strongly fringed; for *Gymnodactylus severtzowi*, Wiegm.: Strauch, *t. c.* p. 64. *P. severtzowi* described.

Gymnodactylus miliusii, Bory, figured by McCoy, Prodr. Zool. Vict. pl. cxxxii, fig. 1. *G. agamensis*, Blkr., = *G. marmoratus*, Kuhl; Boulenger, Ann. N. H. (5) xx, p. 152. *G. feltschenkoi*, p. 46, Turkestan, *danilewskii*, p. 48, Crimea, and *russowii*, p. 49, figs. 10–12, Turkestan, n. spp., Strauch, *t. c.* *G. antillensis*, n. sp., Van Lidth de Jeude, Notes Leyd. Mus. ix, p. 129, Curaçao and Aruba.

Alsophylax przewalskii, p. 55, Central Asia, *spinicauda*, p. 58, figs. 15 & 16, Turkestan, and *loricatus*, p. 59, Turkestan, n. spp., Strauch, *t. c.*

Bunopus blanfordii, n. sp., Strauch, *t. c.* p. 61, figs. 13 & 14, Egypt.

Gonatodes annularis, n. sp., Boulenger, Cat. Liz. iii, p. 481, and P. Z. S. 1887, p. 133, figs., British Guiana.

Cnemaspis, n. g., allied to *Gonatodes*, but differing in the presence of large shields on the inner side of the tibia; Strauch, *t. c.* p. 41. *C. boulengeri*, n. sp., *id. t. c.* p. 42, figs. 7–9, Poulo Condor.

Phyllodactylus marmoratus, Gray, figured by McCoy, *t. c.*, pl. cxxxii, fig. 2. *P. martini*, n. sp., Van Lidth de Jeude, Notes Leyd. Mus. ix, p. 130, pl. ii, figs. 2 & 3, Curaçao. [= *P. julieni*, Cope.—Rec.]

Spathodactylus mutilatus, Gthr., = *Hemiphyllodactylus typus*, Blkr.; Boulenger, Ann. N. H. (5) xx, p. 152.

Hemidactylus murrayi, n. sp., Gleadow, J. Bomb. Soc. ii, p. 49, Bombay. [= *H. gleadowi*, Murr.—Rec.]

Gehyra marginata, n. sp., Boulenger, Cat. Liz. iii, p. 486, Moluccas, = *G. fischeri*, n. sp., Strauch, *t. c.* p. 29, figs. 5 & 6; Boulenger, Ann. N. H. (5) xix, p. 383.

Lepidodactylus woodfordii, n. sp., Boulenger, Cat. Liz. iii, p. 487, and P. Z. S. 1887, p. 334, pl. xxviii, fig. 1, Faro Is., Solomon Is.

Naultinus elegans, Gray. Notes and observations on the gestation, birth, and young of this Gecko, which is viviparous, and brings forth two at a birth; Colenso, Tr. N. Z. Inst. xix, pp. 147–150.

Geckolepis humbloti, n. sp., Vaillant, Bull. Soc. Phil. (7) xi, p. 133, Comoro Is.

Tarentola, Gray. Key to the species by Strauch, *t. c.* p. 20. *T. neglecta*, p. 21, figs. 3 & 4, and *angusticeps*, p. 22, figs. 1 & 2, n. spp., Batna, Algeria; Strauch, *t. c.*: united under the name *T. neglecta*; Boulenger, Ann. N. H. (5) xix, p. 384.

Sphærodactylus torquatus, n. sp., Strauch, *t. c.* p. 35, Mazatlan. *S. picturatus*, p. 19, S. Domingo [= *S. anthracinus*, Blgr., *nec* Cope?], *undipictus*, p. 20, St. Christopher's, n. spp., Garman, Bull. Essex Inst. xix.

Agamidæ.

Draco melanopogon, n. sp., Boulenger, Cat. Liz. iii, p. 492, Malacca. *D. obscurus*, n. sp., *id.* Ann. N. H. (5) xx, p. 95, Kina Baloo, Borneo.

Japalura polygonata, Hallow., characterized and figured; *id.* P. Z. S. 1887, p. 146, pl. xvii, fig. 1.

Lophocalotes interruptus, Gthr., = *Calotes luedekingii*, Blkr.; *id.* Ann. N. H. (5) xx, p. 152.

Tiaris tuberculatus, Gthr., = *Lophyrus megalepis*, Blkr.; *id. ibid.*

Gonyocephalus herveyi, n. sp., *id.* Cat. Liz. iii, p. 493, Malacca.

Calotes liolepis, Blgr., described by Nevill, Taprobanian, ii, p. 133. *C. mystaceus*, D. & B., n. var. *ceylonensis* (an n. sp.?); F. Müller, Verh. Ges. Basel, viii, p. 292, pl. iii, Ceylon. *C. kelaartii*, n. sp., Nevill, *t. c.* p. 134, and Haly, *t. c.* p. 133, Ceylon [= *C. ceylonensis*, F. Müll.—Rec.]. *C. microlepis*, p. 476, pl. vi, fig. 1, and *fœ*, p. 477, pl. vi, fig. 2, n. spp., Boulenger, Ann. Mus. Genov. (2) v, Tenasserim.

Agama hispida, L., p. 141, and *atra*, Daud., p. 142; notes by Boettger, Ber. Senck. Ges. 1887.

Phrynocephalus ornatus, p. 496, and *luteoguttatus*, p. 497, n. spp., Boulenger, Cat. Liz. iii, N. Baluchistan.

Iguanidæ.

Anolis, Daud. S. Garman, Bull. Essex Inst. xix, has greatly multiplied the binomials of the West Indian forms of this genus. The Recorder would refer the new species and varieties to the following more comprehensive terms:—1, *A. cristatellus*, D. & B.: *A. scriptus*, n. sp., p. 28, Silver and Lena Keys, Florida. 2, *A. gingivinus*, Cope: *A. virgatus*, n. sp., p. 41, St. Bart's. 3. *A. leachii*, B. & D.: *A. asper*, n. sp., p. 31, Marie Galante, *nubilus*, n. sp., p. 32, Redonda, *sabanus*, n. sp., p. 39, Saba, *speciosus*, n. sp., p. 42, Marie Galante, *lividus*, n. sp., p. 43, Montserrat. 4, *A. alligator*, D. & B.: *A. gentilis*, n. var., p. 34, Petit Martinique, *cinereus*, n. var., p. 35, Grenada, *extremus*, n. var., p. 35, Barbados, *luciæ*, n. sp., p. 44, St. Lucia, *vincentii*, n. sp., p. 46, St. Vincent. 5, *A. richardii*, D. & B.: *A. griseus*, n. sp., p. 36, St. Vincent, and *trossulus*, n. sp., p. 38, Grenada. Also copious notes on other known species. *A. conspersus*, n. sp., *id.* P. Am. Phil. Soc. xxiv, p. 273, Grand Cayman, W. Indies [= *A. grahamii*, Gray.—Rec.]. *A. boulengerianus*, p. 182, Tehuantepec, *bruneti*, p. 184, Brazil [= *fusco-auratus*, D. & B.—Rec.], and *frontatus*, p. 185, Darien, n. spp., Thominot, Bull. Soc. Philom. (7) xi.

Liocephalus loxogrammus, n. sp., Cope, P. U. S. Nat. Mus. 1887, p. 437, Rum Key, Bahamas. *L. varius*, n. sp., Garman, P. Am. Phil. Soc. xxiv, p. 274, Grand Cayman, W. Indies.

Cyclura carinata, Harl., is distinct from *C. baeolopha*, Cope, and *nubila*, Gray; Cope, *t. c.* p. 437.

Anguidæ.

Diploglossus crusculus, n. sp., Garman, Bull. Essex Inst. xix, p. 22, Jamaica [? = *D. phoxinus*, Cope.—Rec.]. *Panolopus costatus*, Cope, is founded on a mutilated specimen of *D. phoxinus*; *id. t. c.* p. 23.

Anniellidæ.

Anniella texana, n. sp., Boulenger, Ann. N. H. (5) xx, p. 50, El Paso, Texas.

Zonuridæ.

H. E. Sauvage, Bull. Soc. Zool. xii, pp. 488–499, pl. viii, describes the brachial and sacro-lumbar plexus of *Zonurus giganteus*, Smith.

Zonurus riffifer, n. sp., Reichenow, Zool. Anz. x, p. 372, Transvaal.

Varanidæ.

C. W. De Vis, P. Linn. Soc. N.S.W. (2) i, p. 1137, describes, under the heading *Varanus*, sp., what is apparently a new species from the Herbert River, Queensland.

Teiidæ.

E. Koken, SB. nat. Fr. 1887, p. 33, remarks on what he regards as a rudiment of the quadratojugal in *Tupinambis teguexin*, and on the dentition of the same Lizard.

Centropyx capii, n. n. for the Barbados form; Garman, Bull. Essex Inst. xix, p. 2.

Ameiva erythrocephala, Daud., described, *id. t. c.* p. 9 [= *A. pyncta*, Gray.—Rec.]; *A. strigularis*, p. 2, Trinidad; and *aquilina*, p. 3, Grenada and St. Vincent, n. vars. of *A. surinamensis*, Laur.; *A. fuscata*, p. 5, Dominica, and *pluvianotata*, p. 6, Montserrat, n. spp.; *A. atrata*, n. var. of *A. corvina*, Cope, p. 8, Redonda, *id. t. c.*

Cnemidophorus arubensis, n. sp., Van Lidth de Jeude, Notes Leyd. Mus. ix, p. 132, Aruba, Leeward Is.

Colobosaura, n. n. for *Perodactylus*, R. & L., *nec* Fitz.; Boulenger, Cat. Liz. iii, p. 508.

Gymnophthalmus, Merr. *Epaphelus sumichrasti*, Cope, = *Tretioscincus lævicauda*, Cope; Cope, Bull. U. S. Nat. Mus. No. 32, p. 46.

Amphisbænidæ.

Amphisbæna quadrifrons, Ptrs.: note by Boettger, Ber. Senck. Ges. 1887, p. 144. *A. capensis*, n. sp., Thominot, Bull. Soc. Phil. (7) xi, p. 188, Lake N'Gami.

Monopeltis boulengeri, n. sp., Boettger, Zool. Anz. x, p. 649, near Stanley Pool, Congo.

Lacertidæ.

Tachydromus smaragdinus, n. sp., Boulenger, Cat. Liz. iii, p. 509, and P. Z. S. 1887, p. 147, pl. xvii, fig. 2, & pl. xviii, fig. 1, Loo Choo Is.

Poromera, n. g., for *Tachydromus fordii*, Hallow.; Boulenger, Cat. Liz. iii, p. 6.

Lacerta, L. C. Mortensen, Zool. Anz. x, pp. 461–464 & 563, has

notes on the copulation in *Lacerta vivipara* and *L. agilis*. *L. vivipara*, Jacq., found at Wellington, New Zealand (introduced); T. W. Kirk, Tr. N. Z. Inst, xix, p. 67. *L. danfordii*, Gthr., figured by Boulenger, *t. c.* pl. i, fig. 2. *L. ocellata*, n. var. *tangitana*, *id. t. c.* p. 13, pl. iii, fig. 1, Tangiers. *L. viridis*, n. var. *major*, *id. t. c.* p. 16, S.E. Europe and Asia Minor. *L. parva*, p. 22, pl. i, fig. 1, Asia Minor, and *jayakari*, p. 40, pl. ii, Muscat, Arabia, n. spp., *id. t. c.*

Psammodromus blanci, Lataste: on its habits; J. v. Fischer, Zool. Gart. xxviii, pp. 65–74. *P. algira*, L., and n. var. *nollii*, p. 69, fig. Tuggurt, Algeria, *id. t. c.*

Ophiops beddomii, Jerd., figured by Boulenger, *t. c.* pl. iii, fig. 3. *O. occidentalis*, n. sp., *id. t. c.* p. 75, pl. iii, fig. 2, Algeria, Tunis, Tripoli.

Eremias pulchella, Gray: notes by Boettger, Ber. Senck. Ges. 1887, p. 146. *E. nitida*, Gthr., pl. iv, fig. 1, and *spekii*, Gthr., fig. 2, figured by Boulenger, *t. c.* *E. guineensis*, n. sp., *id.* Ann. N. H. (5) xx, p. 51, Mouths of the Niger.

Scapteira depressa, Merr.: notes by Boettger, Ber. Senck. Ges. 1887, p. 145. *S. acutirostris*, n. sp., Boulenger, Cat. Liz. iii, p. 114, N. Baluchistan.

Aporosaura, n. n. for *Pachyrhynchus*, Bocage, *nec* Spix; *id. t. c.* p. 117.

Gerrhosauridæ.

Tetradactylus africanus, Gray, figured by Boulenger, Cat. Liz. iii, pl. iv, fig. 3.

Gerrhosaurus auritus, n. sp., Boettger, Ber. Senck. Ges. 1887, p. 148, pl. v, fig. 2, Ovamboland.

Zonosaurus, n. n. for *Cicigna*, Gray, 1845, *nec* Gray, 1825; Boulenger, *t. c.* p. 127.

Scincidæ.

Tiliqua nigrolutea, Q. & G., figured by McCoy, Prodr. Zool. Vict. pl. cxxxi.

Egernia cunninghami, Gray, figured by McCoy, *t. c.* pl. cxli.

Mabuia, Fitz. S. Garman, Bull. Essex Inst. xix, pp. 51–53, gives diagnoses of the West Indian forms, greatly multiplying the species. *M. nitida*, p. 51, Porto Rico & San Domingo, *luciæ*, p. 51, St. Lucia, and *dominicana*, p. 52, Dominica, n. spp. *M. villata*, Oliv.: on its habits; J. v. Fischer, Zool. Gart. xxviii, pp. 357–360. *M. striata*, Ptrs., p. 150, and *sulcata*, Ptrs., p. 151: notes by Boettger, Ber. Senck. Ges. 1887. *M. fogoensis*, O'Sh., pl. vi, fig. 1, *stangeri*, Gray, pl. vi, fig. 2, *punctata*, Gray, pl. ix, fig. 1, *maculilabris*, Gray, pl. ix, fig. 2, *raddonii*, Gray, pl. x, fig. 1, *brevis*, Gthr., pl. xi, fig. 1, and *multicarinata*, Gray, pl. xi, fig. 2, figured by Boulenger, Cat. Liz. iii. *M. vaillantii*, p. 159, pl. vii., St. Jago, Cape Verd Is., *wrightii*, p. 162, pl. viii, Seychelles, *boettgeri*, p. 173, pl. x, fig. 3, Madagascar, *dorsivittata*, p. 174, pl. x, fig. 4, Minhla, Burma, *vertebralis*, p. 180 (= *trivittata*, Jerd., *nec* Gray), Deccan, *tytleri*, p. 187, Andamans, *rudis*, p. 188, pl. xi, fig. 3, Borneo & Sumatra, and *chinbana*, p. 204 (= *affinis*,

Boc., *nec* De Fil.), Mossamedes, n. spp., Boulenger, *t. c. M. quadricarinata*, n. sp., *id.*, Ann. Mus. Genov. (2) iv, p. 613, Upper Burma.

Tropidolepisma macrurus, Blkr., = *Mabuia multifasciata*, Kuhl.; Boulenger, Ann. N. H. (5) xx, p. 152.

Lygosoma pallidum, Gthr., pl. xiii, fig. 2, *fasciolatum*, Gthr., pl. xiv, fig. 1, *fasciatum*, Gray, pl. xv, fig. 2, *indicum*, Gray, pl. xvi, fig. 1, *cumingii*, Gray, pl. xvi, fig. 2, *pulchellum*, Gray, pl. xvii, fig. 1, *himalayanum*, Gthr., pl. xvii, fig. 2, *ladacense*, Gthr., pl. xvii, fig. 3, *bilineatum*, Gray, pl. xviii, fig. 1, *travancoricum*, Bedd., pl. xviii, fig. 4, *africanum*, Gray, pl. xix, fig. 1, *mustelinum*, O'Sh., pl. xix, fig. 2, *cupreum*, Gray, pl. xx, fig. 2, *lichenigerum*, O'Sh., pl. xx, fig. 1, *grande*, Gray, pl. xx, fig. 3, *trilineatum*, Gray, pl. xxi, fig. 2, *metallicum*, O'Sh., pl. xxii, fig. 1, *preticsum*, O'Sh., pl. xxii, fig. 2, *tetradactylum*, O'Sh., pl. xxii, fig. 3, *albofasciolatum*, Gthr., pl. xxiv, *modestum*, Gthr., pl. xxiii, fig. 2, *bowringii*, Gray, pl. xxiii, fig. 3, *rosmaeri*, Gray, pl. xxv, fig. 2, *lineatum*, Gray, pl. xxv, fig. 3, *ornatum*, Gray, pl. xxvi, fig. 1, *branchiale*, Gthr., pl. xxvi, fig. 2, *infralineolatum*, Gthr., pl. xxvii, fig. 1, *fragile*, Gthr., pl. xxvii, fig. 2, *gerrardii*, Gray, pl. xxvii, fig. 3, *miopus*, Gthr., pl. xxvii, fig. 4, *reticulatum*, Gthr., pl. xxviii, fig. 1, and *sumatrense*, Blkr., pl. xxviii, fig. 2, figured by Boulenger, Cat. Liz. iii. *L. pellopleurum*, Hallow., described and figured by Boulenger, P. Z. S. 1887, p. 147, pl. xviii, fig. 2. *L. dorsale*, p. 226, pl. xii, fig. 1, Fly River, S. Guinea, *leae*, p. 226, pl. xii, fig. 2, Adelaide, *fischeri* (= *Hinulia muelleri*, Fisch.), p. 228, N.-W. Australia, *strauchii*, p. 229, pl. xii, fig. 3, Gayndah, Queensland, *murrayi*, p. 232, pl. xiii, fig. 1, Queensland, *isolepis*, p. 234, pl. xv, fig. 1, W. Australia, *monotropis*, p. 237, pl. xiv, fig. 2, N.-W. Australia, *rufum*, p. 239, pl. xv, fig. 3, Aru Is., *laterimaculatum*, p. 260, pl. xviii, fig. 2, S. India, *beddomii*, p. 261, pl. xviii, fig. 3, S. India, *chaltengeri*, p. 268, pl. xix, fig. 3, Queensland, *infrapunctatum*, p. 274, pl. xxi, fig. 1, Australia, *mivarti*, p. 292, pl. xxiii, fig. 1, Admiralty Is., *calamus*, p. 314, pl. xxv, fig. 1, Minhla, Burma, *pumilum*, p. 325, pl. xxvi, fig. 3, Cape York, *solomonis*, p. 510, pl. xxiii, fig. 4, Solomon Is., *woodfordii*, p. 511, pl. xxv, fig. 4, Solomon Is., and *concinnatum*, p. 51, pl. xxvi, fig. 4, Solomon Is., n. spp., Boulenger, Cat. Liz. iii. *L. doriae*, p. 620, Upper Burma, *kakhienense*, p. 621, Kakhien Hills, Burma, *comotti*, p. 622, Minhla, Burma, *fea*, p. 623, Rangoon, Burma, n. spp., *id.*, Ann. Mus. Genov. (2) iv. *L. zebratum*, p. 478, and *melanostictum*, p. 479, n. spp., *id.*, *op. cit.* v, Tenasserim. *L. vaterifatis*, n. sp., *id.*, P. Z. S. 1887, p. 516, Christmas Is., Indian Ocean.

Chelomeles sumatrensis, Gthr., = *C. sumatrensis*, Blkr.; *id.*, Ann. N. H. (5) xx, p. 152.

Euprepes halianus, n. sp., Nevill, Taprobanian, ii, p. 50, Ceylon. [Probably a *Lygosoma*.—Rec.]

Ablepharus boutonii, Desj.; n. var. *metallicus*, Boulenger, *t. c.* p. 347, N. Australia.

Ristella rurkii, Gray, pl. xxix, fig. 1, and *travancorica*, Bedd., pl. xxix, fig. 2, figured by Boulenger, *t. c.* *R. guentheri*, p. 358, pl. xxix, fig. 3, and *beddomii*, p. 359, pl. xxix, fig. 4, n. spp., *id.*, *t. c.*, S.-W. India.

Tropidophorus brookii, Gray, pl. xxx, fig. 1, and *grayi*, Gthr., pl. xxx,

fig. 2, figured by BOULENGER, *t. c.* *T. yunnanensis*, n. sp., *id. t. c.* p. 362, Yûnnan.

Eumeces elegans, n. n. for *Plestiodon pulchrum*, Hallow., *nec* D. & B.; BOULENGER, *t. c.* p. 371. *E. humilis*, n. n. for *E. bocourtii*, Blgr., *nec* Brocchi; *id. t. c.* p. 377.

Brachymeles bicolor, Gray, figured by BOULENGER, *t. c.* pl. xxxi.

Scincus officinalis, Laur.: on its habits; J. v. FISCHER, Zool. Gart. xxviii, pp. 309–314. *S. muscatensis*, Murray, figured by BOULENGER, *t. c.* pl. xxxii.

Ophiomorus blanfordii, p. 395, pl. xxxiii, fig. 1, Persia or Baluchistan, and *latastii*, p. 398, pl. xxxiii, fig. 2, Palestine, n. spp., BOULENGER, *t. c.*

Gongylus teres, n. sp., VAILLANT, Bull. Soc. Phil. (7) xi, p. 135, Mayotta, Comoro Is.

Scelotes melanopleura, Gthr., pl. xxxiii, fig. 3, *capensis*, pl. xxxiv, fig. 1, and *inornatus*, Smith, pl. xxxiv, fig. 4, figured by BOULENGER, *t. c.* *S. tridactylus*, p. 413, pl. xxxiv, fig. 2, Cape of Good Hope, and *guentheri*, p. 414, pl. xxxiv, fig. 4, Natal, n. spp., *id. t. c.*

Herpetoseps, n. g., allied to *Scelotes*, but the palatine bones not meeting on the median line of the palate. *H. anguinus*, n. sp., BOULENGER, *t. c.* p. 416, pl. xxxv, fig. 1, Port Elizabeth.

Sepsina gastrosticta, O'Sh., pl. xxxv, fig. 2, *macrocercus*, Gthr., pl. xxxv, fig. 3, *melanura*, Gthr., pl. xxxvi, fig. 1, and *johannæ*, Gthr., pl. xxxv, fig. 2, figured by BOULENGER, *t. c.* *S. hessei*, n. sp., BÖTTGER, Zool. Anz. 1887, p. 469, Lower Congo.

Melanoseps, n. g., for *Herpetosaura atra*, Gthr., which is figured pl. xxxvii, fig. 1; BOULENGER, *t. c.* p. 422.

Sepophis punctatus, Bedd., figured by BOULENGER, *t. c.* pl. xxxvii, fig. 2.

Chalcidoseps, n. g., for *Nessia thwaitesii*, Gthr., which is figured pl. xxxviii, fig. 1; BOULENGER, *t. c.* p. 423.

Acontias grayi, n. sp., *id. t. c.* p. 428, Cape of Good Hope.

Typhlacontias punctatissimus, Boc., redescribed by BOCAGE, J. Sci. Lisb. x, p. 204.

Ophiopsiseps, n. n. for *Ophioseps*, Bocage, *nec* Blyth; BOULENGER, *t. c.* p. 436.

ANELYTROPIDÆ.

Typhlosaurus lineatus, p. 432, pl. xxxviii, fig. 3, and *vermis*, p. 434, pl. xxxviii, fig. 4, n. spp., BOULENGER, Cat. Liz. iii, Cape of Good Hope. *T. lineatus*, Blgr.: on a specimen from the N. Kalahari; BÖTTGER, Ber. Senck. Ges. 1887, p. 152.

Feylinia currori, Gray: notes by BOCAGE, J. Sci. Lisb. x, p. 179; n. var. *polylepis*, *id. t. c.* p. 198, Prince I., Guinea. *F. macrolepis*, n. sp., BÖTTGER, Zool. Anz. x, p. 650, Massabe, Loango.

DIBAMIDÆ.

Typhlina leucurus, Blgr., = *Dibamus novæ-guineæ*, D. & B.; BOULENGER, Ann. N. H. (5) xx, p. 152.

Incertæ sedis.

Patricosaurus, n. g. (foss.), for a fragment of femur, and a sacral vertebra. *P. merocratus*, n. sp., Seeley, Q. J. Geol. Soc. xliii, p. 216, pl. xii, figs. 9–12, Cambridge Greensand.

RHIPTOGLOSSA.

Boulenger, G. A. Remarks on Prof. W. K. Parker's Paper on the Skull of the Chameleons. P. Z. S. 1886, p. 543.

Fodera, F. A. La funzione cromatica nei Cameleonti. Note ed osservazioni. Palermo : 1887, 8vo, 61 pp.

The heads of the following species are figured by Boulenger, Cat. Liz. iii, pl. xxxix :—*Chamæleon vulgaris*, Daud., *calcaratus*, Merr., *basiliscus*, Cope, *gracilis*, Hallow., *dilepis*, Leach, and *affinis*, Gray. Whole figures of *C. tæniobronchus*, Smith, pl. xl, fig. 1, and *ventralis*, Gray, pl. xl, fig. 2. *C. parvilopus*, Blgr., p. 152, *namaquensis*, Smith, p. 153, *simoni*, Bttg., p. 57, and *biocephalus*, Gray, p. 58 : notes by Boettger, Ber. Senck. Ges. 1887. *C. polleni*, Ptrs., and *cephalolepis*, Gthr : note by Vaillant, Bull. Soc. Philom. (7) xi. p. 132. *C. saharicus*, n. sp. (?), F. Müller, Verh. Ges. Basel, viii, p. 295, Algeria [= *C. vulgaris*, Daud.—Rec.]. *C. parrilobus*, p. 449, pl. xxxix, fig. 5, W. & S. Africa, and *damaranus*, p. 460, pl. xl, fig. 3, Damaraland, n. spp., Boulenger, *t. c.* *C. sphæropholis*, p. 370, Victoria Niansa, and *fischeri*, p. 371, C. Africa (Ngura Mountains ?), n. spp., Reichenow, Zool. Anz. x.

Brookesia nasus, n. sp., Boulenger, *t. c.* p. 475, pl. xl, fig. 4, Madagascar.

PYTHONOMORPHA.

Hainosaurus bernardi, Dollo. Account by Dollo, Rev. Quest. sci. xxi, pp. 505–524.

OPHIDIA.

A. Günther contributes the article "Snakes" to the ninth edition of the Encyclopædia Britannica, vol. xxii, pp. 189–199, figs. The following divisions are adopted :—

Subord. I. Hopoterodontes.
Fam. 1, *Typhlopidæ* ; 2, *Stenostomatidæ*.

Subord. II. Ophidii Colubriformes.
Fam. 1, *Tortricidæ* ; 2, *Xenopeltidæ* ; 3, *Uropeltidæ* ; 4, *Calamariidæ* ; 5, *Oligodontidæ* ; 6, *Colubridæ* ; 7, *Homalopsidæ* ; 8, *Psammophidæ* ; 9, *Rhachiodontidæ* ; 10, *Dendrophidæ* ; 11, *Dryophidæ* ; 12, *Dipsadidæ* ; 13, *Scytalidæ* ; 14, *Lycodontidæ* ; 15, *Amblycephalidæ* ; 16, *Erycidæ* ; 17, *Boidæ* ; 18, *Pythonidæ* ; 19, *Acrochordidæ* ; 20, *Xenodermidæ*.

Subord. III. OPHIDII COLUBRIFORMES VENENOSI.
Fam. 1, *Elapidæ*; 2, *Atractaspididæ*; 3, *Causidæ*; 4, *Dinophidæ*; 5, *Hydrophidæ*.

Subord. IV. OPHIDII VIPERIFORMES.
Fam. 1, *Viperidæ*; 2, *Crotalidæ*.

SENNA, A. Sulla distribuzione geographica generale degli Ofidi. Atti Soc. Ital. xxix (1886), pp. 477–516.

This contribution is based solely upon the antiquated work of Jan, which was notoriously incomplete even at the time of its publication. As an example, it will suffice to notice that the family *Uropeltidæ* is given as composed of 7 species, which are dismissed, in the discussion of the Oriental region, with the following words: "Gli *Uropeltidi*, i *Tortricidi* e gli *Acrocordidi* sono le forme speciali a questa ricchissima regione."

MILLS, T. W. On the Physiology of the Heart of the Snake. J. Anat. Phys. xxii, pp. 1–8, and Can. Rec. ii, pp. 489–496.

The heart of the Snake, upon the whole, seems to lie physiologically between that of the Frog and of the Chelonians.

SEWALL, H. Experiments on the preventive inoculation of Rattlesnake venom. J. Physiol. viii, pp. 203–210.

MITCHELL & REICHERT publish Researches upon the Venoms of Poisonous Serpents; Smiths. Contr. Knowledge, 1886, p. 674 *et seq.*

E. SYMONDS has notes on some species of South-African Snakes; P. Z. S. 1887, pp. 486–489.

TYPHLOPIDÆ.

Typhlops kraussii, Jan, p. 180, and *elegans*, Ptrs., p. 190: notes by BOCAGE, J. Sci. Lisb. x. *T.* (*Onychocephalus*) *humbo*, p. 171, Quissange, Benguella, and *anchietæ*, p. 172, Huilla, Angola, n. spp., *id. t. c.* *T.* (*Onychocephalus*) *schinzi*, n. sp., BOETTGER, Ber. Senck. Ges. 1887, p. 154, pl. v, figs. 1 & 2 Kalahari Desert and Namaqualand. *T.* (*Onychocephalus*) *congicus*, n. sp., *id.* Zool. Anz. x, p. 650, near Banana, Congo. *T. aluensis*, n. sp., BOULENGER, P. Z. S. 1887, p. 336, pl. xxviii, fig. 2, Alu, Shortland Is, Solomon Is. *T. exocœti*, n. sp., *id. t. c.* p. 517, Christmas I., Indian Ocean.

STENOSTOMATIDÆ.

Stenostoma rostratum, p. 173, Humbe, Angola, *dissimile*, p. 174, White Nile, and *brevicauda*, p. 194, Dahomey, n. spp., BOCAGE, J. Sci. Lisb. x.

BOIDÆ.

Python molurus, L. Remarks on the feeding and casting of skin in confinement: PHIPSON, J. Bomb. Soc. ii, p. 165.

Ungualia curta, n. n. for *U. maculata*, Cope, *nec* Bibr.; GARMAN, P. Am. Phil. Soc. xxiv, p. 270.

PALÆOPHIIDÆ.

Palæophis typhæus, Ow. (fôss.). Note on a vertebra; SMETS, Ann. Brux. xi, p. 308.

COLUBRIDÆ.

Calamaria agamensis, Blkr., = *C. schlegeli*, D. & B.; BOULENGER, Ann. N. H. (5) xx, p. 152. *C. lovii*, n. sp., *id. op. cit.* xix, p. 169, Sarawak, Borneo.

Apostolepis erythronotus, Ptrs., n. subsp. *lineatus*, COPE, P. Am. Phil. Soc. xxiv, p. 56, Mato Grosso, Brazil.

Rhabdosoma lineatum, D. & B., occurs in Trinidad; described by GARMAN, P. Am. Phil. Soc. xxiv, p. 280.

Microsoma collare, Ptrs., described by BOCAGE, J. Sci. Lisb. x, p. 182. *M. fulvicollis*, n. sp., MOCQUARD, Bull. Soc. Phil. (7) xi, p. 65, Franceville, Congo.

Tantilla pallida, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 56, Mato Grosso, Brazil.

Adelophis copei, Dugès, described and figured by DUGÈS, Nat. Mex. (2) i, p. 18, pl. iii, fig. 1.

Rhinocheilus thominotii, n. sp., BOCOURT, Le Nat. (2) i, p. 45, figs., Venezuela.

Ablabes (*Eurypholis*) *semicarinatus*, Hallow., described by BOULENGER, P. Z. S. 1887, p. 148.

Coronella olivacea, Ptrs. Notes by MOCQUARD, Bull. Soc. Phil. (7) xi, p. 66. *C. longicauda*, n. sp., *id. t. c.* p. 69, Congo.

Meizodon longicauda, Gthr., described by BOCAGE, J. Sci. Lisb. x, p. 184

Opheomorphus brachyurus, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 57, Mato Grosso, Brazil.

Rhynchonyx ambiniger, Ptrs., n. subsp. *vittatus*, *id. t. c.* p. 56, Mato Grosso, Brazil.

Dromicus cubensis, n. n. for *D. cursor*, D. & B., *nec* Lacép.; GARMAN, P. Am. Phil. Soc. xxiv, p. 281. *D. nuntius*, Jan, = *D. temporalis*, Cope; *id. ibid.* *D. ornatus*, n. sp., *id. ibid.*, St. Lucia, W. Indies.

Alsophis caymanus, n. var. of *A. angulifer*, D. & B., p. 276, Grand Cayman, and *cinereus*, n. var. of *A. ruficentris*, D. & B., p. 282, St. Barts and Anguilla, W. Indies; *id. t. c.* *A. pulcher*, n. sp. [= *D. fugitivus*, Donnd., var.—REC.], *id. t. c.* p. 283, Testigos I., W. Indies.

Elaphis grabowskyi, Fischer, = *E. teniurus*, Cope; BOULENGER, Ann. N. H. (5) xix, p. 170. *E. rodriguezii*, n. sp., BOCOURT, *t. c.* p. 168, figs., Rio Polochic, Guatemala.

Grayia furcata, n. sp., MOCQUARD, Bull. Soc. Philom. (7) xi, p. 71, Congo.

Tropidonotus sipedon, L., is viviparous; HEILPRIN, P. Ac. Philad. 1887, p. 21. *T. clarkii*, B. & G., occurs in Southern Louisiana; A. K. FISCHER, Am. Nat. xxi, p. 672. *T. taxispilotus*, n. var. *brocki*, HEILPRIN, Explor. in Florida, p. 129, pl. xvii, Eagle Bay, Florida. *T. bisectus*, n. sp., COPE, P. U. S. Nat. Mus. 1887, p. 146, Washington. *T. pryeri*, n. sp.,

Subord. III. OPHIDII COLUBRIFORMES VENENOSI.
Fam. 1, *Elapidæ*; 2, *Atractaspididæ*; 3, *Causidæ*; 4, *Dinophidæ*; 5, *Hydrophidæ*.

Subord. IV. OPHIDII VIPERIFORMES.
Fam. 1, *Viperidæ*; 2, *Crotalidæ*.

SENNA, A. Sulla distribuzione geographica generale degli Ofidi. Atti Soc. Ital. xxix (1886), pp. 477–516.

This contribution is based solely upon the antiquated work of Jan, which was notoriously incomplete even at the time of its publication. As an example, it will suffice to notice that the family *Uropeltidæ* is given as composed of 7 species, which are dismissed, in the discussion of the Oriental region, with the following words: "Gli *Uropeltidi*, i *Tortricidi* e gli *Acrocordidi* sono le forme speciali a questa ricchissima regione."

MILLS, T. W. On the Physiology of the Heart of the Snake. J. Anat. Phys. xxii, pp. 1–8, and Can. Rec. ii, pp. 489–496.

The heart of the Snake, upon the whole, seems to lie physiologically between that of the Frog and of the Chelonians.

SEWALL, H. Experiments on the preventive inoculation of Rattlesnake venom. J. Physiol. viii, pp. 203–210.

MITCHELL & REICHERT publish Researches upon the Venoms of Poisonous Serpents; Smiths. Contr. Knowledge, 1886, p. 674 *et seq.*

E. SIMONS has notes on some species of South-African Snakes; P. Z. S. 1887, pp. 486–489.

TYPHLOPIDÆ.

Typhlops kraussii, Jan, p. 180, and *elegans*, Ptrs., p. 190: notes by BOCAGE, J. Sci. Lisb. x. *T.* (*Onychocephalus*) *humbo*, p. 171, Quissange, Benguella, and *anchietæ*, p. 172, Huilla, Angola, n. spp., *id. t. c.* *T.* (*Onychocephalus*) *schinzi*, n. sp., BUTTGER, Ber. Senck. Ges. 1887, p. 154, pl. v, figs. 1 & 2 Kalahari Desert and Namaqualand. *T.* (*Onychocephalus*) *congicus*, n. sp., *id.* Zool. Anz. x, p. 650, near Banana, Congo. *T. aluensis*, n. sp., BOULENGER, P. Z. S. 1887, p. 336, pl. xxviii, fig. 2, Alu, Shortland Is, Solomon Is. *T. exocœti*, n. sp., *id. t. c.* p. 517, Christmas I., Indian Ocean.

STENOSTOMATIDÆ.

Stenostoma rostratum, p. 173, Humbe, Angola, *dissimile*, p. 174, White Nile, and *brevicauda*, p. 194, Dahomey, n. spp., BOCAGE, J. Sci. Lisb. x.

BOIDÆ.

Python molurus, L. Remarks on the feeding and casting of skin in confinement: PHIPSON, J. Bomb. Soc. ii, p. 165.

Ungualia curta, n. n. for *U. maculata*, Cope, *nec* Bibr.; GARMAN, P. Am. Phil. Soc. xxiv, p. 270.

PALÆOPHIIDÆ.

Palæophis typhæus, Ow. (fóss.). Note on a vertebra; SMETS, Ann. Brux. xi, p. 308.

COLUBRIDÆ.

Calamaria agamensis, Blkr., = *C. schlegeli*, D. & B.; BOULENGER, Ann. N. H. (5) xx, p. 152. *C. lovii*, n. sp., *id. op. cit.* xix, p. 169, Sarawak, Borneo.

Apostolepis erythronotus, Ptrs., n. subsp. *lineatus*, COPE, P. Am. Phil. Soc. xxiv, p. 56, Mato Grosso, Brazil.

Rhabdosoma lineatum, D. & B., occurs in Trinidad; described by GARMAN, P. Am. Phil. Soc. xxiv, p. 280.

Microsoma collare, Ptrs., described by BOCAGE, J. Sci. Lisb. x, p. 182. *M. fulvicollis*, n. sp., MOCQUARD, Bull. Soc. Phil. (7) xi, p. 65, Franceville, Congo.

Tantilla pallida, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 56, Mato Grosso, Brazil.

Adelophis copei, Dugès, described and figured by DUGÈS, Nat. Mex. (2) i, p. 18, pl. iii, fig. 1.

Rhinocheilus thominotii, n. sp., BOCOURT, Le Nat. (2) i, p. 45, figs., Venezuela.

Ablabes (*Eurypholis*) *semicarinatus*, Hallow., described by BOULENGER, P. Z. S. 1887, p. 148.

Coronella olivacea, Ptrs. Notes by MOCQUARD, Bull. Soc. Phil. (7) xi, p. 66. *C. longicauda*, n. sp., *id. t. c.* p. 69, Congo.

Meizodon longicauda, Gthr., described by BOCAGE, J. Sci. Lisb. x, p. 184

Ophiomorphus brachyurus, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 57, Mato Grosso, Brazil.

Rhynchonyx ambiniger, Ptrs., n. subsp. *vittatus*, *id. t. c.* p. 56, Mato Grosso, Brazil.

Dromicus cubensis, n. n. for *D. cursor*, D. & B., *nec* Lacép.; GARMAN, P. Am. Phil. Soc. xxiv, p. 281. *D. nuntius*, Jan, = *D. temporalis*, Cope; *id. ibid.* *D. ornatus*, n. sp., *id. ibid.*, St. Lucia, W. Indies.

Alsophis caymanus, n. var. of *A. angulifer*, D. & B., p. 276, Grand Cayman, and *cinereus*, n. var. of *A. rufiventris*, D. & B., p. 282, St. Barts and Anguilla, W. Indies; *id. t. c.* *A. pulcher*, n. sp. [= *D. fugitivus*, Donnd., var.—REC.], *id. t. c.* p. 283, Testigos I., W. Indies.

Elaphis grabowskyi, Fischer, = *E. teniurus*, Cope; BOULENGER, Ann. N. H. (5) xix, p. 170. *E. rodriguezii*, n. sp., BOCOURT, *t. c.* p. 168, figs., Rio Polochic, Guatemala.

Grayia furcata, n. sp., MOCQUARD, Bull. Soc. Philom. (7) xi, p. 71, Congo.

Tropidonotus sipedon, L., is viviparous; HEILPRIN, P. Ac. Philad. 1887, p. 21. *T. clarkii*, B. & G., occurs in Southern Louisiana; A. K. FISCHER, Am. Nat. xxi, p. 672. *T. taxispilotus*, n. var. *brocki*, HEILPRIN, Explor. in Florida, p. 129, pl. xvii, Eagle Bay, Florida. *T. bisectus*, n. sp., COPE, P. U. S. Nat. Mus. 1887, p. 146, Washington. *T. pryeri*, n. sp.,

BOULENGER, P. Z. S. 1887, p. 149, pl. xviii, fig. 3, Loo Choo Is. *T. flavifrons*, n. sp., *id.* Ann. N. H. (5) xx, p. 96, Kina Baloo, Borneo.

Scaphiophis albopunctatus, Ptrs. Notes by BOCAGE, J. Sci. Lisb. x, p. 195, and by MOCQUARD, Bull. Soc. Philom. (7) xi, p. 77.

Lytorhynchus, Ptrs. [= *Chatachlein*, Jan]. It is proposed that this genus should embrace *Acontiophis*, Gthr.; BOULENGER, Ann. N. H. (5) xx, p. 414. *L. ridgewayi*, n. sp., *id. t. c.* p. 413, Chin-kilak, Afghanistan.

Rhamphiophis multimaculatus, Smith. Notes by BŒTTGER, Ber. Senck. Ges. 1887, p. 158.

Psammophis sibilans, L. Notes on S. African specimens; *id. t. c.* p. 159. On specimens from the Congo; MOCQUARD, Bull. Soc. Philom. (7) xi, p. 78. *P. sibilans*, n. var. *stenocephalus*, p. 205, and *leopardinus*, p. 206, BOCAGE, *t. c.*, Mossamedes.

Psammodynastes, Gthr. On the 3 species of this genus; MOCQUARD, Bull. Soc. Philom. (7) xi, pp. 172–180.

Hapsidophrys lineatus, Fisch. Note by MOCQUARD, *t. c.* p. 76.

Heterolepis, Smith. A monograph of this genus by MOCQUARD, *t. c.*, pp. 5–34, pls. i & ii. 8 species are recognized, 3 of which are new, viz: *H. stenophthalmus*, p. 16, pl i, fig. 1, Assinie, Gold Coast, *guirali*, p. 23, pl. ii, fig. 3, Niger, and *savorgnani*, p. 27, pl. ii, fig. 4, Ogowé, n. spp.

Dirrhox, n. n. for *Callirhinus*, Gir., *nec* Cuv.; COPE, P. Am. Phil. Soc. xxiv, p. 58. *D. lativittatus*, n. sp., *id. t. c.* p. 58, Mato Grosso, Brazil.

Atomophis, n. g. for *Philodryas trilineatus*, Burm.; *id. t. c.* p. 58.

Dasypeltis fasciata, Smith, described by MOCQUARD, Bull. Soc. Philom. (7) xi, p. 81, and regarded as a variety of *D. scabra*, L. *D. scabra*, var. *subfasciata*, F. Müll.: notes by BŒTTGER, Ber. Senck. Ges. 1887, p. 61.

Leptognathus garmani, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 60, San Joao, Rio Grande do Sul, Brazil. *L.* (*Asthenognathus*) *grandoculis*, p. 271, pl. i, fig. 2, Guatemala, *L.* (*Tropidodipsas*) *berneullii*, p. 272, pl. i, fig. 3, Guatemala, *L.* (*T.*) *cucullicepa*, p. 273, pl. i, fig. 4, Vera Paz, and *L.* (*T.*) *subannulatus*, p. 274, pl. i, fig. 5, Mexico ?, n. spp., F. MÜLLER, Verh. Ges. Basel, viii.

Leptodira semiannulata, Smith. Notes by BŒTTGER, Ber. Senck. Ges. 1887, p. 162.

Lamprophis fiski, n. sp., BOULENGER, P. Z. S. 1887, p. 397, pl. xxxiv, Touw's River, Cape of Good Hope.

Boodon geometricus, Boie ?. On a specimen from Prince I., Guinea; BOCAGE, J. Sci. Lisb. x, p. 199.

Odontomus nympha ?, n. var. *ceylonensis*, F. MÜLLER, *t. c.* p. 269, Ceylon.

ELAPIDÆ.

Elaps hygiæ, D. & B., n. var. *chrysopoleoides*, F. MÜLLER, Verh. Ges. Basel, viii, p. 276, pl. ii, Cape of Good Hope. *E. heterochilus*, n. sp., MOCQUARD, Bull. Soc. Philom. (7) xi, p. 39, Brazil. *E. bernardi*, n. sp., COPE, Bull. U. S. Nat. Mus. No. 32, p. 87, Zacualtipan, Mexico. *E. ephippifer*, n. sp., COPE, P. Am. Phil. Soc. xxiii, p. 281, Isthmus of Tehuantepec.

Bungarus semifasciatus, Wagl.: notes on a Javan specimen. The

Chinese specimens so named by Günther belong to at least a distinct variety; F. Müller, Verh. Ges. Basel, viii, p. 276.

Naia nigricollis, Rhdt., p. 83, and *annulata*, Buchh. & Ptrs. (= *Aspidelaps bocagii*, Sauvg.), p. 84. Notes by Mocquard, Bull. Soc. Philom. (7) xi.

Walterinnesia, n. g., allied to *Naia* and *Pseudechis*, but without solid maxillary teeth; neck non-distensible; scales in straight series, keeled on the hind part of the body and on the tail; anal divided; first two subcaudals simple, rest divided. *W. ægyptia*, n. sp., Lataste, Le Nat. iii, p. 411, Cairo.

Pseudechis australis, Gray, figured by McCoy, Prodr. Zool. Vict. pl. cxlii.

Hoplocephalus curtus, Schleg.: record of a specimen containing 109 living young; Morton, Vict. Nat. iii, p. 75. *H. collaris*, n. sp., Mackay, P. Linn. Soc. N.S.W. (2) i, p. 1111, near Bèza, New South Wales, and *carpentariæ*, n. sp., *id.*, *op. cit.* ii, p. 403, Gulf of Carpentaria.

Elapsoidea hessei, n. sp., Boettger, Zool. Anz. x, p. 651, near Banana, Congo.

Atractaspis corpulenta, Hall.: note by Mocquard, Bull. Soc. Philom. (7) xi, p. 37. *A. irregularis*, var. *bibroni*, Smith: note by Boettger, Ber. Senck. Ges. 1887, p. 165. *A. congica*, Ptrs., described by Bocage, J. Sci. Lisb. x, p. 187. *A. dahomeyensis*, n. sp., *id. t. c.* p. 196, Dahomey.

Aspidelaps rhombeatus, Licht., p. 85, and *lichtensteinii*, Jan, p. 86; notes by Mocquard, *t. c.*

Hydrophiidæ.

Enhydrina valakadyen, Boie. J. E. H. Kelso, P. Phys. Soc. Edinb. cxvi, p. 385, records the case of a specimen of this Snake, which met its death in attempting to swallow a large Siluroid fish.

Hydrophis phipsoni, pp. 32 & 20, pl. —, Bombay Harbour, *guttata*, pp. 33 & 20, Mekran Coast, and *plumbea*, pp. 34 & 22, Mekran Coast, n. spp., J. A. Murray, J. Bomb. Soc. ii, & Ind. Ann. N. H. i. *H. taprobanica*, n. sp., Haly, Taprobanian, ii, p. 107, Colombo, Ceylon. *H. jayakari*, n. sp., Boulenger, Ann. N. H. (5) xx, p. 408, Muscat, Arabia.

Viperidæ.

Vipera caudalis, Smith, p. 167, and *cornuta*, Daud., p. 168: notes by Boettger, Ber. Senck. Ges. 1887.

Atheris squammigera, Hallow.: notes by Bocage, J. Sci. Lisb. x, p. 189. *A. anisolepis*, n. sp., Mocquard, Bull. Soc. Philom. (7) xi, p. 89, Congo. *A. læviceps*, n. sp., Boettger, Zool. Anz. x, p. 651, near Banana, Congo.

Trigonocephalus caribbæus, n. sp., Garman, P. Am. Phil. Soc. xxiv, p. 285, St. Lucia, W. Indies.

Bothrops glaucus, L. (= *lanceolatus*, Merr.): note on the coloration of the newly-born young; Vaillant, Bull. Soc. Philom. (7) xi, p. 48. *B. flaviviridis*, Hallow., described by Boulenger, P. Z. S. 1887, p. 149.

Trimeresurus erythrurus, Cant.: notes by F. Müller, Verh. Ges. Basel, viii, p. 280.

Tropidolæmus, sp., from Tandjong-Morawa, described by *id.*, *t. c.* p. 281.

BOULENGER, P. Z. S. 1887, p. 149, pl. xviii, fig. 3, Loo Choo Is. *T. flaviceps*, n. sp., *id.* Ann. N. H. (5) xx, p. 96, Kina Baloo, Borneo.

Scaphiophis albopunctatus, Ptrs. Notes by BOCAGE, J. Sci. Lisb. x, p. 195, and by MOCQUARD, Bull. Soc. Philom. (7) xi, p. 77.

Lytorhynchus, Ptrs. [= *Chatachlein*, Jan]. It is proposed that this genus should embrace *Acontiophis*, Gthr.; BOULENGER, Ann. N. H. (5) xx, p. 414. *L. ridgewayi*, n. sp., *id. t. c.* p. 413, Chin-kilak, Afghanistan.

Rhamphiophis multimaculatus, Smith. Notes by BŒTTGER, Ber. Senck. Ges. 1887, p. 158.

Psammophis sibilans, L. Notes on S. African specimens; *id. t. c.* p. 159. On specimens from the Congo; MOCQUARD, Bull. Soc. Philom. (7) xi, p. 78. *P. sibilans*, n. var. *stenocephalus*, p. 205, and *leopardinus*, p. 206, BOCAGE, *t. c.*, Mossamedes.

Psammodynastes, Gthr. On the 3 species of this genus; MOCQUARD, Bull. Soc. Philom. (7) xi, pp. 172–180.

Hapsidophrys lineatus, Fisch. Note by MOCQUARD, *t. c.* p. 76.

Heterolepis, Smith. A monograph of this genus by MOCQUARD, *t. c.*, pp. 5–34, pls. i & ii. 8 species are recognized, 3 of which are new, viz: *H. stenophthalmus*, p. 16, pl. i, fig. 1, Assinie, Gold Coast, *guirali*, p. 23, pl. ii, fig. 3, Niger, and *savorgnani*, p. 27, pl. ii, fig. 4, Ogowé, n. spp.

Dirrhox, n. n. for *Callixhinus*, Gir., *nec* Cuv.; COPE, P. Am. Phil. Soc. xxiv, p. 58. *D. lativittatus*, n. sp., *id. t. c.* p. 58, Mato Grosso, Brazil.

Atomophis, n. g. for *Philodryas trilineatus*, Burm.; *id. t. c.* p. 58.

Dasypeltis fasciata, Smith, described by MOCQUARD, Bull. Soc. Philom. (7) xi, p. 81, and regarded as a variety of *D. scabra*, L. *D. scabra*, var. *subfasciata*, F. Müll.: notes by BŒTTGER, Ber. Senck. Ges. 1887, p. 61.

Leptognathus garmani, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 60, San Joao, Rio Grande do Sul, Brazil. *L.* (*Asthenognathus*) *grandoculis*, p. 271, pl. i, fig. 2, Guatemala, *L.* (*Tropidodipsas*) *berneullii*, p. 272, pl. i, fig. 3, Guatemala, *L.* (*T.*) *cuculliceps*, p. 273, pl. i, fig. 4, Vera Paz, and *L.* (*T.*) *subannulatus*, p. 274, pl. i, fig. 5, Mexico ?, n. spp., F. MÜLLER, Verh. Ges. Basel, viii.

Leptodira semiannulata, Smith. Notes by BŒTTGER, Ber. Senck. Ges. 1887, p. 162.

Lamprophis fiski, n. sp., BOULENGER, P. Z. S. 1887, p. 397, pl. xxxiv, Touw's River, Cape of Good Hope.

Boodon geometricus, Boie ?. On a specimen from Prince I., Guinea; BOCAGE, J. Sci. Lisb. x, p. 199.

Odontomus nympha ?, n. var. *ceylonensis*, F. MÜLLER, *t. c.* p. 269, Ceylon.

ELAPIDÆ.

Elaps hygiæ, D. & B., n. var. *chrysopeleoides*, F. MÜLLER, Verh. Ges. Basel, viii, p. 276, pl. ii, Cape of Good Hope. *E. heterochilus*, n. sp., MOCQUARD, Bull. Soc. Philom. (7) xi, p. 39, Brazil. *E. bernardi*, n. sp., COPE, Bull. U. S. Nat. Mus. No. 32, p. 87, Zacualtipan, Mexico. *E. ephippifer*, n. sp., COPE, P. Am. Phil. Soc. xxiii, p. 281, Isthmus of Tehuantepec.

Bungarus semifasciatus, Wagl.: notes on a Javan specimen. The

Chinese specimens so named by Günther belong to at least a distinct variety; F. Müller, Verh. Ges. Basel, viii, p. 276.

Naia nigricollis, Rhdt., p. 83, and *annulata*, Büchh. & Ptrs. (= *Aspidelaps bocagii*, Sauvg.), p. 84. Notes by Mocquard, Bull. Soc. Philom. (7) xi.

Walterinnesia, n. g., allied to *Naia* and *Pseudechis*, but without solid maxillary teeth; neck non-distensible; scales in straight series, keeled on the hind part of the body and on the tail; anal divided; first two subcaudals simple, rest divided. *W. ægyptia*, n. sp., Lataste, Le Nat. iii, p. 411, Cairo.

Pseudechis australis, Gray, figured by McCoy, Prodr. Zool. Vict. pl. cxlii.

Hoplocephalus curtus, Schleg.: record of a specimen containing 109 living young; Morton, Viet. Nat. iii, p. 75. *H. collaris*, n. sp., Mackay, P. Linn. Soc. N.S.W. (2) i, p. 1111, near Bega, New South Wales, and *carpentariæ*, n. sp., *id.*, *op. cit.* ii, p. 403, Gulf of Carpentaria.

Elapsoidea hessei, n. sp., Boettger, Zool. Anz. x, p. 651, near Banana, Congo.

Atractaspis corpulenta, Hall.: note by Mocquard, Bull. Soc. Philom. (7) xi, p. 37. *A. irregularis*, var. *bibroni*, Smith: note by Boettger, Ber. Senck. Ges. 1887, p. 165. *A. congica*, Ptrs., described by Bocage, J. Sci. Lisb. x, p. 187. *A. dahomeyensis*, n. sp., *id. t. c.* p. 196, Dahomey.

Aspidelaps rhombeatus, Licht., p. 85, and *lichtensteinii*, Jan, p. 86; notes by Mocquard, *t. c.*

Hydrophiidæ.

Enhydrina valakadyen, Boie. J. E. H. Kelso, P. Phys. Soc. Edinb. cxvi, p. 385, records the case of a specimen of this Snake, which met its death in attempting to swallow a large Siluroid fish.

Hydrophis phipsoni, pp. 32 & 20, pl. —, Bombay Harbour, *guttata*, pp. 33 & 20, Mekran Coast, and *plumbea*, pp. 34 & 22, Mekran Coast, n. spp., J. A. Murray, J. Bomb. Soc. ii, & Ind. Ann. N. H. i. *H. taprobanica*, n. sp., Haly, Taprobanian, ii, p. 107, Colombo, Ceylon. *H. jayakari*, n. sp., Boulenger, Ann. N. H. (5) xx, p. 408, Muscat, Arabia.

Viperidæ.

Vipera caudalis, Smith, p. 167, and *cornuta*, Daud., p. 168: notes by Boettger, Ber. Senck. Ges. 1887.

Atheris squammigera, Hallow.: notes by Bocage, J. Sci. Lisb. x, p. 189. *A. anisolepis*, n. sp., Mocquard, Bull. Soc. Philom. (7) xi, p. 89, Congo. *A. laviceps*, n. sp., Boettger, Zool. Anz. x, p. 651, near Banana, Congo.

Trigonocephalus caribbæus, n. sp., Garman, P. Am. Phil. Soc. xxiv, p. 285, St. Lucia, W. Indies.

Bothrops glaucus, L. (= *lanceolatus*, Merr.): note on the coloration of the newly-born young; Vaillant, Bull. Soc. Philom. (7) xi, p. 48. *B. flavoviridis*, Hallow., described by Boulenger, P. Z. S. 1887, p. 149.

Trimeresurus erythrurus, Cant.: notes by F. Müller, Verh. Ges. Basel, viii, p. 280.

Tropidolæmus, sp., from Tandjong-Morawa, described by *id.*, *t. c.* p. 281.

Atropophis bornecensis, Ptrs.: notes by F. Müller, *l. c.* p. 282.

Ophryacus, n. g., for *Atropos undulatus*, Jan; Cope, Bull. U. S. Nat. Mus. No. 32, p. 88.

Crotalus horridus, n. var. *unicolor*, Van Lidth de Jeude, Notes Leyd. Mus. ix, p. 133, Aruba, Leeward Is.

DINOSAURIA.

G. Baur, J. Morph. i, p. 101, considers the Dinosaurs as forming the following principal groups:—

A. Carnivorous Dinosaurs, *Harpagosauria*, Haeckel.
I. *Goniopoda*, Cope (*Theropoda*, Marsh).
B. Herbivorous Dinosaurs, *Therosauria*, Haeckel.
II. *Orthopoda*, Cope.
1. *Ornithopoda*, Marsh.
2. *Stegosauria*, Marsh.
C. Crocodilian-like Dinosaurs, *Sauropoda*, Marsh.
III. *Opisthocœlia*, Owen.

H. G. Seeley, Geol. Mag. (3) iv, p. 562, states that the group *Dinosauria* has no existence, the constituent animals belonging to two orders which have no affinity, and are thus defined:—

1. *Omosauria*. Ventral border of the pubic bone notched out, so that one limb is directed backward parallel to the ischium, while the other limb is directed forward. The ilium has a slender prolongation in front of the acetabulum.

2. *Cetiosauria*. Pubes directed forward with a median symphysis, but with no posterior limb to the bone. The anterior prolongation of the ilium has a vertical expansion.

On the Wealden Dinosaurs of North Germany (*Hylæosaurus*, sp., *Megalosaurus dunkeri*, Dames, *Iguanodon*, sp., *Stenopelix valdensis*, H. v. Mey.); Koken, Pal. Abh. iii, pp. 314–327.

Marsh, O. C. Principal Characters of American Jurassic Dinosaurs. Part IX. The Skull and Dermal Armor of *Stegosaurus*. Am. Journ. Sci. (3) xxxiv, pp. 413–417, pls. vi–ix.

The *Stegosauria*, which include the two American genera *Stegosaurus*, Marsh, and *Diracodon*, Marsh, agree with the *Ornithopoda* in the presence of a predentary (= presymphysial) bone, and the well-developed post-pubis, and differ in having all the bones of the skeleton solid, the vertebræ all biconcave, a strong dermal armor, the second row of carpals and tarsals unossified, the astragulus co-ossified with the tibia, and the spinal cord greatly enlarged in the sacral region.

Stegosaurus stenops, p. 414, *sulcatus*, p. 415, and *duplex*, p. 416, n. spp., Marsh, *l. c.*, Jurassic of N. America.

Omosaurus durobrivensis, n. sp., Hulke, Q. J. Geol. Soc. xliii, p. 699, fig., Kimmeridge Clay of Northamptonshire.

Polacanthus foxii, Ow. Supplementary note by Hulke, Phil. Tr. clxxviii, pp. 169–172, pls. viii & ix, describing the dorsal and some parts

of the endoskeleton imperfectly known in 1881 ; it is shown to have possessed a more complete armature than any other Dinosaur yet described.

Aristosuchus, n. g., for *Poikilopleuron pusillus*, Ow. ; Seeley, Q. J. Geol. Soc. xliii, p. 221, pl. xii, figs. 13 & 14.

R. Lydekker, Q. J. Geol. Soc. xliii, pp. 156–160, remarks on a vertebral centrum from the Wealden Clay of Brook, Isle of Wight, provisionally referred to *Ornithopsis*, Seeley, and showing great resemblance to *Titanosaurus*, Lyd.

Ornithopsis leedsii, n. sp., Hulke, Q. J. Geol. Soc. xliii, p. 695, fig., Kimmeridge Clay of Northamptonshire.

Iguanodon, Mant. Dollo considers *I. seelyi*, Hulke, as unquestionably identical with *I. bernissartensis*, Blgr., and is inclined to regard the dermal scutes attributed to the former by Hulke, as those of some Crocodilian ; Arch. Biol. vii, p. 249. Dollo, *t. c.* pp. 249–264, pls. viii & 9, has a paper on the ossified ligaments of the vertebral column of the Bernissart Iguanodons. Seeley, Geol. Mag. (3) iv, pp. 80–87 & 124–130, reviews Dollo's contributions on the Iguanodons of Bernissart ; the reviewer expresses the opinion that *I. mantelli*, *bernissartensis*, and *prestwichii* should be regarded as the types of three distinct genera, and that the bones identified by Marsh as clavicles, and by Dollo as sternals, are neither of these elements, but probably xiphoid bones. In a later communication, *t. c.* p. 561, Seeley identifies these elements with the præ-pubic bones.

G. Smets, Muséon, vi, p. 133, writes on a jaw from the Sands of Aix-la-Chapelle (Upper Cretaceous), indicating a new Reptile, possibly related to the *Hadrosauridæ*.

Camarasaurus, Marsh : notes on this genus, which is regarded as unquestionably Dinosaurian and allied to *Megadactylus*, Hitchcock ; Cope, Am. Nat. xxi, pp. 367–369. *C. longicollis* and *lauri*, n. spp., *id. t. c.* p. 368, Upper Trias (?), New Mexico.

CROCODILIA.

E. Koken, Pal. Abh. iii, pp. 327–414, describes the Wealden Crocodilians of North Germany, and supplements his contribution with an account of the development of the brain and of the auditory organ in the genus *Macrorhynchus*, and with remarks on the classification of the *Crocodilia*, giving his reasons against the subordinal separation into *Mesosuchia* and *Eusuchia*.

Lydekker, R. Note on the Hordwell and other Crocodilians. Geol. Mag. (3) iv, pp. 307–312.

The Crocodilians are proposed to be grouped as follows :—

A. Suborder Crocodilia vera.

a. Procœlian : *Crocodilidæ*.

b. Amphicœlian : *Goniopholidæ*, *Teleosauridæ*.

B. Suborder Parasuchia.

Belodontidæ, *Parasuchidæ*, *Stagonolepididæ*.

Goniopholis pugnax, p. 377, pls. xxxv, figs. 3 & 4, & xxxvii, figs. 10–12,

Atropophis formosensis, Ptrs.: notes by F. Müller, *l. c.* p. 282.

Ophryacus, n. g., for *Atropos undulatus*, Jan; Cope, Bull. U. S. Nat. Mus. No. 32, p. 88.

Crotalus horridus, n. var. *unicolor*, Van Lidth de Jeude, Notes Leyd. Mus. ix, p. 133, Aruba, Leeward Is.

DINOSAURIA.

G. Baur, J. Morph. i, p. 101, considers the Dinosaurs as forming the following principal groups:—

A. Carnivorous Dinosaurs, *Harpagosauria*, Haeckel.
   I. *Goniopoda*, Cope (*Theropoda*, Marsh).
B. Herbivorous Dinosaurs, *Therosauria*, Haeckel.
   II. *Orthopoda*, Cope.
      1. *Ornithopoda*, Marsh.
      2. *Stegosauria*, Marsh.
C. Crocodilian-like Dinosaurs, *Sauropoda*, Marsh.
   III. *Opisthocœlia*, Owen.

H. G. Seeley, Geol. Mag. (3) iv, p. 562, states that the group *Dinosauria* has no existence, the constituent animals belonging to two orders which have no affinity, and are thus defined:—

1. *Omosauria*. Ventral border of the pubic bone notched out, so that one limb is directed backward parallel to the ischium, while the other limb is directed forward. The ilium has a slender prolongation in front of the acetabulum.

2. *Cetiosauria*. Pubes directed forward with a median symphysis, but with no posterior limb to the bone. The anterior prolongation of the ilium has a vertical expansion.

On the Wealden Dinosaurs of North Germany (*Hylæosaurus*, sp., *Megalosaurus dunkeri*, Dames, *Iguanodon*, sp., *Stenopelix valdensis*, H. v. Mey.): Koken, Pal. Abh. iii, pp. 314–327.

Marsh, O. C. Principal Characters of American Jurassic Dinosaurs. Part IX. The Skull and Dermal Armor of *Stegosaurus*. Am. Journ. Sci. (3) xxxiv, pp. 413–417, pls. vi–ix.

The *Stegosauria*, which include the two American genera *Stegosaurus*, Marsh, and *Diracodon*, Marsh, agree with the *Ornithopoda* in the presence of a predentary (= presymphysial) bone, and the well-developed post-pubis, and differ in having all the bones of the skeleton solid, the vertebræ all biconcave, a strong dermal armor, the second row of carpals and tarsals unossified, the astragulus co-ossified with the tibia, and the spinal cord greatly enlarged in the sacral region.

Stegosaurus stenops, p. 414, *sulcatus*, p. 415, and *duplex*, p. 416, n. spp., Marsh, *l. c.*, Jurassic of N. America.

Omosaurus durobrivensis, n. sp., Hulke, Q. J. Geol. Soc. xliii, p. 699, fig., Kimmeridge Clay of Northamptonshire.

Polacanthus foxii, Ow. Supplementary note by Hulke, Phil. Tr. clxxviii, pp. 169–172, pls. viii & ix, describing the dorsal and some parts

of the endoskeleton imperfectly known in 1881 ; it is shown to have possessed a more complete armature than any other Dinosaur yet described.

Aristosuchus, n. g., for *Poikilopleuron pusillus*, Ow. ; Seeley, Q. J. Geol. Soc. xliii, p. 221, pl. xii, figs. 13 & 14.

R. Lydekker, Q. J. Geol. Soc. xliii, pp. 156–160, remarks on a vertebral centrum from the Wealden Clay of Brook, Isle of Wight, provisionally referred to *Ornithopsis*, Seeley, and showing great resemblance to *Titanosaurus*, Lyd.

Ornithopsis leedsii, n. sp., Hulke, Q. J. Geol. Soc. xliii, p. 695, fig., Kimmeridge Clay of Northamptonshire.

Iguanodon, Mant. Dollo considers *I. seelyi*, Hulke, as unquestionably identical with *I. bernissartensis*, Blgr., and is inclined to regard the dermal scutes attributed to the former by Hulke, as those of some Crocodilian ; Arch. Biol. vii, p. 249. Dollo, *t. c.* pp. 249–264, pls. viii & 9, has a paper on the ossified ligaments of the vertebral column of the Bernissart Iguanodons. Seeley, Geol. Mag. (3) iv, pp. 80–87 & 124–130, reviews Dollo's contributions on the Iguanodons of Bernissart ; the reviewer expresses the opinion that *I. mantelli*, *bernissartensis*, and *prestwichii* should be regarded as the types of three distinct genera, and that the bones identified by Marsh as clavicles, and by Dollo as sternals, are neither of these elements, but probably xiphoid bones. In a later communication, *t. c.* p. 561, Seeley identifies these elements with the præ-pubic bones.

G. Smets, Muséon, vi, p. 133, writes on a jaw from the Sands of Aix-la-Chapelle (Upper Cretaceous), indicating a new Reptile, possibly related to the *Hadrosauridæ*.

Cœlurus, Marsh : notes on this genus, which is regarded as unquestionably Dinosaurian and allied to *Megadactylus*, Hitchcock ; Cope, Am. Nat. xxi, pp. 367–369. *C. longicollis* and *bauri*, n. spp., *id. t. c.* p. 368, Upper Trias (?), New Mexico.

CROCODILIA.

E. Koken, Pal. Abh. iii, pp. 327–414, describes the Wealden Crocodilians of North Germany, and supplements his contribution with an account of the development of the brain and of the auditory organ in the genus *Macrorhynchus*, and with remarks on the classification of the *Crocodilia*, giving his reasons against the subordinal separation into *Mesosuchia* and *Eusuchia*.

Lydekker, R. Note on the Hordwell and other Crocodilians. Geol. Mag. (3) iv, pp. 307–312.

The Crocodilians are proposed to be grouped as follows :—

A. Suborder Crocodilia vera.

a. Procœlian : *Crocodilidæ*.

b. Amphicœlian : *Goniopholidæ*, *Teleosauridæ*.

B. Suborder Parasuchia.

Belodontidæ, *Parasuchidæ*, *Stagonolepididæ*.

Goniopholis pugnax, p. 377, pls. xxxv, figs. 3 & 4, & xxxvii, figs. 10–12,

and *minor*, p. 332, pl. xxxv, fig. 5, & xxxvii, fig. 9, n. spp. (foss.), KOKEN, *t. c.*, Wealden (Hastings Group) of North Germany.

Hylæochampsa, Ow., and *Bernissartia*, Dollo. (foss.). LYDEKKER, *t. c.* p. 310, having expressed the opinion that these two genera are identical, DOLLO, *t. c.* p. 394, points out their differential characters. LYDEKKER, *t. c.* p. 512, accepting Dollo's view, puts the question whether the vertebræ of *Heterosuchus* may not belong to *Hylæochampsa*.

Heterosuchus, n. g. (foss.), for procœlian Crocodilian vertebræ, showing approximations towards Dinosaurian types of Wealden age. *H. valdensis*, n. sp., SEELEY, Q. J. Geol. Soc. xliii, p. 212, pl. xii, figs. 7 & 8, Hastings Sand, Hastings.

Diplocynodon, Pomel (foss.) : notes on the various species ; LYDEKKER, *t. c.* p. 308.

Jacare nigra, Gray : notes on the skull ; KOKEN, SB. nat. Fr. 1887, p. 31.

Crocodilus champsoides, Ow., and *toliapicus*, Ow., = *C. spenceri*, Buckl. (foss.) ; LYDEKKER, *t. c.* p. 310.

On a fossil skull of a Crocodile (*Crocodilus*, n. sp. ?), from the province of Modena ; G. UZIELLI, Boll. Soc. Geol. Ital. v, pp. 355–361, pls. ix & x.

CHELONIA.

G. BAUR writes on the systematic position of the *Trionychidæ*, and on the structure of the cervical vertebræ in Chelonians. It is proposed to divide the *Chelonia* into two primary groups, viz. :—

1. DIACOSTOIDEA (*Trionychidæ*). Entoplastron without mesial process ; sacral and caudal ribs with well-developed diapophyses, connected with the neural arch ; more than three phalanges in the fourth digit.
2. PARADIACOSTOIDEA. Entoplastron, if present, with mesial process ; sacral and caudal ribs connected with the neural arch and with the centrum ; never more than three phalanges.

The Pleurodiran Chelonians are shown to fall into two groups, according to the mode of articulation of the cervical vertebræ, which character is connected with the presence or absence of mesoplastral bones. Zool. Anz. x, pp. 96–102.

BAUR, G. On the Morphogeny of the Carapace of the *Testudinata*. Am. Nat. xxi, p. 89.

That the carapace of the '*Thecophora*' (Dollo) has developed from the carapace of the *Athecæ*, is proved by a specimen of *Eretmochelys imbricata*. *Psephoderma*, v. Mey., is regarded as a form intermediate between the *Dermatochelydæ* and '*Thecophora*.' [A totally different view is held by BAUR in his notes in the Zool. Anz. for 1886 and 1888.—REC.]

SMETS, G. Les Chéloniens. Rev. Quest. Sc. xxi, pp. 382–408.

An aperçu of the structure and distribution of the Chelonians. Compilation.

G. SMETS also writes on the caudal vertebræ of Land Tortoises. Muséon, vi, pp. 394–398.

G. FETTEROLF, Am. Nat. xxi, pp. 1126 & 1127, has made the very important discovery of the rudimental pineal eye in embryos of Chelonians (*Chrysemys picta* and *Cinosternum pensylvanicum*).

K. MITSUKURI & C. ISHIKAWA's memoir on the formation of the germinal layers in Chelonia, noticed in the preceding record [p. 7], is republished in J. Coll. Sci. Japan, i, pp. 211–246, pls. xiv–xvii.

MILLS, T. W. The Rhythm and Innervation of the Heart of the Sea-Turtle. Can. Rec. ii, pp. 306–323 & 329–333, pl. —.

A reprint of the paper noticed in the preceding record, p. 7.

LORTET, L. Observations sur les Tortues terrestres et Paludines du Bassin de la Méditerranée. Arch. Mus. Lyon, iv, pp. 1–26, pls. i–viii.

R. LYDEKKER & G. A. BOULENGER, Geol. Mag. (3) iv, pp. 270–275, have notes on Chelonia from the Purbeck, Wealden, and London Clay.

TRIONYCHOIDEA.

Trionyx javanicus, Schw.: notes on a specimen from Sumatra; BOETTGER, Ber. Senck. Ges. 1887, p. 39. *T. bruxellensis*, Winkl. (foss.): notes by SMETS, Ann. Soc. Sc. Brux. xi, p. 309.

PLEURODIRA.

Podocnemis, Wagl. *Emys conybeari*, Ow. (foss.), and probably *Platemys bowerbanki*, Ow. (foss.), are to be referred to this genus: LYDEKKER & BOULENGER, *t. c.* p. 275. *P. indica*, n. sp. (foss.), LYDEKKER, Mem. Geol. Surv. Ind. (10) iv, p. 63, pl. xiii, Lower Eocene (?), Punjab Salt Range.

Pleurosternum, Ow. (foss.), is a Pleurodiran, as stated by Rütimeyer; not a Cryptodiran, as stated by Cope: LYDEKKER & BOULENGER, *t. c.* p. 271. COPE, *t. c.* p. 573, observes that he has restricted the genus *Pleurosternum* to *P. concinnum*, which he regarded as Cryptodiran.

Plesiochelys, Rütim. (foss.), *Pleurosternum emarginatum*, Ow., is referred to this genus, which is represented in the Wealden of England by remains of other species; LYDEKKER & BOULENGER, *t. c.* p. 272.

CARETTOCHELYDIDÆ. Under this name, a new family is established by BOULENGER, to receive *Carettochelys*, Ramsay, which is characterised as a Pleurodiran without epidermic scutes, and with the limbs paddle-shaped and containing only two claws; Ann. N. H. (5) xix, p. 171.

Carettochelys, n. g. (*Carettochelyd.*). Vertebral bones in contact, not these Reptiles covered by the costals; LYDEKKER, Rec. Geol. Surv. Ind. xx, p. 66, and Mem. Geol. Surv. Ind. (10) iv, p. 61. *H. warthi*, n. sp. (foss), *id. tt. cc.* pp. 66 & 62, pl. xii, Lower Eocene (?), Punjab Salt-Range.

Miolania, Owen (foss.). Descriptions of remains from Lord Howe's I. (*M. minor* and *platyceps*); OWEN, Phil. Tr. clxxvii, pp. 471–480, pls.

and *minor*, p. 332, pl. xxxv, fig. 5, & xxxvii, fig. 9, n. spp. (foss.), KOKEN, *t. c.*, Wealden (Hastings Group) of North Germany.

Hylæochampsa, Ow., and *Bernissartia*, Dollo. (foss.). LYDEKKER, *t. c.* p. 310, having expressed the opinion that these two genera are identical, DOLLO, *t. c.* p. 394, points out their differential characters. LYDEKKER, *t. c.* p. 512, accepting Dollo's view, puts the question whether the vertebræ of *Heterosuchus* may not belong to *Hylæochampsa*.

Heterosuchus, n. g. (foss.), for procœlian Crocodilian vertebræ, showing approximations towards Dinosaurian types of Wealden age. *H. valdensis*, n. sp., SEELEY, Q. J. Geol. Soc. xliii, p. 212, pl. xii, figs. 7 & 8, Hastings Sand, Hastings.

Diplocynodon, Pomel (foss.) : notes on the various species ; LYDEKKER, *t. c.* p. 308.

Jacare nigra, Gray : notes on the skull ; KOKEN, SB. nat. Fr. 1887, p. 31.

Crocodilus champsoides, Ow., and *toliapicus*, Ow., = *C. spenceri*, Buckl. (foss.) ; LYDEKKER, *t. c.* p. 310.

On a fossil skull of a Crocodile (*Crocodilus*, n. sp. ?), from the province of Modena ; G. UZIELLI, Boll. Soc. Geol. Ital. v, pp. 355–361, pls. ix & x.

CHELONIA.

G. BAUR writes on the systematic position of the *Trionychidæ*, and on the structure of the cervical vertebræ in Chelonians. It is proposed to divide the *Chelonia* into two primary groups, viz. :—

1. DIACOSTOIDEA (*Trionychidæ*). Entoplastron without mesial process ; sacral and caudal ribs with well-developed diapophyses, connected with the neural arch ; more than three phalanges in the fourth digit.
2. PARADIACOSTOIDEA. Entoplastron, if present, with mesial process ; sacral and caudal ribs connected with the neural arch and with the centrum ; never more than three phalanges.

The Pleurodiran Chelonians are shown to fall into two groups, according to the mode of articulation of the cervical vertebræ, which character is connected with the presence or absence of mesoplastral bones. Zool. Anz. x, pp. 96–102.

BAUR, G. On the Morphogeny of the Carapace of the *Testudinata*. Am. Nat. xxi, p. 89.

That the carapace of the '*Thecophora*' (Dollo) has developed from the carapace of the *Athecæ*, is proved by a specimen of *Eretmochelys imbricata*. *Psephoderma*, v. Mey., is regarded as a form intermediate between the *Dermatochelydæ* and '*Thecophora*.' [A totally different view is held by BAUR in his notes in the Zool. Anz. for 1886 and 1888.—REC.]

SMETS, G. Les Chéloniens. Rev. Quest. Sc. xxi, pp. 382–408.

An aperçu of the structure and distribution of the Chelonians. Compilation.

G. SMETS also writes on the caudal vertebræ of Land Tortoises. Muséon, vi, pp. 394–398.

G. FETTEROLF, Am. Nat. xxi, pp. 1126 & 1127, has made the very important discovery of the rudimental pineal eye in embryos of Chelonians (*Chrysemys picta* and *Cinosternum pensylvanicum*).

K. MITSUKURI & C. ISHIKAWA's memoir on the formation of the germinal layers in Chelonia, noticed in the preceding record [p. 7], is republished in J. Coll. Sci. Japan, i, pp. 211–246, pls. xiv–xvii.

MILLS, T. W. The Rhythm and Innervation of the Heart of the Sea-Turtle. Can. Rec. ii, pp. 306–323 & 329–333, pl. —.

A reprint of the paper noticed in the preceding record, p. 7.

LORTET, L. Observations sur les Tortues terrestres et Paludines du Bassin de la Méditerranée. Arch. Mus. Lyon, iv, pp. 1–26, pls. i–viii.

R. LYDEKKER & G. A. BOULENGER, Geol. Mag. (3) iv, pp. 270–275, have notes on Chelonia from the Purbeck, Wealden, and London Clay.

TRIONYCHOIDEA.

Trionyx javanicus, Schw.: notes on a specimen from Sumatra; BOETTGER, Ber. Senck. Ges. 1887, p. 39. *T. bruxellensis*, Winkl. (foss.): notes by SMETS, Ann. Soc. Sc. Brux. xi, p. 309.

PLEURODIRA.

Podocnemis, Wagl. *Emys conybeari*, Ow. (foss.), and probably *Platemys bowerbanki*, Ow. (foss.), are to be referred to this genus; LYDEKKER & BOULENGER, *t. c.* p. 275. *P. indica*, n. sp. (foss.), LYDEKKER, Mem. Geol. Surv. Ind. (10) iv, p. 63, pl. xiii, Lower Eocene (?), Punjab Salt Range.

Pleurosternum, Ow. (foss.), is a Pleurodiran, as stated by Rütimeyer; not a Cryptodiran, as stated by Cope: LYDEKKER & BOULENGER, *t. c.* p. 271. COPE, *t. c.* p. 573, observes that he has restricted the genus *Pleurosternum* to *P. concinnum*, which he regarded as Cryptodiran.

Plesiochelys, Rütim. (foss.), *Pleurosternum marginatum*, Ow., is referred to this genus, which is represented in the Wealden of England by remains of other species; LYDEKKER & BOULENGER, *t. c.* p. 272.

CARETTOCHELYDIDÆ. Under this name, a new family is established by BOULENGER, to receive *Carettochelys*, Ramsay, which is characterised as a Pleurodiran without epidermic scutes, and with the limbs paddle-shaped and containing only two claws; Ann. N. H. (5) xix, p. 171.

Carettochelys, n. g. (*Carettochelyd.*). Vertebral bones in contact, not separated by the costals; LYDEKKER, Rec. Geol. Surv. Ind. xx, p. 66, and Mem. Geol. Surv. Ind. (10) iv, p. 61. *H. warthi*, n. sp. (foss), *id. tt. cc.* pp. 66 & 62, pl. xii, Lower Eocene (?), Punjab Salt-Range.

Miolania, Owen (foss.). Descriptions of remains from Lord Howe's I. (*M. minor* and *platyceps*); OWEN, Phil. Tr. clxxvii, pp. 471–480, pls.

xxix–xxxii. These bones, regarded by Owen as those of gigantic Lizards, are shown by HUXLEY, P. R. S. xlii, pp. 232–238, figs., to be Chelonian. The caudal vertebræ were opisthocœlous, and the Reptile is on this account referred to the Chelydroids (*Chelydra and Platysternum*). The new generic and specific name *Ceratochelys sthenurus*, is proposed for the remains from Lord Howe's I. R. OWEN, P. Roy. Soc. xlii, p. 297 (Abstract), reporting on additional remains of *Miolania platyceps*, Ow., regards *Megalania* and *Miolania* as more nearly akin to the Saurian division of the class Reptilia, in which he proposes to refer them to a new suborder, *Ceratosauria*. BOULENGER, P. Z. S. 1887, p. 554, refers the genus *Miolania* to the *Pleurodira*, and makes it the type of a family, *Miolaniidæ*, characterized by opisthocœlous caudal vertebræ.

Proganochelys quenstedtii, n. g. & sp. (foss.) [? = *Chelytherium*, H. v. Mey.], for Pleurodiran remains from the Keuper of Württemberg; BAUR, Ber. xx. Versamml. Oberrhein. geol. Ver.

CRYPTODIRA.

Testudo, L. BOULENGER remarks on the South African Tortoises allied to *T. geometrica*, characterizing 7 species, viz., *geometrica*, L., *tentoria*, Bell, *trimeni*, n. sp., p. 541, pl. lvii, mouth of the Orange River, *verreauxii*, Smith, *smithi*, n. sp., p. 542, *fiski*, n. sp., p. 542, pl. lviii, De Aar, near Hopetown, and *semiserrata*; Smith; P. Z. S. 1886, pp. 540–542. *T. angulata*, Schw., p. 137, *semiserrata*, Smith, p. 138, and *verreauxi*, Smith, p. 139; notes by BŒTTGER, Ber. Senck. Ges. 1887. *T. ibera*, Pall., pl. i, *græca*, L., pl. ii, *marginata*, Schoepff, pls. iii & iv, and *kleinmanni*, Lortet [= *leithii*, Gthr.], pl. v. figured by LORTET, *t. c.* *T. perpiniana*, Depéret (foss.); notes by DEPÉRET & DONNEGAN, C.R. cv, p. 1275, and GAUDRY, *t. c.* p. 1225.

Cistudo carolina, L. W. T. DAVIS, Am. Nat. xxi, p. 88, points out a sexual characteristic in the colour of the eyes, males having the iris red, females brown or grey. [Previously noticed by Wied-Neuwied in 1865. —REC.]

Emys, Dum. On the distinctive characters of *E. orbicularis*, L., and *E. blandingii*, Holbr.; BOULENGER, P. Z. S. 1887, p. 555, pl. l. *E. europæa*, Schn. (= *orbicularis*, L.), figured by LORTET, *t. c.* pl. vi. On quarternary remains from the Lignite of Leffe, Lombardy; A. PORTIS, Boll. Comit. Geol. 1887, p. 50.

Clemmys caspica, Gm. [var. *rivulata*], pl. viii, and *sigriz*, D. & B., pl. vii, figured by LORTET, *t. c.* *C. muhlenbergii*, Schw., found at Lake George New York; A. K. FISCHER, Am. Nat. xxi, p. 672.

Emys bicarinata, Ow. & Bell (foss.), is a true Emydian; LYDEKKER & BOULENGER, *t. c.* p. 275.

Cinosternum, Wagl. A species of this genus is recorded from Held by GARMAN, P. Am. Phil. Soc. xxiv, p. 286. *C. postinguinale*, n. n. *brevigulare*, Cope, *nec* Gthr.; COPE, Bull. U. S. Nat. Mus. No. 32, p. 23.

Staurotypus, Wagl. COPE, *t. c.* p. 23, refers *Staurotypus* to the family *Cinosternidæ* of his suborder. *Chidosterna*, and *Claudius* to the family *Chelydridæ*, suborder *Dactylosterna*.

Platysternum, Gray. Notes on the osteology of this genus, which is regarded as the type of a distinct family, *Platysternidæ*. *P. peguense*, Gray, = *P. megacephalum*, Gray; Boulenger, Ann. N. H. (5) xix, pp. 461–463, pls. xvi & xvii.

Tretosternum, Ow. (foss.). This genus is a Cryptodiran, apparently related to the *Chelydridæ*. *Peltochelys duchastelii*, Dollo, = *Tretosternum bakewellii*, Mant.; Lydekker & Boulenger, *t. c.* p. 273. Dollo, *t. c.* p. 394, demurs to this identification.

Pseudotrionyx delheidi, Dollo (foss.). A specimen from the London Clay is recorded by Lydekker & Boulenger, *t. c.* p. 274.

Chelonia lata, n. sp., Philippi, Zool. Gart. xxviii, p. 84, Valparaiso.

Thalassochelys tarapacona, n. sp., Philippi, *t. c.* p. 85, Iquique, Chili.

Chelone (*Bryochelys*) *waterkeynii*, Van Ben. (foss.). Note by Smets, Ann. Soc. Brux. xi, p. 291, figs.

Chelyopsis littoreus (Van Ben., MS.), n. g. & sp. (foss.), for some stray bones from the Rupelian clay of Basele, Belgium; Smets, *t. c.* p. 303, figs.

Erquelinnesia, n. n. for *Pachyrhynchus*, Dollo preoccupied; Dollo, Rev. Quest. Sc. xxii, p. 80. Further notes on these fossil Chelonians, the nearest ally of which appears to be *Euclastes*, Cope; *id. t. c.* pp. 70–81, and Geol. Mag. (3) iv. p. 393. Cope, Geol. Mag. (3) iv, p. 573, regards both *Euclastes* and *Erquelinnesia* as belonging to his family *Propleuridæ*.

ATHECÆ.

A. S. Woodward reviews our knowledge of the *Athecæ*, recent and fossil; P. Geol. Ass. x, pp. 2–14.

L. Dollo, in an article entitled 'Psephophorus,' Ann. Soc. Brux. xi, pp. 139–176, discusses the characters and systematic position of the suborder *Athecæ*, refuting Baur's views on the subject. The characters of the various genera are discussed.

Dermatochelys coriacea, L.: note on a specimen from the Essex Coast, N. America; Sears, Bull. Essex Inst. xviii, pp. 87–94 [1886].

Psephophorus (= *Macrochelys*, Van Ben., *nec* Gray) *scaldii*, Van Ben., and *rupeliensis*, Van Ben. (foss.). Notes by Dollo, *t. c.* p. 140.

ICHTHYOSAURIA.

Baur, G. (1) and beg. Hemi- phology and Origin of the *Ichthyopterygia*, Am. Nat. x: separate?

Contains important additions to our knowledge of the osteology of these Reptiles, which are regarded as developed from land-living Reptiles, which very much approached the *Sphenodontidæ* (*Rhynchocephalia*). The following classification is proposed:—

1. *Mixosauridæ*, n. fam. (*Mixosaurus*, n. g. for *Ichthyosaurus cornalianus*, Bassani); 2. *Ichthyosauridæ* (*Ichthyosaurus*, Kœnig); 3. *Baptanodontidæ* (*Baptanodon*, Marsh.).

xxix–xxxii. These bones, regarded by Owen as those of gigantic Lizards, are shown by HUXLEY, P. R. S. xlii, pp. 232–238, figs., to be Chelonian. The caudal vertebræ were opisthocœlous, and the Reptile is on this account referred to the Chelydroids (*Chelydra and Platysternum*). The new generic and specific name *Ceratochelys sthenurus*, is proposed for the remains from Lord Howe's I. R. OWEN, P. Roy. Soc. xlii, p. 297 (Abstract), reporting on additional remains of *Miolania platyceps*, Ow., regards *Megalania* and *Miolania* as more nearly akin to the Saurian division of the class Reptilia, in which he proposes to refer them to a new subborder, *Ceratosauria*. BOULENGER, P. Z. S. 1887, p. 554, refers the genus *Miolania* to the *Pleurodira*, and makes it the type of a family, *Miolaniidæ*, characterized by opisthocœlous caudal vertebræ.

Proganochelys quenstedtii, n. g. & sp. (foss.) [? = *Chelytherium*, H. v. Mey.], for Pleurodiran remains from the Keuper of Württemberg; BAUR, Ber. xx. Versamml. Oberrhein. geol. Ver.

CRYPTODIRA.

Testudo, L. BOULENGER remarks on the South African Tortoises allied to *T. geometrica*, characterizing 7 species, viz., *geometrica*, L., *tentoria*, Bell, *trimeni*, n. sp., p. 541, pl. lvii, mouth of the Orange River, *verreauxii*, Smith, *smithi*, n. sp., p. 542, *fiski*, n. sp., p. 542, pl. lviii, De Aar, near Hopetown, and *semiserrata*, Smith; P. Z. S. 1886, pp. 540–542. *T. angulata*, Schw., p. 137, *semiserrata*, Smith, p. 138, and *verreauxi*, Smith, p. 139; notes by BÖTTGER, Ber. Senck. Ges. 1887. *T. ibera*, Pall., pl. i, *græca*, L., pl. ii, *marginata*, Schoepff, pls. iii & iv, and *kleinmanni*, Lortet [= *leithii*, Gthr.], pl. v. figured by LORTET, *t. c.* *T. perpiniana*, Depéret (foss.); notes by DEPÉRET & DONNEGAN, C. R. cv, p. 1275, and GAUDRY, *t. c.* p. 1225.

Cistudo carolina, L. W. T. DAVIS, Am. Nat. xxi, p. 88, points out a sexual characteristic in the colour of the eyes, males having the iris red, females brown or grey. [Previously noticed by Wied-Neuwied in 1865. —REC.].

Emys, Dum. On the distinctive characters of *E. orbicularis*, L., and *E. blandingii*, Holbr.; BOULENGER, P. Z. S. 1887, p. 555, pl. l. *E. europæa*, Schn. (= *orbicularis*, L.), figured by LORTET, *t. c.* pl. vi. On quarternary remains from the Lignite of Leffe, Lombardy; A. PORTIS, Boll. Comit. Geol. 1887, p. 50.

Clemmys caspica, Gm. [var. *rivulata*], pl. viii, and *sigriz*, D. & B., pl. vii, figured by LORTET, *t. c.* *C. muhlenbergii*, Schw., found at Lake George New York; A. K. FISCHER, Am. Nat. xxi, p. 672.

Emys bicarinata, Ow. & Bell (foss.), is a true Emydian; LYDEKKER & BOULENGER, *t. c.* p. 275.

Cinosternum, Wagl. A species of this genus is recorded from Held by GARMAN, P. Am. Phil. Soc. xxiv, p. 286. *C. postinguinale*, n. n. *C. brevigulare*, Cope, *nec* Gthr.; COPE, Bull. U. S. Nat. Mus. No. 32, p. 23.

Staurotypus, Wagl. COPE, *t. c.* p. 23, refers *Staurotypus* to the family *Cinosternidæ* of his suborder *Chidosterna*, and *Claudius* to the family *Chelydridæ*, suborder *Dactylosterna*.

Platysternum, Gray. Notes on the osteology of this genus, which is regarded as the type of a distinct family, *Platysternidæ*. *P. peguense*, Gray, = *P. megacephalum*, Gray; Boulenger, Ann. N. H. (5) xix, pp. 461–463, pls. xvi & xvii.

Tretosternum, Ow. (foss.). This genus is a Cryptodiran, apparently related to the *Chelydridæ*. *Peltochelys duchastelii*, Dollo, = *Tretosternum bakewellii*, Mant.; Lydekker & Boulenger, *t. c.* p. 273. Dollo, *t. c.* p. 394, demurs to this identification.

Pseudotrionyx delheidi, Dollo (foss.). A specimen from the London Clay is recorded by Lydekker & Boulenger, *t. c.* p. 274.

Chelonia lata, n. sp., Philippi, Zool. Gart. xxviii, p. 84, Valparaiso.

Thalassochelys tarapacona, n. sp., Philippi, *t. c.* p. 85, Iquique, Chili.

Chelone (*Bryochelys*) *waterkeynii*, Van Ben. (foss.). Note by Smets, Ann. Soc. Brux. xi, p. 291, figs.

Chelyopsis littoreus (Van Ben., MS.), n. g. & sp. (foss.), for some stray bones from the Rupelian clay of Basele, Belgium; Smets, *t. c.* p. 303, figs.

Erquelinnesia, n. n. for *Pachyrhynchus*, Dollo preoccupied; Dollo, Rev. Quest. Sc. xxii, p. 80. Further notes on these fossil Chelonians, the nearest ally of which appears to be *Euclastes*, Cope; *id. t. c.* pp. 70–81, and Geol. Mag. (3) iv. p. 393. Cope, Geol. Mag. (3) iv, p. 573, regards both *Euclastes* and *Erquelinnesia* as belonging to his family *Propleuridæ*.

ATHECÆ.

A. S. Woodward reviews our knowledge of the *Athecæ*, recent and fossil; P. Geol. Ass. x, pp. 2–14.

L. Dollo, in an article entitled 'Psephophorus,' Ann. Soc. Brux. xi, pp. 139–176, discusses the characters and systematic position of the suborder *Athecæ*, refuting Baur's views on the subject. The characters of the various genera are discussed.

Dermatochelys coriacea, L.: note on a specimen from the Essex Coast, N. America; Sears, Bull. Essex Inst. xviii, pp. 87–94 [1886].

Psephophorus (= *Macrochelys*, Van Ben., *nec* Gray) *scaldii*, Van Ben., and *rupeliensis*, Van Ben. (foss.). Notes by Dollo, *t. c.* p. 140.

ICHTHYOSAURIA.

Baur, G. On the Morphology and Origin of the *Ichthyopterygia*, Am. Nat. xxi, pp. 837–840.

Contains important additions to our knowledge of the osteology of these Reptiles, which are regarded as developed from land-living Reptiles, which very much approached the *Sphenodontidæ* (*Rhynchocephalia*). The following classification is proposed:—

1. *Mixosauridæ*, n. fam. (*Mixosaurus*, n. g. for *Ichthyosaurus cornalianus*, Bassani); 2. *Ichthyosauridæ* (*Ichthyosaurus*, Kœnig); 3. *Baptanodontidæ* (*Baptanodon*, Marsh.).

[Baur, G.] Ueber den Ursprung der Extremitaten der Ichthyopterygia. Ber. xx. Versamml. Oberrhein. geol. Ver. [Quoted from a separate copy.]

H. E. Sauvage describes and figures the pectoral arch of an *Ichthyosaurus* from the Lias of Watchet, Somersetshire. Bull. Soc. géol. Fr. (3) xv, pp. 726–728, pl. xxvi.

PLESIOSAURIA.

H. G. Seeley, Geol. Mag. (3) iv, p. 562, announces his discovery that *Plesiosaurus* was viviparous.

E. D. Cope, Am. Nat. xxi, pp. 563–566, writes on the Plesiosaurians of the Fox Hill Cretaceous, N. America.

Plesiosaurus degenhardti, p. 414, pl. xxxviii, figs. 1–3, Wealden Sandstone of Bückeberg, North Germany, and *limnophilus*, p. 417, pl. xxxviii, fig. 5, Wealden of Ummeln and Kniggenbrinke, North Germany, n. spp.; Koken, Pal. Abh. iii.

Orophosaurus pauciporus, n. sp., Cope, *t. c.* p. 565, Fox Hills beds of New Mexico.

Piptomerus, n. g., allied to *Polycotylus*. *Id. t. c.* p. 564, for *P. megaloporus*, p. 564, *microporus*, p. 565, and *hexagonus*, p. 565, n. spp., Fox Hills beds of New Mexico.

RHYNCHOCEPHALIA.

T. H. Huxley, Q. J. Geol. Soc. xliii. p. 691, discussing the relations of *Hyperodapedon*, *Rhynchosaurus*, and *Sphenodon*, expresses the opinion that the *Rhynchocephalia* are merely a group of the order *Lacertilia*, and fall into two families: *Rhynchosauridæ* (the two first named genera) and *Sphenodontidæ*. The author is unable to see any grounds for the approximation of *Simœdosaurus* to *Hyperodapedon*. He comes to the conclusion that in the Permian, or earlier, *Lacertilia* existed which were less different from *Sphenodon* than either *Hyperodapedon* and *Rhynchosaurus*.

E. T. Newton in his 'Classification of Animals, being a Synopsis of the Animal Kingdom, with especial reference to the fossil forms' (App. to 2nd ed. of H. B. Woodward's Geology of England, and separately, London: 1887, 8vo, 15 pp.), places the *Rhynchocephalia* as a suborder of the *Anomodontia*.

Hatteria, Gray. The name *Sphenodon*, Gray, is not preoccupied, and has priority; Baur, Zool. Anz. x, p. 120. Notes on the osteology, by G. Smets, Muséon, vi, pp. 606–613. A. Fritsch, Zool. Anz. x, pp. 115 & 116, rectifies an error of his, pointed out by Baur, in the description of the vertebral column of *Hatteria*.

Hyperodapedon gordoni, Huxl. Description of a very perfect specimen; Huxley, Q. J. Geol. Soc. xliii, p. 675, pls. xxvi & xxvii.

Champsosaurus, Cope. Further remarks by Dollo, who now places the genus among the *Rhynchocephalia*; Rev. Quest. Sc. xxi, pp. 525–535.

Typothorax coccinarum, Cope (foss.). Cope, Am. Nat. xxi, p. 468, makes an important addition to our knowledge of this genus, which is regarded as somewhat near *Aëtosaurus*, Fraas. The ribs are remarkable for their wide expansion, so that their edges meet, forming a continuum; but they are not joined suturally. Each rib is overlaid by a band-like dermal scute, of similar length and width. This genus affords an interesting parallel, in the structure of its carapace, to the early stage of the same part in some of the Tortoises, and there can be little doubt but that more complete knowledge of this genus and its allies will throw light on the origin of the order *Chelonia*.

PROTEROSAURIA.

H. G. Seeley, Phil. Tr. clxxviii, pp. 187–213, woodcuts, pls. xiv–xvi, contributes an account of all that is known of the history of *Proterosaurus speneri*, v. Mey., describing the type specimen, and presenting a restoration of the skull. The *Proterosauria* are regarded as a distinct division of the Reptilia showing resemblances to many of the highly-specialized orders, and to some low types.

THEROMORPHA.

Seeley, H. G. On *Pariesaurus bombidens*, Owen, and the Significance of its Affinities to Amphibians, Reptiles, and Mammals. Abstr., P. R. S. xlii, pp. 337–342.

The author describes a skeleton, from the Karoo deposits of South Africa. *Pariesaurus* is placed in a suborder, *Pariesauria*, grouped under the *Anomodontia*, exhibiting a transition from the Labyrinthodont Batrachians to the Reptilia. The Mammalian characters of the pelvis and sacrum of *Pariesaurus* and the other Anomodonts are quite as striking as the Avian characters of certain Dinosaurs, and of the same kind of importance as evidence of affinity.

Cope, E. D. The Structure of the Columella auris in the *Pelycosauria*. Mem. Nat. Ac. Wash. iii, pp. 93–95, figs. [1885].

Galesaurus planiceps, Ow. (foss.). On the skull and dentition; Owen, Q. J. Geol. Soc. xliii, pp. 1–5, pl. i.

Ectocynodon incisivus, n. sp., Cope, Tr. Am. Phil. Soc. xvi, p. 290, pl. ii, figs. 4 & 5, Permian of Texas.

Dimetrodon, Cope. Notes; *id. t. c.* p. 292, pl. iii, fig. 5.

Naosaurus clavĭger, n. sp., *id. t. c.* p. 293, pls. ii, figs. 1 & 2, & iii, figs. 1 & 2, Permian of Texas.

Embolophorus dollovianus, n. n. for remains noticed and figured in 1884; *id. t. c.* p. 287.

Cope, *t. c.* p. 296, pl. iii, fig. 7, describes what is probably the distal part of the astragalus of a Pelycosaurian.

[Baur, G.] Ueber den Ursprung der Extremitaten der Ichthyopterygia. Ber. xx. Versamml. Oberrhein. geol. Ver. [Quoted from a separate copy.]

H. E. Sauvage describes and figures the pectoral arch of an *Ichthyosaurus* from the Lias of Watchet, Somersetshire. Bull. Soc. géol. (3) xv, pp. 726–728, pl. xxvi.

PLESIOSAURIA.

H. G. Seeley, Geol. Mag. (3) iv, p. 562, announces his discovery that *Plesiosaurus* was viviparous.

E. D. Cope, Am. Nat. xxi, pp. 563–566, writes on the Plesiosaurians of the Fox Hill Cretaceous, N. America.

Plesiosaurus degenhardti, p. 414, pl. xxxviii, figs. 1–3, Wealden Sandstone of Bückeberg, North Germany, and *limnophilus*, p. 417, pl. xxxviii, fig. 5, Wealden of Ummeln and Kniggenbrinke, North Germany, n. spp.; Koken, Pal. Abh. iii.

Orophosaurus pauciporus, n. sp., Cope, *t. c.* p. 565, Fox Hills beds of New Mexico.

Piptomerus, n. g., allied to *Polycotylus*. *Id. t. c.* p. 564, for *P. megaloporus*, p. 564, *microporus*, p. 565, and *hexagonus*, p. 565, n. spp., Fox Hills beds of New Mexico.

RHYNCHOCEPHALIA.

T. H. Huxley, Q. J. Geol. Soc. xliii, p. 691, discussing the relations of *Hyperodapedon*, *Rhynchosaurus*, and *Sphenodon*, expresses the opinion that the *Rhynchocephalia* are merely a group of the order *Lacertilia*, and fall into two families: *Rhynchosauridæ* (the two first named genera) and *Sphenodontidæ*. The author is unable to see any grounds for the approximation of *Simœdosaurus* to *Hyperodapedon*. He comes to the conclusion that in the Permian, or earlier, *Lacertilia* existed which were less different from *Sphenodon* than either *Hyperodapedon* and *Rhynchosaurus*.

E. T. Newton in his 'Classification of Animals, being a Synopsis of the Animal Kingdom, with especial reference to the fossil forms' (App. to 2nd ed. of H. B. Woodward's Geology of England, and separately, London: 1887, 8vo, 15 pp.), places the *Rhynchocephalia* as a suborder of the *Anomodontia*.

Hatteria, Gray. The name *Sphenodon*, Gray, is not preoccupied, and has priority; Baur, Zool. Anz. x, p. 120. Notes on the osteology, by G. Smets, Muséon, vi, pp. 606–613. A. Fritsch, Zool. Anz. x, pp. 115 & 116, rectifies an error of his, pointed out by Baur, in the description of the vertebral column of *Hatteria*.

Hyperodapedon gordoni, Huxl. Description of a very perfect specimen; Huxley, Q. J. Geol. Soc. xliii, p. 675, pls. xxvi & xxvii.

Champsosaurus, Cope. Further remarks by Dollo, who now places the genus among the *Rhynchocephalia*; Rev. Quest. Sc. xxi, pp. 525–535.

Typothorax coccinarum, Cope (foss.). Cope, Am. Nat. xxi, p. 468, makes an important addition to our knowledge of this genus, which is regarded as somewhat near *Aëtosaurus*, Fraas. The ribs are remarkable for their wide expansion, so that their edges meet, forming a continuum; but they are not joined suturally. Each rib is overlaid by a band-like dermal scute, of similar length and width. This genus affords an interesting parallel, in the structure of its carapace, to the early stage of the same part in some of the Tortoises, and there can be little doubt but that more complete knowledge of this genus and its allies will throw light on the origin of the order *Chelonia*.

PROTEROSAURIA.

H. G. Seeley, Phil. Tr. clxxviii, pp. 187–213, woodcuts, pls. xiv–xvi, contributes an account of all that is known of the history of *Proterosaurus speneri*, v. Mey., describing the type specimen, and presenting a restoration of the skull. The *Proterosauria* are regarded as a distinct division of the Reptilia showing resemblances to many of the highly-specialized orders, and to some low types.

THEROMORPHA.

Seeley, H. G. On *Pareiasaurus bombidens*, Owen, and the Significance of its Affinities to Amphibians, Reptiles, and Mammals. Abstr., P. R. S. xlii, pp. 337–342.

The author describes a skeleton, from the Karoo deposits of South Africa. *Pareiasaurus* is placed in a suborder, *Pareiasauria*, grouped under the *Anomodontia*, exhibiting a transition from the Labyrinthodont Batrachians to the Reptilia. The Mammalian characters of the pelvis and sacrum of *Pareiasaurus* and the other Anomodonts are quite as striking as the Avian characters of certain Dinosaurs, and of the same kind of importance as evidence of affinity.

Cope, E. D. The Structure of the Columella auris in the *Pelycosauria*. Mem. Nat. Ac. Wash. iii, pp. 93–95, figs. [1885].

Galesaurus planiceps, Ow. (foss.). On the skull and dentition; Owen, Q. J. Geol. Soc. xliii, pp. 1–5, pl. i.

Ectocynodon incisivus, n. sp., Cope, Tr. Am. Phil. Soc. xvi, p. 290, pl. ii, figs. 4 & 5, Permian of Texas.

Dimetrodon, Cope. Notes; *id. t. c.* p. 292, pl. iii, fig. 5.

Naosaurus claviger, n. sp., *id. t. c.* p. 293, pls. ii, figs. 1 & 2, & iii, figs. 1 & 2, Permian of Texas.

Embolophorus dollovianus, n. n. for remains noticed and figured in 1884; *id. t. c.* p. 287.

Cope, *t. c.* p. 296, pl. iii, fig. 7, describes what is probably the distal part of the astragalus of a Pelycosaurian.

"PROGANOSAURIA."

This order, established by Baur (*suprà*, p. 6) for *Stereosternum*, Cope, is regarded as well founded by Cope, Am. Nat. xxi, p. 1109, who supplies additional information on the structure of his *S. tumidum*, derived from a nearly entire specimen. A clavicle or an interclavicle is present; the foramen of the humerus is external; the carpus consists of a radiale, a large intermedium, and a small ulnare; a large centrale and four tarsalia [carpalia ?]; thumb more robust than the four other digits; nine cervical vertebræ, besides the atlas, with slender ribs; teeth slender, acute, alveolate (?).

BATRACHIA.

P. & F. Sarasin, Naturw. Forsch. Ceylon, ii [*infrà*, p. 33], p. 29, propose to divide the recent Batrachians in the following manner:—

A. Urodela.
1. *Perennibranchiata.*
2. *Derotremata.*
3. *Salamandrina.*
α. *Salamandridæ.*
β. *Apoda.*

B. Anura.
1. *Aglossa.*
2. *Arcifera.*
3. *Firmisternia.*

Maurer, F. Schilddrüse, Thymus und Kiemenreste der Amphibien. Morph. JB. xiii, pp. 296–382, pls. xi–xiii.

——. Die Kiemen und ihre Gefässe bei Urodelen und Anuren. *T. c.* pp. 383 & 384.

Hochstetter, F. Beiträge zur vergleichenden Anatomie und Entwicklungsgeschichte des Venensystems der Amphibien und Fische. Morph. JB. xiii, pp. 119–172, pls. ii–iv.

Dogiel, A. Ueber den Bau des Geruchsorgans bei Ganoiden, Knochenfischen und Amphibien. Trudui Kazan. Univ. xvi, No. 1 [1886], 82 pp., 1 pl. (Russian text).

Bellonci, G. Sui Nuclei polimorfi delle Cellule sessuali degli Anfibii. Mem. Acc. Bologn. (4) vii, pp. 169–181, pls. i & ii [1886].

Schultze, O. Untersuchungen über die Reifung und Befruchtung des Amphibieneies. Erste Abhandlung. Z. wiss. Zool. xlv, pp. 177–226, pls. xi–xiii.

Schwink, —. Ueber die Gastrula bei Amphibieneiern. SB. Ges. Morph. iii, pp. 93–95.

ECAUDATA.

Chiarugi, G. Contributo allo studio del tessuto osseo. 1. Sulla struttura e lo sviluppo della ossa della *Rana*. Boll. Accad. Fisiocrit., Sez.-Med. v, fasc. 8, 14 pp., 1 pl.

Holl, M. Zur Anatomie der Mundhöhle von *Rana temporaria*. SB. Ak. Wien (3) xcv, pp. 47–86, 2 pls. Abstr. in Anz. Ak. Wien, 1887, pp. 3–5.

Howes, G. B. On a hitherto unrecognized Feature in the Larynx of the Anurous Amphibia. P. Z. S. 1887, pp. 491–501, woodcuts.

On the presence of the epiglottis in certain tailless Batrachians.

Zimmermann, W. Ueber die Carotidendrüse von *Rana esculenta*. Berlin: 1887, 8vo, 39 pp.

Huber, O. Ueber Brunstwarzen bei *Rana temporaria*, L. Z. wiss. Zool. xlv, pp. 664–668, pl. xxxv.

An investigation of the structure of the peculiar nuptial pearl-like excrescences of the dorsal region of the female common Frog. The author is inclined to regard these excrescences as nerve-end apparatuses, conveying a modified sensation of voluptuousness, and as functionally, but not anatomically, homologous with the well-known pearl-like tubercles of Fishes.

Wlassak, R. Das Kleinhirn des Frosches. Arch. Anat. Phys. 1887, Phys. Abth. pp. 109–137, pls. xii & xiii.

Knoll, P. Beiträge zur Lehre der Athmungsinnervation. viii. Mittheilung. Ueber die Athmungsbewegungen und Athmungsinnervation des Frosches. Abstr. in Anz. Ak. Wien, 1887, pp. 191 & 192.

Archarow, J. Ueber die Aufsaugung aus den Lymphsäcken des Frosches. Trudui Kasan. Univ. xviii, No. 2, 18 pp. (Russian text).

Tarchanoff, J. R. Zur Physiologie des Geschlechtsapparates des Frosches. Arch. Ges. Phys. xl, pp. 330–351.

An investigation of the causes of the genesic frenzy of male Frogs.

Camerano, L. Note di Biologia alpina. 1. Dello sviluppo degli Anfibi Anuri sulle Alpi. Boll. Mus. Tor. ii, No. 30, 10 pp.

Thiele, J. Der Haftapparat der Batrachierlarven. Z. wiss. Zool. xlvi, pp. 67–79, pl. x.

A comparative investigation of the subcephalic adhesive organs of European Tadpoles.

Schültze, O. Zur ersten Entwickelung des braunen Grasfrosches. Kölliker Festschrift, pp. 265–280, pls. xi & xii.

——. Ueber Axenbestimmung des Froschembryo. Biol. Centralbl. vii, pp. 577–588.

"PROGANOSAURIA."

This order, established by Baur (*suprà*, p. 6) for *Stereosternum*, Cope, is regarded as well founded by Cope, Am. Nat. xxi, p. 1109, who supplies additional information on the structure of his *S. tumidum*, derived from a nearly entire specimen. A clavicle or an interclavicle is present; the foramen of the humerus is external; the carpus consists of a radiale, a large intermedium, and a small ulnare; a large centrale and four tarsalia [carpalia ?]; thumb more robust than the four other digits; nine cervical vertebræ, besides the atlas, with slender ribs; teeth slender, acute, alveolate (?).

BATRACHIA.

P. & F. Sarasin, Naturw. Forsch. Ceylon, ii [*infrà*, p. 33], p. 29, propose to divide the recent Batrachians in the following manner:—

A. Urodela.
- 1. *Perennibranchiata.*
- 2. *Derotremata.*
- 3. *Salamandrina.*
  - α. *Salamandridæ.*
  - β. *Apoda.*

B. Anura.
- 1. *Aglossa.*
- 2. *Arcifera.*
- 3. *Firmisternia.*

Maurer, F. Schilddrüse, Thymus und Kiemenreste der Amphibien. Morph. JB. xiii, pp. 296–382, pls. xi–xiii.

——. Die Kiemen und ihre Gefässe bei Urodelen und Anuren. *T. c.* pp. 383 & 384.

Hochstetter, F. Beiträge zur vergleichenden Anatomie und Entwicklungsgeschichte des Venensystems der Amphibien und Fische. Morph. JB. xiii, pp. 119–172, pls. ii–iv.

Dogiel, A. Ueber den Bau des Geruchsorgans bei Ganoiden, Knochenfischen und Amphibien. Trudui Kazan. Univ. xvi, No. 1 [1886], 82 pp., 1 pl. (Russian text).

Bellonci, G. Sui Nuclei polimorfi delle Cellule sessuali degli Anfibii. Mem. Acc. Bologn. (4) vii, pp. 169–181, pls. i & ii [1886].

Schultze, O. Untersuchungen über die Reifung und Befruchtung des Amphibieneies. Erste Abhandlung. Z. wiss. Zool. xlv, pp. 177–226, pls. xi–xiii.

Schwink, —. Ueber die Gastrula bei Amphibieneiern. SB. Ges. Morph. iii, pp. 93–95.

ECAUDATA.

Chiarugi, G. Contributo allo studio del tessuto osseo. 1. Sulla struttura e lo sviluppo della ossa della *Rana*. Boll. Accad. Fisiocrit., Sez.-Med. v, fasc. 8, 14 pp., 1 pl.

Holl, M. Zur Anatomie der Mundhöhle von *Rana temporaria*. SB. Ak. Wien (3) xcv, pp. 47–86, 2 pls. Abstr. in Anz. Ak. Wien, 1887, pp. 3–5.

Howes, G. B. On a hitherto unrecognized Feature in the Larynx of the Anurous Amphibia. P. Z. S. 1887, pp. 491–501, woodcuts.

On the presence of the epiglottis in certain tailless Batrachians.

Zimmermann, W. Ueber die Carotidendrüse von *Rana esculenta*. Berlin: 1887, 8vo, 39 pp.

Huber, O. Ueber Brunstwarzen bei *Rana temporaria*, L. Z. wiss. Zool. xlv, pp. 664–668, pl. xxxv.

An investigation of the structure of the peculiar nuptial pearl-like excrescences of the dorsal region of the female common Frog. The author is inclined to regard these excrescences as nerve-end apparatuses, conveying a modified sensation of voluptuousness, and as functionally, but not anatomically, homologous with the well-known pearl-like tubercles of Fishes.

Wlassak, R. Das Kleinhirn des Frosches. Arch. Anat. Phys. 1887, Phys. Abth. pp. 109–137, pls. xii & xiii.

Knoll, P. Beiträge zur Lehre der Athmungsinnervation. viii. Mittheilung. Ueber die Athmungsbewegungen und Athmungsinnervation des Frosches. Abstr. in Anz. Ak. Wien, 1887, pp. 191 & 192.

Archarow, J. Ueber die Aufsaugung aus den Lymphsäcken des Frosches. Trudui Kasan. Univ. xviii, No. 2, 18 pp. (Russian text).

Tarchanoff, J. R. Zur Physiologie des Geschlechtsapparates des Frosches. Arch. Ges. Phys. xl, pp. 330–351.

An investigation of the causes of the genesic frenzy of male Frogs.

Camerano, L. Note di Biologia alpina. 1. Dello sviluppo degli Anfibi Anuri sulle Alpi. Boll. Mus. Tor. ii, No. 30, 10 pp.

Thiele, J. Der Haftapparat der Batrachierlarven. Z. wiss. Zool. xlvi, pp. 67–79, pl. x.

A comparative investigation of the subcephalic adhesive organs of European Tadpoles.

Schültze, O. Zur ersten Entwickelung des braunen Grasfrosches. Kölliker Festschrift, pp. 265–280, pls. xi & xii.

——. Ueber Axenbestimmung des Froschembryo. Biol. Centralbl. vii, pp. 577–588.

RANIDÆ.

Rana arvalis, Nilss.: discovered near Basle; F. MÜLLER, Verh. Ges Basel, viii, p. 252. *R. latastii*, Blgr.: on a specimen from Marcelliso, Verona; CAMERANO, Boll. Mus. Tor. ii, No. 26. E. DE BETTA, Atti Ist. Ven. (6) v. pp. 527-533, has notes on the specimens of *Ranæ fuscæ* in his collection. *R. breviceps*, Schn.: on its burrowing habits; NEVILL, Taprobanian, ii, p. 70. *R. montezumæ*, n. subsp. *concolor*, COPE, Bull. U. S. Nat. Mus. No. 32, p. 20, Guanajuato. *R. mascareniensis*, D. & B.: *R. porosissima*, Stdr., is regarded as distinct by BOCAGE, J. Sci. Lisb. x, p. 191. *R. fea*, p. 418, pl. iii, Kakhien Hills, Burma, *humeralis*, p. 420, pl. iv, fig. 1, Upper Burma, *doriæ*, p. 482, pl. viii, fig. 1, Tenasserim, and *lateralis*, p. 483, pl. viii, fig. 2, Tenasserim, n. spp., BOULENGER, Ann. Mus. Genov. (2) v. *R. labialis*, n. sp., *id.*, Ann. N. H. (5) xix, p. 345, pl. x, fig. 1, Malacca. *R. whiteheadi*, n. sp., *id.*, *op. cit.* xx, p. 96, Kina Baloo, Borneo.

Polypedates chloronotus, Gthr., = *P. lividus*, Blyth; BOULENGER, Ann. Mus. Genov. (2) v, p. 484.

Rhacophorus, Kuhl: E. D. COPE, Origin of the Fittest, p. 82, footnote, proposes to restrict *Polypedates* to *P. maculatus* and *quadrilineatus*, the other species being referred to *Rhacophorus*, which genus includes also *Chiromantis*, Ptrs. *R. viridis*, Hallow., is specifically distinct from *R. schlegelii*, Gthr.; BOULENGER, P. Z. S. 1887, p. 149.

Polypedates leprosus, n. sp. (?), GÜNTHER, Ann. N. H. (5) xx, p. 315, pl. xvi, fig. A, Perak. [= *Theloderma leprosum*, Tsch.—REC.]

Ixalus sarasinorum, n. sp., F. MÜLLER, Verh. Ges. Basel, viii, p. 256, pl. i, fig. 1, Ceylon. *I. latopalmatus*, n. sp., BOULENGER, Ann. N. H. (5) xx, p. 97, Kina Baloo, Borneo. *I. vittatus*, n. sp., *id.*, Ann. Mus. Genov. (2) v, p. 421, pl. iv, fig. 2, Bhamo, Burma.

Nyctibatrachus sinensis, Ptrs., = *Rana kuhlii*, D. & B.; *id.*, *t. c.* p. 482.

Batrachylodes, n. g.: pupil horizontal; tongue oval, free and feebly nicked behind; no vomerine teeth; tympanum distinct; fingers and toes free, the tips dilated into large disks; distal phalanges T-shaped; omosternum and sternum with a bony style. *B. vertebralis*, n. sp., BOULENGER, P. Z. S. 1887, p. 337, pl. xxviii, fig. 3, Faro I., Solomon Is.

Prostherapis brunneus, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 54, Mato Grosso, Brazil.

Phyllobates trinitatis, n. sp., GARMAN, Bull. Essex Inst xix, p. 13, Trinidad.

DENDROBATIDÆ.

Dendrobates braccatus, n. sp., COPE, P. Am. Phil. Soc. xxiv, p. 53, Mato Grosso, Brazil. This frog has been observed to carry its tadpoles on the back; SMITH, Am. Nat. xxi, p. 307, and COPE, p. 310. According to KAPPLER, Ausland, 1885, p. 858, *D. tricittatus* transports its larvæ, attached to its back, from one pool to another.

ENGYSTOMATIDÆ.

Hypopachus inguinalis, Cope, is considered a subspecies of *H. variolosus*, Cope; COPE, Bull. U. S. Nat. Mus. No. 32, p. 18.

Callula macrodactyla, n. sp., BOULENGER, Ann. Mus. Genov. (2) v, p. 485, pl. viii, fig. 3, Tenasserim.

Phrynella, n. g.: pupil horizontal; tongue elliptical, entire, free behind; vomerine teeth none; no ridges across the palate; tympanum hidden; fingers free, toes extensively webbed; tips of fingers and toes dilated; outer metatarsals united; no præcoracoids; sternum cartilaginous; diapophyses of sacral vertebra moderately dilated; terminal phalanges T-shaped. *P. pulchra*, n. sp., BOULENGER, Ann. N. H. (5) xix, p. 346, pl. x, fig. 2, Malacca. A specimen from Perak is described and referred to this species by GÜNTHER, Ann. N. H. (5) x, p. 313, pl. xvi, fig. B. [Is a distinct species.—REC.]

Cacosternum, n. g.: pupil horizontal; tongue pyriform, free, and notched behind; palate toothless, without dermal ridges; tympanum hidden; fingers and toes free, tips not dilated; outer metatarsals united; no præcoracoids; coracoids slender; sternum extremely small, cartilaginous; diapophyses of sacral vertebra strongly dilated: BOULENGER, Ann. N. H. (5) xx, p. 51. *C. nanum*, n. sp., *id. t. c.* p. 52, Kaffraria.

CYSTIGNATHIDÆ.

Hylodes planirostris, Cope, = *H. ricordii*, D. & B.; COPE, P. U. S. Nat. Mus. 1887, p. 436.

Paludicola nebulosa, Burm., p. 295, *albifrons*, Spix, p. 295, *henselii*, Ptrs., p. 296, and *olfersii*, Mart., p 297, described by BOULENGER, Ann. N. H. (5) xx. *P. bischoffi*, n. sp., *id. t. c.* p. 296, Mundo Novo, Rio Grande do Sul. *P. saltica*, p. 48, *mystacalis*, p. 49, and *ameghini*, p. 50, n. spp., COPE, P. Am. Phil. Soc. xxiv, Mato Grosso, Brazil.

Leptodactylus brevipes, p. 51, *and glandulosus* [= *diptyx*, Bttg.—REC.], p. 52, n. spp., COPE, P. Am. Phil. Soc., xxiv, Mato Grosso, Brazil. *L. validus*, n. sp., GARMAN, Bull. Essex Inst. xix, p. 14, St. Vincent. [= *caliginosus*, Gir.—REC.]

BUFONIDÆ.

HÉRON-ROYER, —. Notices sur les Mœurs des Batraciens. VI. Famille des Bufonidés. Bull. Soc. Angers (2) xvi, pp. 185–258.

Bufo spelæus, n. n. for a large Quarternary race of *B. vulgaris* from the Caves of Mentone; RIVIÈRE, CR. Ass. Fr. Sci. xv, p. 453. *B. parvus*, p. 346, pl. x, fig. 3, and *quadriporcatus*, p. 347, pl. x, fig. 4, n. spp., BOULENGER, Ann. N. H. (5) xix, Malacca. A specimen of the latter species, from Perak, also described and figured by GÜNTHER, Ann. N. H. (5) xx, p. 314, pl. xvi, fig. C. *B. philippinicus*, n. sp., BOULENGER, *t. c.* p. 348, pl. x, fig. 5, Puerta Princesa. *B. muelleri*, n. sp., *id. t. c.* p. 52, Mindanao. *B. macrotis*, n. sp., *id.*, Ann. Mus. Genov. (2) v, p. 422, pl. iv, fig. 3, Upper Burma.

Cophophryne, n. n. for *Scutiger*, Theob., *nec* Latr. *C. sikkimensis*, Blyth, described, and the genus recharacterized; BOULENGER, Ann. N. H. (5) xx, p. 406.

Ranidæ.

Rana arvalis, Nilss.: discovered near Basle; F. Müller, Verh. Ges Basel, viii, p. 252. *R. latastii*, Blgr.: on a specimen from Marcelliso, Verona; Camerano, Boll. Mus. Tor. ii, No. 26. E. de Betta, Atti Ist. Ven. (6) v. pp. 527-533, has notes on the specimens of *Ranæ fuscæ* in his collection. *R. breviceps*, Schn.: on its burrowing habits; Nevill, Taprobanian, ii, p. 70. *R. montezumæ*, n. subsp. *concolor*, Cope, Bull. U. S. Nat. Mus. No. 32, p. 20, Guanajuato. *R. mascareniensis*, D. & B.: *R. porosissima*, Stdr., is regarded as distinct by Bocage, J. Sci. Lisb. x, p. 191. *R. feæ*, p. 418, pl. iii, Kakhien Hills, Burma, *humeralis*, p. 420, pl. iv, fig. 1, Upper Burma, *doriæ*, p. 482, pl. viii, fig. 1, Tenasserim, and *lateralis*, p. 483, pl. viii, fig. 2, Tenasserim, n. spp., Boulenger, Ann. Mus. Genov. (2) v. *R. labialis*, n. sp., *id.*, Ann. N. H. (5) xix, p. 345, pl. x, fig. 1, Malacca. *R. whiteheadi*, n. sp., *id.*, *op. cit.* xx, p. 96, Kina Baloo, Borneo.

Polypedates chloronotus, Gthr., = *P. lividus*, Blyth; Boulenger, Ann. Mus. Genov. (2) v, p. 484.

Rhacophorus, Kuhl: E. D. Cope, Origin of the Fittest, p. 82, footnote, proposes to restrict *Polypedates* to *P. maculatus* and *quadrilineatus*, the other species being referred to *Rhacophorus*, which genus includes also *Chiromantis*, Ptrs. *R. viridis*, Hallow., is specifically distinct from *R. schlegelii*, Gthr.; Boulenger, P. Z. S. 1887, p. 149.

Polypedates leprosus, n. sp. (?), Günther, Ann. N. H. (5) xx, p. 315, pl. xvi, fig. A, Perak. [= *Theloderma leprosum*, Tsch.—Rec.]

Ixalus sarasinorum, n. sp., F. Müller, Verh. Ges. Basel, viii, p. 256, pl. i, fig. 1, Ceylon. *I. latopalmatus*, n. sp., Boulenger, Ann. N. H. (5) xx, p. 97, Kina Baloo, Borneo. *I. vittatus*, n. sp., *id.*, Ann. Mus. Genov. (2) v, p. 421, pl. iv, fig. 2, Bhamo, Burma.

Nyctibatrachus sinensis, Ptrs., = *Rana kuhlii*, D. & B.; *id.*, *t. c.* p. 482.

Batrachylodes, n. g.: pupil horizontal; tongue oval, free and feebly nicked behind; no vomerine teeth; tympanum distinct; fingers and toes free, the tips dilated into large disks; distal phalanges T-shaped; omosternum and sternum with a bony style. *B. vertebralis*, n. sp., Boulenger, P. Z. S. 1887, p. 337, pl. xxviii, fig. 3, Faro I., Solomon Is.

Prostherapis brunneus, n. sp., Cope, P. Am. Phil. Soc. xxiv, p. 54, Mato Grosso, Brazil.

Phyllobates trinitatis, n. sp., Garman, Bull. Essex Inst xix, p. 13, Trinidad.

Dendrobatidæ.

Dendrobates braccatus, n. sp., Cope, P. Am. Phil. Soc. xxiv, p. 53, Mato Grosso, Brazil. This frog has been observed to carry its tadpoles on the back; Smith, Am. Nat. xxi, p. 307, and Cope, p. 310. According to Kappler, Ausland, 1885, p. 858, *D. tricittatus* transports its larvæ, attached to its back, from one pool to another.

Engystomatidæ.

Hypopachus inguinalis, Cope, is considered a subspecies of *H. variolosus*, Cope; Cope, Bull. U. S. Nat. Mus. No. 32, p. 18.

Callula macrodactyla, n. sp., BOULENGER, Ann. Mus. Genov. (2) v, p. 485, pl. viii, fig. 3, Tenasserim.

Phrynella, n. g.: pupil horizontal; tongue elliptical, entire, free behind; vomerine teeth none; no ridges across the palate; tympanum hidden; fingers free, toes extensively webbed; tips of fingers and toes dilated; outer metatarsals united; no præcoracoids; sternum cartilaginous; diapophyses of sacral vertebra moderately dilated; terminal phalanges T-shaped. *P. pulchra*, n. sp., BOULENGER, Ann. N. H. (5) xix, p. 346, pl. x, fig. 2, Malacca. A specimen from Perak is described and referred to this species by GÜNTHER, Ann. N. H. (5) x, p. 313, pl. xvi, fig. B. [Is a distinct species.—REC.]

Cacosternum, n. g.: pupil horizontal; tongue pyriform, free, and notched behind; palate toothless, without dermal ridges; tympanum hidden; fingers and toes free, tips not dilated; outer metatarsals united; no præcoracoids; coracoids slender; sternum extremely small, cartilaginous; diapophyses of sacral vertebra strongly dilated: BOULENGER, Ann. N. H. (5) xx, p. 51. *C. nanum*, n. sp., *id. t. c.* p. 52, Kaffraria.

CYSTIGNATHIDÆ.

Hylodes planirostris, Copé, = *H. ricordii*, D. & B.; COPE, P. U. S. Nat. Mus. 1887, p. 436.

Paludicola nebulosa, Burm., p. 295, *albifrons*, Spix, p. 295, *henselii*, Ptrs., p. 296, and *olfersii*, Mart., p 297, described by BOULENGER, Ann. N. H. (5) xx. *P. bischoffi*, n. sp., *id. t. c.* p. 296, Mundo Novo, Rio Grande do Sul. *P. saltica*, p. 48, *mystacalis*, p. 49, and *ameghini*, p. 50, n. spp., COPE, P. Am. Phil. Soc. xxiv, Mato Grosso, Brazil.

Leptodactylus brevipes, p. 51, *and glandulosus* [= *dipityx*, Bttg.—REC.], p. 52, n. spp., COPE, P. Am. Phil. Soc., xxiv, Mato Grosso, Brazil. *L. validus*, n. sp., GARMAN, Bull. Essex Inst. xix, p. 14, St. Vincent. [= *caliginosus*, Gir.—REC.]

BUFONIDÆ.

HÉRON-ROYER, —. Notices sur les Mœurs des Batraciens. VI. Famille des Bufonidés. Bull. Soc. Angers (2) xvi, pp. 185–258.

Bufo spelæus, n. n. for a large Quarternary race of *B. vulgaris* from the Caves of Mentone; RIVIÈRE, CR. Ass. Fr. Sci. xv, p. 453. *B. parcus*, p. 346, pl. x, fig. 3, and *quadriporcatus*, p. 347, pl. x, fig. 4, n. spp., BOULENGER, Ann. N. H. (5) xix, Malacca. A specimen of the latter species, from Perak, also described and figured by GÜNTHER, Ann. N. H. (5) xx, p. 314, pl. xvi, fig. C. *B. philippinicus*, n. sp., BOULENGER, *t. c.* p. 348, pl. x, fig. 5, Puerta Princesa. *B. muelleri*, n. sp., *id. t. c.* p. 52, Mindanao. *B. macrotis*, n. sp., *id.*, Ann. Mus. Genov. (2) v, p. 422, pl. iv, fig. 3, Upper Burma.

Cophophryne, n. n. for *Scutiger*, Theob., *nec* Latr. *C. sikkimensis*, Blyth, described, and the genus recharacterized; BOULENGER, Ann. N. H. (5) xx, p. 406.

Hylidæ.

Hyla staufferi, Cope, is regarded as a subspecies of *H. eximia*, Baird: Cope, Bull. U. S. Nat. Mus. No. 32, p. 14. *H. zebra*, D. & B., described by Boulenger, Ann. N. H. (5) xx, p. 299. *H. copii*, p. 53, El Paso, Texas, *marginata*, p. 298, Mundo Novo, Rio Grande do Sul, and *bischoffi*, p. 298, Mundo Novo, n. spp., *id. t. c.* *H. melanargyrea*, p. 45, *velata*, p. 46, and *nigra*, p. 47, n. spp., Cope, P. Am. Phil. Soc. xxiv, Mato Grosso, Brazil. *H. lutea*, n. sp., Boulenger, P. Z. S. 1887, p. 337, pl. xxviii, fig. 4, Faro I., Solomon Is. *Scytopis boulengeri*, n. sp., Cope, Bull. U. S. Nat. Mus. No. 32, p. 12, Nicaragua.

Diaglena, n. g., for *Triprion spatulatus*, Gthr.; Cope, *t. c.* p. 12.

Pelobatidæ.

Scaphiopus solitarius, Holbr. Notes on the life-history; N. Pike, Bull. Am. Mus. i (1886), pp. 213–220. *S. hammondii*, Baird, = *stagnalis*, Cope, = *dugesi*, Brocchi; Cope, Bull. U. S. Nat. Mus. No. 32, p. 12.

Megalophrys fea, n. sp., Boulenger, Ann. Mus. Genov. (2) iv, p. 512, and v, p. 423, pl. v, Kakhien Hills, Burma.

Palæobatrachus, Tsch. (foss.). W. Wolterstorff, JB. Naturw. Ver. Magdeburg, 1887, pp. 83–156, pls. vii–xiii, completes his account of this genus, which is regarded as connecting the *Aglossa* (*Dactylethridæ*) with the *Arcifera* (*Pelobatidæ*), although it is not possible to say to which of these suborders it is to be referred. *P. diluvianus*, Goldf. (?), n. varr. *elegans*, p. 95, Brown Coal of Rhenish Prussia, *extensa*, p. 97, Brown Coal of Markersdorf, Bohemia; *P. gigas*, v.-Mey. (?), n. varr. *carinata*, p. 133, pl. xi, figs. 21–24, *minor*, p. 134, *subcarinata*, p. 134, and *depressa*, p. 136; *P. fritschii*, Wolt., n. var. *major*, p. 125; *P. rarus*, p. 127, Brown Coal of Kaltennordheim, Rhön, *wetzleri*, p. 128, Lower Miocene of Haslach, near Ulm, *intermedius*, p. 137, and *fallax*, p. 138, Brown Coal of Weisenau, n. spp.

Discoglossidæ.

Bombinator, Merr. Boulenger distinguishes two European species, viz., *bombinus*, L., from Western and Central Europe and Italy, and *igneus*, Laur., from Germany and Austria. P. Z. S. 1886, p. 499, pl. l.

Alytes obstetricans, Laur. On its occurrence in Brunswick and Hanover: Nehring, Zool. Gart. xxviii, p. 61, and SB. nat. Fr. 1887, p. 49.

CAUDATA.

Macallum, A. B. On the Nuclei of the Striated Muscle-Fibre in *Necturus* (*Menobranchus*) *lateralis*. Q. J. Micr. Sci. (2) xxvii, pp. 461–466, pl. xxxiii, figs. A & B.

Schultze, O. Ueber die Karyokinese in den ersten Zellen des Axolotl. SB. phys.-med. Ges. Würzburg, 1887, pp. 2–4.

Mitrophanow, P. Zur Entwicklungsgeschichte und Innervation der Nervenhügel der Urodelenlarven. Biol. Centralbl. vii, pp. 174–178, fig.

Weliky, N. Über die Lymphherzen bei *Triton taeniatus*. Zool. Anz. x, p. 529.

Zelinka, C. Über eine in der Harnblase von *Salamandra maculosa* gefundene Larve derselben Species. Zool. Anz. x, pp. 515 & 516.

E. D. Cope, Am. Nat. xxi, pp. 87 & 88, figs., has notes on the hyoid structures in the Amblystomatoid Salamanders.

Molge, Merr. On the habits of *M. blasii*, de l'Isle, and other Newts; J. v. Fischer, Zool. Gart. xxviii, pp. 11–20. *M. palmata*, Schn., discovered in the Harz, the Easternmost point of its distribution; Wolterstorff, Zool. Anz. x, p. 321. *M. pyrrhogastra*, Boie, var. *ensicauda*, Hallow.; remarks by Boulenger, P. Z. S. 1887, p. 150. *M. strauchii*, n. sp., Steindachner, Anz. Ak. Wien, 1887, p. 230, Mush, West of Lake Van, Armenia.

Hynobius leechi, n. sp., Boulenger, Ann. N. H. (5) xix, p. 67, Gensan, Corea.

Amblystoma opacum; Gravh.: notes on the life-history; N. Pike, Bull. Am. Mus. i [1886], pp. 209–212. *A. tigrinum*, Green: on its diet; Shufeldt, Science, ix, p. 298; Call, Am. Nat. xxi, p. 776.

Chondrostus, n. g., for *Amblystoma tenebrosum*, B. & G., and allies; Cope, Am. Nat. xxi, p. 88.

Linguelapsus, n. g., for *Amblystoma annulatum*, Cope, and *A. lepturum*; Cope; *id. t. c.*

Autodax, n. n. for *Anaides*, Baird, *nec* Westwood; Boulenger, Ann. N. H. (5) xix, p. 67.

Spelerpes fuscus, Gené: on its habits in confinement; J. v. Fischer, *t. c.* pp. 33–39, fig. *S. guttolineatus*, Holbr., found near the city of Washington; A. K. Fischer, Am. Nat. xxi, pp. 672.

Megalobatrachus maximus, Schleg.: notes on adult larvæ and eggs; Sasaki, J. Coll. Sci. Japan, i, pp. 269–274. The eggs, which are laid in August and September, form a string resembling in form a rosary. P. & F. Sarasin, "Ceylon," ii, p. 30, reproduce a Japanese drawing representing the larva. Notes on a specimen living in Zürich, with an account (compilation) of this and the fossil species *A. scheuchzeri*, Tsch., and a reproduction of Schlegel's plate, in Neujahrsblatt Naturf. Ges. Zürich, lxxxix, 12 pp., 1 pl.

APODA.

Sarasin, P. & F. Ergebnisse naturwissenschaftlicher Forschungen auf Ceylon in den Jahren, 1884–86. II. Wiesbaden: 1887, 4to, 94 pp., 11 pls.

On the habits, embryology, and anatomy of *Ichthyophis glutinosus*. In addition to the important discoveries already published in a preliminary note [*cf.* Zool. Rec. xxii, *Rept.* p. 25], a vast number of new facts of

Hylidæ.

Hyla staufferi, Cope, is regarded as a subspecies of *H. eximia*, Baird; Cope, Bull. U. S. Nat. Mus. No. 32, p. 14. *H. zebra*, D. & B., described by Boulenger, Ann. N. H. (5) xx, p. 299. *H. copii*, p. 53, El Paso, Texas, *marginata*, p. 298, Mundo Novo, Rio Grande do Sul, and *bischoffi*, p. 298, Mundo Novo, n. spp., *id. t. c.* *H. melanargyrea*, p. 45, *velata*, p. 46, and *nigra*, p. 47, n. spp., Cope, P. Am. Phil. Soc. xxiv, Mato Grosso, Brazil. *H. lutea*, n. sp., Boulenger, P. Z. S. 1887, p. 337, pl. xxviii, fig. 4, Faro I., Solomon Is. *Scytopis boulengeri*, n. sp., Cope, Bull. U. S. Nat. Mus. No. 32, p. 12, Nicaragua.

Diaglena, n. g., for *Triprion spatulatus*, Gthr.; Cope, *t. c.* p. 12.

Pelobatidæ.

Scaphiopus solitarius, Holbr. Notes on the life-history; N. Pike, Bull. Am. Mus. i (1886), pp. 213–220. *S. hammondii*, Baird, = *stagnalis*, Cope, = *dugesi*, Brocchi; Cope, Bull. U. S. Nat. Mus. No. 32, p. 12.

Megalophrys fea, n. sp., Boulenger, Ann. Mus. Genov. (2) iv, p. 512, and v, p. 423, pl. v, Kakhien Hills, Burma.

Palæobatrachus, Tsch. (foss.). W. Woltersdorff, JB. Naturw. Ver. Magdeburg, 1887, pp. 83–156, pls. vii–xiii, completes his account of this genus, which is regarded as connecting the *Aglossa* (*Dactylethridæ*) with the *Arcifera* (*Pelobatidæ*), although it is not possible to say to which of these suborders it is to be referred. *P. diluvianus*, Goldf. (?), n. varr. *elegans*, p. 95, Brown Coal of Rhenish Prussia, *extensa*, p. 97, Brown Coal of Markersdorf, Bohemia; *P. gigas*, v. Mey. (?), n. varr. *carinata*, p. 133, pl. xi, figs. 21–24, *minor*, p. 134, *subcarinata*, p. 134, and *depressa*, p. 136; *P. fritschii*, Wolt., n. var. *major*, p. 125; *P. rarus*, p. 127, Brown Coal of Kaltennordheim, Rhön, *goetzleri*, p. 128, Lower Miocene of Haslach, near Ulm, *intermedius*, p. 137, and *fallax*, p. 138, Brown Coal of Weisenau, n. spp.

Discoglossidæ.

Bombinator, Merr. Boulenger distinguishes two European species, viz., *bombinus*, L., from Western and Central Europe and Italy, and *igneus*, Laur., from Germany and Austria. P. Z. S. 1886, p. 499, pl. l.

Alytes obstetricans, Laur. On its occurrence in Brunswick and Hanover; Nehring, Zool. Gart. xxviii, p. 61, and SB. nat. Fr. 1887, p. 49.

CAUDATA.

Macallum, A. B. On the Nuclei of the Striated Muscle-Fibre in *Necturus* (*Menobranchus*) *lateralis*. Q. J. Micr. Sci. (2) xxvii, pp. 461–466, pl. xxxiii, figs. A & B.

Schultze, O. Ueber die Karyokinese in den ersten Zellen des Axolotl. SB. phys.-med. Ges. Würzburg, 1887, pp. 2–4.

Mitrophanow, P. Zur Entwicklungsgeschichte und Innervation der Nervenhügel der Urodelenlarven. Biol. Centralbl. vii, pp. 174–178, fig.

Weliky, N. Über die Lymphherzen bei *Triton taeniatus*. Zool. Anz. x, p. 529.

Zelinka, C. Über eine in der Harnblase von *Salamandra maculosa* gefundene Larve derselben Species. Zool. Anz. x, pp. 515 & 516.

E. D. Cope, Am. Nat. xxi, pp. 87 & 88, figs., has notes on the hyoid structures in the Amblystomatoid Salamanders.

Molge, Merr. On the habits of *M. blasii*, de l'Isle, and other Newts; J. v. Fischer, Zool. Gart. xxviii, pp. 11–20. *M. palmata*, Schn., discovered in the Harz, the Easternmost point of its distribution; Wolterstorff, Zool. Anz. x, p. 321. *M. pyrrhogastra*, Boie, var. *ensicauda*, Hallow.; remarks by Boulenger, P. Z. S. 1887, p. 150. *M. strauchii*, n. sp., Steindachner, Anz. Ak. Wien, 1887, p. 230, Mush, West of Lake Van, Armenia.

Hynobius leechi, n. sp., Boulenger, Ann. N. H. (5) xix, p. 67, Gensan, Corea.

Amblystoma opacum; Gravh.: notes on the life-history; N. Pike, Bull. Am. Mus. i [1886], pp. 209–212. *A. tigrinum*, Green: on its diet; Shufeldt, Science, ix, p. 298; Call, Am. Nat. xxi, p. 776.

Chondrostus, n. g., for *Amblystoma tenebrosum*, B. & G., and allies; Cope, Am. Nat. xxi, p. 88.

Lingualapsus, n. g., for *Amblystoma annulatum*, Cope, and *A. lepturum*; Cope; *id. l. c.*

Autodax, n. n. for *Anaides*, Baird, *nec* Westwood; Boulenger, Ann. N. H. (5) xix, p. 67.

Spelerpes fuscus, Gené: on its habits in confinement; J. v. Fischer, *l. c.* pp. 33–39, fig. *S. guttolineatus*, Holbr., found near the city of Washington; A. K. Fischer, Am. Nat. xxi, pp. 672.

Megalobatrachus maximus, Schleg.: notes on adult larvæ and eggs; Sasaki, J. Coll. Sci. Japan, i, pp. 269–274. The eggs, which are laid in August and September, form a string resembling in form a rosary. P. & F. Sarasin, "Ceylon," ii, p. 30, reproduce a Japanese drawing representing the larva. Notes on a specimen living in Zürich, with an account (compilation) of this and the fossil species *A. scheuchzeri*, Tsch., and a reproduction of Schlegel's plate, in Neujahrsblatt Naturf. Ges. Zürich, lxxxix, 12 pp., 1 pl.

APODA.

Sarasin, P. & F. Ergebnisse naturwissenschaftlicher Forschungen auf Ceylon in den Jahren, 1884–86. II. Wiesbaden: 1887, 4to, 94 pp., 11 pls.

On the habits, embryology, and anatomy of *Ichthyophis glutinosus*. In addition to the important discoveries already published in a preliminary note [*cf.* Zool. Rec. xxii, *Rept.* p. 25], a vast number of new facts of

special as well as of general biological interest are contained in this memoir. Bud-like rudiments of hind-limbs have been found in embryos. [Preliminary note in Zool. Anz. x, pp. 194–197.] The larva of *Typhlonectes compressicauda*, described by Peters in 1874, having been re-examined by the authors, they find that the gills are not bladder-like, but leaf-like or lobe-like; a figure of this specimen is given on p. 26.

Note on the copulatory organ of *Ichthyophis glutinosus*; BOULENGER, Ann Mus. Genov. (2) v, p. 423, pl. iv, fig. 4.

STEGOCEPHALA.

CREDNER, H. Stegocephalen des Rothliegenden. Wandtafeln mit Erläuterungen. Leipzig: 1887, 2 pls., 10 pp. 8vo text, with wood-cuts.

Two wall-pictures, with explanatory text, illustrating the structure of *Branchiosaurus amblystomus*, Credn., *Pelosaurus laticeps*, Credn., and *Melanerpeton pulcherrimum*, Fritsch.

Actinodon, Gaudry. A monograph of this genus, which contains 2 species—*A. frossardi*, Gaudry, and *A. brevis*, Gaudry; GAUDRY, N. Arch. Mus. (2) x, pp. 1–32, woodcuts, pls. i–iii.

Weissia, n. g., probably related to *Actinodon*, for *W. bavarica*, n. sp.; BRANCO, JB. Preuss. geol. Landes-Anstalt, 1886, p. 22, pl. i [*cf.* N. JB. Min. 1888, p. 117], Lower Rothliegende, Ohmbach, Bavaria.

Eryops platypus, Cope [= *Ichthyacanthus platypus*, Cope]: note on the hind foot. COPE, Tr. Am. Phil. Soc. xvi, p. 289, fig.

Zatrachys serratus, Cope. Notes; *id. ibid.*

W. J. STEPHENS, P. Linn. Soc. N.S.W. (2) i, pp. 1113–1121, pl. xiv, has a second note on the Bilocla Labyrinthodont. Also on some additional Labyrinthodont fossils from the Hawkesbury Sandstones of New South Wales; *t. c.* pp. 1175–1192, pl. xxii.

Platyceps, n. g. [name preoccupied by Blyth, Reptiles, 1860.—REC.], for *P. wilkinsonii*, n. sp., based upon a larval specimen from the Hawkesbury Sandstones, New South Wales; *id. t. c.* p. 1175, pl. xxii.

PISCES.

BY

G. A. BOULENGER.

GENERAL.

ZITTEL, K. A. Handbuch der Palæontologie. I. Abtheilung: Palæozoologie. Bd. iii. Lief. i. Munich: 1887, 8vo, 256 pp., woodcuts.

This first fascicle of the third volume contains the Fishes, *minus* the Teleostei. The Class Pisces is divided into 6 subclasses: *Leptocardii*, *Cyclostomi*, *Selachii*, *Dipnoi*, *Ganoidei*, and *Teleostei*.

E. D. COPE, reviewing the above work, in Am. Nat. xxi, pp. 1014–1019, again protests against the adoption of the group "Ganoids," and proposes to separate the members of that group (exclusive of the *Pterichthyidæ*, *Bothreolepididæ*, *Pteraspididæ*, *Cephalaspididæ*, and *Dipnoi*) into the following superorders and orders:—

I. RHIPIDOPTERYGIA. 1, *Rhipidistia* (*Tristichopteridæ*); 2, *Actinistia* (*Cœlacanthidæ*).

II. CROSSOPTERYGIA. 1, *Haplistia* (*Phaneropleuridæ*); 2, *Taxistia* (*Cyclodipterini* and *Glyptodipterini*); 3, *Cladistia* (*Polypteridæ*).

III. PODOPTERYGIA (= CHONDROSTEI, Owen).

IV. ACTINOPTERYGIA. 1, *Lysopteri* (*Palæoniscidæ*); 2, *Merospondyli* (*Sauropsidæ* and *Pycnodontidæ*); 3, *Isospondyli* (*Aspidorhynchidæ* s. *Rhynchodontidæ*); 4, *Ginglymodi*; 5, *Haleomorphi*.

WILDER, B. G. Remarks on Classification of Vertebrata. Am. Nat. xxi, pp. 913–917.

BRONN, H. G. Klassen und Ordnungen des Thierreichs. VI. Abth. i. *Pisces*, by A. A. W. HUBRECHT, continued by M. SAGEMEHL.

Lief. 4, pp. 81–112, pl. xi, dealing with the osteology and myology of Chondropterygians, was published in 1885 [omitted from Zool. Rec. xxii].

GÜNTHER, A. Guide to the Galleries of Reptiles and Fishes in the Department of Zoology of the British Museum (Natural History). London: 1887, 8vo, 119 pp., figs.

Fishes, pp. 47–119, 65 woodcuts.

[GÜNTHER, A.] The Zoology of H.M.S. 'Challenger.' Vol. xxii. Report on the Deep-Sea Fishes. With Appendices by H. N. MOSELEY, on the Structure of the Peculiar Organs on the Head of Ipnops, and by R. VON LENDENFELD, on the Structure of the Phosphorescent Organs of Fishes. London: 1887, 4to, lxv & 335 pp., 45 pls., & woodcuts.

This report includes references to all Fishes which have hitherto been obtained at a depth of 100 or more fathoms. Most of the new or little known species obtained by the 'Challenger,' the 'Knight Errant,' and the 'Triton,' are described and figured, as well as many others.

DOLLO, L. La Vie au Sein des Mers et les Poissons abyssaux. Rev. Quest. sci. xxi, pp. 33–64, figs.

Abyssal Fishes; conclusion.

VAILLANT, L. Considérations sur les Poissons des grandes profondeurs. Deuxième Note. C.R. civ, pp. 123–126.

JORDAN, D. S. Science Sketches. Chicago: 1887, 8vo, 276 pp.

This volume is made up of a number of unconnected sketches and addresses, coming more or less distinctly under the head of Popular Science. Several chapters are of special interest to the ichthyologist, particularly that on the Dispersion of Fresh-water Fishes. An appendix contains a full list of the author's publications.

LUKOFF, B. Vergleichend-Anatomische Studien über die Chorda und die Chordascheide. Bull. Soc. Mosc. 1887, pp. 227–342 (Russian text), & 442–482 (German abstract), pls. iv–vi.

DOHRN, A. Studien zur Urgeschichte des Wirbelthierkörpers. XII. Thyreoidea und Hypobranchialrinne, Spritzlochsack und Pseudobranchialrinne bei Fischen, Amnioccetes und Tunicaten. MT. z. Stat. Neap. vii, pp. 301–337, pls. iv & v.

The author offers new arguments in defence of his hypothesis of Tunicate Fish-descent.

STRECKER, C. Ueber die Condylen des Hinterhauptes. Arch. Anat. Phys. 1887, An. Abth. pp. 301–338.

Fishes, pp. 301–303.

GEGENBAUR, C. Ueber die Occipitalregion und die ihr benachbarten Wirbel der Fische. Kölliker Festschrift, pp. 1–33, pl. i.

BAUR, G. On the Morphology of Ribs. Am. Nat. xxi, pp. 942–945.

RYDER, J. A. On the homologies and early history of the limbs of Vertebrates. P. Ac. Philad. 1887, pp. 344–368.

EMERY, C. Ueber die Beziehungen des Cheiropterygiums zum Ichthyopterygium. Zool. Anz. x, pp. 185–189, figs.

The author does not recognise in the Chiropterygium any difference between præ- and postaxial rays. The uniaxial fin of *Ceratodus* is not regarded as a primitive form, but as probably derived from a Crossopterygium in which the humerus or femur was previously differentiated.

FRORIEP, A. Ueber das Homologon der Chorda tympani bei niederen Wirbeltieren. Anat. Anz. ii, pp. 486–493, fig.

DOGIEL, A. Ueber den Bau des Geruchsorgans bei Ganoiden, Knochenfischen und Amphibien. Trudui Kasan Univ. xvi, No. 1 (1886), 82 pp., 1 pl. (Russian text).

SCHIEFFERDECKER, —. Ueber das Fischauge. Anat. Anz. ii, pp. 381 & 382.

JULIN, C. De la Signification morphologique de l'Epiphyse (Glande pinéale) des Vertébrés. I. L'Epiphyse des Poissons.—Structure et Développement. Bull. Sci. Nord. (2) x, pp. 55–65.

LENDENFELD, R. v. Die Leuchtorgane der Fische. Biol. Centralbl. vii, pp. 609–621.

A condensed translation by the author of his contribution to the "Challenger" volume on deep-sea Fishes.

SOLGER, —. Ueber die Cupula terminalis der Seitenorgane der Fische. Tag. 60. Vers. Deutsch. Nat. p. 93.

CATTANEO, G. Sull' esistenza delle glandule gastriche nell' *Acipenser sturio* e nella *Tinca vulgaris*. Rend. Ist. Lomb. (2) xix, pp. 676–682, pl. — (1886).

CHARBONNEL-SALLE, L. Recherches expérimentales sur les fonctions hydrostatiques de la Vessie natatoire. Ann. Sci. Nat. (7) ii, pp. 305–331.

The variations in volume of the air-bladder are the consequence, not the cause, of the vertical movements of the Fish experimented upon (Carp, Tench, Pike, Perch, Eel). The theory first produced by Borelli, and admitted by most zoologists, that the Fish is able to modify at will its density for the purpose of vertical locomotion, must be abandoned.

CORBLIN, H. Recherches sur la locomotion du Poisson et sur la fonction hydrostatique de la Vessie natatoire. C.R. Soc. Biol. (8) iv, pp. 652–654.

Arrives at the same results as Charbonnel-Sallé.

TRAUBE-MENGARINI, M. Ricerche sui gas contenuiti nella vesica natatoria dei pesci. Atti Acc. Rom. (4) iii, pp. 55–62.

BOAS, J. E. V. Ueber die Arterienbogen der Wirbelthiere. Morph. JB. xiii, pp. 115–118, pl. i.

HOCHSTETTER, F. Beiträge zur vergleichenden Anatomie und Entwicklungsgeschichte des Venensystems der Amphibien und Fische. Morph. JB. xiii, pp. 119–172, pls. ii–iv.

BORNAND, E. Sur la Nature et l'Origine de la Gaîne de Sarcolemme chez les Poissons. Bull. Soc. Vaud. xxiii, pp. 1–18, pls. i & ii.

EBERTH, C. J. Zur Kenntniss der Blutplättchen bei den niederen Wirbelthieren. Kölliker Festschrift, pp. 37–48, pl. ii.

DECKER, F. Zur Physiologie des Fischdarmes. Kölliker Festschrift, pp. 387–411.

[GÜNTHER, A.] The Zoology of H.M.S. 'Challenger.' Vol. xxii. Report on the Deep-Sea Fishes. With Appendices by H. N. MOSELEY, on the Structure of the Peculiar Organs on the Head of Ipnops, and by R. VON LENDENFELD, on the Structure of the Phosphorescent Organs of Fishes. London: 1887, 4to, lxv & 335 pp., 79 pls., & woodcuts.

This report includes references to all Fishes which have hitherto been obtained at a depth of 100 or more fathoms. Most of the new or little known species obtained by the 'Challenger,' the 'Knight Errant,' and the 'Triton,' are described and figured, as well as many others.

DOLLO, L. La Vie au Sein des Mers et les Poissons abyssaux. Rev. Quest. sci. xxi, pp. 33–64, figs.

Abyssal Fishes; conclusion.

VAILLANT, L. Considérations sur les Poissons des grandes profondeurs. Deuxième Note. C.R. civ, pp. 123–126.

JORDAN, D. S. Science Sketches. Chicago: 1887, 8vo, 276 pp.

This volume is made up of a number of unconnected sketches and addresses, coming more or less distinctly under the head of Popular Science. Several chapters are of special interest to the ichthyologist, particularly that on the Dispersion of Fresh-water Fishes. An appendix contains a full list of the author's publications.

LUCOFF, B. Vergleichend-Anatomische Studien über die Chorda und die Chordascheide. Bull. Soc. Mosc. 1887, pp. 227–342 (Russian text), & 442–482 (German abstract), pls. iv–vi.

DOHRN, A. Studien zur Urgeschichte des Wirbelthierkörpers. XII. Thyreoidea und Hypobranchialrinne, Spritzlochsack und Pseudobranchialrinne bei Fischen, Ammocœtes und Tunicaten. MT. z. Stat. Neap. vii, pp. 301–337, pls. iv & v.

The author offers new arguments in defence of his hypothesis of Tunicate Fish-descent.

STRECKER, C. Ueber die Condylen des Hinterhauptes. Arch. Anat. Phys. 1887, An. Abth. pp. 301–338.

Fishes, pp. 301–303.

GEGENBAUR, C. Ueber die Occipitalregion und die ihr benachbarten Wirbel der Fische. Kölliker Festschrift, pp. 1–33, pl. i.

BAUR, G. On the Morphology of Ribs. Am. Nat. xxi, pp. 942–945.

RYDER, J. A. On the homologies and early history of the limbs of Vertebrates. P. Ac. Philad. 1887, pp. 344–368.

EMERY, C. Ueber die Beziehungen des Cheiropterygiums zum Ichthyopterygium. Zool. Anz. x, pp. 185–189, figs.

The author does not recognise in the Chiropterygium any difference between præ- and postaxial rays. The uniaxial fin of *Ceratodus* is not regarded as a primitive form, but as probably derived from a Crossopterygium in which the humerus or femur was previously differentiated.

FRORIEP, A. Ueber das Homologon der Chorda tympani bei niederen Wirbeltieren. Anat. Anz. ii, pp. 486–493, fig.

DOGIEL, A. Ueber den Bau des Geruchsorgans bei Ganoiden, Knochenfischen und Amphibien. Trudui Kasan Univ. xvi, No. 1 (1886), 82 pp., 1 pl. (Russian text).

SCHIEFFERDECKER, —. Ueber das Fischauge. Anat. Anz. ii, pp. 381 & 382.

JULIN, C. De la Signification morphologique de l'Epiphyse (Glande pinéale) des Vertébrés. I. L'Epiphyse des Poissons.—Structure et Développement. Bull. Sci. Nord. (2) x, pp. 55–65.

LENDENFELD, R. v. Die Leuchtorgane der Fische. Biol. Centralbl. vii, pp. 609–621.

A condensed translation by the author of his contribution to the "Challenger" volume on deep-sea Fishes.

SOLGER, —. Ueber die Cupula terminalis der Seitenorgane der Fische. Tag. 60. Vers. Deutsch. Nat. p. 93.

CATTANEO, G. Sull' esistenza delle glandule gastriche nell' *Acipenser sturio* e nella *Tinca vulgaris*. Rend. Ist. Lomb. (2) xix, pp. 676–682, pl. — (1886).

CHARBONNEL-SALLE, L. Recherches expérimentales sur les fonctions hydrostatiques de la Vessie natatoire. Ann. Sci. Nat. (7) ii, pp. 305–331.

The variations in volume of the air-bladder are the consequence, not the cause, of the vertical movements of the Fish experimented upon (Carp, Tench, Pike, Perch, Eel). The theory first produced by Borelli, and admitted by most zoologists, that the Fish is able to modify at will its density for the purpose of vertical locomotion, must be abandoned.

CORBLIN, H. Recherches sur la locomotion du Poisson et sur la fonction hydrostatique de la Vessie natatoire. C.R. Soc. Biol. (8) iv, pp. 652–654.

Arrives at the same results as Charbonnel-Sallé.

TRAUBE-MENGARINI, M. Ricerche sui gas contenuiti nella vesica natatoria dei pesci. Atti Acc. Rom. (4) iii, pp. 55–62,

BOAS, J. E. V. Ueber die Arterienbogen der Wirbelthiere. Morph. JB. xiii, pp. 115–118, pl. i.

HOCHSTETTER, F. Beiträge zur vergleichenden Anatomie und Entwicklungsgeschichte des Venensystems der Amphibien und Fische. Morph. JB. xiii, pp. 119–172, pls. ii–iv.

BORNAND, E. Sur la Nature et l'Origine de la Gaine de Sarcolemme chez les Poissons. Bull. Soc. Vaud. xxiii, pp. 1–18, pls. i & ii.

EBERTH, C. J. Zur Kenntniss der Blutplättchen bei den niederen Wirbelthieren. Kölliker Festschrift, pp. 37–48, pl. ii.

DECKER, F. Zur Physiologie des Fischdarmes. Kölliker Festschrift, pp. 387–411.

°Savtschenko, P. Atlas des Poissons vénéneux. Descriptions des ravages par eux sur l'organisme humain, et des contre-poisons à employer. (Russian and French text.) St. Petersburg : 1887, 4to, 10 pls.

Bund, J. W. The Influence of Weather on the Migration of Fish. J. Nat. Fish-Cult. Ass. i, pp. 26–34.

Ewart, J. C. On Rigor Mortis in Fish and its Relation to Putrefaction. P. R. S. xlii, pp. 438–459.

A. Kappler has some semi-popular notes on the Fishes of Dutch Guiana. Ausland, 1885, pp. 879, 880, 896–899, 918–920, & 936–938.

On deep-sea Fishes killed by the earthquake in the Riviera; Giglioli, Nature, xxxvi, p. 4.

FAUNÆ.

Europe.

Day, F. British and Irish Salmonidæ. London : 1887, 8vo, 298 pp., woodcuts, 12 pls.

Deals with the genera *Salmo* and *Thymallus*.

Howden, J. C. Report on the Fishes of the North-east of Scotland. Scot. Nat. (2) iii, pp. 4–18.

Charbonnier, H. J. Notes on the Reptiles, Amphibia, and Fish of the Bristol District. P. Bristol Soc. (2) v, pp. 133–142.

Browne, M. Notes on the Vertebrate Animals of Leicestershire. Zool. xlv. *Pisces*, pp. 59–61.

Selys-Longchamps, E. de. Révision des Poissons d'eau douce de la Faune belge. Bull. Ac. Belg. (3) xiv, pp. 1021–1098.

Petersen, C. G. J. Nye Bidrag til den danske Hav-Fiskefauna. Vid. Medd. 1886, pp. 151–160.

Borne, M. von dem, Benecke, B., & Dallmer, C. Handbuch der Fischzucht und Fischerei. Berlin : 1886, 8vo, xiii & 701 pp., 581 cuts.

German Fish and Fisheries.

°Torossi, G. B. I Pesci e i Molluschi fluviatili della provinzia di Vicenza. Vicenza : 1887, 8vo, 32 pp., 4 pls.

A. E. Jurinac publishes a list of the Fishes of Croatia. Rad jugoslav. Akad. lxxxiii, pp. 114–121.

Ruzsky, M. Die Fische des Flusses Swijaga. Trudui Kasan. Univ. xvii, pt. 4, 67 pp. (Russian text).

Asia.

Herzenstein, S., & Warpachowski, N. Notizen über die Fischfauna des Amur-Beckens und der angrenzenden Gebiete. Trudui St. Petersburg Nat. xviii; pp. 1–58, 1 pl. (Russian text, Latin diagnoses, and German *résumé*.)

STEINDACHNER, F., & DÖDERLEIN, L. Beiträge zur Kenntniss der Fische Japan's. IV. Denk. Ak. Wien, xxxv, pp. 257–295, 4 pls.

NYSTRÖM, E. Redogörelse för den Japanska Fisksamlingen i Upsala Universitets Zoologiska Museum. Sv. Ak. Handl. xiii, pt. 4, No. 4, 54 pp.

A list, with notes, of the Japanese Fish in the Upsala Museum, several of which are described as new.

THURSTON, E. Preliminary Report on the Marine Fauna of Rámeswaram and the neighbouring Islands. Government Central Museum, Madras. Science Series, No. 1. Madras: 1887, 8vo, 41 pp., 6 pls.

List of Fishes, pp. 22–27.

A. HALY, Taprobanian, ii, p. 169, records some Fish new to Ceylon.

AFRICA.

BOULENGER, G. A. On New Fishes from the Lower Congo. Ann. N. H. (5) xix, pp. 148 & 149.

AMERICA.

JORDAN, D. S. A Catalogue of the Fishes known to inhabit the waters of North America, North of the Tropic of Cancer, with notes on the species discovered in 1883 and 1884. Rep. U. S. Fish Comm. xiii, pp. 789–973.

HAY, O. P. A Contribution to the Knowledge of the Fishes of Kansas. P. U. S. Nat. Mus. 1887, pp. 242–253.

JAMES, J. F. Catalogue of the Mammals, Birds, Reptiles, Batrachians, and Fishes in the Collection of the Cincinnati Society of Natural History. J. Cincinn. Soc. x.

Enumeration of the Fishes, with notes, pp. 36–48.

JENKINS, O. P. A List of the Fishes of Beaufort Harbour, North Carolina. Stud. Biol. Lab. J. Hopkins Univ. iv, pp. 83–94.

JORDAN, D. S., & EIGENMANN, C. H. Notes on a Collection of Fishes sent by Mr. Charles C. Leslie from Charleston, South Carolina. P. U. S. Nat. Mus. 1887, pp. 269 & 270.

BEAN, T. H. Descriptions of Five new Species of Fishes sent by Prof. A. Dugès from the Province of Guanajuato, Mexico. *T. c.* pp. 370–375.

JORDAN, D. S. A preliminary List of the Fishes of the West Indies. *Op. cit.* ix, pp. 554–608.

A nominal list, including all species which have been accredited by good authority to the waters of the West Indies proper and the Bermudas, as well as to the Atlantic Coasts of Mexico, Central America, Venezuela, and the Guianas.

LIDTH DE JEUDE, T. W. VAN. On a Collection of Reptiles and Fishes from the West Indies. Notes Leyd. Mus. ix, pp. 129–139, pl. ii.

On a few species from Curaçao and Aruba.

SAVTSCHENKO, P. Atlas des Poissons vénéneux. Descriptions des ravages par eux sur l'organisme humain, et des contre-poisons à employer. (Russian and French text.) St. Petersburg : 1887, 4to, 10 pls.

BUND, J. W. The Influence of Weather on the Migration of Fish. J. Nat. Fish-Cult. Ass. i, pp. 26–34.

EWART, J. C. On Rigor Mortis in Fish and its Relation to Putrefaction. P. R. S. xlii, pp. 438–459.

A. KAPPLER has some semi-popular notes on the Fishes of Dutch Guiana. Ausland, 1885, pp. 879, 880, 896–899, 918–920, & 936–938.

On deep-sea Fishes killed by the earthquake in the Riviera; GIGLIOLI, Nature, xxxvi, p. 4.

FAUNÆ.

EUROPE.

DAY, F. British and Irish Salmonidæ. London : 1887, 8vo, 298 pp., woodcuts, 12 pls.

Deals with the genera *Salmo* and *Thymallus*.

HOWDEN, J. C. Report on the Fishes of the North-east of Scotland. Scot. Nat. (2) iii, pp. 4–18.

CHARBONNIER, H. J. Notes on the Reptiles, Amphibia, and Fish of the Bristol District. P. Bristol Soc. (2) v, pp. 133–142.

BROWNE, M. Notes on the Vertebrate Animals of Leicestershire. Zool. xlv. *Pisces*, pp. 59–61.

SELYS-LONGCHAMPS, E. DE. Révision des Poissons d'eau douce de la Faune belge. Bull. Ac. Belg. (3) xiv, pp. 1021–1098.

PETERSEN, C. G. J. Nye Bidrag til den danske Hav-Fiskefauna. Vid. Medd. 1886, pp. 151–160.

BORNE, M. VON DEM, BENECKE, B., & DALLMER, C. Handbuch der Fischzucht und Fischerei. Berlin : 1886, 8vo, xiii & 701 pp., 581 cuts.

German Fish and Fisheries.

TOROSSI, G. B. I Pesci e i Molluschi fluviatili della provinzia di Vicenza. Vicenza : 1887, 8vo, 32 pp., 4 pls.

A. E. JURINAC publishes a list of the Fishes of Croatia. Rad jugoslav. Akad. lxxxiii, pp. 114–121.

RUZSKY, M. Die Fische des Flusses Swijaga. Trudui Kasan. Univ. xvii, pt. 4, 67 pp. (Russian text).

ASIA.

HERZENSTEIN, S., & WARPACHOWSKI, N. Notizen über die Fischfauna des Amur-Beckens und der angrenzenden Gebiete. Trudui St. Petersburg Nat. xviii, pp. 1–58, 1 pl. (Russian text, Latin diagnoses, and German *résumé*.)

STEINDACHNER, F., & DÖDERLEIN, L. Beiträge zur Kenntniss der Fische Japan's. IV. Denk. Ak. Wien, xxxv, pp. 257–295, 4 pls.

NYSTRÖM, E. Redogörelse för den Japanska Fisksamlingen i Upsala Universitets Zoologiska Museum. Sv. Ak. Handl. xiii, pt. 4, No. 4, 54 pp.

A list, with notes, of the Japanese Fish in the Upsala Museum, several of which are described as new.

THURSTON, E. Preliminary Report on the Marine Fauna of Rámés-waram and the neighbouring Islands. Government Central Museum, Madras. Science Series, No. 1. Madras: 1887, 8vo, 41 pp., 6 pls.

List of Fishes, pp. 22–27.

A. HALY, Taprobanian, ii, p. 169, records some Fish new to Ceylon.

AFRICA.

BOULENGER, G. A. On New Fishes from the Lower Congo. Ann. N. H. (5) xix, pp. 148 & 149.

AMERICA.

JORDAN, D. S. A Catalogue of the Fishes known to inhabit the waters of North America, North of the Tropic of Cancer, with notes on the species discovered in 1883 and 1884. Rep. U. S. Fish Comm. xiii, pp. 789–973.

HAY, O. P. A Contribution to the Knowledge of the Fishes of Kansas. P. U. S. Nat. Mus. 1887, pp. 242–253.

JAMES, J. F. Catalogue of the Mammals, Birds, Reptiles, Batrachians, and Fishes in the Collection of the Cincinnati Society of Natural History. J. Cincinn. Soc. x.

Enumeration of the Fishes, with notes, pp. 36–48.

JENKINS, O. P. A List of the Fishes of Beaufort Harbour, North Carolina. Stud. Biol. Lab. J. Hopkins Univ. iv, pp. 83–94.

JORDAN, D. S., & EIGENMANN, C. H. Notes on a Collection of Fishes sent by Mr. Charles C. Leslie from Charleston, South Carolina. P. U. S. Nat. Mus. 1887, pp. 269 & 270.

BEAN, T. H. Descriptions of Five new Species of Fishes sent by Prof. A. Dugès from the Province of Guanajuato, Mexico. *T. c.* pp. 370–375.

JORDAN, D. S. A preliminary List of the Fishes of the West Indies. *Op. cit.* ix, pp. 554–608.

A nominal list, including all species which have been accredited by good authority to the waters of the West Indies proper and the Bermudas, as well as to the Atlantic Coasts of Mexico, Central America, Venezuela, and the Guianas.

LIDTH DE JEUDE, T. W. VAN. On a Collection of Reptiles and Fishes from the West Indies. Notes Leyd. Mus. ix, pp. 129–139, pl. ii.

On a few species from Curaçao and Aruba.

BOULENGER, G. A. Descriptions of new South-American Characinoid Fishes. Ann. N. H. (5) xix, pp. 172–174.

——. On new Siluroid Fishes from the Andes of Columbia. *T. c.* pp. 348–350.

——. An Account of the Fishes collected by Mr. C. Buckley in Eastern Ecuador. P. Z. S. 1887, pp. 274–283, pls. xx–xxiv.

PHILIPPI, R. A. Sobre los Tiburones y algunos otros Peces de Chile. An. Univ. Chile, lxxi, pp. 1–42, pls. i–viii. [Recorded from a separate copy.]

The same author has notes on some rare fish of the Chilian coast; Zool. Gart. xxviii, pp. 85–88.

AUSTRALIA AND POLYNESIA.

RAMSAY, E. P., & DOUGLAS OGILBY, J. Descriptions of new Australian Fishes. P. Linn. Soc. N.S.W. (2) ii, pp. 241–243 & 561–564.

VAILLANT, L. Matériaux pour servir à l'histoire ichthyologique des Archipels de la Société et des Pomotous. Bull. Soc. Philom. (7) xi, pp. 49–62.

Chiefly notes on the life-coloration of known species.

PALÆONTOLOGICAL.

ANDERSON, W. Notes on the Fish Remains from the Bone Bed at Abden, near Kinghorn, Fife. Tr. Edinb. Geol. Soc. v, pp. 310–314.

TRAQUAIR, R. H. Remarks on the Fossils of the Bone Bed at Abden. *T. c.* pp. 314 & 315.

BRODIE, P. B. On the discovery of Fossil Fish in the New Red Sandstone (Upper Keuper) in Warwickshire. Rep. Brit. Ass. 1886, p. 629.

NEWTON, E. T. On the Remains of Fishes from the Keuper of Warwick and Nottingham. Q. J. Geol. Soc. xliii, pp. 537–540, pl. xxii.

MALAISE, C. Sur la découverte de poissons dévoniens dans le bord nord du bassin de Namur. Bull. Ac. Belg. (3) xiv, pp. 771 & 772.

DUPONT, E. Sur les ossements de la faune maestrichtienne placés récemment dans les galeries du Musée royal à Bruxelles. *Op. cit.* xiii, pp. 706–710.

RIVIÈRE, E. Faune des Oiseaux, des Reptiles et des Poissons des Grottes de Menton. C.R. Ass. Fr. Sci. xv, pp. 450–457. iv.

WETTSTEIN, A. Über die Fischfauna des tertiären Glarner. Abh. schw. pal. Ges. xiii, 1886 [published 1887], No. 2 8 pls.

On Fish from the roofing-slate (Tertiary) of the Canton of Glarus.

V. SZAJNOCHA has a paper in Polish, on Fossil Fish from Monte Bolca; Pam. Ak. Krakau, xii (1886), pp. 104–115, pls. i–iv.

GORJANOVIĆ-KRAMBERGER, D. Palæichthyologische Beiträge. Glasnik Narav. Druztva (Soc. Hist. Nat. Croatica), i (1886) pp. 123–137.

A German abstract, with some additions, of a paper by the author, on Tertiary Fishes, published in Croatian, in 1884.

DAVIS, J. W. The Fossil Fishes of the Chalk of Mount Lebanon, in Syria. Tr. R. Dublin Soc. (2) iii, pp. 457–636, pls. xiv–xxxviii.

The numerous new genera and species established in this contribution are reported below, under the family and other headings to which they have been referred by the author, although the Recorder is aware that many of these identifications are erroneous.

LYDEKKER, R. The Fossil Vertebrata of India. Rec. Geol. Surv. Ind. xx, pp. 51–80.

Contains reference to every species of fossil fish recorded from India (pp. 69–71).

COPE, E. D. Systematic Catalogue of Species of Vertebrata found in the Beds of the Permian Epoch in North America. Tr. Am. Phil. Soc. xvi, pp. 285–297, pls. ii & iii.

WILLIAMS, H. U. Notes on the fossil Fishes of the Genesee and Portage Black Shales. Bull. Buff. Soc. v, pp. 81–84, pl. (1886).

F. K. MIXER & H. U. WILLIAMS record the find of a considerable number of fragmentary Fish-remains in the Carboniferous, near Buffalo. *T. c.* p. 84 (1886).

WHITEAVES, J. F. Illustrations of the Fossil Fishes of the Devonian Rocks of Canada: Part I. P. Tr. R. Soc. Can. iv, pp. 101–110, pls. vi–x.

Descriptions of species from the Upper Devonian Rocks at Scaumenac Bay.

PALÆICHTHYES.

HOWES, G. B. On the Skeleton and Affinities of the Paired Fins of *Ceratodus*, with observations upon those of the *Elasmobranchii*. P. Z. S. 1887, pp. 3–26, pls. i–iii.

On the structure of the *Ceratodus* fins, and on the homologies of the Chimæroid fin-skeleton, as compared with that of *Ceratodus*. The paired fins of the Plagiostomes and Dipnoi have, in all probability, arisen independently from a type of fin most nearly represented by that of living

A n... good auth... quidas, as ...nezuel...

CHONDROPTERYGII.

MAYER, P. Ueber die Entwicklung des Herzens und der Grossen Gefässstämme bei den Selachiern. MT. z. Stat. Neap. vii, pp. 338–370, pls. xi & xii.

BOULENGER, G. A. Descriptions of new South-American Characinoid Fishes. Ann. N. H. (5) xix, pp. 172–174.

——. On new Siluroid Fishes from the Andes of Columbia. *T. c.* pp. 348–350.

——. An Account of the Fishes collected by Mr. C. Buckley in Eastern Ecuador. P. Z. S. 1887, pp. 274–283, pls. xx–xxiv.

PHILIPPI, R. A. Sobre los Tiburones y algunos otros Peces de Chile. An. Univ. Chile, lxxi, pp. 1–42, pls. i–viii. [Recorded from a separate copy.]

The same author has notes on some rare fish of the Chilian coast; Zool. Gart. xxviii, pp. 85–88.

AUSTRALIA AND POLYNESIA.

RAMSAY, E. P., & DOUGLAS OGILBY, J. Descriptions of new Austral Fishes. P. Linn. Soc. N.S.W. (2) ii, pp. 241–243 & 561–564.

VAILLANT, L. Matériaux pour servir à l'histoire ichthyologique Archipels de la Société et des Pomotous. Bull. Soc. Phil pp. xi, pp. 49–62.

Chiefly notes on the life-coloration of known species.

PALÆONTOLOGICAL.

ANDERSON, W. Notes on the Fish Remains from the Bone Bed at Abden, near Kinghorn, Fife. Tr. Edinb. Geol. Soc. v, pp. 310–314.

TRAQUAIR, R. H. Remarks on the Fossils of the Bone Bed at Abden. *T. c.* pp. 314 & 315.

BRODIE, P. B. On the discovery of Fossil Fish in the New Red Sandstone (Upper Keuper) in Warwickshire. Rep. Brit. Ass. 1886, p. 629.

NEWTON, E. T. On the Remains of Fishes from the Keuper of Warwick and Nottingham. Q. J. Geol. Soc. xliii, pp. 537–540, pl. xxii.

MALAISE, C. Sur la découverte de poissons dévoniens dans le bord nord du bassin de Namur. Bull. Ac. Belg. (3) xiv, pp. 771 & 772.

DUPONT, E. Sur les ossements de la faune maestrichtienne placés récemment dans les galeries du Musée royal à Bruxelles. *Op. cit.* xiii, pp. 706–710.

RIVIÈRE, E. Faune des Oiseaux, des Reptiles et des Poissons des Grottes de Menton. C.R. Ass. Fr. Sci. xv, pp. 450–457. liv.

WETTSTEIN, A. Über die Fischfauna des tertiären Glarner Abh. schw. pal. Ges. xiii, 1886 [published 1887], No. 2 8 pls.

On Fish from the roofing-slate (Tertiary) of the Canton of Glarus.

V. SZAJNOCHA has a paper in Polish, on Fossil Fish from Monte Bolca; Pam. Ak. Krakau, xii (1886), pp. 104–115, pls. i–iv.

GORJANOVIĆ-KRAMBERGER, D. Palæichthyologische Beiträge. Glasnik Narav. Druztva (Soc. Hist. Nat. Croatica), i (1886) pp. 123–137.

A German abstract, with some additions, of a paper by the author, on Tertiary Fishes, published in Croatian, in 1884.

DAVIS, J. W. The Fossil Fishes of the Chalk of Mount Lebanon, in Syria. Tr. R. Dublin Soc. (2) iii, pp. 457–636, pls. xiv–xxxviii.

The numerous new genera and species established in this contribution are reported below, under the family and other headings to which they have been referred by the author, although the Recorder is aware that many of these identifications are erroneous.

LYDEKKER, R. The Fossil Vertebrata of India. Rec. Geol. Surv. Ind. xx, pp. 51–80.

Contains reference to every species of fossil fish recorded from India (pp. 69–71).

COPE, E. D. Systematic Catalogue of Species of Vertebrata found in the Beds of the Permian Epoch in North America. Tr. Am. Phil. Soc. xvi, pp. 285–297, pls. ii & iii.

WILLIAMS, H. U. Notes on the fossil Fishes of the Genesee and Portage Black Shales. Bull. Buff. Soc. v, pp. 81–84, pl. (1886).

F. K. MIXER & H. U. WILLIAMS record the find of a considerable number of fragmentary Fish-remains in the Carboniferous, near Buffalo. *T. c.* p. 84 (1886).

WHITEAVES, J. F. Illustrations of the Fossil Fishes of the Devonian Rocks of Canada: Part I. P. Tr. R. Soc. Can. iv, pp. 101–110, pls. vi–x.

Descriptions of species from the Upper Devonian Rocks at Scaumenac Bay.

PALÆICHTHYES.

HOWES, G. B. On the Skeleton and Affinities of the Paired Fins of *Ceratodus*, with observations upon those of the *Elasmobranchii*. P. Z. S. 1887, pp. 3–26, pls. i–iii.

On the structure of the *Ceratodus* fins, and on the homologies of the Chimæroid fin-skeleton, as compared with that of *Ceratodus*. The paired fins of the Plagiostomes and Dipnoi have, in all probability, arisen independently from a type of fin most nearly represented by that of living

A ne-
geod auth
mudas, as
nezuel

CHONDROPTERYGII.

MAYER, P. Ueber die Entwicklung des Herzens und der Grossen Gefässstämme bei den Selachiern. MT. z. Stat. Neap. vii, pp. 338–370, pls. xi & xii.

SANDERS, A. Contributions to the Anatomy of the Central Nervous System in Vertebrate Animals.—Plagiostomata. Phil. Tr. clxxvii, pp. 733–766, pls. xxxviii–xli.

BEARD, J. The Origin of the Segmental Duct in Elasmobranchs. Anat. Anz. ii, pp. 646–652.

ROSENBERG, E. Ueber das Kopfskelet einiger Selachier. SB. Ges. Dorp. viii, pp. 31–34.

SELACHOIDEI.

BEARD, J. The Ciliary, or Motor-oculi Ganglion, and the Ganglion of the ophthalmicus profundus in Sharks. Anat. Anz. ii, pp. 565–575, figs.

LÉGER, M. Observation concernant une anomalie du cervelet d'un *Alopias vulpes*. Bull. Soc. Philom. (7) xi, pp. 160–163.

WOODWARD, A. S. On the Anatomy and Systematic Position of the Liassic Selachian *Squaloraja polyspondyla*, Agassiz. P. Z. S. 1886, pp. 527–538, pl. lv, and 1887, p. 481.

A nearly complete skeleton, and other parts, are figured and described in detail. The genus *Squaloraja* is regarded as the type of a new family of the Selachian suborder *Tectospondyli*, *Squaloraiidæ*, which may be provisionally defined as follows:—Body scarcely depressed, elongate; head produced into a long flat rostrum, without lateral teeth; males with a prehensile spine on the upper part of the snout; dentition sharply divided at the symphysis; pectoral fins with small propterygium, free.

Carcharias puga, n. sp., PEREZ CANTO, in PHILIPPI, An. Univ. Chile, lxxi, p. 6, pl. i, fig. 2, Chili. *C. gracilis*, p. 7, pl. ii, fig. 1, and *brachyrhynchus*, p. 8, pl. i, fig. 1, n. spp., PHILIPPI, *t. c.*, Chili.

Galeus chilensis, n. sp., PEREZ CANTO, in PHILIPPI, *t. c.* p. 11, pl. iv, fig. 2, and Zool. Gart. xxviii, p. 86, Chili.

Zygæna peruana, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 13, pl. ii, fig. 2, and Zool. Gart. xxviii, p. 86, Peru. *Z. dissimilis*, n. sp., J. A. MURRAY, J. Bomb. Soc. ii, p. 103, pl. —, and Ind. Ann. N. H. i, p. 90, pl. —, and Ann. N. H. (5) xx, p. 304, Kurrachee Harbour, = *Z. mokarran*, Rüpp.; DAY, Ann. N. H. (5) xx, p. 389.

Mustelus edulis, n. sp., PEREZ CANTO, in PHILIPPI, An. Univ. Chile, lxxi, p. 15, Chili.

Hypoprion? Hemigaleus? heterodus, p. 9, pl. ii, fig. 5, and *isodus*, p. 10, pl. ii, fig. 5, n. spp., PHILIPPI, *t. c.*, Chili.

Lamna huidobrii, n. sp., PHILIPPI, *t. c.* p. 16, pl. iii, fig. 1, and Zool. Gart. xxviii, p. 86, Chili. *L. philippii*, n. sp., PEREZ CANTO, in PHILIPPI, *t. c.* p. 17, pl. iii, fig. 2, Chili. *L. guentheri*, Murray, = *Carcharias tricuspidatus*, Day; DAY, Ann. N. H. (5) xx, p. 389.

Carcharodon rondeletii, M. & H.: notes on the external characters and anatomy, from specimens obtained on the coast of New Zealand; T. J. PARKER, P. Z. S. 1887, pp. 27–40, pls. iv–viii. *C. hetercdon*, Ag. (foss.): on a recently restored skeleton in the Brussels Museum; DOLLO, Rev. Quest. sci. xxii, pp. 81–91.

Alopecias vulpes, L.: notes on a specimen from Sardinia; PARONA, Atti Soc. Mod., Rend. (3) i, p. 99. *A. barræ*, n. sp., PEREZ CANTO, in PHILIPPI, *t. c.* p. 21, pl. v, fig. 2, Chili.

Notidanus vulgaris, p. 22, pl. vi, fig. 1, and *ferox*, p. 23, pl. vi, fig. 2, n. spp., PEREZ CANTO, in PHILIPPI, *t. c.*, Chili. *N. gracilis*, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, p. 470, pl. xiv, fig. 1, Upper Cretaceous, Mount Lebanon.

Chlamydoselache anguinea, Garm.: GÜNTHER figures a male specimen, and supplements Garman's account* of the anatomy of this Shark, which is referred to the *Notidanidæ*; Chall. xxii, p. 2, pls. lxiv & lv. *C. lawleyi*, n. sp. (foss.), for teeth from the Pliocene beds of Orciano in Tuscany, figured by Lawley in 1876; J. W. DAVIS, P. Z. S. 1887, p. 542.

Scyllium canescens, Gthr., described and figured by GÜNTHER, Chall. xxii, p. 1, pl. i, fig. A. *S. brevicolle*, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 26, pl. vii, fig. 5, Chili. *S. gayi*, n. sp., *id.*, Zool. Gart. xxviii, p. 86, Chili.

Thyellina elongata, p. 473, pl. xiv, figs. 2 & 3, and *curtirostris*, p. 475, pl. xv, fig. 1, n. spp. (foss.), DAVIS, *t. c.*, Upper Cretaceous, Mount Lebanon.

Acrodus, Ag. (foss): A. S. WOODWARD has notes on some Post-Liassic species; Geol. Mag. (3) iv, pp. 101–105, figs. *A. leiodus* (Ag., nomen nud.), p. 101, fig. 1, Great Oolite and Forest Marble, England, and *levis*, p. 102, figs. 2 & 3, Gault, Folkestone, n. spp., *id. t. c.*

Chalcodus, n. g., *Cochliodontidarum*, for *C. permianus*, n. sp. (foss.), ZITTEL, Handb. Pal. iii, p. 72, fig. 66, Permian of Thüringia.

Centrophorus foliaceus, fig. A, and *squamulosus*, fig. B, n. spp., GÜNTHER, Chall. xxii, p. 5, pl. ii, off Japan, 345 fath..

Centroscyllium granulatum, n. sp., *id. t. c.* p. 7, Falkland Is, 245 fath.

Spinax primævus, Pict. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xvi, fig. 2.

Centrophoroides, n. g. (*Spinacid.*) for *C. latidens*, n. sp. (foss.), DAVIS, *t. c.* p. 478, pl. xv, fig. 2, Upper Cretaceous, Mount Lebanon.

Rhinognathus, n. g. (*Spinacid.*) for *R. lewisii*, n. sp. (foss.), *id. t. c.* p. 480, pl. xiv, fig. 4, Upper Cretaceous, Mount Lebanon.

Echinorhinus spinosus, L., figured by MCCOY, Prodr. Zool. Viet. pl. cxliv.

Rhina armata, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 29, pl. vii, fig. 1, and Zool. Gart. xxviii, p. 87, Chili.

BATOIDEI.

E. DU BOIS-REYMOND, Arch. Anat. Phys. 1887, Phys. Abth. p. 50–110, relates further experiments on living specimens of *Torpedo marmorata*.

* I find that S. Garman's important paper on this fish, in Bull. Mus. C. Z. xii. No. 1, has been omitted by the Recorder for 1885.—REC.

SANDERS, A. Contributions to the Anatomy of the Central Nervous System in Vertebrate Animals.—Plagiostomata. Phil. Tr. clxxvii, pp. 733–766, pls. xxxviii–xli.

BEARD, J. The Origin of the Segmental Duct in Elasmobranchs. Anat. Anz. ii, pp. 646–652.

ROSENBERG, E. Ueber das Kopfskelet einiger Selachier. SB. Ges. Dorp. viii, pp. 31–34.

SELACHOIDEI.

BEARD, J. The Ciliary, or Motor-oculi Ganglion, and the Ganglion of the ophthalmicus profundus in Sharks. Anat. Anz. ii, pp. 565–575, figs.

LÉGER, M. Observation concernant une anomalie du cervelet d'un *Alopias vulpes*. Bull. Soc. Philom. (7) xi, pp. 160–163.

WOODWARD, A. S. On the Anatomy and Systematic Position of the Liassic Selachian *Squaloraja polyspondyla*, Agassiz. P. Z. S. 1886, pp. 527–538, pl. lv, and 1887, p. 481.

A nearly complete skeleton, and other parts, are figured and described in detail. The genus *Squaloraja* is regarded as the type of a new family of the Selachian suborder *Tectospondyli*, *Squaloraiida*, which may be provisionally defined as follows:—Body scarcely depressed, elongate; head produced into a long flat rostrum, without lateral teeth; males with a prehensile spine on the upper part of the snout; dentition sharply divided at the symphysis; pectoral fins with small propterygium, free.

Carcharias pugæ, n. sp., PEREZ CANTO, in PHILIPPI, An. Univ. Chile, lxxi, p. 6, pl. i, fig. 2, Chili. *C. gracilis*, p. 7, pl. ii, fig. 1, and *brachyrhynchus*, p. 8, pl. i, fig. 1, n. spp., PHILIPPI, *t. c.*, Chili.

Galeus chilensis, n. sp., PEREZ CANTO, in PHILIPPI, *t. c.* p. 11, pl. iv, fig. 2, and Zool. Gart. xxviii, p. 86, Chili.

Zygæna peruana, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 13, pl. ii, fig. 2, and Zool. Gart. xxviii, p. 86, Peru. *Z. dissimilis*, n. sp., J. A. MURRAY, J. Bomb. Soc. ii, p. 103, pl. —, and Ind. Ann. N. H. i, p. 90, pl. —, and Ann. N. H. (5) xx, p. 304, Kurrachee Harbour, = *Z. mokarran*, Rüpp.; DAY, Ann. N. H. (5) xx, p. 389.

Mustelus edulis, n. sp., PEREZ CANTO, in PHILIPPI, An. Univ. Chile, lxxi, p. 15, Chili.

Hypoprion? Hemigaleus? heterodus, p. 9, pl. ii, fig. 5, and *isodus*, p. 10, pl. ii, fig. 5, n. spp., PHILIPPI, *t. c.*, Chili.

Lamna huidobrii, n. sp., PHILIPPI, *t. c.* p. 16, pl. iii, fig. 1, and Zool. Gart. xxviii, p. 86, Chili. *L. philippii*, n. sp., PEREZ CANTO, in PHILIPPI, *t. c.* p. 17, pl. iii, fig. 2, Chili. *L. guentheri*, Murray, = *Carcharias tricuspidatus*, Day; DAY, Ann. N. H. (5) xx, p. 389.

Carcharodon rondeletii, M. & H.: notes on the external characters and anatomy, from specimens obtained on the coast of New Zealand; T. J. PARKER, P. Z. S. 1887, pp. 27–40, pls. iv–viii. *C. heterodon*, Ag. (foss.): on a recently restored skeleton in the Brussels Museum; DOLLO, Rev. Quest. sci. xxii, pp. 81–91.

Alopecias vulpes, L.: notes on a specimen from Sardinia; PARONA, Atti Soc. Mod., Rend. (3) i, p. 99. *A. barræ*, n. sp., PEREZ CANTO, in PHILIPPI, *t. c.* p. 21, pl. v, fig. 2, Chili.

Notidanus vulgaris, p. 22, pl. vi, fig. 1, and *ferox*, p. 23, pl. vi, fig. 2, n. spp., PEREZ CANTO, in PHILIPPI, *t. c.*, Chili. *N. gracilis*, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, p. 470, pl. xiv, fig. 1, Upper Cretaceous, Mount Lebanon.

Chlamydoselache anguinea, Garm.: GÜNTHER figures a male specimen, and supplements Garman's account* of the anatomy of this Shark, which is referred to the *Notidanidæ*; Chall. xxii, p. 2, pls. lxiv & lv. *C. lawleyi*, n. sp. (foss.), for teeth from the Pliocene beds of Orciano in Tuscany, figured by Lawley in 1876; J. W. DAVIS, P. Z. S. 1887, p. 542.

Scyllium canescens, Gthr., described and figured by GÜNTHER, Chall. xxii, p. 1, pl. i, fig. A. *S. brevicolle*, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 26, pl. vii, fig. 5, Chili. *S. gayi*, n. sp., *id.*, Zool. Gart. xxviii, p. 86, Chili.

Thyellina elongata, p. 473, pl. xiv, figs. 2 & 3, and *curtirostris*, p. 475, pl. xv, fig. 1, n. spp. (foss.), DAVIS, *t. c.*, Upper Cretaceous, Mount Lebanon.

Acrodus, Ag. (foss): A. S. WOODWARD has notes on some Post-Liassic species; Geol. Mag. (3) iv, pp. 101–105, figs. *A. leiodus* (Ag., nomen nud.), p. 101, fig. 1, Great Oolite and Forest Marble, England, and *levis*, p. 102, figs. 2 & 3, Gault, Folkestone, n. spp., *id. t. c.*

Chalcodus, n. g., *Cochliodontidarum*, for *C. permianus*, n. sp. (foss.), ZITTEL, Handb. Pal. iii, p. 72, fig. 66, Permian of Thüringia.

Centrophorus foliaceus, fig. A, and *squamulosus*, fig. B, n. spp., GÜNTHER, Chall. xxii, p. 5, pl. ii, off Japan, 345 fath..

Centroscyllium granulatum, n. sp., *id. t. c.* p. 7, Falkland Is, 245 fath.

Spinax primævus, Pict. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xvi, fig. 2.

Centrophoroides, n. g. (*Spinacid.*) for *C. latidens*, n. sp. (foss.), DAVIS, *t. c.* p. 478, pl. xv, fig. 2, Upper Cretaceous, Mount Lebanon.

Rhinognathus, n. g. (*Spinacid.*) for *R. lewisii*, n. sp. (foss.), *id. t. c.* p. 480, pl. xiv, fig. 4, Upper Cretaceous, Mount Lebanon.

Echinorhinus spinosus, L., figured by MCCOY, Prodr. Zool. Vict. pl. cxliv.

Rhina armata, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 29, pl. vii, fig. 1, and Zool. Gart. xxviii, p. 87, Chili.

BATOIDEI.

E. DU BOIS-REYMOND, Arch. Anat. Phys. 1887, Phys. Abth. pp. 50–110, relates further experiments on living specimens of *Torpedo marmorata*.

* I find that S. Garman's important paper on this fish, in Bull. Mus. C. Z. xii. No. 1, has been omitted by the Recorder for 1885.—REC.

Swaen, A. Études sur le développement de la Torpille (*Torpedo ocellata*). Première Partie. Arch. Biol. vii, pp. 537–585, pls. xiv–xvi.

Rückert, J. Ueber die Anlage des mittleren Keimblattes und die erste Blutbildung bei Torpedo. Anat. Anz. ii, pp. 97–112, fig., & 154–176.

Krause, W. Die Nervenendigung im electrischen Organ. Monthly Int. J. Anat. Hist. iii [1886], pp. 285–308, pl. xiv, and iv, pp. 371–392, pls. xvi & xvii. (*Torpedo ocellata*.)

Gotch, F. The Electromotive Properties of the Electrical Organ of *Torpedo marmorata*. Phil. Tr. clxxviii, pp. 487–537.

Rhinobatus grandis, p. 482, pl. xvi, fig. 1, *latus*, p. 485, pl. xvii, *expansus*, p. 486, pl. xviii, *tenuirostris*, p. 487, pl. xix, fig. 1, and *intermedius*, p. 489, pl. xx, fig. i, n. spp. (foss.), Davis, Tr. R. Dublin Soc. (2) iii, Upper Cretaceous, Mount Lebanon.

Raia hyperborea, Coll., figured by Günther, Chall. xxii, pl. iv. *R. isotrachys*, n. sp., *id. t. c.* p. 7, pl. iii, S. of Japan, 365 fath. *R. fyllæ*, n. sp., Lütken, Vid. Medd. 1887, p. 1, pl. i, Greenland. *R. japonica*, n. sp., Nyström, Sv. Ak. Handl. xiii, 4, 4, p. 52, Japan. *R. minor*, n. sp. (foss.), Davis, *t. c.* p. 493, pl. xxi, fig. 2, Upper Cretaceous, Mount Lebanon.

Trygon violacea, Bp.: on its occurrence in the Adriatic; F. Trois, Atti Ist. Venet. (6) v, p. 31.

Urolophus tullbergi, n. sp., Nyström, Sv. Ak. Handl. xiii, 4, 4, p. 53, Japan.

Cyclobatis, Egert. (foss.), does not belong to the *Torpedinidæ*, but to the *Trygonidæ*; A. S. Woodward, Ann. N. H. (5) xx, p. 389, and Geol. Mag. (3) iv, p. 508. *C. oligodactylus*, Egert. (foss.), figured by Davis, *t. c.* pl. xxi, fig. 3. *C. major*, n. sp. (foss.), *id. t. c.* p. 491, pl. xxi, fig. 1, Upper Cretaceous, Mount Lebanon.

Ptychodus, Ag. (foss.): on the dentition and affinities; A. S. Woodward, Q. J. Geol. Soc. xliii, pp. 121–130, pl. x.

HOLOCEPHALA.

J. Reiss, Palæontogr. xxxiv, pp. 1–27, pls. i–iii, describes some fossil Chimæroid remains in the Palæontological Museum of Munich (*Ischyodus quenstedti*, Wagn., *avita*, H. v. Mey., *schuebleri*, Quenst., *Chimæropsis paradoxa*, Zitt.).

Ischyodus ferrugineus, n. sp. (foss.), *id. ibid.* p. 20, pl. 1, fig. 10, Jurassic of Aalen, Germany.

Edaphodon kelheimensis, n. sp. (foss.), *id. ibid.* p. 20, pl. i, fig. 11, Cretaceous Greensand of Kelheim.

Metopacanthus, n. g., for *Ischyodus orthorhinus*, Egert. (foss.); Zittel, Handb. Pal. iii, p. 110.

Chimæropsis, n. g., for *C. paradoxa*, n. sp. (foss.), *id. t. c.* p. 113, fig. 126, Lithographic Slate of Eichstädt, Bavaria.

GANOIDEI.

PLACODERMI.

WOODWARD, A. S. On the Presence of a Canal System, evidently Sensory, in the Shields of Pteraspidian Fishes. P. Z. S. 1887, pp. 478–481, woodcut.

Pteraspis? *acadia*, n. sp., C. F. MATTHEW, Can. Rec. ii, pp. 251 & 323, Silurian Rocks of New Brunswick.

Pterichthys (*Bothriolepis*) *canadensis*, Whiteaves, described and figured by WHITEAVES, P. Tr. R. Soc. Can. iv, p. 101, pls. vi–ix.

ACANTHODINI.

Acanthodes concinnus, n. sp. (foss.), WHITEAVES, P. Tr. R. Soc. Can. iv, p. 107, pl. x, fig. 1, Upper Devonian, Scaumenac Bay, Canada.

DIPNOI.

SCHNEIDER, A. Ueber die *Dipnoi* und besonders die Flossen derselben. Zool. Beitr. ii, pp. 97–105, pl. xi.

In the author's opinion, the *Dipnoi* should be placed with the Batrachians rather than with the Fishes.

WILDER, B. G. The Dipnoan Brain. Am. Nat. xxi, pp. 544–548, figs.

An account of the brain of *Ceratodus*, as compared with that of *Protopterus*.

BEDDARD, F. E. Observations on the Development and Structure of the Ovum in the *Dipnoi*. P. Z. S. 1886, pp. 505–527, pls. lii–liv.

Ceratodus, Ag.: a short review of our knowledge of this genus, with special reference to the dentition; H. BÖCKLEN, JH. Ver. Württ. xliii, pp. 76–81.

Lepidosiren paradoxa, Fitz.: its history reviewed by BAUR, Zool. JB. ii, pp. 575–583; recently rediscovered at Manaós, Amazon; GIGLIOLI, Nature, xxxv, p. 343.

Phaneropleuron curtum, Whiteaves; described by WHITEAVES, P. Tr. R. Soc. Can. iv, p. 108, pl. x, fig. 8.

CHONDROSTEI.

ZOGRAFF, N. On some of the Affinities between the *Ganoidei*, *Chondrostei*, and other Fishes. Nature, xxxvii, p. 70.

The author finds a closer relationship between the *Ganoidei*, *Chondrostei*, and the *Polypteridæ* than has hitherto been supposed.

——. Ueber die Zähne der Knorpel-Ganoiden. Biol. Centralbl. vii, pp. 178–183 & 224.

——. Die embryonale Rückenflosse des Sterlet (*Acipenser ruthenus*). *T. c.* pp. 517–521.

SWAEN, A. Études sur le développement de la Torpille (*Torpedo ocellata*). Première Partie. Arch. Biol. vii, pp. 537–585, pls. xiv–xvi.

RÜCKERT, J. Ueber die Anlage des mittleren Keimblattes und die erste Blutbildung bei Torpedo. Anat. Anz. ii, pp. 97–112, fig., & 154–176.

KRAUSE, W. Die Nervenendigung im electrischen Organ. Month. Int. J. Anat. Hist. iii [1886], pp. 285–308, pl. xiv, and iv, pp. 371–392, pls. xvi & xvii. (*Torpedo ocellata.*)

GÖTCH, F. The Electromotive Properties of the Electrical Organ of *Torpedo marmorata*. Phil. Tr. clxxviii, pp. 487–537.

Rhinobatus grandis, p. 482, pl. xvi, fig. 1, *latus*, p. 485, pl. xvii, *expansus*, p. 486, pl. xviii, *tenuirostris*, p. 487, pl. xix, fig. 1, and *intermedius*, p. 489, pl. xx, fig. i, n. spp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, Upper Cretaceous, Mount Lebanon.

Raia hyperborea, Coll., figured by GÜNTHER, Chall. xxii, pl. iv. *R. isotrachys*, n. sp., *id. t. c.* p. 7, pl. iii, S. of Japan, 365 fath. *R. fyllæ*, n. sp., LÜTKEN, Vid. Medd. 1887, p. 1, pl. i, Greenland. *R. japonica*, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 52, Japan. *R. minor*, n. sp. (foss.), DAVIS, *t. c.* p. 493, pl. xxi. fig. 2, Upper Cretaceous, Mount Lebanon.

Trygon violacea, Bp.: on its occurrence in the Adriatic; F. TROIS, Atti Ist. Venet. (6) v, p. 31.

Urolophus tullbergi, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 53, Japan.

Cyclobatis, Egert. (foss.), does not belong to the *Torpedinidæ*, but to the *Trygonidæ*; A. S. WOODWARD, Ann. N. H. (5) xx, p. 389, and Geol. Mag. (3) iv, p. 508. *C. oligodactylus*, Egert. (foss.), figured by DAVIS, *t. c.* pl. xxi, fig. 3. *C. major*, n. sp. (foss.), *id. t. c.* p. 491, pl. xxi, fig. 1, Upper Cretaceous, Mount Lebanon.

Ptychodus, Ag. (foss.): on the dentition and affinities; A. S. WOODWARD, Q. J. Geol. Soc. xliii, pp. 121–130, pl. x.

HOLOCEPHALA.

J. REISS, Palæontogr. xxxiv, pp. 1–27, pls. i–iii, describes some fossil Chimæroid remains in the Palæontological Museum of Munich (*Ischyodus quenstedti*, Wagn., *avita*, H. v. Mey., *schuebleri*, Quenst., *Chimæropsis paradoxa*, Zitt.).

Ischyodus ferrugineus, n. sp. (foss.), *id., ibid.* p. 20, pl. 1, fig. 10, Jurassic of Aalen, Germany.

Edaphodon kelheimensis, n. sp. (foss.), *id. ibid.* p. 20, pl. i, fig. 11, Cretaceous Greensand of Kelheim.

Metopacanthus, n. g., for *Ischyodus orthorhinus*, Egert. (foss.); ZITT. i., Handb. Pal. iii, p. 110.

Chimæropsis, n. g., for *C. paradoxa*, n. sp. (foss.), *id. t. c.* p. 113, fig. 126, Lithographic Slate of Eichstädt, Bavaria.

GANOIDEI.

PLACODERMI.

WOODWARD, A. S. On the Presence of a Canal System, evidently Sensory, in the Shields of Pteraspidian Fishes. P. Z. S. 1887, pp. 478–481, woodcut.

Pteraspis? acadia, n. sp., C. F. MATTHEW, Can. Rec. ii, pp. 251 & 323, Silurian Rocks of New Brunswick.

Pterichthys (*Bothriolepis*) *canadensis*, Whiteaves, described and figured by WHITEAVES, P. Tr. R. Soc. Can. iv, p. 101, pls. vi–ix.

ACANTHODINI.

Acanthodes concinnus, n. sp. (foss.), WHITEAVES, P. Tr. R. Soc. Can. iv, p. 107, pl. x, fig. 1, Upper Devonian, Scaumenac Bay, Canada.

DIPNOI.

SCHNEIDER, A. Ueber die *Dipnoi* und besonders die Flossen derselben. Biol. Zool. Beitr. ii, pp. 97–105, pl. xi.

In the author's opinion, the *Dipnoi* should be placed with the Batrachians rather than with the Fishes.

WILDER, B. G. The Dipnoan Brain. Am. Nat. xxi, pp. 544–548, figs.

An account of the brain of *Ceratodus*, as compared with that of *Protopterus*.

BEDDARD, F. E. Observations on the Development and Structure of the Ovum in the *Dipnoi*. P. Z. S. 1886, pp. 505–527, pls. lii–liv.

Ceratodus, Ag.: a short review of our knowledge of this genus, with special reference to the dentition; H. BÖCKLEN, JH. Ver. Württ. xliii, pp. 76–81.

Lepidosiren paradoxa, Fitz.: its history reviewed by BAUR, Zool. JB. ii, pp. 575–583; recently rediscovered at Manaós, Amazon; GIGLIOLI, Nature, xxxv, p. 343.

Phaneropleuron curtum, Whiteaves; described by WHITEAVES, P. Tr. R. Soc. Can. iv, p. 108, pl. x, fig. 8.

CHONDROSTEI.

ZOGRAFF, N. On some of the Affinities between the *Ganoidei*, *Chondrostei*, and other Fishes. Nature, xxxvii, p. 70.

The author finds a closer relationship between the *Ganoidei*, *Chondrostei*, and the *Polypteridæ* than has hitherto been supposed.

——. Ueber die Zähne der Knorpel-Ganoiden. Biol. Centralbl. vii, pp. 178–183 & 224.

——. Die embryonale Rückenflosse des Sterlet (*Acipenser ruthenus*). *T. c.* pp. 517–521.

H. Zograph has also a monograph (in Russian) of *Acipenser ruthenus*, L., treating of the external characters and anatomy. Tr. Soc. Nat. Mosc. lii, pt. 3, 72 pp., 2 pls., woodcuts.

Iwanzow, N. Der Scaphirhynchus. Vergleichend-Anatomische Beschreibung. Bull. Soc. Mosc. 1887, pp. 1–41, 2 pls.

Chondrosteus acipenseroides, Ag.; described by J. W. Davis, Q. J. Geol. Soc. xliii, pp. 605–616, pl. xxiii. Notes by Traquair, P. Phys. Soc. Edinb. cxvi, pp. 349–361, figs., and Geol. Mag. (3) iv, pp. 248–257, figs. The affinities of *Chondrosteus* seem to radiate in three directions: towards *Acipenser*, towards *Polyodon*, and towards *Palæoniscidæ*: but of all the three directions, the distance towards *Acipenser* is the least.

Crossophilus magnicaudatus, Cope (foss.), described and figured by Cope, Mem. Ac. Washington, iii (1886), p. 162, pl. —, figs. 1–3.

POLYPTEROIDEI.

Wiedersheim, R. Zur Biologie von *Protopterus*. Anat. Anz. ii, pp. 707–713, fig.

On the condition of the animal when enclosed in the clay-ball. The tail serves as a breathing organ, as in the embryo of *Hylodes martinicensis*.

Waldschmidt, J. Beitrag zur Anatomie des Centralnervensystems und des Geruchsorgans von *Polypterus bichir*. Anat. Anz. ii, pp. 308–322, figs.

LEPIDOSTEOIDEI.

Semionotus, Ag. (foss.). A list and synonymy of the known species; A. S. Woodward, Ann. N. H. (5) xx, pp. 178 & 320. *S. joassi*, n. sp., *id. t. c.* p. 175, pl. vii, Lower Oolite, Brora, Sutherlandshire. *S. brodiei*, n. sp., E. T. Newton, Q. J. Geol. Soc. xliii, p. 539, Upper Keuper of Rowington.

Pholidophorus purbeckensis, p. 337, pl. x, fig. 2, Lower Purbeck, Isle of Portland, and *brevis*, p. 338, pl. x, fig. 1, Upper Purbeck, near Weymouth, n. spp. (foss.). W. Davies, Geol. Mag. (3) iv.

Palæoniscus reticulatus, p. 83, fig. 1, and *antiquus*, p. 84, fig. 2, n. spp. (foss.), H. U. Williams, Bull. Buff. Soc. v (1886), Black Shale of Portage Group, Sturgeon Point, Erie County, N.Y.

Palæobalistum goedelii, Heck. (foss.), described and figured by Davis, Tr. R. Dublin Soc. (2) iii, p. 496, pl. xxii, fig. 1. *P. ventralis*, n. sp., *id. t. c.* p. 499, pl. xxiii, fig. 1, Hard Chalk, Mount Lebanon.

Microdon pulchellus, n. sp. (foss.), Davis, *t.c.* p. 501, pl. xxiv, fig. 3, Soft Chalk, Mount Lebanon. Determined as Teleostean by A. S. Woodward, Ann. N. H. (5) xx, p. 344.

Spathiurus, n. g. (*Ganoid*?), *id. t. c.* p. 502, for *S. dorsalis*, n. sp. (foss.), *id. t. c.* p. 503, Hard Chalk, Mount Lebanon.

Amphilaphurus, n. g. (*Ganoid*?); *id. t. c.* p. 504, for *A. major*, n. sp. (foss.), Hard Chalk, Mount Lebanon.

TELEOSTEI.

Brock, J. Ueber Terminalkörperchen-ähnliche Organe in der Haut von Knochenfischen. Month. Int. J. Anat. Hist. iv, pp. 301–311, pl. xii.

——. Ueber Anhangsgebilde des Urogenitalapparates von Knochenfischen. Z. wiss. Zool. xlv, pp. 532–541, pl. xxv.

Coggi, A. Intorno ai corpi rossi della vescica natatoria di alcuni Teleostei. MT. z. Stat. Neap. vii, pp. 381–400, pl. xiv.

Fusari, R. Ricerche intorno alla Fina Anatomia dell' Encefalo dei Teleostei. Atti Acc. Rom. (4) iii, pp. 148–150.

——. Untersuchungen über die feinere Anatomie des Gehirnes der Teleostier. Month. Int. J. Anat. Hist. iv, pp. 275–300, pls. ix–xi.

Weber, M. Ueber Hermaphroditismus bei Fischen Zweite Mittheilung. Tijdschr. Nederl. Dierk. Ver. (2) i, pp. 128–134.

Gadus morrhua, *Scomber scomber*, *Clupea harengus*.

Cunningham, J. T. The Eggs and Larvæ of Teleosteans. Tr. R. Soc. Edinb. xxxiii, pp. 97–136, pls. i–vii.

Descriptions and figures of the eggs, embryos, and larvæ of a few species from the Scottish coast; followed by a comprehensive review of what is known concerning the structure of the embryos and larvæ of the species of Teleosteans, with the object of discovering what features are common to each family or each order; and a discussion of the changes which take place in the protoplasm and nucleus of the mature ovum, immediately after it is shed, both when fertilised and when unfertilised.

Ryder, J. A. On the Development of Osseous Fishes, including Marine and Fresh-water forms. Rep. U. S. Fish. Comm. xiii, pp. 488–604, pls. i–xxx.

Gadus morrhua, L., *Clupea vernalis*, Mitch., *Elacate canada*, L., *Siphostoma fuscum*, Stor., *Apeltes quadracus*, Mitch., *Esox reticulatus*, Lesueur, *Roccus americanus*, Gm., *Stizostedium vitreum*, Mitch., *Scombromorus maculatus*, Mitch., *Chætodipterus faber*, Brouss., *Gadus tomcodus*, Walb., *Clupea sapidissima*, Wils., *Ictalurus albidus*, Lesueur.

F. Raffaele has two preliminary notes on the ova and larvæ of Teleostei; Boll. Soc. Nat. Napoli, i, pp. 53–58, 83 & 84.

List, J. H. Zur Entwicklungsgeschichte der Knochenfische (Labriden) 1. Theil. Morphologische Ergebnisse. Z. wiss. Zool. xlv. pp. 595–645, pls. xxxi–xxxiii.

Scharff, R. On the Intra-Ovarian Egg of some Osseous Fishes. Q. J. Micr. Sci. (2) xxviii, pp. 53–74, pl. v.

——. Some Remarks on the Egg-Membranes of Osseous Fishes. Rep. Brit. Ass. 1886, pp. 698 & 699.

Prince, E. E. The Significance of the Yolk in the Eggs of Osseous Fishes. Ann. N. H. (5) xx. pp. 1–8, pl. ii.

H. Zograph has also a monograph (in Russian) of *Acipenser ruthenus*, L., treating of the external characters and anatomy. Tr. Soc. Nat. Mosc. lii, pt. 3, 72 pp., 2 pls, woodcuts.

Iwanzow, N. Der Scaphirhynchus. Vergleichend-Anatomische Beschreibung. Bull. Soc. Mosc. 1887, pp. 1–41, 2 pls.

Chondrosteus acipenseroides, Ag.; described by J. W. Davis, Q. J. Geol. Soc. xliii, pp. 605–616, pl. xxiii. Notes by Traquair, P. Phys. Soc. Edinb. cxvi, pp. 349–361, figs., and Geol. Mag. (3) iv. pp. 248–257, figs. The affinities of *Chondrosteus* seem to radiate in three directions: towards *Acipenser*, towards *Polyodon*, and towards *Palæoniscidæ*: but of all the three directions, the distance towards *Acipenser* is the least

Crossophilus magnicaudatus, Cope (foss.), described and figured by Cope, Mem. Ac. Washington, iii (1886), p. 162, pl. —, figs. 1–3.

POLYPTEROIDEI.

Wiedersheim, R. Zur Biologie von *Protopterus*. Anat. Anz. ii, pp. 707–713, fig.

On the condition of the animal when enclosed in the clay-ball. The tail serves as a breathing organ, as in the embryo of *Hylodes martinicensis*.

Waldschmidt, J. Beitrag zur Anatomie des Centralnervensystems und des Geruchsorgans von *Polypterus bichir*. Anat. Anz. ii, pp. 308–322, figs.

LEPIDOSTEOIDEI.

Semionotus, Ag. (foss.). A list and synonymy of the known species; A. S. Woodward, Ann. N. H. (5) xx, pp. 178 & 320. *S. joassi*, n. sp., *id. t. c.* p. 175, pl. vii, Lower Oolite, Brora, Sutherlandshire. *S. brodiei*, n. sp., E. T. Newton, Q. J. Geol. Soc. xliii, p. 539, Upper Keuper of Rowington. *Pholidophorus purbeckensis*, p. 337, pl. x, fig. 2, Lower Purbeck, Isle of Portland, and *brevis*, p. 338, pl. x, fig. 1, Upper Purbeck, near Weymouth, n. spp. (foss). W. Davies, Geol. Mag. (3) iv.

Palæoniscus reticulatus, p. 83, fig. 1, and *antiquus*, p. 84, fig. 2, n. spp. (foss.), H. U. Williams, Bull. Buff. Soc. v (1886), Black Shale of Portage Group, Sturgeon Point, Erie County, N.Y.

Palæobalistum goedelii, Heck. (foss.), described and figured by Davis, Tr. R. Dublin Soc. (2) iii, p. 496, pl. xxii, fig. 1. *P. ventralis*, n. sp., *id. t. c.* p. 499, pl. xxiii, fig. 1, Hard Chalk, Mount Lebanon.

Microdon pulchellus, n. sp. (foss.), Davis, *t. c.* p. 501, pl. xxiv, fig. 3, Soft Chalk, Mount Lebanon. Determined as Teleostean by A. S. Woodward, Ann. N. H. (5) xx, p. 344.

Spathiurus, n. g. (*Ganoid?*), *id. t. c.* p. 502, for *S. dorsalis*, n. sp. (foss.), *id. t. c.* p. 503, Hard Chalk, Mount Lebanon.

Amphilaphurus, n. g. (*Ganoid?*), *id. t. c.* p. 504, for *A. major*, n. sp. (foss.), Hard Chalk, Mount Lebanon.

TELEOSTEI.

Brock, J. Ueber Terminalkörperchen-ähnliche Organe in der Haut von Knochenfischen. Month. Int. J. Anat. Hist. iv, pp. 301–311, pl. xii.

——. Ueber Anhangsgebilde des Urogenitalapparates von Knochenfischen. Z. wiss. Zool. xlv, pp. 532–541, pl. xxv.

Coggi, A. Intorno ai corpi rossi della vescica natatoria di alcuni Teleostei. MT. z. Stat. Neap. vii, pp. 381–400, pl. xiv.

Fusari, R. Ricerche intorno alla Fina Anatomia dell' Encefalo dei Teleostei. Atti Acc. Rom. (4) iii, pp. 148–150.

——. Untersuchungen über die feinere Anatomie des Gehirnes der Teleostier. Month. Int. J. Anat. Hist. iv, pp. 275–300, pls. ix–xi.

Weber, M. Ueber Hermaphroditismus bei Fischen Zweite Mittheilung. Tijdschr. Nederl. Dierk. Ver. (2) i, pp. 128–134.

Gadus morrhua, *Scomber scomber*, *Clupea harengus*.

Cunningham, J. T. The Eggs and Larvæ of Teleosteans. Tr. R. Soc. Edinb. xxxiii, pp. 97–136, pls. i–vii.

Descriptions and figures of the eggs, embryos, and larvæ of a few species from the Scottish coast; followed by a comprehensive review of what is known concerning the structure of the embryos and larvæ of the species of Teleosteans, with the object of discovering what features are common to each family or each order; and a discussion of the changes which take place in the protoplasm and nucleus of the mature ovum, immediately after it is shed, both when fertilised and when unfertilised.

Ryder, J. A. On the Development of Osseous Fishes, including Marine and Fresh-water forms. Rep. U. S. Fish. Comm. xiii, pp. 488–604, pls. i–xxx.

Gadus morrhua, L., *Clupea vernalis*, Mitch., *Elacate canada*, L., *Siphostoma fuscum*, Stor., *Apeltes quadracus*, Mitch., *Esox reticulatus*, Lesueur, *Roccus americanus*, Gm., *Stizostedium vitreum*, Mitch., *Scombromorus maculatus*, Mitch., *Chætodipterus faber*, Brouss., *Gadus tomcodus*, Walb., *Clupea sapidissima*, Wils., *Ictalurus albidus*, Lesueur.

F. Raffaele has two preliminary notes on the ova and larvæ of Teleostei; Boll. Soc. Nat. Napoli, i, pp. 53–58, 83 & 84.

List, J. H. Zur Entwicklungsgeschichte der Knochenfische (Labriden) 1. Theil. Morphologische Ergebnisse. Z. wiss. Zool. xlv. pp. 595–645, pls. xxxi–xxxiii.

Scharff, R. On the Intra-Ovarian Egg of some Osseous Fishes. Q. J. Micr. Sci. (2) xxviii, pp. 53–74, pl. v.

——. Some Remarks on the Egg-Membranes of Osseous Fishes. Rep. Brit. Ass. 1886, pp. 698 & 699.

Prince, E. E. The Significance of the Yolk in the Eggs of Osseous Fishes. Ann. N. H. (5) xx, pp. 1–8, pl. ii.

BROOK, G. On the Relation of Yolk to Blastoderm in Teleostean Fish Ova. P. Phys. Soc. Edinb. cxv, pp. 187–193.

——. The Formation of the Germinal Layers in Teleostei. Tr. R. Soc. Edinb. xxxiii, pp. 199–250, pls. xiii–xv.

FUSARI, R. La segmentation des œufs des Téléostiens. Arch. Ital. Biol. ix, pp. 22–24. The same in Italian, Boll. Scient. ix, pp. 82–84.

Researches on the eggs of *Cristiceps argenteus*.

HENNEGUY, L. F. Sur le mode d'accroissement de l'embryon des Poissons osseux. C.R. civ, pp. 85–87.

ZIEGLER, E. Ueber Gastrulation der Teleosteer. Tag. 60. Vers. Deutsch. Nat. p. 258.

CUNNINGHAM, J. T. On the Development of the Oviduct in Teleosteans. P. Phys. Soc. Edinb. cxvi, pp. 342–345.

SACCHI, M. Sulla struttura del tegumento negli embrioni ed avannotti del *Salmo lacustris*. Rend. Ist. Lomb. (2) xx, p. 642–649, pl. —.

PRINCE, E. E. Points in the Development of the Pectoral Fin and Girdle in Teleosteans. Rep. Brit. Ass. 1886; pp. 697 & 698.

LAGUESSE, G. E. Sur le Développement de la Rate des Poissons osseux. C.R. Soc. Biol. (8) iv, pp. 458–460.

RABL-RÜCKHARD, H. Zur onto- und phylogenetischen Entwickelung des Torus longitudinalis im Mittelhirn der Knochenfische. Anat. Anz. ii, pp. 549–551.

ACANTHOPTERYGII.

PERCIDÆ.

Perca flavescens, Mitch.: this name has priority over that of *lutea*, Raf.; EIGENMANN, P. Ac. Philad. 1887, p. 295.

Lucioperca sandra, L.: on its introduction in the Bodensee; H. LANG; JH. Ver. Württ. xliii, p. 446.

Morone mississippiensis, n. n. for *M. interrupta*, Gill, *nec* Mitch.; *id. t. c.*

Percalates, n. g., for *Lates colonorum*, Gthr.; RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 182.

Platylates, n. g., allied to *Lates*, for *P. rupeliensis*, n. sp. (foss.); R. STORMS, Mém. Soc. Belg. Géol. i, p. 98, figs., Rupelian beds, Rumpst, near Boom, Belgium.

Etheostoma zonale, Cope, p. 54, *saxatile*, Hay, p. 57, *punctulatum*, Ag., p. 60, *whipplei*, Gir., p. 61, and *cragini*, Gilb., p. 62; notes by GILBERT, P. U. S. Nat. Mus. 1887. *E.* (*Ulocentra*) *histrio*, p. 47, Arkansas, *E.* (*Coltogaster*) *uranidea*, p. 48, Arkansas, *E.* (*Hadropterus*) *ouachitæ*, p. 49, Arkansas, and *E.* (*Alvarius*) *fonticola*, p. 63, San Marcos R., Texas, n. spp., JORDAN & GILBERT, *t. c.* *E.* (*Hadropterus*) *aquamatum*, p. 50, Tennessee, *E.* (*Rhotoeca*) *blennius*, p. 55, Tennessee,

E. (*R.*) *rupestre*, p. 57, North River, Alabama, *E. luteovinctum*, p. 58, Tennessee, *E. parvipinne*, p. 59, Black Warrior R., Alabama, *E. whipplei alabamæ*, p. 62, Black Warrior R., and *E. tuscumbia*, p. 63, Tuscumbia, Alabama, n. spp., GILBERT & SWAIN, *t. c.* *E.* (*Hadropterus*) *camptotænia*, p. 51, Montana, and *E.* (*H.*) *nianguæ*, p. 52, Montana, n. spp., GILBERT & MEEK, *t. c.* *E. nianguæ spilotum*, n. subsp., GILBERT, *t. c.* p. 53, Kentucky.

Mycteroperca xenarcha, n. sp., JORDAN, P. Ac. Philad. 1887, p. 387, James I., Galapagos.

Polyprion prognathus, Parkins: note by GÜNTHER, Ann. N. H. (5) xx, p. 236. *P. kneri*, Stdr., = *P. prognathus*.

Dules flaviventris, C. & V., is the female of *D. auriga*, C. & V.; STEINDACHNER, Anz. Ak. Wien, 1887, p. 231.

Moronopsis sandvicensis, n. sp., *id. t. c.* p. 230, Sandwich I.

Hapalogenys aculeatus, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 10, Japan.

Dentex gibbosus is regarded as a valid species by F. TROIS, Atti Ist. Venet. (6) v, p. 35.

Murrayia, Casteln., and *Riverina*, Casteln., = *Macquaria*, C. & V.; RAMSAY & DOUGLAS-OGILBY, *t. c.* p. 183.

Apogon cyseigaster, n. sp., *iid.*, P. Linn. Soc. N.S.W. (2) i, p. 1102, Parramatta River, New South Wales.

Amiichthys, n. g. (Poey, MS.), for *A. diapterus*, Poey; JORDAN, P. U. S. Nat. Mus. ix, p. 586.

Synagrops, n. n. for *Melanops*, Döderlein, preoccupied; GÜNTHER, Chall. xxii, p. 16.

Podocys minutus, Ag. (foss.), figured by WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pl. viii, fig. 8.

Acanus, Ag. (foss.), referred to the *Percidæ*, with notes on the remains found in Switzerland; WETTSTEIN, *t. c.* pp. 62–67, pls. iii & viii, fig. 9. *A. longispina*, p. 65, n. n. for *A. ovalis*, Ag., and *A. aquispina*, p. 67, n. n. for *A. elongatus*, v. Rath, *nec* Ag.

SQUAMIPINNES.

EIGENMANN, C. H., & HORNING, J. E. A Review of the *Chætodontidæ* of North America. Ann. N. Y. Ac. iv, pp. 1–18.

Ephippus longipinnis, Ag. (foss.), figured by SZAJNOCHA, Pam. Akad. Krakau, xii, pls. ii & iii.

Semiophorus parvulus, n. sp. (foss.), *id. t. c.* p. 109, pl. iv, fig. 1, Monte Libica.

SPARIDÆ.

EIGENMANN, C. H., & HUGHES, ELIZABETH G. A Review of the North American Species of the Genera *Lagodon*, *Archosargus*, and *Diplodus*. P. U. S. Nat. Mus. 1887, p. 65.

With an analysis of the North American *Sparinæ*.

Brook, G. On the Relation of Yolk to Blastoderm in Teleostean Fish Ova. P. Phys. Soc. Edinb. cxv, pp. 187–193.

——. The Formation of the Germinal Layers in Teleostei. Tr. R. Soc. Edinb. xxxiii, pp. 199–250, pls. xiii–xv.

Fusari, R. La segmentation des œufs des Téléostiens. Arch. Ital. Biol. ix, pp. 22–24. The same in Italian, Boll. Scient. ix, pp. 82–84.

Researches on the eggs of *Cristiceps argenteus*.

Henneguy, L. F. Sur le mode d'accroissement de l'embryon des Poissons osseux. C.R. civ, pp. 85–87.

Ziegler, E. Ueber Gastrulation der Teleosteer. Tag. 60. Vers. Deutsch. Nat. p. 258.

Cunningham, J. T. On the Development of the Oviduct in Teleosteans. P. Phys. Soc. Edinb. cxvi, pp. 342–345.

Sacchi, M. Sulla struttura del tegumento negli embrioni ed avannotti del *Salmo lacustris*. Rend. Ist. Lomb. (2) xx, p. 642–649, pl. —.

Prince, E. E. Points in the Development of the Pectoral Fin and Girdle in Teleosteans. Rep. Brit. Ass. 1886, pp. 697 & 698.

Laguesse, G. E. Sur le Développement de la Rate des Poissons osseux. C.R. Soc. Biol. (8) iv, pp. 458–460.

Rabl-Rückhard, H. Zur onto- und phylogenetischen Entwickelung des Torus longitudinalis im Mittelhirn der Knochenfische. Anat. Anz. ii, pp. 549–551.

ACANTHOPTERYGII.

Percidæ.

Perca flavescens, Mitch.: this name has priority over that of *lutea*, Raf.; Eigenmann, P. Ac. Philad. 1887, p. 295.

Lucioperca sandra, L.: on its introduction in the Bodensee; H. Lang; JH. Ver. Württ. xliii, p. 446.

Morone mississippiensis, n. n. for *M. interrupta*, Gill, *nec* Mitch.; *id. t. c.*

Percalates, n. g., for *Lates colonorum*, Gthr.; Ramsay & Douglas-Ogilby, P. Linn. Soc. N.S.W. (2) ii, p. 182.

Platylates, n. g., allied to *Lates*, for *P. rupeliensis*, n. sp. (foss.); R. Storms, Mém. Soc. Belg. Géol. i, p. 98, figs., Rupelian beds, Rumpst, near Boom, Belgium.

Etheostoma zonale, Cope, p. 54, *saxatile*, Hay, p. 57, *punctulatum*, Ag., p. 60, *whipplei*, Gir., p. 61, and *cragini*, Gilb., p. 62; notes by Gilbert, P. U. S. Nat. Mus. 1887. *E.* (*Ulocentra*) *histrio*, p. 47, Arkansas, *E.* (*Coltogaster*) *uranidea*, p. 48, Arkansas, *E.* (*Hadropterus*) *ouachita*, p. 49, Arkansas, and *E.* (*Alvarius*) *fonticola*, p. 63, San Marcos R., Texas, n. spp., Jordan & Gilbert, *t. c.* *E.* (*Hadropterus*) *squamatum*, p. 50, Tennessee, *E.* (*Rhotoeca*) *blennius*, p. 55, Tennessee,

E. (*R.*) *rupestre*, p. 57, North River, Alabama, *E. luteovinctum*, p. 58, Tennessee, *E. parvipinne*, p. 59, Black Warrior R., Alabama, *E. whipplei alabamæ*, p. 62, Black Warrior R., and *E. tuscumbia*, p. 63, Tuscumbia, Alabama, n. spp., GILBERT & SWAIN, *t. c.* *E.* (*Hadropterus*) *cymatotænia*, p. 51, Montana, and *E.* (*H.*) *nianguæ*, p. 52, Montana, n. spp., GILBERT & MEEK, *t. c.* *E. nianguæ spilotum*, n. subsp., GILBERT, *t. c.* p. 53, Kentucky.

Mycteroperca xenarcha, n. sp., JORDAN, P. Ac. Philad. 1887, p. 387, James I., Galapagos.

Polyprion prognathus, Parkins: note by GÜNTHER, Ann. N. H. (5) xx, p. 236. *P. kneri*, Stdr., = *P. prognathus*.

Dules flaviventris, C. & V., is the female of *D. auriga*, C. & V.; STEINDACHNER, Anz. Ak. Wien, 1887, p. 231.

Moronopsis sandvicensis, n. sp., *id. t. c.* p. 230, Sandwich I.

Hapalogenys aculeatus, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 10, Japan.

Dentex gibbosus is regarded as a valid species by F. TROIS, Atti Ist. Venet. (6) v, p. 35.

Murrayia, Casteln., and *Riverina*, Casteln., = *Macquaria*, C. & V.; RAMSAY & DOUGLAS-OGILBY, *t. c.* p. 183.

Apogon roseigaster, n. sp., *iid.*, P. Linn. Soc. N.S.W. (2) i, p. 1102, Parra-[illegible] Bay, New South Wales.

Amiichthys, n. g. Poey, MS.), for *A. diapterus*, Poey; JORDAN, P. U. S. Nat. Mus. ix, p. 586.

Synagrops, p. n. for *Melanops*, Döderlein, preoccupied; GÜNTHER, Chall. xxii, p. 16.

Podocys minutus, Ag. (foss.), figured by WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pl. viii, fig. 8.

Acanus, Ag. (foss.), referred to the *Percidæ*, with notes on the remains found in Switzerland; WETTSTEIN, *t. c.* pp. 62–67, pls. iii & viii, fig. 9. *A. longispina*, p. 65, n. n. for *A. ovalis*, Ag., and *A. æquispina*, p. 67, n. n. for *A. elongatus*, v. Rath, *nec* Ag.

SQUAMIPINNES.

EIGENMANN, C. H., & HORNING, J. E. A Review of the *Chætodontidæ* of North America. Ann. N. Y. Ac. iv, pp. 1–18.

Ephippus longipinnis, Ag. (foss.), figured by SZAJNOCHA, Pam. Akad. Krakau, xii, pls. ii & iii.

Semiophorus parvulus, n. sp. (foss.), *id. t. c.* p. 109, pl. iv, fig. 1, Monte Bolca.

SPARIDÆ.

EIGENMANN, C. H., & HUGHES, ELIZABETH G. A Review of the North American Species of the Genera *Lagodon*, *Archosargus*, and *Diplodus*. P. U. S. Nat. Mus. 1887, p. 65.

With an analysis of the North American *Sparinæ*.

Girella cyanea, Macl., described by DOUGLAS-OGILBY, P. Z. S. 1887, p. 393.

Pimelepterus meridionalis, n. sp., *id.*, P. Z. S. 1886, p. 530, Port Jackson.

Sparnodus lethriniformis, n. sp. (foss.), SZAJNOCHA, Pam. Akad. Krakau, xii, p. 106, pl. i, fig. 1, Monte Bolca.

SCORPÆNIDÆ.

Sebastes norvegicus, Müll. : note on specimens from off Stonehaven, Scotland ; J. D. MATTHEWS, Ann. N. H. (5) xx, p. 445.

Bathysebastes, Döderl., = *Setarches*, Johns. ; STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 295.

Setarches fidjiensis, n. sp., GÜNTHER, Chall. xxii, p. 19, pl. i, fig. *c*, off Matuka, Fiji, 315 fath.

Scorpæna scrofa, L. : on the occurrence of a specimen off the south coast of England ; DAY, P. Z. S. 1887, p. 342.

TEUTHIDIDÆ.

Archæoteuthis, n. g., near *Teuthis*, for *A. glaronensis*, n. sp. (foss.) ; WETTSTEIN, Abh. schw. pal. Ges. xiii, p. 67, pl. viii, fig. 29, Roofing-slate of Glarus.

BERYCIDÆ.

A. S. WOODWARD gives a list of the fossil *Berycidæ* hitherto described ; Geol. Mag. (3) iv, pp. 357 & 358.

Trachichthys elongatus, Gthr., pl. v, fig. *c*, *Traillii*, Hutton, p. lv, fig. A, and *intermedius*, Hector, pl. 5, fig. D, figured by GÜNTHER, Chall. xxii. *T. fernandezianus*, n. sp., *id. t. c.* p. 23, Juan Fernandez, Chili.

Beryx decadactylus, C. & V. : skeleton figured by GÜNTHER, Chall. xxii, pl. vi. *B. affinis*, Gthr., diagnosed by GÜNTHER, Ann. N. H. (5) xx, p. 238, fig. *B. mülleri*, Klunz., = *B. lineatus*, C. & V., *id. t. c.* p. 239. *B. gerrardi*, n. sp., *id. t. c.* p. 238, fig., Adelaide, S. Australia. *B. ovalis*, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, p. 508, pl. xxvii, fig. 4, Upper Chalk, Mount Lebanon.

Pseudoberyx grandis, p. 510, pl. xxviii, fig. 4, and *longispina*, p. 511, pl. xxv, fig. 2, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Hoplopteryx oblongus, p. 515, pl. xxv, fig. 1, and *spinosus*, p. 516, pl. xxviii, fig. 1, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Homonotus pulcher, n. sp. (foss.), *id. t. c.* p. 519, pl. xxv, fig. 3, Upper Cretaceous, Mount Lebanon.

Melamphaës typhlops, Lowe, pl. v, fig. A, *megalops*, Lütk., pl. v, fig. B, and *crassiceps*, Gthr., pl. viii, fig. B, figured by GÜNTHER, Chall. xxii. *M. robustus*, n. sp., *id. t. c.* p. 29, Mid-Atlantic, S.W. of Sierra Leone, 1850 fath. *M. beanii*, n. n. for *M. crassiceps*, Bean, *nec* Gthr. ; *id. t. c.* p. 29.

Malacosarcus, n. g., a degraded form of *Melamphaës*, with the ventrals small and five-rayed ; for *Scopelus macrostoma*, Gthr. : *id. t. c.* p. 30.

Polymixia nobilis, Lowe, figured by *id. t. c.* pl. i, fig. B.

Holocentrum melitense, n. sp. (foss.), A. S. WOODWARD, Geol. Mag. (3) iv, p. 355, Miocene of Malta.

KURTIDÆ.

Neopempheris pectoralis, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 563, Aird River, New Guinea.

POLYNEMIDÆ.

Polynemus californiensis, Thomin., = *P. approximans*, Lay & Benn.; JORDAN, P. U. S. Nat. Mus. 1887, p. 322.

XIPHIIDÆ.

Xiphias gladius, L. Note on the Sword-Fish of the Chilian Coast; PHILIPPI, An. Univ. Chile, lxxi, p. 33, pl. viii, fig. 1.

Histiophorus audax, n. sp., *id. t. c.* p. 35, pl. viii, figs. 2 & 3, and Zool. Gart. xxviii, p. 88, Chili.

TRICHIURIDÆ.

Aphanopus carbo, Lowe, figured by GÜNTHER, Chall. xxii, pl. vii, fig. A. *A. minor*, n. sp., COLLETT, Forh. Selsk. Chr. 1886, No. 19, fig. (1887), East Coast of Greenland.

Euoxymetopon poeyi, n. sp., GÜNTHER, *t. c.* p. 39, pl. xliii, Mauritius.

Lepidopus, Gouan (= *Anenchelum*, Ag.): on the fossil remains from Switzerland; WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pp. 17–45, pl. vi. *L. tenuis*, Gthr., figured by GÜNTHER, *t. c.* pl. vii, fig. B.

Trichiurus coxii, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 562, Broken Bay, New South Wales.

Enchodus recurvus, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, p. 522, pl. xxv, fig. 6, Soft Chalk, Mount Lebanon.

Saurodon, Hays. (foss.). DAMES, SB. nat. Fr. 1887, pp. 72–78, has notes on the teeth known under this name, and which he refers to the *Trichiuridæ*.

PALÆORHYNCHIDÆ.

On the fossil remains of *Palæorhynchus*, Bl., and *Hemirhynchus*, Ag., from the roofing-slate of Glarus; WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pp. 71–81, pl. ii, figs. 14–16.

ACRONURIDÆ.

Prionurus maculatus, n. sp., DOUGLAS-OGILBY, P. Z. S. 1887, p. 395, Port Jackson.

Carangidæ.

Platax, C. & V.: *Microdon nuchalis*, Dixon (foss.), is referred to this genus by A. S. Woodward, Ann. N. H. (5) xx, p. 342. *P. brevis*, n. sp. (foss.), Davis, Tr. R. Dublin Soc. (2) iii, p. 524, pl. xxv, fig. 4, Upper Cretaceous; Mount Lebanon.

Cheirothrix libanicus, Pict. & Humb. (foss.), figured by Davis, *l. c.* pl. xxvi, figs. 3 & 4. *C. lævis*, n. sp., *id. t. c.* p. 528, pl. xxvi, fig. 2, Soft Chalk, Mount Lebanon.

Petalopteryx dorsalis, n. sp. (foss.), *id. t. c.* p. 627, pl. xx, fig. 4, Upper Cretaceous, Mount Lebanon.

Cyttidæ.

Cyttus abbreviatus, Hector, figured by Günther, Chall. xxii, pl. x, fig. B.

Cyttoides, n. g. for *C. glaronensis*, n. sp. (foss.), Wettstein, Abh. schw. pal. Ges. xiii, No. 2, p. 91, pl. viii, fig. 5, Roofing-slate of Glarus.

Stromateidæ.

Omosoma sah-el-almæ, Costa (foss.), figured by Davis, Tr. R. Dublin Soc. (2) iii, pl. xxv, fig. 5.

Coryphænidæ.

Schedophilus enigmaticus, Lock., figured by Günther, Chall. xxii, pl. xliv.

Brama raii, Bl., figured by McCoy, Prodr. Zool. Vict. pl. cxxxiii.

Scombridæ.

Thynnus thynnus, L. An analysis of Pavesi's paper on the migrations of the Tunny; S. Calloni, Arch. Sci. Nat. (3) xvii, pp. 536–542.

Echeneis glaronensis, n. sp. (foss.), Wettstein, Abh. schw. pal. Ges. xiii, p. 82, pl. vii, fig. 10, Roofing-slate of Glarus.

Archæoides macrurus, n. sp. (foss.), *id. t. c.* p. 86, pl. vii, figs. 8, 9, & 11, Roofing-slate of Glarus. *A. longus*, n. n. for *A. brevis*, Ag.; *id. t. c.* p. 86.

Palimphyes glaronensis, n. n. To include the six fossil forms distinguished as species by Agassiz and by Giebel; *id. t. c.* p. 88, pl. ii, figs. 1–6.

Isurus macrurus, Ag. (foss.), figured; *id. t. c.* pl. vii, figs. 1–6.

Trachinidæ.

Bathydraco antarcticus, Gthr., figured by Günther, Chall. xxii, pl. viii, fig. A.

Neopercis atlantica, n. sp., Vaillant, C.R. cv, p. 1032, Cape Verd Is., 75–90 m.

Latilus fronticinctus, n. sp., Günther, P. Z. S. 1887, p. 550, pl. xlviii, Mauritius.

Pseudochromis persicus, n. sp., J. A. MURRAY, J. Bomb. Soc. ii, p. 49, and Ind. Ann. N. H. i, p. 24, Persian Gulf.

Pisthognathus inornatus, n. sp., RAMSAY & DOUGLAS OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 561, Derby, Australia.

Notothenia filholi, n. sp., SAUVAGE, in FILHOL, Miss. Campbell, Mém. Passage de Vénus, iii, pt. 2, p. 345 (1885), Campbell I.

BATRACHIDÆ.

Thalassophryne dowi, n. sp., JORDAN & GILBERT, P. U. S. Nat. Mus. 1887, p. 388, Punta Arenas and Panama.

PEDICULATI.

Ceratias uranoscopus, Murr., described and figured by GÜNTHER, Chall. xxii, p. 54, pl. xi, fig. c. *C. bispinosus*, p. 53, pl. xi, fig. B, off Bermuda I., 360 fath., and *caranculatus*, p. 55, pl. xi, fig. D, S. of Yeddo, 345 fath., n. spp., *id. t. c.*

Himantolophus reinhardti, Ltk. Notes on the external characters and osteology; LÜTKEN, Dan. Selsk. Skr. iv, p. 325, pl.

Melanocoetus murrayi, n. sp., GÜNTHER, *t. c.* p. 57, pl. xi, fig. A, Mid-Atlantic, 1850 fath.

Antennarius marmoratus, Less. & Garn. Note on its nest; VAILLANT, C.R. Soc. Biol. (8) iv, p. 732.

Chaunax pictus, Lowe, figured by GÜNTHER, *t. c.* pl. x, fig. A.

COTTIDÆ.

Cottus szanaga, Dyb., p. 17, and *haitej*, Dyb., p. 18, described by HERZENSTEIN & WARPACHOWSKI, Trudui St. Petersburg Nat. xviii. *C. bathybius*, n. sp., GÜNTHER, Chall. xxii, p. 62, pl. x, fig. C, S. of Yeddo, 565 fath.

Cottunculus microps, Coll., fig. A, and *thomsonii*, Gthr., fig. B, figured by GÜNTHER, *t. c.* pl. xi.

Centridermichthys elegans, Stdr. Young described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 258. *C. affinis*, p. 257, *argenteus*, p. 257, and *nudus*, p. 258, n. spp., *iid. t. c.*, Japan.

Platycephalus macrolepis, Blkr., *rudis*, Gthr., and *japonicus*, Tiles, described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 260. *P. subfasciatus*, n. sp., GÜNTHER, P. Z. S. 1887, p. 551, pl. xlix, Mauritius.

Lepidotrigla buergeri, Temm. & Schleg., p. 261, *microptera*, Gthr., p. 263, pl. iv, fig. 2, and *japonica*, Blkr., p. 264, described by STEINDACHNER & DÖDERLEIN, *t. c.* *L. longirostris*, n. sp., *iid. t. c.* p. 262, pl. iv, fig. 1, Japan. *L. japonica*, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 23, Japan.

Bembras lævis, n. sp., NYSTRÖM, *t. c.* p. 26, Japan.

CATAPHRACTI.

Dactylopterus petersèni, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 24, Japan.

CARANGIDÆ.

Platax, C. & V.: *Microdon nuchalis*, Dixon (foss.), is referred to this genus by A. S. WOODWARD, Ann. N. H. (5) xx, p. 342. *P. brevis*, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, p. 524, pl. xxv, fig. 4, Upper Cretaceous, Mount Lebanon.

Cheirothrix libanicus, Pict. & Humb. (foss.), figured by DAVIS, *l. c.* pl. xxvi, figs. 3 & 4. *C. lævis*, n. sp., *id. t. c.* p. 528, pl. xxvi, fig. 2, Soft Chalk, Mount Lebanon.

Petalopteryx dorsalis, n. sp. (foss.), *id. t. c.* p. 627, pl. xx, fig. 4, Upper Cretaceous, Mount Lebanon.

CYTTIDÆ.

Cyttus abbreviatus, Hector, figured by GÜNTHER, Chall. xxii, pl. x, fig. B.

Cyttoides, n. g. for *C. glaronensis*, n. sp. (foss.), WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 91, pl. viii, fig. 5, Roofing-slate of Glarus.

STROMATEIDÆ.

Omosoma sah-el-alma, Costa (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxv, fig. 5.

CORYPHÆNIDÆ.

Schedophilus enigmaticus, Lock., figured by GÜNTHER, Chall. xxii, pl. xliv.

Brama raii, Bl., figured by MCCOY, Prodr. Zool. Vict. pl. cxxxiii.

SCOMBRIDÆ.

Thynnus thynnus, L. An analysis of Pavesi's paper on the migrations of the Tunny; S. CALLONI, Arch. Sci. Nat. (3) xvii, pp. 536–542.

Echeneis glaronensis, n. sp. (foss.), WETTSTEIN, Abh. schw. pal. Ges. xiii, p. 82, pl. vii, fig. 10, Roofing-slate of Glarus.

Archæoides macrurus, n. sp. (foss.), *id. t. c.* p. 86, pl. vii, figs. 8, 9, & 11, Roofing-slate of Glarus. *A. longus*, n. n. for *A. brevis*, Ag.; *id. t. c.* p. 86.

Palimphyes glaronensis, n. n. To include the six fossil forms distinguished as species by Agassiz and by Giebel; *id. t. c.* p. 88, pl. ii, figs. 1–6.

Isurus macrurus, Ag. (foss.), figured; *id. t. c.* pl. vii, figs. 1–6.

TRACHINIDÆ.

Bathydraco antarcticus, Gthr., figured by GÜNTHER, Chall. xxii, pl. viii, fig. A.

Neopercis atlantica, n. sp., VAILLANT, C.R. cv, p. 1032, Cape Verd Is., 75–90 m.

Latilus fronticinctus, n. sp., GÜNTHER, P. Z. S. 1887, p. 550, pl. xlviii, Mauritius.

Pseudochromis persicus, n. sp., J. A. MURRAY, J. Bomb. Soc. ii, p. 49, and Ind. Ann. N. H. i, p. 24, Persian Gulf.

Isthognathus ornatus, n. sp., RAMSAY & DOUGLAS OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 561, Derby, Australia.

Notolepis filholi, n. sp., SAUVAGE, in FILHOL, Miss. Campbell, Mém. Passage de Vénus, iii, pt. 2, p. 345 (1885), Campbell I.

BATRACHIDÆ.

Thalassophryne dowi, n. sp., JORDAN & GILBERT, P. U. S. Nat. Mus. 1887, p. 388, Punta Arenas and Panama.

PEDICULATI.

Ceratias uranoscopus, Murr., described and figured by GÜNTHER, Chall. xxii, p. 54, pl. xi, fig. C. *C. bispinosus*, p. 53, pl. xi, fig. B, off Bermuda I., 360 fath., and *caranculatus*, p. 55, pl. xi, fig. D, S. of Yeddo, 345 fath., n. spp., *id. t. c.*

Himantolophus reinhardti, Ltk. Notes on the external characters and osteology; LÜTKEN, Dan. Selsk. Skr. iv, p. 325, pl.

Melanocetus murrayi, n. sp., GÜNTHER, *t. c.* p. 57, pl. xi, fig. A, Mid-Atlantic, 1850 fath.

Antennarius marmoratus, Less. & Garn. Note on its nest; VAILLANT, C.R. Soc. Biol. (8) iv, p. 732.

Chaunax pictus, Lowe, figured by GÜNTHER, *t. c.* pl. x, fig. A.

COTTIDÆ.

Cottus szanaga, Dyb., p. 17, and *haitej*, Dyb., p. 18, described by HERZENSTEIN & WARPACHOWSKI, Trudui St. Petersburg Nat. xviii. *C. bathybius*, n. sp., GÜNTHER, Chall. xxii, p. 62, pl. x, fig. C, S. of Yeddo, 565 fath.

Cottunculus microps, Coll., fig. A, and *thomsonii*, Gthr., fig. B, figured by GÜNTHER, *t. c.* pl. xi.

Centridermichthys elegans, Stdr. Young described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 258. *C. affinis*, p. 257, *argenteus*, p. 257, and *nudus*, p. 258, n. spp., *iid. t. c.*, Japan.

Platycephalus macrolepis, Blkr., *rudis*, Gthr., and *japonicus*, Tiles, described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 260. *P. subfasciatus*, n. sp., GÜNTHER, P. Z. S. 1887, p. 551, pl. xlix, Mauritius.

Lepidotrigla buergeri, Temm. & Schleg., p. 261, *microptera*, Gthr., p. 263, pl. iv, fig. 2, and *japonica*, Blkr., p. 264, described by STEINDACHNER & DÖDERLEIN, *t. c.* *L. longirostris*, n. sp., *iid. t. c.* p. 262, pl. iv, fig. 1, Japan. *L. japonica*, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 23, Japan.

Bembras laevis, n. sp., NYSTRÖM, *t. c.* p. 26, Japan.

CATAPHRACTI.

Dactylopterus petersèni, n sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 24, Japan.

CARANGIDÆ.

Platax, C. & V.: *Microdon nuchalis*, Dixon (foss.), is referred to this genus by A. S. WOODWARD, Ann. N. H. (5) xx, p. 342. *P. brevis*, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, p. 524, pl. xxv, fig. 4, Upper Cretaceous, Mount Lebanon.

Cheirothrix libanicus, Pict. & Humb. (foss.), figured by DAVIS, *l. c.* pl. xxvi, figs. 3 & 4. *C. lævis*, n. sp., *id. t. c.* p. 528, pl. xxvi, fig. 2, Soft Chalk, Mount Lebanon.

Petalopteryx dorsalis, n. sp. (foss.), *id. t. c.* p. 627, pl. xx, fig. 4, Upper Cretaceous, Mount Lebanon.

CYTTIDÆ.

Cyttus abbreviatus, Hector, figured by GÜNTHER, Chall. xxii, pl. x, fig. B.

Cyttoides, n. g. for *C. glaronensis*, n. sp. (foss.), WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 91, pl. viii, fig. 5, Roofing-slate of Glarus.

STROMATEIDÆ.

Omosoma sah-el-almæ, Costa (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxv, fig. 5.

CORYPHÆNIDÆ.

Schedophilus enigmaticus, Lock., figured by GÜNTHER, Chall. xxii, pl. xliv.

Brama raii, Bl., figured by MCCOY, Prodr. Zool. Vict. pl. cxxxiii.

SCOMBRIDÆ.

Thynnus thynnus, L. An analysis of Pavesi's paper on the migrations of the Tunny; S. CALLONI, Arch. Sci. Nat. (3) xvii, pp. 536–542.

Echeneis glaronensis, n. sp. (foss.), WETTSTEIN, Abh. schw. pal. Ges. xiii, p. 82, pl. vii, fig. 10, Roofing-slate of Glarus.

Archæoides macrurus, n. sp. (foss.), *id. t. c.* p. 86, pl. vii, figs. 8, 9, & 11, Roofing-slate of Glarus. *A. longus*, n. n. for *A. brevis*, Ag.; *id. t. c.* p. 86.

Palimphyes glaronensis, n. n. To include the six fossil forms distinguished as species by Agassiz and by Giebel; *id. t. c.* p. 88, pl. ii, figs. 1–6.

Isurus macrurus, Ag. (foss.), figured; *id. t. c.* pl. vii, figs. 1–6.

TRACHINIDÆ.

Bathydraco antarcticus, Gthr., figured by GÜNTHER, Chall. xxii, pl. viii, fig. A.

Neopercis atlantica, n. sp., VAILLANT, C.R. cv, p. 1032, Cape Verd Is., 75–90 m.

Latilus fronticinctus, n. sp., GÜNTHER, P. Z. S. 1887, p. 550, pl. xlviii, Mauritius.

Pseudochromis persicus, n. sp., J. A. MURRAY, J. Bomb. Soc. ii, p. 49, and Ind. Ann. N. H. i, p. 24, Persian Gulf.

Pisthognathus inornatus, n. sp., RAMSAY & DOUGLAS OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 561, Derby, Australia.

Notolepis filholi, n. sp., SAUVAGE, in FILHOL, Miss. Campbell, Mém. Passage de Vénus, iii, pt. 2, p. 345 (1885), Campbell I.

BATRACHIDÆ.

Thalassophryne dowi, n. sp., JORDAN & GILBERT, P. U. S. Nat. Mus. 1887, p. 388, Punta Arenas and Panama.

PEDICULATI.

Ceratias uranoscopus, Murr., described and figured by GÜNTHER, Chall. xxii, p. 54, pl. xi, fig. c. *C. bispinosus*, p. 53, pl. xi, fig. B, off Bermuda I., 360 fath., and *caranculatus*, p. 55, pl. xi, fig. D, S. of Yeddo, 345 fath., n. spp., *id. t. c.*

Himantolophus reinhardti, Ltk. Notes on the external characters and osteology; LÜTKEN, Dan. Selsk. Skr. iv, p. 325, pl.

Melanocetus murrayi, n. sp., GÜNTHER, *t. c.* p. 57, pl. xi, fig. A, Mid-Atlantic, 1850 fath.

Antennarius marmoratus, Less. & Garn. Note on its nest; VAILLANT, C.R. Soc. Biol. (8) iv, p. 732.

Chaunax pictus, Lowe, figured by GÜNTHER, *t. c.* pl. x, fig. A.

COTTIDÆ.

Cottus szanaga, Dyb., p. 17, and *haitej*, Dyb., p. 18, described by HERZENSTEIN & WARPACHOWSKI, Trudui St. Petersburg Nat. xviii. *C. bathybius*, n. sp., GÜNTHER, Chall. xxii, p. 62, pl. x, fig. C, S. of Yeddo, 565 fath.

Cottunculus microps, Coll., fig. A, and *thomsonii*, Gthr., fig. B, figured by GÜNTHER, *t. c.* pl. xi.

Centridermichthys elegans, Stdr. Young described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 258. *C. affinis*, p. 257, *argenteus*, p. 257, and *nudus*, p. 258, n. spp., *iid. t. c.*, Japan.

Platycephalus macrolepis, Blkr., *rudis*, Gthr., and *japonicus*, Tiles, described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 260. *P. subfasciatus*, n. sp., GÜNTHER, P. Z. S. 1887, p. 551, pl. xlix, Mauritius.

Lepidotrigla buergeri, Temm. & Schleg., p. 261, *microptera*, Gthr., p. 263, pl. iv, fig. 2, and *japonica*, Blkr., p. 264, described by STEINDACHNER & DÖDERLEIN, *t. c.* *L. longirostris*, n. sp., *iid. t. c.* p. 262, pl. iv, fig. 1, Japan. *L. japonica*, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 23, Japan.

Bembras lævis, n. sp., NYSTRÖM, *t. c.* p. 26, Japan.

CATAPHRACTI.

Dactylopterus petersèni, n sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 24, Japan.

Discoboli.

Liparis, Art. Notes on the habits and development of the British species; W. A. Smith, P. Phys. Soc. Edinb. cxv, pp. 143–151, pl. xii.

L. micropus, n. sp., Günther, Chall. xxii, p. 66, pl. xii, fig. b, Faroë Channel, 608 fath.

Paraliparis bathybius, Coll. figured; *id. t. c.* pl. xii, fig. c. *P. membranaceus*, n. sp., *id. t. c.* p. 69, pl. xii, fig. d, off Cape St. Vincent, 400 fath.

Gobiidæ.

Eleotris glehni, Dyb., described by Herzenstein & Warpachowski, Trudui St. Petersburg Nat. xviii, p. 22. *E. pleskei*, n. sp., Warpachowski, *t. c.* p. 19, pl. —, fig. 2, River Lefu, Amoor. *E. dybowskii*, n. sp., Herzenstein & Warpachowski, *t. c.* p. 21, between Palus and Chingan, Amoor.

Cepolidæ.

Cepola krusensternii, Schleg., described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 268.

Blenniidæ.

Salarias pulcher, pp. 47 & 23, and *opercularis*, pp. 48 & 23, n. spp., J. A. Murray, J. Bomb. Soc. ii, and Ind. Ann. N. H. i, Kurrachee.

Cristiceps eigenmanni, n. sp., Jordan, P. Ac. Philad. 1887, p. 387, N. E. Patagonia.

Mugilidæ.

Mugil hæmatochilus, Schleg. (= *joyneri*, Gthr.), described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 266.

Gasterosteidæ.

Gastrosteus buysei, n. sp., Warpachowski, Trudui St. Petersburg Nat. xviii, p. 18, pl. —, fig. 1, Lefu River, Amoor.

Apeltes quadracus, Mitch. On the spinning habits of the adult male during the breeding season; Ryder, Rep. U. S. Fish. Comm. xiii, pp. 514–516.

Fistularidæ.

Hacquetia bolcensis, n. sp. (foss.) Szajnocha, Pam. Akad. Krakau, xii, p. 111, pl. iv, fig. 2, Monte Bolca.

Gobiesocidæ.

Leptoptergius piger, Nardo. Notes by Facciola, Nat. Sicil. vi, p. 163, pl. iii, fig. 1.

Lepadogaster, Gouan: notes on the habits and development of the British species; W. A. Smith, P. Phys. Soc. Edinb. cxv, pp. 143–151, p' vii. *L. dentatus*, n. sp., Facciolà, Nat. Sicil. vi, p. 165, pl. iii, fig. 2, ily. *L. minimus*, n. sp., Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 270, Japan.

Ophiocephalidæ.

Ophiocephalus pekinensis, Basil., described by Herzenstein & Warpachowski, Trudui St. Petersburg Nat. xviii, p. 23.

Labyrinthici.

Ctenopoma congicum, n. sp., Boulenger, Ann. N. H. (5) xix, p. 148, Lower Congo.

Trachypteridæ.

On the characteristics and relations of the Ribbon-Fishes; T. Gill, Am. Nat. xxi, p. 86.

Regalecus banksi, Cuv., figured by McCoy, Prodr. Zool. Vict. pl. cxlv.

Notacanthi.

This family is now placed among the *Physostomi*, although there does not seem to be an open communication between the air-bladder and the œsophagus; Günther, Chall. xxii, p. 242.

Notacanthus sexspinis, Richards., pl. lxi, fig. A, *bonapartii*, Risso, pl. lxi, fig. C, and *rissoanus*, Filippi & Verany, pl. lxi, fig. B, figured; *id. t. c.*

ACANTHOPTERYGII PHARYNGOGNATHI.

Pomacentridæ.

Glyphidodon (*Parma*) *hermani*, n. sp., Steindachner, Anz. Ak. Wien, 1887, p. 230, Cape Verd I.

Labridæ.

List, J. H. Ueber Bastardierungsversuche bei Knochenfischen (Labriden). Biol. Centralbl. vii, pp. 20 & 21.

On artificial cross-impregnation of *Crenilabrus tinca*, *quinquemaculatus*, and *pavo*. The embryos only lived a few days.

——. Ueber die Variation der Laichzeit bei Labriden. *T. c.* p. 64.

——. Zur Herkunft des Periblastes bei Knochenfischen. (Labriden) *T. c.* pp. 81–88.

Graus, n. g., near *Labrus*, for *C. nigra*, n. sp., Philippi, An. Univ. Chile, lxxi, p. 40, Chili.

Discoboli.

Liparis, Art. Notes on the habits and development of the British species; W. A. Smith, P. Phys. Soc. Edinb. cxv, pp. 143–151, pl. xii.

L. micropus, n. sp., Günther, Chall. xxii, p. 66, pl. xii, fig. b, Faroë Channel, 608 fath.

Paraliparis bathybius, Coll., figured; *id. t. c.* pl. xii, fig. c. *P. membranaceus*, n. sp., *id. t. c.* p. 69, pl. xii, fig. d, off Cape St. Vincent, 400 fath.

Gobiidæ.

Electris glehni, Dyb., described by Herzenstein & Warpachowski, Trudui St. Petersburg Nat. xviii, p. 22. *E. pleskei*, n. sp., Warpachowski, *t. c.* p. 19, pl. —, fig. 2, River Lefu, Amoor. *E. dybowskii*, n. sp., Herzenstein & Warpachowski, *t. c.* p. 21, between Palus and Chingan, Amoor.

Cepolidæ.

Cepola krusensternii, Schleg., described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 268.

Blenniidæ.

Salarias pulcher, pp. 47 & 23, and *opercularis*, pp. 48 & 23, n. spp., J. A. Murray, J. Bomb. Soc. ii, and Ind. Ann. N. H. i, Kurrachee.

Cristiceps eigenmanni, n. sp., Jordan, P. Ac. Philad. 1887, p. 387, N. E. Patagonia.

Mugilidæ.

Mugil hæmatochilus, Schleg. (= *joyneri*, Gthr.), described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 266.

Gastrosteidæ.

Gastrosteus bussei, n. sp., Warpachowski, Trudui St. Petersburg Nat. xviii, p. 18, pl. —, fig. 1, Lefu River, Amoor.

Apeltes quadracus, Mitch. On the spinning habits of the adult male during the breeding season; Ryder, Rep. U. S. Fish. Comm. xiii, pp. 514–516.

Fistularidæ.

Hacquetia bolcensis, n. sp. (foss.) Szajnocha, Pam. Akad. Krakau, xii, p. 111, pl. iv, fig. 2, Monte Bolca.

Gobiesocidæ.

Leptoptery gius piger, Nardo. Notes by Facciolà, Nat. Sicil. vi, p. 163, pl. iii, fig. 1.

Lepadogaster, Gouan: notes on the habits and development of the British species; W. A. Smith, P. Phys. Soc. Edinb. cxv, pp. 143–151, p' vii. *L. dentatus*, n. sp., Facciolà, Nat. Sicil. vi, p. 165, pl. iii, fig. 2, ily. *L. minimus*, n. sp., Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 270, Japan.

Ophiocephalidæ.

Ophiocephalus pekinensis, Basil., described by Herzenstein & Warpachowski, Trudui St. Petersburg Nat. xviii, p. 23.

Labyrinthici.

Ctenopoma congicum, n. sp., Boulenger, Ann. N. H. (5) xix, p. 148, Lower Congo.

Trachypteridæ.

On the characteristics and relations of the Ribbon-Fishes; T. Gill, Am. Nat. xxi, p. 86.

Regalecus banksi, Cuv., figured by McCoy, Prodr. Zool. Vict. pl. cxlv.

Notacanthi.

This family is now placed among the *Physostomi*, although there does not seem to be an open communication between the air-bladder and the œsophagus; Günther, Chall. xxii. p. 242.

Notacanthus sexspinis, Richards., pl. lxi, fig. A, *bonapartii*, Risso, pl. lxi, fig. C, and *rissoanus*, Filippi & Vérany, pl. lxi, fig. B, figured; *id. t. c.*

ACANTHOPTERYGII PHARYNGOGNATHI.

Pomacentridæ.

Glyphidodon (*Parma*) *hermani*, n. sp., Steindachner, Anz. Ak. Wien, 1887, p. 230, Cape Verd I.

Labridæ.

List, J. H. Ueber Bastardierungsversuche bei Knochenfischen (Labriden). Biol. Centralbl. vii, pp. 20 & 21.

On artificial cross-impregnation of *Crenilabrus tinca*, *quinquemaculatus*, and *pavo*. The embryos only lived a few days.

——. Ueber die Variation der Laichzeit bei Labriden. *T. c.* p. 64.

——. Zur Herkunft des Periblastes bei Knochenfischen. (Labriden) *T. c.* pp. 81–88.

Graus, n. g., near *Labrus*, for *C. nigro*, n. sp., Philippi, An. Univ. Chile, lxxi, p. 40, Chili.

Semicossyphus reticulatus, C. & V., described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 270. *S. robecchii*, n. sp., *iid. t. c.* p. 271, Japan.

Cossyphus unimaculatus, Gthr., described; *iid. t. c.* p. 271. *C. tredecemspinosus*, Gthr., described and figured by STEINDACHNER, SB. Ak. Wien, xliv, p. 44, pl. vi, fig. 1. *C. bellis*, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 561, Shoalhaven, New South Wales.

Platyglossus bleekeri, n. sp., STEINDACHNER & DÖDERLEIN, *t. c.* p. 275, Japan.

Chærops macleayi, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 241, Port Jackson.

Trochopus canis, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 38, pl. vii, fig. 3, Chili.

Labrichthys bleekeri, Cast., figured by MCCOY, Prodr. Zool. Vict. pl. cxxxiv. *L. rubiginosus*, Schleg.: notes by STEINDACHNER & DÖDERLEIN, *t. c.* p. 272. *L. gracilis*, n. sp., *iid. t. c.* p. 273, Japan. *L. cyanogenys*, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 242, Broken Bay.

Duymaria japonica, Blkr.: notes by STEINDACHNER & DÖDERLEIN, *t. c.* p. 273.

Pseudoscarus ovifrons, Schleg. (an *P. schlegelii*, n. sp.), described by, *t. c.* p. 277. *P. madagascariensis*, p. 230, Madagascar, and *knerii* (= *aruginosus*, Kner, *nec* Blkr.), p. 231, Auckland, n. spp., STEINDACHNER, Anz. Ak. Wien, 1887.

EMBIOTOCIDÆ.

Ditrema smitti, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 32, Japan.

CHROMIDES.

Hemichromis volta, n. sp., STEINDACHNER, Anz. Ak. Wien, 1887, p. 230, Volta River, Gold Coast.

Priscacara hypsacanthus, n. sp. (foss.), COPE, Mem. Ac. Washington, iii (1886), p. 164, pl. —, fig. 6, Twin Creek, Eocene of Wyoming Territory.

Pycnosterinx discoides, Heck., pl. xxvii, fig. 3, *heckelii*, Pict., pl. xxvii, fig. 1, and *dorsalis*, Pict., pl. xxviii, fig. 2 (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii. *P. latus*, p. 534, pl. xxvii, fig. 2, *lewisii*, p. 535, pl. xxvii, fig. 5, *daviesii*, p. 537, pl. xxix, fig. 2, *gracilis*, p. 539, pl. xxix, fig. 1, and *dubius*, p. 540, pl. xxix, fig. 3, n. spp., *id. t. c.*, Chalk of Mount Lebanon.

Imogaster auratus, Costa (foss.), figured by DAVIS, *t. c.* pl. xxviii, fig. 3.

ANACANTHINI.

LYCODIDÆ.

Lycodes reticulatus, Rhdt., pl. xiii, and *murænæ*, pl. xii, fig. A, figured by GÜNTHER, Chall. xxii.

GADIDÆ.

Gadus pollachius, L.: notes on habits, parasites, enemies, &c.; M. DUNN, Zool. xlv, pp. 241–248. *G. minor*, n. sp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 277, Japan.

Melanonus gracilis, Gthr., figured by GÜNTHER, Chall. xxii, pl. xiv, fig. B.

Lotella phycis, Schleg., described by STEINDACHNER & DÖDERLEIN, *t. c.* p. 278. *L. marginata*, Gthr., figured by GÜNTHER, *t. c.* pl. xiv, fig. A.

Physiculus kaupi, Poey, figured by *id. t. c.* pl. xvii, fig. A.

Haloporphyrus guentheri, Giglioli, figured by *id. t. c.* pl. xviii fig. A. *H. eques*, p. 91, pl. xviii, fig. B, Faroë Channel, 530 fath., *inosimæ*, p. 92, pl. xx, fig. B, Inosima, Japan, 345 fath., and *ensiferus*, p. 92, pl. xix, fig. A, off the Mouth of the Rio de la Plata, 600 fath., n. spp.: *id. t. c.*

Salilota, n. g., forming a passage from *Haloporphyrus* to *Lota*; for *Haloporphyrus australis*, Gthr.; *id. t. c.* p. 95, pl. xvii, fig. B.

Antimora rostrata, Gthr., pl. xvi, fig. A, and *viola*, Goode & Bean, pl. xv, figured by *id. t. c.*

Onus reinhardti, Coll., figured by *id. t. c.* pl. xix, fig. B. *O. carpenteri*, n. sp., *id. t. c.* p. 97, pl. xlii, fig. D, Faroë Channel, 180 fath.

Nemopteryx, Ag., includes *Palæogadus*, v. Rath., and *Palæbrosmius*, v. Rath.; WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 58. *N. troscheli*, v. Rath. (foss.), figured; *id. t. c.* pl. iv.

OPHIDIIDÆ.

Brotula japonica, n. sp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 279, Tokio.

Myxocephalus, n. g. Body elongate, *Brotula*-like, small-scaled; head rather broad, covered with thin naked skin; bones of the head pitted; upper edge of opercle with a long spine; bands of villiform teeth on the jaws, vomer, and palate; vertical fins united; pectorals jugular, close together, formed of a single filiform ray. Branchiostegals 8; pseudobranchiæ and pyloric appendages absent; swim-bladder present. *M. japonicus*, n. sp., *iid. t. c.* p. 281, Tokio, deep sea.

Neobythites grandis, Gthr., figured by GÜNTHER, Chall. xxii, pl. xxi, fig. A. *N. macrops*, p. 102, pl. xx, fig. A, off the Philippine Islands, 375 fath., and *ocellatus*, p. 103, pl. xxi, fig. B, off Pernambuco, 350 fath., n. spp., *id. t. c.*

Acanthonus armatus, Gthr., figured; *id. t. c.* pl. xxiv, fig. A.

Typhlonus nasus, Gthr., figured; *id. t. c.* pl. xxv, fig. A.

Aphyonus gelatinosus, Gthr., figured; *id. t. c.* pl. xxvi, fig. A.

Sirembo armatus, Schleg., described by STEINDACHNER & DÖDERLEIN, *t. c.* p. 280.

Catetyx, n. g., for *Sirembo messieri*, Gthr.; GÜNTHER, *t. c.* p. 104, pl. xxiii, fig. B.

Pteroidonus, n. g., allied to *Pteridium*, Scop.; for *P. quinquarius*, n. sp.; *id. t. c.* p. 106, pl. xxii, fig. B, Japan, 565 fath.

Semicossyphus reticulatus, C. & V., described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 270. *S. robecchii*, n. sp., *iid. t. c.* p. 271, Japan.

Cossyphus unimaculatus, Gthr., described; *iid. t. c.* p. 271. *C. tredecemspinosus*, Gthr., described and figured by STEINDACHNER, SB. Ak. Wien, xliv, p. 44, pl. vi, fig. 1. *C. bellis*, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 561, Shoalhaven, New South Wales.

Platyglossus bleekeri, n. sp., STEINDACHNER & DÖDERLEIN, *t. c.* p. 275, Japan.

Cheilops macleayi, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 241, Port Jackson.

Trochopus canis, n. sp., PHILIPPI, An. Univ. Chile, lxxi, p. 38, pl. vii, fig. 3, Chili.

Labrichthys bleekeri, Cast., figured by MCCOY, Prodr. Zool. Vict. pl. cxxxiv. *L. rubiginosus*, Schleg.: notes by STEINDACHNER & DÖDERLEIN, *t. c.* p. 272. *L. gracilis*, n. sp., *iid. t. c.* p. 273, Japan. *L. cyanogenys*, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 242, Broken Bay.

Duymaria japonica, Blkr.: notes by STEINDACHNER & DÖDERLEIN, *t. c.* p. 273.

Pseudoscarus ovifrons, Schleg. (an *P. schlegelii*, n. sp.), described by [illegible], *t. c.* p. 277. *P. madagascariensis*, p. 230, Madagascar, and *knerii* (= *aruginosus*, Kner, *nec* Blkr.), p. 231, Auckland, n. spp., STEINDACHNER, Anz. Ak. Wien, 1887.

EMBIOTOCIDÆ.

Ditrema smitti, n. sp., NYSTRÖM, Sv. Ak. Handl. xiii, 4, 4, p. 32, Japan.

CHROMIDES.

Hemichromis volta, n. sp., STEINDACHNER, Anz. Ak. Wien, 1887, p. 230, Volta River, Gold Coast.

Priacara hypsacanthus, n. sp. (foss.), COPE, Mem. Ac. Washington, iii (1886), p. 164, pl. —, fig. 6, Twin Creek, Eocene of Wyoming Territory.

Pycnosterinx discoides, Heck., pl. xxvii, fig. 3, *heckelii*, Pict., pl. xxvii, fig. 1, and *dorsalis*, Pict., pl. xxviii, fig. 2 (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii. *P. latus*, p. 534, pl. xxvii, fig. 2, *lewisii*, p. 535, pl. xxvii, fig. 5, *daviesii*, p. 537, pl. xxix, fig. 2, *gracilis*, p. 539, pl. xxix, fig. 1, and *dubius*, p. 540, pl. xxix, fig. 3, n. spp., *id. t. c.*, Chalk of Mount Lebanon.

Imogaster auratus, Costa (foss.), figured by DAVIS, *t. c.* pl. xxviii, fig. 3.

ANACANTHINI.

LYCODIDÆ.

Lycodes reticulatus, Rhdt., pl. xiii, and *murana*, pl. xii, fig. A, figured by GÜNTHER, Chall. xxii.

GADIDÆ.

Gadus pollachius, L.: notes on habits, parasites, enemies, &c.; M. DUNN, Zool. xlv, pp. 241–248. *G. minor*, n. sp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 277, Japan.

Melanonus gracilis, Gthr., figured by GÜNTHER, Chall. xxii, pl. xiv, fig. B.

Lotella phycis, Schleg., described by STEINDACHNER & DÖDERLEIN, *t. c.* p. 278. *L. marginata*, Gthr., figured by GÜNTHER, *t. c.* pl. xiv, fig. A.

Physiculus kaupi, Poey, figured by *id. t. c.* pl. xvii, fig. A.

Haloporphyrus guentheri, Giglioli, figured by *id. t. c.* pl. xviii fig. A. *H. eques*, p. 91, pl. xviii, fig. B, Faroë Channel, 530 fath., *inosimæ*, p. 92, pl. xx, fig. B, Inosima, Japan, 345 fath., and *ensiferus*, p. 92, pl. xix, fig. A, off the Mouth of the Rio de la Plata, 600 fath., n. spp.: *id. t. c.*

Salilota, n. g., forming a passage from *Haloporphyrus* to *Lota*; for *Haloporphyrus australis*, Gthr.; *id. t. c.* p. 95, pl. xvii, fig. B.

Antimora rostrata, Gthr., pl. xvi, fig. A, and *viola*, Goode & Bean, pl. xv, figured by *id. t. c.*

Onus reinhardti, Coll., figured by *id. t. c.* pl. xix, fig. B. *O. carpenteri*, n. sp., *id. t. c.* p. 97, pl. xlii, fig. D, Faroë Channel, 180 fath.

Nemopteryx, Ag., includes *Palæogadus*, v. Rath., and *Palæbrosmius*, v. Rath.; WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 58. *N. trösscheli*, v. Rath. (foss.), figured; *id. t. c.* pl. iv.

OPHIDIIDÆ.

Brotula japonica, n. sp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 279, Tokio.

Myxocephalus, n. g. Body elongate, *Brotula*-like, small-scaled; head rather broad, covered with thin naked skin; bones of the head pitted; upper edge of opercle with a long spine; bands of villiform teeth on the jaws, vomer, and palate; vertical fins united; pectorals jugular, close together, formed of a single filiform ray. Branchiostegals 8; pseudobranchiæ and pyloric appendages absent; swim-bladder present. *M. japonicus*, n. sp., *iid. t. c.* p. 281, Tokio, deep sea.

Neobythites grandis, Gthr., figured by GÜNTHER, Chall. xxii, pl. xxi, fig. A. *N. macrops*, p. 102, pl. xx, fig. A, off the Philippine Islands, 375 fath., and *ocellatus*, p. 103, pl. xxi, fig. B, off Pernambuco, 350 fath., n. spp., *id. t. c.*

Acanthonus armatus, Gthr., figured; *id. t. c.* pl. xxiv, fig. A.

Typhlonus nasus, Gthr., figured; *id. t. c.* pl. xxv, fig. A.

Aphyonus gelatinosus, Gthr., figured; *id. t. c.* pl. xxvi, fig. A.

Sirembo armatus, Schleg., described by STEINDACHNER & DÖDERLEIN, *t. c.* p. 280.

Catoxyx, n. g., for *Sirembo messieri*, Gthr.; GÜNTHER, *t. c.* p. 104, pl. xxiii, fig. B.

Pteroidonus, n. g., allied to *Pteridium*, Scop.; for *P. quinquarius*, n. sp.; *id. t. c.* p. 106, pl. xxii, fig. B, Japan, 565 fath.

Mixonus, n. g., allied to the preceding ; for *Bathynectes laticeps*, Gthr. ; *id. t. c.* p. 108, pl. xxv, fig. B.

Bathyonus compressus, Gthr., figured ; *id. t. c.* pl. xxii, fig. A. *B. tænia*, n. sp., *id. t. c.* p. 110, pl. xxiii, fig. A, Mid-Atlantic, 2500 fath.

Porogadus gracilis, Gthr., figured ; *id. t. c.* pl. xvi, fig. B. *P. rostratus*, n. sp., *id. t. c.* p. 113, pl. xxiv, fig. B, N. of Celebes, 2150 fath.

Nematonus, n. g., for *Bathyonus pectoralis*, Goode & Bean ; *id. t. c.* p. 114.

Diplacanthopoma, n. g., for *D. brachysoma*, n. sp., *id. t. c.* p. 115, pl. xxiii, fig. C, off Pernambuco, 350 fath.

Fierasfer kagoshimanus, n. sp., STEINDACHNER & DÖDERLEIN, *t. c.* p. 283, Kagoshima, Japan.

MACRURIDÆ.

In his revision of the *Macruridæ*, GÜNTHER, Chall. xxii, proposes to divide the genus *Macrurus* into 11 subgenera :—*Cœlorhynchus*, Giorna, *Macrurus*, Bl., *Coryphænoides*, Gunn., *Mystaconurus*, n., *Lionurus*, n., *Trachonurus*, n., *Cetonurus*, n., *Chalinurus*, Goode & Bean, *Optonurus*, n., *Malacocephalus*, Gthr., and *Nematonurus*, n. The following species are figured :—*M. parallelus*, Gthr., pl. xxix, fig. A, *japonicus*, Schleg., xxix, fig. C, *carminatus*, Goode, l, fig. B, *fasciatus*, Gthr., xxviii, fig. A, *rudis*, Gthr., xxvii, *nasutus*, Gthr., xxx, fig. B, *serrulatus*, Gthr., xxx, fig. C, *sclerorhynchus*, Val., xxxii, fig. A, *æqualis*, Gthr., xxxii, fig. C, *bairdii*, = Goode & Bean, xxxii, fig. B, *holotrachys*, Gthr., xxviii, fig. B, *asper*, Gthr., xxxvi, fig. A, *carinatus*, Gthr., xxxii, fig. A, *altipinnis*, Gthr., xxxix, fig. *filicauda*, Gthr., xxxiv, fig. B, *villosus*, Gthr., xxxvi, fig. B, *crassiceps*, Gthr., xxxviii, *leptolepis*, Gthr., xxxi, *murrayi*, Gthr., xxxiv, fig. A, *lævis*, Lowe, xxxix, fig. B, *macrochir*, Gthr., xxix, fig. B, *armatus*, Hector, xl, fig. A, *affinis*, Gthr., xl, fig. B, and *longifilis*, Gthr., xxxv.

New species :—*M. goodii*, p. 136 (= *M. asper*, Goode & Bean, *nec* Gthr.), *longibarbis*, p. 139, pl. xviii, fig. C, off Matuka, Fiji, 315 fath., *fernandezianus*, p. 145, pl. xxxviii, fig. B, S. of Juan Fernandez, 1375 fath., and *liocephalus*, p. 145, pl. xxxviii, fig. A, Japan and Mid-Pacific, 1875 & 2050 fath.

Macrurus tokiensis, n. sp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 283, Tokio. *Coryphænoides marginatus*, n. sp., *iid. t. c.* p. 284, Tokio.

Trachyrhynchus trachyrhynchus, Risso, pl. xli, fig. C, and *longirostris*, Gthr., pl. xli, fig. B, figured by GÜNTHER, *t. c.* *T. murrayi*, n. sp., *id. t. c.*, p. 153, pl. xli, fig. A, Faroë Channel, 555 fath.

Bathygadus cottoides, Gthr., figured, *id. t. c.* pl. xlii, fig. A. *B. multifilis*, n. sp., *id. t. c.*, p. 155, pl. xlii, fig. B, S. of the Philippine Is., 500 fath.

LYCONIDÆ.

Under this name A. GÜNTHER, Chall. xxii, p. 158, proposes to establish a new family for the following genus, which may be considered to be a more generalized type than the *Macruridæ*.

Lycodus, n. g., for *L. pinnatus*, n. sp., *id. t. c.* pl. xlii, fig. C, South Atlantic.

ATELEOPODIDÆ.

Ateleopus japonicus, Blkr., figured by GÜNTHER, Chall. xxii, pl. 1, fig. A, described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 286.

PLEURONECTIDÆ.

D. S. JORDAN has additional notes on the *Pleuronectidæ* of America; P. Ac. Philad. 1887, pp. 389–391. [The Recorder regrets to have been unable to see a more extensive paper, by the same author, on the subject, in Rep. U. S. Fish-Comm. 1887.]

Arnoglossus lophotes, Gthr.: description of a specimen from the Sea of Messina; FACCIOLÀ, Atti Soc. Mod., Rend. (3) iii, p. 91.

Pseudorhombus hectoris, n. sp., GÜNTHER, Chall. xxii, p. 163, fig., off New Zealand, 150 fath.

PHYSOSTOMI.

SILURIDÆ.

GÜNTHER, A. Art. *Siluridæ* in Encycl. Britann., 9th ed., xxii, pp. [illegible] 67–69, figs.

[illegible]H, G. Die Elektrischen Fische, nach neuen Untersuchungen [illegible]natomisch - zoologisch dargestellt. I. *Malapterurus electricus*. Leipzig: 1887, fol., vii, 90 pp., woodcuts, 12 pls.

In addition to the electric organ, the zoological and anatomical characters of *Malapterurus* are discussed.

Clarias melas, n. sp., BOULENGER, Ann. N. H. (5) xix, p. 148, Lower Congo.

Macrones ussurigusis, Dyb., described by HERZENSTEIN & WARPACHOWSKI, Trudui St. Petersburg Nat. xviii, p. 24.

Pseudobagrus ransonnettii, p. 287, and *tokiensis*, p. 288, n. spp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, Japan.

Ictalurus okeechobeensis, n. sp., HEILPRIN, Proc. Ac. Philad. 1887, p. 9, and Explor. in Florida, p. 129, pl. xviii, Lake Okeechobee, Florida.

Pimelodus buckleyi, p. 275, pl. xx, fig. 1, *P.* (*Rhamdia*) *longicauda*, p. 275, pl. xx, fig. 2, and *P.* (*Pseudopimelodus*) *pulcher*, p. 276, pl. xxi, fig. 1, n. spp., BOULENGER, P. Z. S. 1887, Canelos, Ecuador.

Arius egertoni, Dixon (foss.): notes by A. S. WOODWARD, Geol. Mag. (3) iv, p. 304, fig. *Arius? bartonensis*, n. sp. (foss.), *id. t. c.* p. 306, Upper Eocene, Hampshire.

Malapterurus. G. FRITSCH (*suprà*) regards *M. beninensis*, Murray, and *M. affinis*, Gthr., as local varieties of *M. electricus*.

Stygogenes humboldtii, Gthr., figured, with notes, by BOULENGER, P. Z. S. 1887, p. 276, pl. xxi, fig. 2. *S. guentheri*, n. sp., *id.*, Ann. N. H. (5) xix, p. 348, Andes of Columbia.

Chætostomus dermorhynchus, n. sp., BOULENGER, P. Z. S. 1887, p. 277, pl. xxii, Canelos, Ecuador. *C. setosus*, n. sp., *id.*, Ann. N. H. (5) xix, p. 349, Andes of Columbia.

Mixonus, n. g., allied to the preceding ; for *Bathynectes laticeps*, Gthr. ; *id. t. c.* p. 108, pl. xxv, fig. B.

Bathyonus compressus, Gthr., figured ; *id. t. c.* pl. xxii, fig. A. *B. tænia*, n. sp., *id. t. c.* p. 110, pl. xxiii, fig. A, Mid-Atlantic, 2500 fath.

Porogadus gracilis, Gthr., figured ; *id. t. c.* pl. xvi, fig. B. *P. rostratus*, n. sp., *id. t. c.* p. 113, pl. xxiv, fig. B, N. of Celebes, 2150 fath.

Nematonus, n. g., for *Bathyonus pectoralis*, Goode & Bean ; *id. t. c.* p. 114.

Diplacanthoponia, n. g., for *D. brachysoma*, n. sp., *id. t. c.* p. 115, pl. xxiii, fig. C, off Pernambuco, 350 fath.

Fierasfer kagoshimanus, n. sp., STEINDACHNER & DÖDERLEIN, *t. c.* p. 283, Kagoshima, Japan.

MACRURIDÆ.

In his revision of the *Macruridæ*, GÜNTHER, Chall. xxii, proposes to divide the genus *Macrurus* into 11 subgenera:—*Coelorhynchus*, Giorna, *Macrurus*, Bl., *Coryphænoides*, Gunn., *Mystaconurus*, n., *Lionurus*, n., *Trachonurus*, n., *Cetonurus*, n., *Chalinurus*, Goode & Bean, *Optonurus*, n., *Malacocephalus*, Gthr., and *Nematonurus*, n. The following species are figured:—*M. parallelus*, Gthr., pl. xxix, fig. A, *japonicus*, Schleg., xxix, fig. C, *carminatus*, Goode, I, fig. B, *fasciatus*, Gthr., xxviii, fig. A, *rudis*, Gthr., xxvii, *nasutus*, Gthr., xxx, fig. B, *serrulatus*, Gthr., xxx, fig. *sclerorhynchus*, Val., xxxii, fig. A, *æqualis*, Gthr., xxxii, fig. C, *bairdii*, Goode & Bean, xxxii, fig. B, *holotrachys*, Gthr., xxviii, fig. B, *asper*, Gthr., xxxvi, fig. A, *carinatus*, Gthr., xxxii, fig. A, *altipinnis*, Gthr., xxxix, fig. *filicauda*, Gthr., xxxiv, fig. B, *villosus*, Gthr., xxxvi, fig. B, *crassiceps*, Gthr., xxxviii, *leptolepis*, Gthr., xxxi, *murrayi*, Gthr., xxxiv, fig. A, *lævis*, Lowe, xxxix, fig. B, *macrochir*, Gthr., xxix, fig. B, *armatus*, Hector, xl, fig. A, *affinis*, Gthr., xl, fig. B, and *longifilis*, Gthr., xxxv.

New species:—*M. goodii*, p. 136 (= *M. asper*, Goode & Bean, *nec* Gthr.), *longibarbis*, p. 139, pl. xviii, fig. C, off Matuka, Fiji, 315 fath., *fernandezianus*, p. 145, pl. xxxviii, fig. B, S. of Juan Fernandez, 1375 fath., and *liocephalus*, p. 145, pl. xxxviii, fig. A, Japan and Mid-Pacific, 1875 & 2050 fath.

Macrurus tokiensis, n. sp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 283, Tokio. *Coryphænoides marginatus*, n. sp., *iid. t. c.* p. 284, Tokio.

Trachyrhynchus trachyrhynchus, Risso, pl. xli, fig. C, and *longirostris*, Gthr., pl. xli, fig. B, figured by GÜNTHER, *t. c.* *T. murrayi*, n. sp., *id. t. c.*, p. 153, pl. xli, fig. A, Faroë Channel, 555 fath.

Bathygadus cottoides, Gthr., figured, *id. t. c.* pl. xlii, fig. A. *B. multifilis*, n. sp., *id. t. c.*, p. 155, pl. xlii, fig. B, S. of the Philippine Is., 500 fath.

LYCONIDÆ.

Under this name A. GÜNTHER, Chall. xxii, p. 158, proposes to establish a new family for the following genus, which may be considered to be a more generalized type than the *Macruridæ*.

Lycodus, n. g., for *L. pinnatus*, n. sp., *id. t. c.* pl. xlii, fig. C, South Atlantic.

ATELEOPODIDÆ.

Ateleopus japonicus, Blkr., figured by GÜNTHER, Chall. xxii, pl. 1, fig. A, described by STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, p. 286.

PLEURONECTIDÆ.

D. S. JORDAN has additional notes on the *Pleuronectidæ* of America; P. Ac. Philad. 1887, pp. 389–391. [The Recorder regrets to have been unable to see a more extensive paper, by the same author, on the subject, in Rep. U. S. Fish-Comm. 1887.]

Arnoglossus lophotes, Gthr.: description of a specimen from the Sea of Messina; FACCIOLÀ, Atti Soc. Mod., Rend. (3) iii, p. 91.

Pseudorhombus hectoris, n. sp., GÜNTHER, Chall. xxii, p. 163, fig., off New Zealand, 150 fath.

PHYSOSTOMI.

SILURIDÆ.

GÜNTHER, A. Art. *Siluridæ* in Encycl. Britann., 9th ed., xxii, pp. [illegible] 67–69, figs.

[illegible]H, G. Die Elektrischen Fische, nach neuen Untersuchungen WARPAC[illegible]natomisch - zoologisch dargestellt. 1. *Malapterurus electricus*. Sha[illegible] Leipzig: 1887, fol., vii, 90 pp., woodcuts, 12 pls.

In addition to the electric organ, the zoological and anatomical characters of *Malapterurus* are discussed.

Clarias melas, n. sp., BOULENGER, Ann. N. H. (5) xix, p. 148, Lower Congo.

Macrones ussuriensis, Dyb., described by HERZENSTEIN & WARPACHOWSKI, Trudui St. Petersburg Nat. xviii, p. 24.

Pseudobagrus ransonnettii, p. 287, and *tokiensis*, p. 288, n. spp., STEINDACHNER & DÖDERLEIN, Denk. Ak. Wien, xxxv, Japan.

Ictalurus okeechobeensis, n. sp., HEILPRIN, Proc. Ac. Philad. 1887, p. 9, and Explor. in Florida, p. 129, pl. xviii, Lake Okeechobee, Florida.

Pimelodus buckleyi, p. 275, pl. xx, fig. 1, *P.* (*Rhamdia*) *longicauda*, p. 275, pl. xx, fig. 2, and *P.* (*Pseudopimelodus*) *pulcher*, p. 276, pl. xxi, fig. 1, n. spp., BOULENGER, P. Z. S. 1887, Canelos, Ecuador.

Arius egertoni, Dixon (foss.): notes by A. S. WOODWARD, Geol. Mag. (3) iv, p. 304, fig. *Arius? bartonensis*, n. sp. (foss.), *id. t. c.* p. 306, Upper Eocene, Hampshire.

Malapterurus. G. FRITSCH (*suprà*) regards *M. beninensis*, Murray, and *M. affinis*, Gthr., as local varieties of *M. electricus*.

Stygogenes humboldtii, Gthr., figured, with notes, by BOULENGER, P. Z. S. 1887, p. 276, pl. xxi, fig. 2. *S. guentheri*, n. sp., *id.*, Ann. N. H. (5) xix, p. 348, Andes of Columbia.

Chætostomus dermorhynchus, n. sp., BOULENGER, P. Z. S. 1887, p. 277, pl. xxii, Canelos, Ecuador. *C. setosus*, n. sp., *id.*, Ann. N. H. (5) xix, p. 349, Andes of Columbia.

Trichomycterus nigromaculatus, n. sp., BOULENGER, *t. c.* p. 349, Andes of Columbia.

Nannoglanis, n. g. (*Trichomycterina*). Adipose fin present, large; dorsal fin short, without pungent spine, placed nearly in the middle of the body and behind the ventral fins; anal short; caudal truncated; teeth villiform, in broad bands in the jaws; palate toothless; cleft of the mouth moderate; no nasal barbel, one premaxillary and two lateral mentals; eyes directed upwards; head covered with soft skin; no opercular or interopercular armature; gill-openings wide, continuous across the throat; ventrals six-rayed. *N. fasciatus*, n. sp., BOULENGER, P. Z. S. 1887, p. 278, pl. xxi, fig. 3, Eastern Ecuador.

Stegophilus punctatus, n. sp., *id. t. c.* p. 279, pl. xxi, fig. 4, Canelos, Ecuador.

Coccodus armatus, Pict. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxx, fig. 1.

Xenophilis, n. g., referred provisionally to the *Siluridæ*; DAVIS, *t. c.* p. 548. *X. carinatus*, n. sp. (foss.), *id. t. c.* p. 549, pl. xxix, fig. 4, Hard Chalk, Mount Lebanon.

SCOPELIDÆ.

Harpodon microchir, Gthr., figured by GÜNTHER, Chall. xxii, pl. xl[illegible]ardii, Gthr., fig. A.

Bathysaurus ferox, Gthr., pl. xlvi, fig. A, and *mollis*, Gthr., pl. xlvi, Gthr., figured; *id. t. c.*

Bathypterois, Gthr.: on the tactile rays; VAILLANT, C.R. cv. p. 619. *B. longifilis*, Gthr., pl. xlvii, fig. B, & xlviii, fig. B, *longipes*, Gthr., pl. xlviii, fig. A, *longicauda*, Gthr., pl. xxvi, fig. B, and *quadrifilis*, Gthr., pl. xxxiii, fig. B, figured by GÜNTHER, *t. c.*

Ipnops murrayi, Gthr., figured by GÜNTHER, *t. c.* pl. xlix, fig. B.

Chlorophthalmus agassizii, Bp., pl. l, fig. C, *nigripinnis*, Gthr., pl. li, fig. A, and *gracilis*, Gthr., pl. xlix, fig. A, figured; *id. t. c.* *C. productus*, n. sp., *id. t. c.* p. 193, pl. l, fig. D, off Matuka, Fiji, 315 fath.

Scopelus antarcticus, Gthr., figured, *id. t. c.* pl. li, fig. D. *S. engraulis*, n. sp., *id. t. c.* p. 197, pl. li, fig. C, Philippine Is., 250 fath.

Nannobrachium, n. g., closely allied to *Scopelus*. *N. nigrum*, n. sp., *id. t. c.* p. 199, pl. lii, fig. B, S. of Philippine Is., 500 fath.

Odontostomus hyalinus, Cocco, figured by GÜNTHER, *t. c.* pl. lii, fig. A.

Omosudis, n. g., for *O. lowii*, n. sp., *id. t. c.* p. 201, pl. lii, fig. C, Philippine Is., 500 fath.

Alepidosaurus ferox, Lowe, described by STEINDACHNER & DÖDERLEIN, *t. c.* p. 290.

Aulopus japonicus, Gthr., described by *iid.* Denk. Ak. Wien, xxxv, p. 289.

Scopeloides, n. g., approaching *Scopelus* in the structure and position of the fins, and *Harpodon* and *Paralepis* in the dentition; WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 55. For *Osmerus glarisianus*, Ag. (= *O. cordieri*, Ag.) (foss.); figured, *id. t. c.* pl. ii, figs. 7–13.

CYPRINIDÆ.

WATASE, S. On the Caudal and Anal Fins of Gold Fishes. J. Coll. Sci. Japan, i, pp. 247–267, pls. xviii–xx.

Pseudogobio amurensis, Dyb., described by HERZENSTEIN & WARPACHOWSKI, Trudui St. Petersburg Nat. xviii, p. 28.

Ladislavia taczanowskii, Dyb., described ; *iid. t. c.* p. 30.

Barbodon, Dyb., = *Sarcochilichthys*, Blkr. ; *iid. t. c.* p. 29.

Notropis umbrifer (an *N. macrostoma*, Gir.?), p. 245, *aneolus*, p. 245, and *germanus*, p. 252, n. spp., HAY, P. U. S. Nat. Mus. 1887, Kansas.

Hypophthalmichthys, Blkr. ; synopsis of the species ; HERZENSTEIN & WARPACHOWSKI, *t. c.* p. 40. *H. dybowskii*, n. sp., HERZENSTEIN, *t. c.* p. 38, Amoor.

Leucaspius delineatus, Sieb. Found near Hasselt, Belgium ; C. BAMPS, Bull. Ac. Belg. (3) xiv, p. 372.

Micraspius, Dyb., = *Pseudorasbora*, Blkr. ; HERZENSTEIN & WARPACHOWSKI, *t. c.* p. 31.

Pseudaspius leptocephalus, Pall., described and figured ; *iid. t. c.* p. 33, pl. —, fig. 3.

Culter erythropterus, Basil., p. 42, *alburnus*, Basil., p. 43, and *mongolicus*, Basil., p. 44, described by *iid. t. c.*

Hemicultur, Blkr. A monograph of the species of this genus by N. WARPACHOWSKI, Bull. Ac. St. Pétersb. xxxii, pp. 13–23. *H. kneri*, p. 17, Shanghai, and *bleekeri*, p. 20, Yang-tse-kiang ?, n. spp., *id. t. c.* *H. schrenckii*, n. sp., *id.* Trudui St. Petersburg Nat. xviii, p. 46, and Bull. Ac. St. Pétersb. xxxii, p. 18, Fu Chau.

Hemiculterella, n. g., like *Hemiculter*, but dorsal with the second undivided ray not thickened, and beginning somewhat behind the base of the ventrals; abdomen sharply keeled behind but not in front of the ventrals ; anal short, with not more than 13 articulated rays. Teeth in two rows (5–3 | 3–2–4). *H. sauvagei*, n. sp., *id.* Bull. Ac. St. Petersb. xxxii p. 23, Western Sze-Chuan.

Octonema, n. g. (*Cobitidin.*). Caput valde depressum. Os fere terminale. Spina suborbitalis nulla. Nares anteriores cirro sat longo instructæ. Cirri rostrales 4, supra-maxillares 2. Pinna dorsalis post ventrales incipiens. Vesicæ natatoriæ pars posterior in cavitate abdominali libere suspensa. HERŽENSTEIN, Trudui St. Petersburg Nat. xviii, p. 47. *O. pleskei*, n. sp., *id. t. c.* p. 48, pl. —, fig. 5, River Lefu, Amoor.

CHARACINIDÆ.

Curimatus nasus, Stdr., = *C. dobula*, Gthr. ; BOULENGER, P. Z. S. 1887, p. 279. *C. hypostoma*, n. sp., *id.* Ann. N. H. (5) xix, p. 172, Ucayali River.

Elopomorphus orinocensis, n. sp., STEINDACHNER, Anz. Ak. Wien. 1887, p. 231, Orinoco.

Parodon buckleyi, n. sp., BOULENGER, P. Z. S. 1887, p. 279, pl. xxiii, fig. 1, Canelos, Ecuador.

Trichomycterus nigromaculatus, n. sp., BOULENGER, *t. c.* p. 349, Andes of Columbia.

Nannoglanis, n. g. (*Trichomycterina*). Adipose fin present, large; dorsal fin short, without pungent spine, placed nearly in the middle of the body and behind the ventral fins; anal short; caudal truncated; teeth villiform, in broad bands in the jaws; palate toothless; cleft of the mouth moderate; no nasal barbel, one premaxillary and two lateral mentals; eyes directed upwards; head covered with soft skin; no opercular or interopercular armature; gill-openings wide, continuous across the throat; ventrals six-rayed. *N. fasciatus*, n. sp., BOULENGER, P. Z. S. 1887, p. 278, pl. xxi, fig. 3, Eastern Ecuador.

Stegophilus punctatus, n. sp., *id. t. c.* p. 279, pl. xxi, fig. 4, Canelos, Ecuador.

Coccodus armatus, Pict. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxx, fig. 1.

Xenophölis, n. g., referred provisionally to the *Siluridæ*; DAVIS, *t. c.* p. 548. *X. carinatus*, n. sp. (foss.), *id. t. c.* p. 549, pl. xxix, fig. 4, Hard Chalk, Mount Lebanon.

SCOPELIDÆ.

Harpodon microchir, Gthr., figured by GÜNTHER, Chall. xxii, pl. xl[illegible] *ardii*, fig. A. Gthr.

Bathysaurus ferox, Gthr., pl. xlvi, fig. A, and *mollis*, Gthr., pl. xlvi, Gthr. B, figured; *id. t. c.*

Bathypterois, Gthr.: on the tactile rays; VAILLANT, C.R. cv. p. 619. *B. longifilis*, Gthr., pl. xlvii, fig. B, & xlviii, fig. B, *longipes*, Gthr., pl. xlviii, fig. A, *longicauda*, Gthr., pl. xxvi, fig. B, and *quadrifilis*, Gthr., pl. xxxiii, fig. B, figured by GÜNTHER, *t. c.*

Ipnops murrayi, Gthr., figured by GÜNTHER, *t. c.* pl. xlix, fig. B.

Chlorophthalmus agassizii, Bp., pl. l, fig. C, *nigripinnis*, Gthr., pl. li, fig. A, and *gracilis*, Gthr., pl. xlix, fig. A, figured; *id. t. c.* *C. productus*, n. sp., *id. t. c.* p. 193, pl. l, fig. D, off Matuka, Fiji, 315 fath.

Scopelus antarcticus, Gthr., figured, *id. t. c.* pl. li, fig. D. *S. engraulis*, n. sp., *id. t. c.* p. 197, pl. li, fig. C, Philippine Is., 250 fath.

Nannobrachium, n. g., closely allied to *Scopelus*. *N. nigrum*, n. sp., *id. t. c.* p. 199, pl. lii, fig. B, S. of Philippine Is., 500 fath.

Odontostomus hyalinus, Cocco, figured by GÜNTHER, *t. c.* pl. lii, fig. A.

Omosudis, n. g., for *O. lowii*, n. sp., *id. t. c.* p. 201, pl. lii, fig. C, Philippine Is., 500 fath.

Alepidosaurus ferox, Lowe, described by STEINDACHNER & DÖDERLEIN, *t. c.* p. 290.

Aulopus japonicus, Gthr., described by *iid.* Denk. Ak. Wien, xxxv, p. 289.

Scopeloides, n. g., approaching *Scopelus* in the structure and position of the fins, and *Harpodon* and *Paralepis* in the dentition; WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 55. For *Osmerus glarisianus*, Ag. (= *O. cordieri*, Ag.) (foss.); figured, *id. t. c.* pl. ii, figs. 7–13.

Cyprinidæ.

Watase, S. On the Caudal and Anal Fins of Gold Fishes. J. Coll. Sci. Japan, i, pp. 247–267, pls. xviii–xx.

Pseudogobio amurensis, Dyb., described by Herzenstein & Warpachowski, Trudui St. Petersburg Nat. xviii, p. 28.

Ladislavia taczanowskii, Dyb., described ; *iid. t. c.* p. 30.

Barbodon, Dyb., = *Sarcochilichthys*, Blkr. ; *iid. t. c.* p. 29.

Notropis umbrifer (an *N. macrostoma*, Gir.?), p. 245, *aneolus*, p. 245, and *germanus*, p. 252, n. spp., Hay, P. U. S. Nat. Mus. 1887, Kansas.

Hypophthalmichthys, Blkr. : synopsis of the species ; Herzenstein & Warpachowski, *t. c.* p. 40. *H. dybowskii*, n. sp., Herzenstein, *t. c.* p. 38, Amoor.

Leucaspius delineatus, Sieb. Found near Hasselt, Belgium ; C. Bamps, Bull. Ac. Belg. (3) xiv, p. 372.

Micraspius, Dyb., = *Pseudorasbora*, Blkr. ; Herzenstein & Warpachowski, *t. c.* p. 31.

Pseudaspius leptocephalus, Pall., described and figured ; *iid. t. c.* p. 33, pl. —, fig. 3.

Culter erythropterus, Basil., p. 42, *alburnus*, Basil., p. 43, and *mongolicus*, Basil., p. 44, described by *iid. t. c.*

Hemicultur, Blkr. A monograph of the species of this genus by N. Warpachowski, Bull. Ac. St. Pétersb. xxxii, pp. 13–23. *H. kneri*, p. 17, Shanghai, and *bleekeri*, p. 20, Yang-tse-kiang ?, n. spp., *id. t. c.* *H. schrenckii*, n. sp., *id.* Trudui St. Petersburg Nat. xviii, p. 46, and Bull. Ac. St. Pétersb. xxxii, p. 18, Fu Chau.

Hemiculterella, n. g., like *Hemiculter*, but dorsal with the second undivided ray not thickened, and beginning somewhat behind the base of the ventrals ; abdomen sharply keeled behind but not in front of the ventrals ; anal short, with not more than 13 articulated rays. Teeth in two rows (5–3 | 2–4). *H. sauvagei*, n. sp., *id.* Bull. Ac. St. Petersb. xxxii p. 23, Western Sze-Chuan.

Octonema, n. g. (*Cobitidin.*). Caput valde depressum. Os fere terminale. Spina suborbitalis nulla. Nares anteriores cirro sat longo instructæ. Cirri rostrales 4, supra-maxillares 2. Pinna dorsalis post ventrales incipiens. Vesicæ natatoriæ pars posterior in cavitate abdominali libere suspensa. Herzenstein, Trudui St. Petersburg Nat. xviii, p. 47. *O. pleskei*, n. sp., *id. t. c.* p. 48, pl. —, fig. 5, River Lefu, Amoor.

Characinidæ.

Curimatus nasus, Stdr., = *C. dobula*, Gthr. ; Boulenger, P. Z. S. 1887, p. 279. *C. hypostoma*, n. sp., *id.* Ann. N. H. (5) xix, p. 172, Ucayali River.

Elopomorphus orinocensis, n. sp., Steindachner, Anz. Ak. Wien. 1887, p. 231, Orinoco.

Parodon buckleyi, n. sp., Boulenger, P. Z. S. 1887, p. 279, pl. xxiii, fig. 1, Canelos, Ecuador.

Characidium fasciatum, Rhdt. Specimens from Ecuador described by Boulenger, *t. c.* p. 280.

Piabucina elongata, n. sp., *id. t. c.* p. 280, pl. xxiii, fig. 2. Eastern Ecuador.

Tetragonopterus, Cuv. A synopsis of 5 species from Rio Grande do Sul, Brazil; *id.* Ann. N. H. (5) xix, p. 174. *T. iheringii*, p. 172, and *luetkenii*, p. 173, n. spp., *id. t. c.*, Rio Grande do Sul.

Leptagoniates, n. g., allied to *Paragoniates*, Stdr., but differing in the following points: cleft of the mouth narrow; anal nearly two-thirds the length of the body; lateral line complete; *id.* P. Z. S. 1887, p. 281. *L. steindachneri*, n. sp., *id.* p. 282, pl. xxiii, fig. 3, Sarayacu, Ecuador.

Cyprinodontidæ.

Characodon variatus, p. 370, *bilineatus*, p. 371, and *ferrugineus*, p. 372, n. spp., Bean, P. U. S. Nat. Mus. 1887, Guanajuato, Mexico.

Fundulus dugesii, n. sp., *id. t. c.* p. 373, Guanajuato, Mexico.

Poecilia vandepolli, n. sp., p. 137, Curaçao, and n. var. *arubensis*, p. 138, Aruba; Van Lidth de Jeude, Notes Leyd. Mus. ix.

Scombresocidæ.

Belone gnastomella, C. & V., described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 293.

Scombresox saurus, var. *forsteri*, C. & V., figured by McCoy, Prodr. Zool. Vict. pl. cxxxv, fig. 2.

Hemirhamphus intermedius, Cant., figured by *id. t. c.* pl. cxxxv, fig. 1.

Exocœtus doederleinii, n. sp. (an *E. agoo*, Schl. ?), Steindachner & Döderlein, *t. c.* p. 294, Japan.

Exocœtoides, n. g., allied to *Exocœtus*, Davis, Tr. R. Dublin Soc. (2) iii, p. 550. *E. minor*, n. sp. (foss.), *id. t. c.* p. 551, pl. xxvi, figs. 1 & 5, Hard Chalk, Mount Lebanon.

Esocidæ.

Istieus lebanonensis, n. sp. (foss.), Davis, Tr. R. Dublin Soc. (2) iii, p. 553, pl. xxx, fig. 3, Upper Cretaceous, Mount Lebanon.

Galaxiidæ.

Galaxias campbelli, n. sp., Sauvage, in Filhol, Miss. Campbell, Mém. Passage de Vénus, iii, pt. 2, p. 345 (1885), Campbell I.

Mormyridæ.

Mormyrus (*Petrocephalus*) *sauvagii*, n. sp., Boulenger, Ann. N. H. (5) xix, p. 149, Lower Congo.

Sternoptychidæ.

Sternoptyx diaphana, Herm., figured by Günther, Chall. xxii, pl. xlv, fig. D.

Polyipnus, n. g., differing from *Sternoptyx* in having the body covered with large, very thin, and deciduous scales, and in lacking the anterior spinous dilatation of the dorsal fin. *P. spinosus*, n. sp., *id. t. c.* p. 170, between the Philippine Is. and Borneo, 250 fath.

Gonostoma elongatum, Gthr., pl. xlv, fig. B, and *gracile*, Gthr., pl. xlv, fig. C, figured by *id. t. c.*

Photichthys argenteus, Hutton, figured by *id. t. c.* pl. xlv, fig. A.

Stomiatidæ.

Stomias affinis, n. sp., Günther, Chall. xxii, p. 205, pl. liv, fig. A, S. of Sombrero I., 450 fath.

Echiostoma barbatum, Lowe, figured; *id. t. c.* pl. liii, fig. B.

Optostomias, n. g., allied to *Echiostoma*; for *Echiostoma micripnus*, Gthr.; *id. t. c.* p. 208, pl. liii, fig. A.

Bathystomias, n. g., allied to *Echiostoma*; for *Echiostoma microdon*, Gthr.; *id. t. c.* p. 210, pl. liii, fig. C.

Malacosteus niger, Ayres, pl. liv, fig. C, and *indicus*, Gthr., pl. liv, fig. B, figured by *id. t. c.*

Idiacanthus ferox, Gthr., figured; *id. t. c.* pl. lii, fig. D.

Lucifer albipinnis, Döderl., described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 292.

Salmonidæ.

Day, F. The British Salmonidæ. J. Nat. Fish. Cult. Ass. i, pp. 3–25.

——. Notes on Cœcal Appendages of Fresh-water Trout. *T. c.* pp. 243–255.

——. Notes on the Cœcal Appendages of Cardiganshire Trout. *T. c.* pp. 369–374.

Smith, A. The Food of the Salmonidæ at Sea. *T. c.* pp. 35–39.

Salmo, L. Day, Brit. Salm. (*suprà*, p. 4), admits only 4 British species, viz., *S. salar*, L., *S. trutta*, L., *S. alpinus* L., and the introduced American *S. fontinalis*, Mitch.

Salmo fario, L. Notes by J. W. Willis Bund, J. Nat. Fish. Cult. Ass. i. pp. 129, 289, & 433.

Argentina elongata, Hutton, figured by Günther, Chall. xxii, pl. lv, fig. B.

Microstoma oblitum, n. sp., Facciolà, Nat. Sicil. vi. p. 193, Sicily.

Characidium fasciatum, Rhdt. Specimens from Ecuador described by Boulenger, *t. c.* p. 280.

Piabucina elongata, n. sp., *id. t. c.* p. 280, pl. xxiii, fig. 2, Eastern Ecuador.

Tetragonopterus, Cuv. A synopsis of 5 species from Rio Grande do Sul, Brazil; *id.* Ann. N. H. (5) xix, p. 174. *T. iheringii*, p. 172, and *luetkenii*, p. 173, n. spp., *id. t. c.*, Rio Grande do Sul.

Leptagoniates, n. g., allied to *Paragoniates*, Stdr., but differing in the following points: cleft of the mouth narrow; anal nearly two-thirds the length of the body; lateral line complete; *id.* P. Z. S. 1887, p. 281. *L. steindachneri*, n. sp., *id.* p. 282, pl. xxiii, fig. 3, Sarayacu, Ecuador.

Cyprinodontidæ.

Characodon variatus, p. 370, *bilineatus*, p. 371, and *ferrugineus*, p. 372, n. spp., Bean, P. U. S. Nat. Mus. 1887, Guanajuato, Mexico.

Fundulus dugesii, n. sp., *id. t. c.* p. 373, Guanajuato, Mexico.

Poecilia vandepolli, n. sp., p. 137, Curaçao, and n. var. *arubensis*, p. 138, Aruba; Van Lidth de Jeude, Notes Leyd. Mus. ix.

Scombresocidæ.

Belone quastomella, C. & V., described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 293.

Scombresox saurus, var. *forsteri*, C. & V., figured by McCoy, Prodr. Zool. Viet. pl. cxxxv, fig. 2.

Hemirhamphus intermedius, Cant., figured by *id. t. c.* pl. cxxxv, fig. 1.

Exocœtus doederleinii, n. sp. (an *E. agoo*, Schl.?), Steindachner & Döderlein, *t. c.* p. 294, Japan.

Exocœtoides, n. g., allied to *Exocœtus*, Davis, Tr. R. Dublin Soc. (2) iii, p. 550. *E. minor*, n. sp. (foss.), *id. t. c.* p. 551, pl. xxvi, figs. 1 & 5, Hard Chalk, Mount Lebanon.

Esocidæ.

Istieus lebanonensis, n. sp. (foss.), Davis, Tr. R. Dublin Soc. (2) iii, p. 553, pl. xxx, fig. 3, Upper Cretaceous, Mount Lebanon.

Galaxiidæ.

Galaxias campbelli, n. sp., Sauvage, in Filhol, Miss. Campbell, Mém. Passage de Vénus, iii, pt. 2, p. 345 (1885), Campbell I.

Mormyridæ.

Mormyrus (*Petrocephalus*) *sauvagii*, n. sp., Boulenger, Ann. N. H. (5) xix, p. 149, Lower Congo.

Sternoptychidæ.

Sternoptyx diaphana, Herm., figured by Günther, Chall. xxii, pl. xlv, fig. D.

Polyipnus, n. g., differing from *Sternoptyx* in having the body covered with large, very thin, and deciduous scales, and in lacking the anterior spinous dilatation of the dorsal fin. *P. spinosus*, n. sp., *id. t. c.* p. 170, between the Philippine Is. and Borneo, 250 fath.

Gonostoma elongatum, Gthr., pl. xlv, fig. B, and *gracile*, Gthr., pl. xlv, fig. C, figured by *id. t. c.*

Photichthys argenteus, Hutton, figured by *id. t. c.* pl. xlv, fig. A.

Stomiatidæ.

Stomias affinis, n. sp., Günther, Chall. xxii, p. 205, pl. liv, fig. A, S. of Sombrero I., 450 fath.

Echiostoma barbatum, Lowe, figured; *id. t. c.* pl. liii, fig. B.

Optostomias, n. g., allied to *Echiostoma*; for *Echiostoma micripnus*, Gthr.; *id. t. c.* p. 208, pl. liii, fig. A.

Bathystomias, n. g., allied to *Echiostoma*; for *Echiostoma microdon*, Gthr.; *id. t. c.* p. 210, pl. liii, fig. C.

Malacosteus niger, Ayres, pl. liv, fig. C, and *indicus*, Gthr., pl. liv, fig. B, figured by *id. t. c.*

Idiacanthus ferox, Gthr., figured; *id. t. c.* pl. lii, fig. D.

Lucifer albipinnis, Döderl., described by Steindachner & Döderlein, Denk. Ak. Wien, xxxv, p. 292.

Salmonidæ.

Day, F. The British Salmonidæ. J. Nat. Fish. Cult. Ass. i, pp. 3–25.

——. Notes on Cœcal Appendages of Fresh-water Trout. *T. c.* pp. 243–255.

——. Notes on the Cœcal Appendages of Cardiganshire Trout. *T. c.* pp. 369–374.

Smith, A. The Food of the Salmonidæ at Sea. *T. c.* pp. 35–39.

Salmo, L. Day, Brit. Salm. (*suprà*, p. 4), admits only 4 British species, viz., *S. salar*, L., *S. trutta*, L., *S. alpinus* L., and the introduced American *S. fontinalis*, Mitch.

Salmo fario, L. Notes by J. W. Willis Bund, J. Nat. Fish. Cult. Ass. i, pp. 129, 289, & 433.

Argentina elongata, Hutton, figured by Günther, Chall. xxii, pl. lv, fig. B.

Microstoma oblitum, n. sp., Facciolà, Nat. Sicil. vi. p. 193, Sicily.

GONORHYNCHIDÆ.

Notogoneus osculus, Cope (foss.), described and figured by Cope, Mem. Ac. Washington, iii (1886), p. 163, pl. —, figs. 4 & 5.

CLUPEIDÆ.

Clupea, L. Biological sketch of the Caspian species, by E. PÖLSAM, Trudui Kasan. Univ. xv. No. 5 (1886), 43 pp. (Russian). Analysis by J. DENIKER, Arch. Slav. Biol. iv, pp. 103–107. F. DAY describes and figures a supposed hybrid between *C. pilchardus*, Walb., and *C. harengus*, L.; P. Z. S. 1887, p. 129, pl. xv. *C. pilchardus*: on the food of the Sardine; POUCHET & DE GUERNE, C.R. civ, pp. 712–715; MONTICELLI, Boll. Soc. Nat. Napoli, i, pp. 85–88. Submarine migrations of the Sardine; A. BERTHOUD, Bull. Soc. Acclim. (4) pp. 97–110. *C. sadina*, Mitch., and *Alosa sadina*, Dekay: synonymic note by EIGENMANN, P. Acc. Philad. 1887, p. 295. *C. sapidissima*, Wils.: preliminary note on the osteology; FANNY HITCHCOCK, Am. Nat. xxi, p. 1032. *C. lewisii*, p. 571, pl. xxxiii, fig. 1, *pulchra*, p. 578, pl. xxxiii, fig. 3, *curta*, p. 579, pl. xxxiii, fig. 5, *attenuata*, p. 580, pl. xxxiii, fig. 4, and *elongata*, p. 581, pl. xxxiii, fig. 2, n. spp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, Chalk of Mount Lebanon. *C. dubia*, n. sp. (foss.), WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 54, pl. iii, fig. 5, Roofing-slate of Glarus. *C. lesinensis*, n. sp. (foss.), KRAMBERGER, Glasnik Narav. Bružtva, i, p. 130, Lesina I. *Alosa sapozschnikowi*, n. sp., GRIMM, in PÖLSAM, *t. c.* p. 15, Caspian Sea.

Osmeroides megapterus, Pict. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxxii, figs. 4–6. *O. gracilis*, p. 559, pl. xxxi, figs. 2 & 3, *brevis*, p. 560, pl. xxii, fig. 1, *latus*, p. 561, pl. xxxi, fig. 1, *minor*, p. 563, pl. xxxii, fig. 2, *dubius*, p. 565, pl. xxxi, fig. 4, and *maximus*, p. 566, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Sardinius crassapinna, n. sp. (foss.), *id. t. c.* p. 567, pl. xxxii, fig. 5, Upper Cretaceous, Mount Lebanon.

Opisthopteryx curtus, n. sp. (foss.), *id. t. c.* p. 569, pl. xxxiii, fig. 3, Upper Cretaceous, Mount Lebanon.

Engraulis (?) *tenuis*, n. sp. (foss.), *id. t. c.* p. 583, pl. xxx, figs. 4 & 5, Hard Chalk, Mount Lebanon.

Spaniodon blondelii, Pict., pl. xxxiv, fig. 3, and *brevis*, Pict. & Humb., pl. xxxiv, fig. 1 (foss.), figured by DAVIS, *t. c.* *S. electus*, p. 589, pl. xxxiv, fig. 2, and *hakelensis*, p. 591, pl. xxxiv, fig. 4, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Lewisia, n. g., for *L. ovalis*, n. sp. (foss.), *id. t. c.* p. 593, pl. xxxiii, fig. 6, Upper Cretaceous, Mount Lebanon.

Eurypholis major, n. sp. (foss.), *id. t. c.* p. 597, pl. xxx, fig. 2, Soft Chalk, Mount Lebanon.

Pantopholis, n. g., *id. t. c.* p. 599, for *P. dorsalis*, n. sp. (foss.), p. 600, pl. xxxvi, fig. 2, Soft Chalk, Mount Lebanon.

Eurygnathus, n. g., *id. t. c.* p. 601, for *E. ferox*, n. sp. (foss.), p. 602, pl. xxxvi, fig. 1, Upper Cretaceous, Mount Lebanon.

Rhinellus robustus, p. 608, pl. xxxvii, fig. 5, *curtirostris*, p. 610, pl. xxxvii, fig. 2, *longirostris*, p. 611, pl. xxxvii, fig. 3, *laniatus*, p. 612, pl. xxxvii, figs. 6 & 7, *ferox*, p. 614, pl. xxxvii, fig. 1, and *damoni*, p. 617, pl. xxxvii, fig. 4, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Phylactocephalus, n. g., for *P. microlepis*, n. sp. (foss.), *id. t. c.* p. 605, pl. xxxv, fig. 2, Hard Chalk, Mount Lebanon.

Meletta scheuchzeri, Blainv. (foss.), figured by WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pl. viii, fig. 6.

Eugnathus nienstedtensis, n. sp. (foss.), STRUCKMANN, Z. Deutsch. geol. Ges. xxxix, p. 67, Wealden of Hanover.

Hemielopopsis gibbus, n. sp. (foss.), KRAMBERGER, Glasnik Narav, Bružtva, i, p. 128, Lesina I.

Rhacolepis, Ag. (foss.). Notes on the Fishes of this genus, the affinities of which are considered to be with the Elopine Clupeoids. 3 species are characterized and figured, viz., *R. buccalis*, Ag., *brama*, Ag., and *latus*, Ag.; A. S. WOODWARD, P. Z. S. 1887, pp. 535–542, pls. xlvi & xlvii.

BATHYTHRISSIDÆ.

F. HILGENDORF, SB. nat. Fr. 1887, p. 187, claims priority for *Pterothrissus*, Hilg. (Sept. 3, 1877), against *Bathythrissa*, Gthr. (Nov. 1, 1877).

Bathythrissa dorsalis, Gthr., figured by GÜNTHER, Chall. xxii, pl. lvi, fig. A.

ALEPOCEPHALIDÆ.

Alepocephalus niger, Gthr., figured by GÜNTHER, Chall. xxii, pl. lvi, fig. B.

Bathytroctes microlepis, Gthr., pl. lvii, fig. A, and *rostratus*, Gthr., lviii, fig. B; figured, *id. t. c.* *B. macrolepis*, n. sp., *id. t. c.* p. 225, pl. lvii, fig. B, N. of Celebes, 2150 fath.

Platytroctes apus, Gthr., figured, *id. t. c.* pl. lviii, fig. A.

Xenodermichthys nodulosus, Gthr., figured, *id. t. c.* pl. lviii, fig. C.

HALOSAURIDÆ.

Halosaurus macrochir, Gthr., pl. lix, fig. A, *rostratus*, Gthr., pl. lix, fig. D, and *affinis*, Gthr., pl. lix, fig. B, figured by GÜNTHER, Chall. xxii. *H. mediorostris*, n. sp., *id. t. c.* p. 239, pl. lix, fig. C, W. of Philippine Is., 700 fath.

GYMNOTIDÆ.

Sternarchus (*Rhamphosternarchus*) *curvirostris*, n. sp., BOULENGER, P. Z. S. 1887, p. 282, pl. xxiv, Canelos, Ecuador.

HOPLOPLEURIDÆ.

Leptotrachelus triqueter, Pict. & Humb. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxxviii, figs. 1 & 2. *L. gracilis*, n. sp., *id. t. c.* p. 623, pl. xxxviii, fig. 3, Soft Chalk, Mount Lebanon.

Aspidopleurus cataphractus, Pict. & Humb. (foss.), figured, *id. t. c.* pl. xxxviii, fig. 4.

GONORHYNCHIDÆ.

Notogoneus osculus, Cope (foss.), described and figured by COPE, Mem. Ac. Washington, iii (1886), p. 163, pl. —, figs. 4 & 5.

CLUPEIDÆ.

Clupea, L. Biological sketch of the Caspian species, by E. PÖLSAM, Trudui Kasan. Univ. xv. No. 5 (1886), 43 pp. (Russian). Analysis by J. DENIKER, Arch. Slav. Biol. iv, pp. 103–107. F. DAY describes and figures a supposed hybrid between *C. pilchardus*, Walb., and *C. harengus*, L.; P. Z. S. 1887, p. 129, pl. xv. *C. pilchardus*: on the food of the Sardine; POUCHET & DE GUERNE, C.R. civ. pp. 712–715; MONTICELLI, Boll. Soc. Nat. Napoli, i, pp. 85–88. Submarine migrations of the Sardine; A. BERTHOUD, Bull. Soc. Acclim. (4) pp. 97–110. *C. sadina*, Mitch., and *Alosa sadina*, Dekay: synonymic note by EIGENMANN, P. Acc. Philad. 1887, p. 295. *C. sapidissima*, Wils.: preliminary note on the osteology; FANNY HITCHCOCK, Am. Nat. xxi, p. 1032. *C. lewisii*, p. 571, pl. xxxiii, fig. 1, *pulchra*, p. 578, pl. xxxiii, fig. 3, *curta*, p. 579, pl. xxxiii, fig. 5, *attenuata*, p. 580, pl. xxxiii, fig. 4, and *elongata*, p. 581, pl. xxxiii, fig. 2, n. spp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, Chalk of Mount Lebanon. *C. dubia*, n. sp. (foss.), WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, p. 54, pl. iii, fig. 5, Roofing-slate of Glarus. *C. lesinensis*, n. sp. (foss.), KRAMBERGER, Glasnik Narav. Bružtva, i, p. 130, Lesina I. *Alosa sapozschnikowi*, n. sp., GRIMM, in PÖLSAM, *t. c.* p. 15, Caspian Sea.

Osmeroides megapterus, Pict. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxxii, figs. 4–6. *O. gracilis*, p. 559, pl. xxxi, figs. 2 & 3, *brevis*, p. 560, pl. xxii, fig. 1, *latus*, p. 561, pl. xxxi, fig. 1, *minor*, p. 563, pl. xxxii, fig. 2, *dubius*, p. 565, pl. xxxi, fig. 4, and *maximus*, p. 566, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Sardinius crassapinna, n. sp. (foss.), *id. t. c.* p. 567, pl. xxxii, fig. 5, Upper Cretaceous, Mount Lebanon.

Opisthopteryx curtus, n. sp. (foss.), *id. t. c.* p. 569, pl. xxxiii, fig. 3, Upper Cretaceous, Mount Lebanon.

Engraulis (?) *tenuis*, n. sp. (foss.), *id. t. c.* p. 583, pl. xxx, figs. 4 & 5, Hard Chalk, Mount Lebanon.

Spaniodon blondelii, Pict., pl. xxxiv, fig. 3, and *brevis*, Pict. & Humb., pl. xxxiv, fig. 1 (foss.), figured by DAVIS, *t. c.* *S. electus*, p. 589, pl. xxxiv, fig. 2, and *hakelensis*, p. 591, pl. xxxiv, fig. 4, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Lewisia, n. g., for *L. ovalis*, n. sp. (foss.), *id. t. c.* p. 593, pl. xxxiii, fig. 6, Upper Cretaceous, Mount Lebanon.

Eurypholis major, n. sp. (foss.), *id. t. c.* p. 597, pl. xxx, fig. 2, Soft Chalk, Mount Lebanon.

Pantopholis, n. g., *id. t. c.* p. 599, for *P. dorsalis*, n. sp. (foss.), p. 600, pl. xxxvi, fig. 2, Soft Chalk, Mount Lebanon.

Eurygnathus, n. g., *id. t. c.* p. 601, for *E. ferox*, n. sp. (foss.), p. 602, pl. xxxvi, fig. 1, Upper Cretaceous, Mount Lebanon.

Rhinellus robustus, p. 608, pl. xxxvii, fig. 5, *curtirostris*, p. 610, pl. xxxvii, fig. 2, *longirostris*, p. 611, pl. xxxvii, fig. 3, *laniatus*, p. 612, pl. xxxvii, figs. 6 & 7, *ferox*, p. 614, pl. xxxvii, fig. 1, and *damoni*, p. 617, pl. xxxvii, fig. 4, n. spp. (foss.), *id. t. c.*, Chalk of Mount Lebanon.

Phylactocephalus, n. g., for *P. microlepis*, n. sp. (foss.), *id. t. c.* p. 605, pl. xxxv, fig. 2, Hard Chalk, Mount Lebanon.

Meletta scheuchzeri, Blainv. (foss.), figured by WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pl. viii, fig. 6.

Eugnathus nienstedtensis, n. sp. (foss.), STRUCKMANN, Z. Deutsch. geol. Ges. xxxix, p. 67, Wealden of Hanover.

Hemielopopsis gibbus, n. sp. (foss.), KRAMBERGER, Glasnik Narav, Bružtva, i, p. 128, Lesina I.

Rhacolepis, Ag. (foss.). Notes on the Fishes of this genus, the affinities of which are considered to be with the Elopine Clupeoids. 3 species are characterized and figured, viz., *R. buccalis*, Ag., *brama*, Ag., and *latus*, Ag.; A. S. WOODWARD, P. Z. S. 1887, pp. 535–542, pls. xlvi & xlvii.

BATHYTHRISSIDÆ.

F. HILGENDORF, SB. nat. Fr. 1887, p. 187, claims priority for *Pterothrissus*, Hilg. (Sept. 3, 1877), against *Bathythrissa*, Gthr. (Nov. 1, 1877).

Bathythrissa dorsalis, Gthr., figured by GÜNTHER, Chall. xxii, pl. lvi, fig. A.

ALEPOCEPHALIDÆ.

Alepocephalus niger, Gthr., figured by GÜNTHER, Chall. xxii, pl. lvi, fig. B.

Bathytroctes microlepis, Gthr., pl. lvii, fig. A, and *rostratus*, Gthr., lviii, fig. B; figured, *id. t. c.* *B. macrolepis*, n. sp., *id. t. c.* p. 225, pl. lvii, fig. B, N. of Celebes, 2150 fath.

Platytroctes apus, Gthr., figured, *id. t. c.* pl. lviii, fig. A.

Xenodermichthys nodulosus, Gthr., figured, *id. t. c.* pl. lviii, fig. C.

HALOSAURIDÆ.

Halosaurus macrochir, Gthr., pl. lix, fig. A, *rostratus*, Gthr., pl. lix, fig. D, and *affinis*, Gthr., pl. lix, fig. B, figured by GÜNTHER, Chall. xxii. *H. mediorostris*, n. sp., *id. t. c.* p. 239, pl. lix, fig. C, W. of Philippine Is., 700 fath.

GYMNOTIDÆ.

Sternarchus (*Rhamphosternarchus*) *curvirostris*, n. sp., BOULENGER, P. Z. S. 1887, p. 282, pl. xxiv, Canelos, Ecuador.

HOPLOPLEURIDÆ.

Leptotrachelus triqueter, Pict. & Humb. (foss.), figured by DAVIS, Tr. R. Dublin Soc. (2) iii, pl. xxxviii, figs. 1 & 2. *L. gracilis*, n. sp., *id. t. c.* p. 623, pl. xxxviii, fig. 3, Soft Chalk, Mount Lebanon.

Aspidopleurus cataphractus, Pict. & Humb. (foss.), figured, *id. t. c.* pl. xxxviii, fig. 4.

MURÆNIDÆ.

FICALBI, E. Sulla conformazione dello scheletro cefalico dei Pesci Murenoidi Italiani. Atti (Mem.) Soc. Tosc. viii, pp. 101–158, pl. xi.

DAY, F. On the Mode of Propagation of the Common Eel. P. Cottesw. Nat. F. C. 1885–86, pp. 44–51.

A review of the state of our knowledge of the matter.

Anguilla sahel-alma, p. 625, pl. xx, fig. 2, and *hakelensis*, p. 626, pl. xx, fig. 3, n. spp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, Chalk of Mount Lebanon.

Nemichthys infans, Gthr., figured by GÜNTHER, Chall. xxii, pl. lxiii, fig. B.

Cyema atrum, Gthr., figured, *id. t. c.* pl. liv, fig. D.

Saccopharynx ampullaceous, Harwood, figured, *id. t. c.* pl. lxvi.

Synaphobranchus pinnatus, pl. lxii, fig. A, and *bathybius*, pl. lxii, fig. B, figured by GÜNTHER, *t. c.* *S. brevidorsalis*, n. sp., *id. t. c.* p. 255, pl. lxiii, fig. C, Japan and New Guinea, 345 & 1070 fath.

Congromuræna guttulata, n. sp., GÜNTHER, *t. c.* p. 252, off Matuka, Fiji, 315 fath.

Nettastoma parviceps, Gthr., figured, *id. t. c.* pl. lxiii, fig. A. *N. brevirostre*, n. sp., FACCIOLÀ, Nat. Sicil. vi, p. 166, pl. iii, fig. 3, Sicily.

Ophichthys retropinnis, n. sp., EIGENMANN, P. U. S. Nat. Mus. 188[illegible] p. 116, Pensacola, Florida.

Leptocephali. A list of the Italian species; FACCIOLÀ, Atti (Rend. Mem.) Soc. Mod. Mem. (3) i, pp. 121–123. *Leptocephalus polleni*, p. 119, fig. 1, and *lalandii*, p. 120, fig. 2, n. spp., *id. ibid.*, Sea of Messina.

INCERTÆ SEDIS.

Lyrolepis caucasicus, n. sp. & g. (foss.), ROMANOVSKY, Mem. Soc. Min. (Russian) xxii [1886], p. 304, Lower Eocene of Kutaïs, Caucasus. (*Cf.* Bull. Com. Géol. St. Petersb. vi, Suppl. p. 52.)

LOPHOBRANCHII.

Hippocampus heptagonus, Raf.: notes on a female specimen kept in an aquarium; LOCKWOOD, Am. Nat. xxi, pp. 111–114.

PLECTOGNATHI.

WIEDERSHEIM, R. Das Geruchsorgan der Tetrodonten nebst Bemerkungen über die Hautmuskulatur derselben. Kölliker Festschrift, pp. 73–84, pl. vi.

——. Ueber rudimentäre Fischnasen. Anat. Anz. ii, pp. 652–657, figs.

On the condition of the nostrils in *Tetrodon* and *Diodon*.

Acanthopleurus serratus, Ag. (foss.), figured by WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pl. viii, figs. 1–4

Monacanthus peronii, Holl., figured by McCOY, Prodr. Zool. Viet. pl. cxliii.

Tetrodon setosus, n.sp., ROSA SMITH, Bull. Cal. Ac. Sci. ii, p. 155, Mexico.

CYCLOSTOMATA.

JULIN, C. Les deux premières fentes branchiales des Poissons Cyclostomes sont-elles homologues respectivement à l'évent et à la fente hyobranchiale des Sélaciens? Communication préliminaire. Bull. Ac. Belg. (3) xiii, pp. 275–291, pl.

The author concludes in favour of these homologies.

——. Quelle est la valeur morphologique du corps Thyroïde des Vertébrés? Communication préliminaire. *T. c.* pp. 293–300.

The author concludes, from the disposition in *Ammocœtes*, that this organ is a dependance of the branchial cavity, and specially of the region corresponding to the four or five anterior pairs of branchial clefts.

——. De la valeur morphologique du nerf latéral du Petromyzon. *T. c.* pp. 300–309.

The hypothesis is brought forward that the lateral nerve of *Ammocœtes* is merely the remnant of the neural crest.

——. Recherches sur l'anatomie de l'Ammocœtes. Bull. Sci. Nord. (2) x, pp. 265–295, pl. iv.

——. Le Système nerveux grand sympathique de l'Ammocœtes (*Petromyzon planeri*). Communication préliminaire. Anat. Anz. ii, pp. 192–201.

——. Des origines de l'aorte et des carotides chez les Poissons Cyclostomes. Communication préliminaire. *T. c.* pp. 228–238, figs.

BEARD, J. The Parietal Eye in Fishes. Nature, xxxvi, pp. 246–248, 340 & 341, fig.

A preliminary report of investigations upon the Cyclostomes.

THOMPSON, D'ARCY W. On the Blood-corpuscles of the Cyclostomata. Ann. N. H. (5) xx, pp. 231–233, and Anat. Anz. ii, pp. 630–632.

SHEPLEY, A. E. On some Points in the Development of *Petromyzon fluviatilis*. Q. J. Micr. Sci. (2) xxvii, pp. 325–370, pls. xxvi–xxix.

SCOTT, W. B. The Embryology of Petromyzon. Journ. Morph. i, pp. 253–310, pls. viii–xi.

BÖHM, A. A. Ueber die Befruchtung des Neunaugeneies. SB. bayer. Ak. 1887, pp. 53–62.

M. WEBER reviews Cunningham's paper on the genital organs of *Myxine*; Tijdschr. Nederl. Dierk. Ver. (2) i, Versl. pp. ccxiii–ccxvi.

J. T. CUNNINGHAM & M. WEBER have a discussion about the former

MURÆNIDÆ.

FICALBI, E. Sulla conformazione dello scheletro cefalico dei Pesci Murenoidi Italiani. Atti (Mem.) Soc. Tosc. viii, pp. 101–158, pl. xi.

DAY, F. On the Mode of Propagation of the Common Eel. P. Cottesw. Nat. F. C. 1885–86, pp. 44–51.

A review of the state of our knowledge of the matter.

Anguilla sahel-almæ, p. 625, pl. xx, fig. 2, and *hakelensis*, p. 626, pl. xx, fig. 3, n. spp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iii, Chalk of Mount Lebanon.

Nemichthys infans, Gthr., figured by GÜNTHER, Chall. xxii, pl. lxiii, fig. B.

Cyema atrum, Gthr., figured, *id. t. c.* pl. liv, fig. D.

Saccopharynx ampullaceous, Harwood, figured, *id. t. c.* pl. lxvi.

Synaphobranchus pinnatus, pl. lxii, fig. A, and *bathybius*, pl. lxii, fig. B, figured by GÜNTHER, *t. c.* *S. brevidorsalis*, n. sp., *id. t. c.* p. 255, pl. lxiii, fig. C, Japan and New Guinea, 345 & 1070 fath.

Congromuræna guttulata, n. sp., GÜNTHER, *t. c.* p. 252, off Matuka, Fiji, 315 fath.

Nettastoma parviceps, Gthr., figured, *id. t. c.* pl. lxiii, fig. A. *N. brevirostre*, n. sp., FACCIOLÀ, Nat. Sicil. vi, p. 166, pl. iii, fig. 3, Sicily.

Ophichthys retropinnis, n. sp., EIGENMANN, P. U. S. Nat. Mus. 1887, p. 116, Pensacola, Florida.

Leptocephali. A list of the Italian species; FACCIOLÀ, Atti (Rend. Mem.) Soc. Mod. Mem. (3) i, pp. 121–123. *Leptocephalus polleni*, p. 119, fig. 1, and *lalandii*, p. 120, fig. 2, n. spp., *id. ibid.*, Sea of Messina.

INCERTÆ SEDIS.

Lyrolepis caucasicus, n. sp. & g. (foss.), ROMANOVSKY, Mem. Soc. Min. (Russian) xxii [1886], p. 304, Lower Eocene of Kutaïs, Caucasus. (*Cf.* Bull. Com. Géol. St. Petersb. vi, Suppl. p. 52.)

LOPHOBRANCHII.

Hippocampus heptagonus, Raf.: notes on a female specimen kept in an aquarium; LOCKWOOD, Am. Nat. xxi, pp. 111–114.

PLECTOGNATHI.

WIEDERSHEIM, R. Das Geruchsorgan der Tetrodonten nebst Bemerkungen über die Hautmuskulatur derselben. Kölliker Festschrift, pp. 73–84, pl. vi.

——. Ueber rudimentäre Fischnasen. Anat. Anz. ii, pp. 652–657, figs.

On the condition of the nostrils in *Tetrodon* and *Diodon*.

Acanthopleurus serratus, Ag. (foss.), figured by WETTSTEIN, Abh. schw. pal. Ges. xiii, No. 2, pl. viii, figs. 1–4

Monacanthus peronii, Holl., figured by MCCOY, Prodr. Zool. Vict. pl. cxliii.

Tetrodon setosus, n.sp., ROSA SMITH, Bull. Cal. Ac. Sci. ii, p. 155, Mexico.

CYCLOSTOMATA.

JULIN, C. Les deux premières fentes branchiales des Poissons Cyclostomes sont-elles homologues respectivement à l'évent et à la fente hyobranchiale des Sélaciens? Communication préliminaire. Bull. Ac. Belg. (3) xiii, pp. 275–291, pl.

The author concludes in favour of these homologies.

——. Quelle est la valeur morphologique du corps Thyroïde des Vertébrés? Communication préliminaire. *T. c.* pp. 293–300.

The author concludes, from the disposition in *Ammocœtes*, that this organ is a dependance of the branchial cavity, and specially of the region corresponding to the four or five anterior pairs of branchial clefts.

——. De la valeur morphologique du nerf latéral du Petromyzon. *T. c.* pp. 300–309.

The hypothesis is brought forward that the lateral nerve of *Ammocœtes* is merely the remnant of the neural crest.

——. Recherches sur l'anatomie de l'Ammocœtes. Bull. Sci. Nord. (2) x, pp. 265–295, pl. iv.

——. Le Système nerveux grand sympathique de l'Ammocœtes (*Petromyzon planeri*). Communication préliminaire. Anat. Anz. ii, pp. 192–201.

——. Des origines de l'aorte et des carotides chez les Poissons Cyclostomes. Communication préliminaire. *T. c.* pp. 228–238, figs.

BEARD, J. The Parietal Eye in Fishes. Nature, xxxvi, pp. 246–248, 340 & 341, fig.

A preliminary report of investigations upon the Cyclostomes.

THOMPSON, D'ARCY W. On the Blood-corpuscles of the Cyclostomata. Ann. N. H. (5) xx, pp. 231–233, and Anat. Anz. ii, pp. 630–632.

SHEPLEY, A. E. On some Points in the Development of *Petromyzon fluviatilis*. Q. J. Micr. Sci. (2) xxvii, pp. 325–370, pls. xxvi–xxix.

SCOTT, W. B. The Embryology of Petromyzon. Journ. Morph. i, pp. 253–310, pls. viii–xi.

BÖHM, A. A. Ueber die Befruchtung des Neunaugeneies. SB. bayer. Ak. 1887, pp. 53–62.

M. WEBER reviews Cunningham's paper on the genital organs of *Myxine*; Tijdschr. Nederl. Dierk. Ver. (2) i, Versl. pp. cexiii–cexvi.

J. T. CUNNINGHAM & M. WEBER have a discussion about the former

author's claims to priority for his discoveries on the sexual organs of *Myxine glutinosa* ; Zool. Anz. x, pp. 241–244, 318–321, & 390–392.

Lampetra spadicea, n. sp., Bean, P. U. S. Nat. Mus. 1887, p. 374, Guanajuato, Mexico.

INCERTÆ SEDIS.

Fanny Hitchcock, Am. Nat. xxi, pp. 847 & 848, is inclined to regard the fossils named *Edestus*, Leidy, as intermandibular teeth.

Titanichthys pharao, n. g. & sp., for fossil fish-teeth of uncertain affinities from the Chalk of Egypt ; Dames, SB. nat. Fr. 1887, p. 69, fig. The name *Titanichthys*, being preoccupied, is changed to *Gigantichthys*, *id. t. c.* p. 137.

TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.L.S.

LIST OF PUBLICATIONS.

1. BENEDEN, E. VAN. Les genres *Ecteinascidia*, Herd., *Rhopalaea*, Phil., et *Sluiteria*, n. g. Note pour servir à la classification des Tuniciers. Bull. Ac. Belg. (3) xiv, No. 7, pp. 19–45.

2. ——. Les Tuniciers sont-ils des Poissons dégénérés? Zool. Anz. No. 257, pp. 407–413, No. 258, pp. 433–436.

3. CHABRY, L. Embryologie normal et tératologique des Ascidiens. J. de l'Anat. Phys. xxiii, pp. 167–319.

4. DAVIDOFF, M. VON. Ueber die ersten Entwickelungsvorgänge bei *Distaplia magnilarva*, della Valle, einer zusammengesetzten Ascidie. Anat. Anz. 2 Jahrg. Nos. 18 & 19, pp. 575–579.

5. DOLLEY, CH. S. On the histology of *Salpa*. P. Ac. Philad. 1887, pp. 298–308, pl. xiii.

6. GRANGER, A. Histoire naturelle de France. Partie 7: Mollusques (Bivalves), Tuniciers, Bryozoaires. Paris: 1886, 8vo, 256 pp., 18 pls.

7. HERDMAN, W. A. Recent Discoveries in connection with the Pineal Gland and Pituitary Body of the Brain. P. Biol. Soc. Liverp. i, pp. 18–25, pls. i & ii.

8. JOURDAIN, S. Observations sur la Blastogénèse continue du *Botryllioides rubrum*. C.R. ciii, pp. 1086–1088.

9. LAHILLE, F. Faune Ascidiologique de Banyuls-sur-Mer. Compte-rendu de la Société d'histoire naturelle de Toulouse, séance du 20, Juillet, 1887.

10. ——. Étude systématique des Tuniciers. Assoc. Franç. p. l'av. des Sc., Congr. de Toulouse, 1887. Zool. Anat. et Physiol. pp. 1–12.

11. ——. Sur le système vasculaire Colonial des Tuniciers. C.R. civ, pp. 239–242.

author's claims to priority for his discoveries on the sexual organs of *Myxine glutinosa* ; Zool. Anz. x, pp. 241–244, 318–321, & 390–392.

Lampetra spadicea, n. sp., BEAN, P. U. S. Nat. Mus. 1887, p. 374, Guanajuato, Mexico.

INCERTÆ SEDIS.

FANNY HITCHCOCK, Am. Nat. xxi, pp. 847 & 848, is inclined to regard the fossils named *Edestus*, Leidy, as intermandibular teeth.

Titanichthys pharao, n. g. & sp., for fossil fish-teeth of uncertain affinities from the Chalk of Egypt ; DAMES, SB. nat. Fr. 1887, p. 69, fig. The name *Titanichthys*, being preoccupied, is changed to *Gigantichthys*, *id. t. c.* p. 137.

TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.L.S.

LIST OF PUBLICATIONS.

1. BENEDEN, E. VAN. Les genres *Ecteinascidia*, Herd., *Rhopalaea*, Phil., et *Sluiteria*, n. g. Note pour servir à la classification des Tuniciers. Bull. Ac. Belg. (3) xiv, No. 7, pp. 19–45.

2. ——. Les Tuniciers sont-ils des Poissons dégénérés? Zool. Anz. No. 257, pp. 407–413, No. 258, pp. 433–436.

3. CHABRY, L. Embryologie normal et tératologique des Ascidiens. J. de l'Anat. Phys. xxiii, pp. 167–319.

4. DAVIDOFF, M. VON. Ueber die ersten Entwickelungsvorgänge bei *Distaplia magnilarva*, della Valle, einer zusammengesetzten Ascidie. Anat. Anz. 2 Jahrg. Nos. 18 & 19, pp. 575–579.

5. DOLLEY, CH. S. On the histology of *Salpa*. P. Ac. Philad. 1887, pp. 298–308, pl. xiii.

6. GRANGER, A. Histoire naturelle de France. Partie 7: Mollusques (Bivalves), Tuniciers, Bryozoaires. Paris: 1886, 8vo, 256 pp., 18 pls.

7. HERDMAN, W. A. Recent Discoveries in connection with the Pineal Gland and Pituitary Body of the Brain. P. Biol. Soc. Liverp. i, pp. 18–25, pls. i & ii.

8. JOURDAIN, S. Observations sur la Blastogénèse continue du *Botryllοides rubrum*. C.R. ciii, pp. 1086–1088.

9. LAHILLE, F. Faune Ascidiologique de Banyuls-sur-Mer. Compte-rendu de la Société d'histoire naturelle de Toulouse, séance du 20, Juillet, 1887.

10. ——. Étude systématique des Tuniciers. Assoc. Franç. p. l'av. des Sc., Congr. de Toulouse, 1887. Zool. Anat. et Physiol. pp. 1–12.

11. ——. Sur le système vasculaire Colonial des Tuniciers. C.R. civ, pp. 239–242.

12. [Lahille, F.] Sur le développement typique du système nerveux central des Tuniciers. *Op. cit.* cv, pp. 957–960.

13. ——. Anatomie des *Distaplia*. Bull. Soc. d'hist. nat. Toulouse, xxi (1887), pp. xxx–xxxiii.

14. McIntosh, W. C. On the presence of Swarms of Appendicularians. Ann. & Mag. Nat. Hist. (5) xx, Aug., pp. 102 & 103.

15. Nansen, Fr. The Structure and Combinations of the Histological Elements of the Central Nervous System. Bergens Mus. Aarsber. 1886, pp. 96 & 97, 119 & 120, 141–144, &c.

16. Palethorpe, Fanny, & Wilson, Charlotte. Preliminary Paper upon a Collection of Ascidians from Australian Seas. P. Biol. Soc. Liverp. i, pp. 63–66, pl. viii.

17. Sheldon, Lilian. Note on the ciliated pit of Ascidians and its relation to the nerve ganglion and the so-called hypophysial gland; and an account of the anatomy of *Cynthia rustica* (?). Q. J. Micr. Sci. (n.s.) (5) xxviii, pp. 131–148, pls. ix & x.

18. Sluiter, C. Ph. Einfache Ascidien aus der Bai von Batavia. Nat. Tijdschr. Nederl. Ind. xlvi, pp. 242–266, pls. i–iii.

19. Todaro, F. Studî ulteriori sullo sviluppo delle Salp... Pt. 1. Atti R. Accad. Lincei, Mem. fis. mat. e nat (4) vol. i, pp. 641–680.

20. Traustedt, M. P. A. Dijmphna-Togtets zoologisk-botaniske Udbytte—Kara-Havets Svampe (*Ascidiæ simplices*). Kjobnhavn: pp. 419–437, tab. xxxvi–xxxix.

21. Wilson, Charlotte. [See Palethorpe, Fanny.]

Anatomy.

Amongst Sluiter's (18) new Simple Ascidians, from Batavia, there are two noteworthy forms:—(1) *Eugyra bilabiata*, in which the test is folded so as to conceal the branchial and atrial apertures, much in the same way as in the case of the genus *Rhodosoma* amongst the *Ascidiidæ*; and (2) *Ascidia diplozoon*, in which two individuals are always found together, imbedded in a common test.

Lahille (10) propounds a new system of classification of the *Tunicata*. He is dissatisfied with the characters at present made use of in distinguishing the sections of that group, and considers that they do not lead us to a natural or phylogenetic classification. He considers that the most important characters of the *Tunicata*, as a whole, are the presence of a non-ciliated larva, furnished with a tail for swimming, the production of tunicine from the ectoderm, the transformation of the anterior part of the digestive tube into an organ of respiration, and the periodic reversal of the circulation. According as the larval tail is retained permanently or not, he, following other zoologists, would divide the *Tunicata* into *Perennichordata* and *Caducichordata*, or, as he would prefer to call them, *Copelata* and *Acopelata*. In dividing up the *Acopelata*, the great mass of the *Tunicata*, he makes use of the branchial sac as the primary character,

and recognizes three groups:—(1) The *Aplousobranchiata*, in which the branchial sac is a simple cylinder, with no folds and no longitudinal bars; (2) The *Phlebobranchiata*, in which internal longitudinal bars are present; and (3) The *Stolidobranchiata*, in which the branchial sac has longitudinal folds. Then, by making use of other characters drawn from various organs, he breaks up these 3 orders into 8 suborders, 16 families, and 66 genera, most of which are commonly recognized groups. Amongst the genera the following apparently new forms are mentioned but not described:—*Alderia* (name preoccupied) and *Herdmania*. The point of greatest novelty, and the one to which most exception will be taken, is the division of the *Acopelata* into the 3 orders—*Aplousobranchiata*, *Phlebobranchiata*, and *Stolidobranchiata*, according to the condition of the branchial sac. Without giving any detailed criticism, it may be pointed out that any arrangement which results in *Doliolum* being placed along with the *Didemnidæ* and the *Distomidæ*, while *Salpa*, *Pyrosoma*, the *Aplididæ*, and the *Polyclinidæ*, form another group, can scarcely be considered as a natural classification. At the end of the paper *Salpa* is withdrawn from the *Aplousobranchiata*, and placed in a class by itself, the *Hemitremata*, of equal rank with the *Atremata* (*Appendicularia*), and the *Eutremata* (all other *Tunicata*); so that finally the following amended classification is offered:—

TYPE.	CLASSES.	ORDERS.
Tunicata	*Atremata*	
	Hemitremata	
	Eutremata	*Aplousobranchiata*
		Phlebobranchiata
		Stolidobranchiata

The anatomy of the genus *Distaplia* has been investigated by Lahille (13). He regards it as a synthetic type uniting the characters of the *Diplosomidæ*, *Distomidæ*, and other families.

Dolley (5) has worked carefully through the histology of *Salpa* (apparently *Salpa runcinata-fusiformis*), corroborating and extending the results of many other investigators. He is of opinion that the test may be occasionally shed and renewed, like the "Haus" of *Appendicularia*. He finds two hepatic cæca from the stomach, and only one sense-organ (visual) on the nerve-ganglion.

Lahille (12) gives a generalized account of the development of the nervous system in the *Tunicata*, and of the parts derived from it. He distinguishes the following ganglionic masses placed in series from before backwards, and bilaterally symmetrical:—(1) Anterior; (2) Sensorial (with which the larval eye and ear are connected); (3) Cerebral; (4) Posterior; (5) Visceral; and (6) Caudal ganglia. The same author points out (11) that the colonial vascular system, supposed by some French investigators to be a characteristic of the Compound Ascidians, is really exceptional, being only present in a few forms, whence, it is argued, the Compound Ascidians are merely aggregations.

12. [Lahille, F.] Sur le développement typique du système nerveux central des Tuniciers. *Op. cit.* cv, pp. 957–960.

13. ——. Anatomie des *Distaplia*. Bull. Soc. d'hist. nat. Toulouse, xxi (1887), pp. xxx–xxxiii.

14. McIntosh, W. C. On the presence of Swarms of Appendicularians. Ann. & Mag. Nat. Hist. (5) xx, Aug., pp. 102 & 103.

15. Nansen, Fr. The Structure and Combinations of the Histological Elements of the Central Nervous System. Bergens Mus. Aarsber. 1886, pp. 96 & 97, 119 & 120, 141–144, &c.

16. Palethorpe, Fanny, & Wilson, Charlotte. Preliminary Paper upon a Collection of Ascidians from Australian Seas. P. Biol. Soc. Liverp. i, pp. 63–66, pl. viii.

17. Sheldon, Lilian. Note on the ciliated pit of Ascidians and its relation to the nerve ganglion and the so-called hypophysial gland; and an account of the anatomy of *Cynthia rustica* (?). Q. J. Micr. Sci. (n.s.) (5) xxviii, pp. 131–148, pls. ix & x.

18. Sluiter, C. Ph. Einfache Ascidien aus der Bai von Batavia. Nat. Tijdschr. Nederl. Ind. xlvi, pp. 242–266, pls. i–iii.

19. Todaro, F. Studî ulteriori sullo sviluppo delle Salp[illegible]. Pt. 1. Atti R. Accad. Lincei, Mem. fis. mat. e nat (4) vol. i, pp. 641–680.

20. Traustedt, M. P. A. Dijmphna-Togtets zoologisk-botaniske Udbytte—Kara-Havets Svampe (*Ascidiæ simplices*). Kjøbnhavn: pp. 419–437, tab. xxxvi–xxxix.

21. Wilson, Charlotte. [See Palethorpe, Fanny.]

Anatomy.

Amongst Sluiter's (18) new Simple Ascidians, from Batavia, there are two noteworthy forms:—(1) *Eugyra bilabiata*, in which the test is folded so as to conceal the branchial and atrial apertures, much in the same way as in the case of the genus *Rhodosoma* amongst the *Ascidiidæ*; and (2) *Ascidia diplozoon*, in which two individuals are always found together, imbedded in a common test.

Lahille (10) propounds a new system of classification of the *Tunicata*. He is dissatisfied with the characters at present made use of in distinguishing the sections of that group, and considers that they do not lead us to a natural or phylogenetic classification. He considers that the most important characters of the *Tunicata*, as a whole, are the presence of a non-ciliated larva, furnished with a tail for swimming, the production of tunicine from the ectoderm, the transformation of the anterior part of the digestive tube into an organ of respiration, and the periodic reversal of the circulation. According as the larval tail is retained permanently or not, he, following other zoologists, would divide the *Tunicata* into *Perennichordata* and *Caducichordata*, or, as he would prefer to call them, *Copelata* and *Acopelata*. In dividing up the *Acopelata*, the great mass of the *Tunicata*, he makes use of the branchial sac as the primary character,

and recognizes three groups:—(1) The *Aplousobranchiata*, in which the branchial sac is a simple cylinder, with no folds and no longitudinal bars; (2) The *Phlebobranchiata*, in which internal longitudinal bars are present; and (3) The *Stolidobranchiata*, in which the branchial sac has longitudinal folds. Then, by making use of other characters drawn from various organs, he breaks up these 3 orders into 8 suborders, 16 families, and 66 genera, most of which are commonly recognized groups. Amongst the genera the following apparently new forms are mentioned but not described:—*Alderia* (name preoccupied) and *Herdmania*. The point of greatest novelty, and the one to which most exception will be taken, is the division of the *Acopelata* into the 3 orders—*Aplousobranchiata*, *Phlebobranchiata*, and *Stolidobranchiata*, according to the condition of the branchial sac. Without giving any detailed criticism, it may be pointed out that any arrangement which results in *Doliolum* being placed along with the *Didemnidæ* and the *Distomidæ*, while *Salpa*, *Pyrosoma*, the *Aplididæ*, and the *Polyclinidæ*, form another group, can scarcely be considered as a natural classification. At the end of the paper *Salpa* is withdrawn from the *Aplousobranchiata*, and placed in a class by itself, the *Hemitremata*, of equal rank with the *Atremata* (*Appendicularia*), and the *Eutremata* (all other *Tunicata*); so that finally the following amended classification is offered:—

TYPE.	CLASSES.	ORDERS.
Tunicata	*Atremata*	
	Hemitremata	
	Eutremata	*Aplousobranchiata*
		Phlebobranchiata
		Stolidobranchiata

The anatomy of the genus *Distaplia* has been investigated by Lahille (13). He regards it as a synthetic type uniting the characters of the *Diplosomidæ*, *Distomidæ*, and other families.

Dolley (5) has worked carefully through the histology of *Salpa* (apparently *Salpa runcinata fusiformis*), corroborating and extending the results of many other investigators. He is of opinion that the test may be occasionally shed and renewed, like the "Haus" of *Appendicularia*. He finds two hepatic cæca from the stomach, and only one sense-organ (visual) on the nerve-ganglion.

Lahille (12) gives a generalized account of the development of the nervous system in the *Tunicata*, and of the parts derived from it. He distinguishes the following ganglionic masses placed in series from before backwards, and bilaterally symmetrical:—(1) Anterior; (2) Sensorial (with which the larval eye and ear are connected); (3) Cerebral; (4) Posterior; (5) Visceral; and (6) Caudal ganglia. The same author points out (11) that the colonial vascular system, supposed by some French investigators to be a characteristic of the Compound Ascidians, is really exceptional, being only present in a few forms, whence, it is argued, the Compound Ascidians are merely aggregations.

LILIAN SHELDON (17) describes the conditions of the subneural gland and dorsal tubercle in *Clavelina*, *Amaroucium*, and some of the *Ascidiidæ*, and suggests that the original function of the system was the aeration of the brain. She also gives a short account of the anatomy and of some points in the histology of one of the *Cynthiida* (evidently a species of *Styela*).

NANSEN (15), in an elaborate paper upon the histology of the central nervous system, gives an account of the minute structure of the nerve-centres and nerve-fibres in Ascidians.

HERDMAN (7) gives a summary of recent investigations in regard to the subneural gland (hypophysis cerebri), and suggests that in the *Tunicata* it is a renal organ which has established a secondary connection with an oral sense-organ (the dorsal tubercle).

DEVELOPMENT.

JOURDAIN (8) shows how successive generations of buds are produced in a colony of *Botrylloides rubrum*. He finds that the forms produced by the larva give rise to asexual blastozooids, which then produce by budding a series of male forms, and these in their turn produce a series of hermaphrodite buds. The development of the reproductive organs also appears to depend upon the season and the temperature.

CHABRY (3) has investigated the normal and the teratological embryology of *Ascidia aspersa*. He finds that the cerebral sense organs and the notochord are originally double in their nature. He has examined a large number of different kinds of monstrous and abnormal forms, due apparently, in some cases, to physical, and in others to vital causes.

DAVIDOFF (4) finds that in *Distaplia magnilarva* a solid morula is formed, in which the central mass of cells (hypoblast) differs from the peripheral layer (epiblast); the mesoblast originates as an invagination of epiblast. The archenteron has, therefore, no connection with an invagination of the epiblast.

TODARO (19) describes, with illustrations, the structure of the ovary and the maturation and fecundation of the ova in certain *Salpæ*.

GEOGRAPHICAL DISTRIBUTION.

TRAUSTEDT (20) describes 8 species of Simple Ascidians (5 of which are new), collected by the 'Dijmphna' expedition from the Kara Sea.

LAHILLE (9) enumerates 40 species of *Tunicata*, representing all the main groups, as having been found by him at Banyuls-sur-Mer, on the Mediterranean coast of France, during 1886 and 1887. A number of the species mentioned are evidently new, and one (*Perophoropsis herdmani*) is apparently the type of a new genus; but no descriptions are given.

SLUITER (18) describes 9 species of Simple Ascidians (all new to ...ently *...icata* into which he had found in the Bay of Batavia. ...all them.

McINTOSH (14) records the presence of swarms of *Appendi...* t mass of with the "Haus," in St. Andrew's Bay. ...haracter,

F. D. PALETHORPE & CHARLOTTE WILSON (16) refer, with remarks, to 26 Simple Ascidians from Australian seas, which they are now investigating. Some of the species are new to science; but detailed descriptions are not yet given.

The French species of *Tunicata* are enumerated by GRANGER (6).

PHYLOGENY.

E. VAN BENEDEN (2) controverts Dohrn's view that the *Tunicata* are related to the Fishes,—1, on account of certain considerable differences in their organogeny, and, 2, because Julin's recent researches on the innervation of the head and branchial region of *Ammocœtes* do not support the homologies upon which Dohrn's argument is based.

SYSTEMATIC.

(There is nothing to be recorded under this head in regard to the LARVACEA, the THALIACEA, the ASCIDIÆ COMPOSITÆ, and the ASCIDIÆ SALPIFORMES.)

ASCIDIÆ SIMPLICES.

Fam. I CLAVELINIDÆ.

E. VAN BENEDEN (1) revises some of the genera of this family, and proposes a redistribution of the species of *Ecteinascidia* and *Rhopalæa*.

Sluiteria, n. gen., E. VAN BENEDEN, (1) p. 33, a new genus close to *Ecteinascidia*, Herdman, and containing the species *E. rubricollis*, Sluiter.

Fam. II. ASCIDIIDÆ.

Corella borealis, n. sp., TRAUSTEDT, (20) pp. 423 & 430.

Phallusia dijmphniana, n. sp., *id.* pp. 424 & 431 ; *Ph. glacialis*, n. sp., *id.* pp. 426 & 432.

Ascidia diplozoon, n. sp., SLUITER, (18) p. 249 ; *A. liberata*, n. sp., *id.* p. 251 ; *A. nodosa*, n. sp., *id.* p. 253 ; *A. capillata*, n. sp., *id.* p. 255 ; *A. limosa*, n. sp., *id.* p. 257 ; *A. kuneides*, n. sp., *id.* p. 259.

Fam. III. CYNTHIIDÆ.

Styela gelatinosa, n. sp., TRAUSTEDT, (20) pp. 429 & 433 ; *St. bicolor*, n. sp., SLUITER, (18) p. 262.

Cynthia rosea, n. sp., *id.* p. 264.

Fam. IV. MOLGULIDÆ.

Eugyra pedunculata, n. sp., TRAUSTEDT, (20) pp. 427 & 432.

Eugyra bilabiata (*bivalvata*, in explanation of plates), n. sp., SLUITER (18) p. 243.

LILIAN SHELDON (17) describes the conditions of the subneural gland and dorsal tubercle in *Clavelina*, *Amaroucium*, and some of the *Ascidiidæ*, and suggests that the original function of the system was the aeration of the brain. She also gives a short account of the anatomy and of some points in the histology of one of the *Cynthiidæ* (evidently a species of *Styela*).

NANSEN (15), in an elaborate paper upon the histology of the central nervous system, gives an account of the minute structure of the nerve-centres and nerve-fibres in Ascidians.

HERDMAN (7) gives a summary of recent investigations in regard to the subneural gland (hypophysis cerebri), and suggests that in the *Tunicata* it is a renal organ which has established a secondary connection with an oral sense-organ (the dorsal tubercle).

DEVELOPMENT.

JOURDAIN (8) shows how successive generations of buds are produced in a colony of *Botrylloides rubrum*. He finds that the forms produced by the larva give rise to asexual blastozooids, which then produce by budding a series of male forms, and these in their turn produce a series of hermaphrodite buds. The development of the reproductive organs also appears to depend upon the season and the temperature.

CHABRY (3) has investigated the normal and the teratological embryology of *Ascidia aspersa*. He finds that the cerebral sense organs and the notochord are originally double in their nature. He has examined a large number of different kinds of monstrous and abnormal forms, due apparently, in some cases, to physical, and in others to vital causes.

DAVIDOFF (4) finds that in *Distaplia magnilarva* a solid morula is formed, in which the central mass of cells (hypoblast) differs from the peripheral layer (epiblast); the mesoblast originates as an invagination of epiblast. The archenteron has, therefore, no connection with an invagination of the epiblast.

TODARO (19) describes, with illustrations, the structure of the ovary and the maturation and fecundation of the ova in certain *Salpæ*.

GEOGRAPHICAL DISTRIBUTION.

TRAUSTEDT (20) describes 8 species of Simple Ascidians (5 of which are new), collected by the 'Dijmphna' expedition from the Kara Sea.

LAHILLE (9) enumerates 40 species of *Tunicata*, representing all the main groups, as having been found by him at Banyuls-sur-Mer, on the Mediterranean coast of France, during 1886 and 1887. A number of the species mentioned are evidently new, and one (*Perophoropsis herdmani*) is apparently the type of a new genus; but no descriptions are given.

SLUITER (18) describes 9 species of Simple Ascidians (all new to [illegible]ently *icata* into which he had found in the Bay of Batavia. all them.

McINTOSH (14) records the presence of swarms of *Appendi* t mass of with the "Haus," in St. Andrew's Bay. haracter,

F. D. Pallethorpe & Charlotte Wilson (16) refer, with remarks, to 26 Simple Ascidians from Australian seas, which they are now investigating. Some of the species are new to science; but detailed descriptions are not yet given.

The French species of *Tunicata* are enumerated by Granger (6).

Phylogeny.

E. van Beneden (2) controverts Dohrn's view that the *Tunicata* are related to the Fishes,—1, on account of certain considerable differences in their organogeny, and, 2, because Julin's recent researches on the innervation of the head and branchial region of *Ammocœtes* do not support the homologies upon which Dohrn's argument is based.

Systematic.

(There is nothing to be recorded under this head in regard to the Larvacea, the Thaliacea, the Ascidiæ compositæ, and the Ascidiæ salpiformes.)

ASCIDIÆ SIMPLICES.

Fam. I Clavelinidæ.

E. van Beneden (1) revises some of the genera of this family, and proposes a redistribution of the species of *Ecteinascidia* and *Rhopalæa*.

Sluiteria, n. gen., E. van Beneden, (1) p. 33, a new genus close to *Ecteinascidia*, Herdman, and containing the species *E. rubricollis*, Sluiter.

Fam. II. Ascidiidæ.

Corella borealis, n. sp., Traustedt, (20) pp. 423 & 430.

Phallusia dijmphniana, n. sp., *id.* pp. 424 & 431 ; *Ph. glacialis*, n. sp., *id.* pp. 426 & 432.

Ascidia diplozoon, n. sp., Sluiter, (18) p. 249 ; *A. liberata*, n. sp., *id.* p. 251 ; *A. nodosa*, n. sp., *id.* p. 253 ; *A. capillata*, n. sp., *id.* p. 255 ; *A. limosa*, n. sp., *id.* p. 257 ; *A. kuneides*, n. sp., *id.* p. 259.

Fam. III. Cynthiidæ.

Styela gelatinosa, n. sp., Traustedt, (20) pp. 429 & 433 ; *St. bicolor*, n. sp., Sluiter, (18) p. 262.

Cynthia rosea, n. sp., *id.* p. 264.

Fam. IV. Molgulidæ.

Eugyra pedunculata, n. sp., Traustedt, (20) pp. 427 & 432.

Eugyra bilabiata (*bivalvata*, in explanation of plates), n. sp., Sluiter (18) p. 243.

MOLLUSCA.

BY

W. E. Hoyle, M.A., F.R.S.E.

Adams, J. The Land *Mollusca* of the Thames Goldfields. Tr. N. Z. Inst. xix, pp. 177–181.

Am-Stein, G. Nachtrag zu den bei Serneus beobachteten Binnenconchylien. JB. Ges. Graub. xxx, pp. 41–44.

Ancey, C. F. (1) Nouvelles contributions malacologiques. III. Considérations sur le genre *Opisthostoma* et les Diplommatinacées. IV. Auriculacées d'Aden (Arabie). V. Descriptions de Clausilies exotiques nouvelles. VI. Études sur la faune malacologique des îles Galapagos. Bull. Soc. mal. Fr. iv, pp. 273–299.

——. (2) Sur la faune terrestre et fluviatile du Mozambique septentrional. Le Nat. ix, pp. 79 & 80.

——. (3) Sur l'*Helix plectotropis* Martens et ses variations. *T. c.* p. 167.

Apathy, I. Tanúlmány a Najadeák szövettanáról. [Study of the Histology of the *Naiadæ*.] Ért. Term. Kör. xiv, 121 pp., 4 pls., 1885; Biol. Centralbl. vii, pp. 621–630; abstr., J. R. Micr. Soc. 1888, pp. 205 & 206.

Apgar, A. C. The Musk-rat and the *Unio*. J. Trenton Soc. i, pp. 58 & 59; also Zool. (3) xi, p. 425.

Appellöf, A. Om skalets bildning hos *Sepia officinalis*, L. Œfv. Ak. Förh. 1887, pp. 495–502.

Ashford, C. Land and Fresh-water *Mollusca* round Christchurch, South Hants. J. of Conch. v, pp. 153–163.

Atwater, W. O. Contributions to the knowledge of the chemical composition and nutritive values of American food-fishes and invertebrates. Rep. U. S. Fish Comm. xi, for 1883 (1885), pp. 433–494. 2 pls.

---

† Indicates that though the Recorder has not seen the paper, an abstract has been obtained from some other source, which is usually indicated.

MOLLUSCA.

BY

W. E. Hoyle, M.A., F.R.S.E.

Adams, J. The Land *Mollusca* of the Thames Goldfields. Tr. N. Z. Inst. xix, pp. 177–181.

Am-Stein, G. Nachtrag zu den bei Serneus beobachteten Binnenconchylien. JB. Ges. Graub. xxx, pp. 41–44.

Ancey, C. F. (1) Nouvelles contributions malacologiques. III. Considérations sur le genre *Opisthostoma* et les Diplommatinacées. IV. Auriculacées d'Aden (Arabie). V. Descriptions de Clausilies exotiques nouvelles. VI. Études sur la faune malacologique des îles Galapagos. Bull. Soc. mal. Fr. iv, pp. 273–299.

——. (2) Sur la faune terrestre et fluviatile du Mozambique septentrional. Le Nat. ix, pp. 79 & 80.

——. (3) Sur l'*Helix plectotropis* Martens et ses variations. *T. c.* p. 167.

Apathy, I. Tanúlmány a Najadeák szövettanáról. [Study of the Histology of the *Naiadæ*.] Ért. Term. Kör. xiv, 121 pp., 4 pls., 1885; Biol. Centralbl. vii, pp. 621–630; ab-tr., J. R. Micr. Soc. 1888, pp. 205 & 206.

Apgar, A. C. The Musk-rat and the *Unio*. J. Trenton Soc. i, pp. 58 & 59; also Zool. (3) xi, p. 425.

Appellöf, A. Om skalets bildning hos *Sepia officinalis*, L. Œfv. Ak. Förh. 1887, pp. 495–502.

Ashford, C. Land and Fresh-water *Mollusca* round Christchurch, South Hants. J. of Conch. v, pp. 153–163.

Atwater, W. O. Contributions to the knowledge of the chemical composition and nutritive values of American food-fishes and invertebrates. Rep. U.S. Fish Comm. xi, for 1883 (1885), pp. 433–494 2 pls.

---

† Indicates that though the Recorder has not seen the paper, an abstract has been obtained from some other source, which is usually indicated.

AURIVILLIUS, C. W. S. Öfversigt öfver de af Vega-expeditionen insamlade arktiska hafsmollusker. II. Placophora och *Gastropoda*: in, Vega-Expeditionens Vetenskapliga Jakttagelser, iv, pp. 311–384, pls. xii & xiii.

BAILLIE, W. Colonizing Land and Fresh-water Shells in East Sutherland. J. of Conch. v, p. 192.

BALASHEVA, M. O vliyanie vnyeshnei sredi i preimushtshestvenno obema vodnago basseina na nyekotorikhi iz slizhnyakov. [Influence of the external medium, and especially of the dimensions of the vessel on certain Molluscs.] Zapiski Novoross. Obsch. Estestv. xii, pp. 21–28, pl.

BALLÉ, E. Note sur une coquille de l'*Helix lapicida* (Linné) presentant la monstruosité subscalaire. Le Nat. ix, p. 108.

BARROIS, J. Note sur une nouvelle forme parasite des Firoles, *Trichœlina paradoxa* (Barrois). J. de l'Anat. Phys xxiii, pp. 1–17, pls. i & ii; abstr., Z. f. Parasit. ii, p. 163.

BATES, J. Additional Note on *Planorbis dilatatus* and *Planorbis glaber* at Burnley. J. of Conch. v, p. 221.

BATHER, F. A. The Growth of Cephalopod Shells. Geol. Mag. iv, pp. 446–449, cut; abstr., J. R. Micr. Soc. 1888, p. 200.

BEAUMONT, D. DE. Sur la valeur specifique des *Helix nemoralis* et *Helix hortensis*. Le Nat. ix, pp. 59 & 60.

BECKLEY [MRS.] E. M. Hawaiian Fishing Implements and Methods of Fishing. Bull. U. S. Fish. Comm. vi, pp. 245–256; abstr., Zool. (3) xi, pp. 354 & 355.

BEECHER, C. E. [See CALL, R. E.]

BELLARDI, L. I Molluschi dei terreni terziarii del Piemonte e della Liguria. Parte v. *Mitridæ* (continuazione). Mem. Acc. Torino (2) xxxviii, pp. 257–326, pls. iii & iv, 1888; also separately, Turin: 1887, 4to, 88 pp.

BERGH, R. (1) Die Marseniaden, eine systematische Monographie; in, C. SEMPER's Reisen im Archipel der Philippinen. II. Wiss Result., ii. Malacol. Untersuch., Supplement-Heft iv, 2. Wiesbaden: 1887, 4to, pp. 227–285, pls. *S–Æ*.

——. (2) Die van Hasselt'schen Nudibranchien. Notes Leyd. Mus. ix, No. xliii, pp. 303–323, pl. vi.

BERNARD, F. (1) Structure de la branchie des Gastéropodes prosobranches. C.R. cv, pp. 316–318: transl., Ann. N. H. (5) xx, pp. 247–249; abstr., J. R. Micr. Soc. 1887, pp. 939 & 940.

——. (2) Structure de la fausse branchie des Prosobranches pectinibranches. C.R. cv, pp. 383–385; abstr., J. R. Micr. Soc. 1887, p. 940.

BERTHIER, H. A quel auteur attribuer la paternité du genre *Cæcilianella*. Bull. Soc. mal. Fr. iv, pp. 59–66.

Bièтrix, E. Observation sur un cas de monstruosité de l'appareil génital chez l'*Helix pomatia*. Bibl. haut. études, xxxii, No. 6, 14 pp., 1 pl., 1886; see also Ann. Sci. Nat. (7) i, No. 2, pp. 95–108, pl. v. [*Cf.* Zool. Rec. xxiii, *Moll.* pp. 3 & 40.]

Blackford, E. G. Report on the Oyster investigation in New York, with the steamer Lookout. Rep. U. S. Fish Comm. xiii, for 1885, App., pp. 157–163.

Borcherding, E. Beiträge zur Molluskenfauna der nordwestdeutschen Tiefebene. JH. Ver. Lüneb, 1887, pp. 43–73.

Böttger, O. (1) Vier neue westindische Pneumonopomen. JB. mal. Ges. xiv, pp. 101–104, pl. iv, figs. 7–10.

——. (2) Zur Kenntniss der Melanien Chinas und Japans, II. *T. c.* pp. 105–117.

——. (3) Die ostasiatischen Vertreter der Gattung *Rissoina*. I. *T. c.* pp. 125–135, pl. vi, figs. 1 & 2.

——. (4) Die Rissoidengattung *Stossichia*, Brus., ihre Synonymie u. ihre lebenden u. fossilen Vertreter. *T. c.* pp. 136–147, pl. vi, figs. 3–5.

——. (5) Aufzählung der zur Gattung *Assiminea* Fleming gehörigen Arten. *T. c.* pp. 147–234, pl. vi, figs. 6–11.

——. (6) Zwei neue Formen transkaukasischer Landschnecken. Nachr. mal. Ges. xix, pp. 55–57.

Bouchon-Brandely, G. Rapport sur sa mission à Tahiti (Partie technique). Les pêcheries des iles Tuamotu. J. officiel Repub. Franç. xvii, pp. 3186–3189, 3220, 3221, 3234–3236, 3250–3252, 23, 25, 26, & 27, June, 1885; abstr., Rev. Tr. Sci. vi, p. 400; transl., Rep. U. S. Fish. Comm. xiii, App. pp. 353–377.

Bourguignat, J. R. (1) Études sur les noms génériques des petites Paludinidées à opercule spirescent suivie de la description du nouveau genre *Horatia*. Paris: 1887, 8vo, 56 pp., 1 pl.

——. (2) Mollusques nouveaux de la région du Nyanza-Oukéréwé (Victoria Nyanza). Bull. Soc. mal. Fr. iv, pp. 267–272.

——. [See also Letourneux.]

Bouvier, E. L. (1) Système nerveux, morphologie générale et classification des Gastéropodes prosobranches. Ann. Sci. Nat. (7) iii, pp. 1–510, pls. i–xix; also separately, Paris: 1887; abstr., J. R. Micr. Soc. 1888, pp. 21–24.

——. (2) Système nerveux et morphologie des Cyclobranches. Bull. Soc. Philom. (7) xi, pp. 34 & 35.

——. (3) Observations sur le genre *Ceratoptilus* créé dans la famille des Cérithidés. *T. c.* pp. 36–38.

——. (4) Résumé d'observations faites sur le système nerveux des Prosobranches et la formation du système nerveux typique des Cténobranches. *T. c.* pp. 42–45.

AURIVILLIUS, C. W. S. Öfversigt öfver de af Vega-expeditionen insamlade arktiska hafsmollusker. II. Placophora och *Gastropoda*: in, Vega-Expeditionens Vetenskapliga Jakttagelser, iv, pp. 311–384, pls. xii & xiii.

BAILLIE, W. Colonizing Land and Fresh-water Shells in East Sutherland. J. of Conch. v, p. 192.

BALASHEVA, M. O vliyanie vnyeshnei sredi i preimushtshestvenno obema vodnago basseina na nyekotorikhi iz slizhnyakov. [Influence of the external medium, and especially of the dimensions of the vessel on certain Molluscs.] Zapiski Novoross. Obsch. Estestv. xii, pp. 21–28, pl.

BALLÉ, E. Note sur une coquille de l'*Helix lapicida* (Linné) presentant la monstruosité subscalaire. Le Nat. ix, p. 108.

BARROIS, J. Note sur une nouvelle forme parasite des Firoles, *Trichœlina paradoxa* (Barrois). J. de l'Anat. Phys xxiii, pp. 1–17, pls. i & ii; abstr., Z. f. Parasit. ii, p. 163.

BATES, J. Additional Note on *Planorbis dilatatus* and *Planorbis glaber* at Burnley. J. of Conch. v, p. 221.

BATHER, F. A. The Growth of Cephalopod Shells. Geol. Mag. iv, pp. 446–449, cut; abstr., J. R. Micr. Soc. 1888, p. 200.

BEAUMONT, D. DE. Sur la valeur specifique des *Helix nemoralis* et *Helix hortensis*. Le Nat. ix, pp. 59 & 60.

BECKLEY [MRS.] E. M. Hawaiian Fishing Implements and Methods of Fishing. Bull. U. S. Fish. Comm. vi, pp. 245–256; abstr., Zool. (3) xi, pp. 354 & 355.

BEECHER, C. E. [See CALL, R. E.]

BELLARDI, L. I Molluschi dei terreni terziarii del Piemonte e della Liguria. Parte v. *Mitridæ* (continuazione). Mem. Acc. Torino (2) xxxviii, pp. 257–326, pls. iii & iv, 1888; also separately, Turin: 1887, 4to, 88 pp.

BERGH, R. (1) Die Marseniaden, eine systematische Monographie; in, C. SEMPER's Reisen im Archipel der Philippinen. II. Wiss Result., ii. Malacol. Untersuch., Supplement-Heft iv, 2. Wiesbaden: 1887, 4to, pp. 227–285, pls. *S–Æ*.

——. (2) Die van Hasselt'schen Nudibranchien. Notes Leyd. Mus. ix, No. xliii, pp. 303–323, pl. vi.

BERNARD, F. (1) Structure de la branchie des Gastéropodes prosobranches. C.R. cv, pp. 316–318: transl., Ann. N. H. (5) xx, pp. 247–249; abstr., J. R. Micr. Soc. 1887, pp. 939 & 940.

——. (2) Structure de la fausse branchie des Prosobranches pectinibranches. C.R. cv, pp. 383–385; abstr., J. R. Micr. Soc. 1887, p. 940.

BERTHIER, H. À quel auteur attribuer la paternité du genre *Cæcilianella*. Bull. Soc. mal. Fr. iv, pp. 59–66.

Bietrix, E. Observation sur un cas de monstruosité de l'appareil génital chez l'*Helix pomatia*. Bibl. haut. études, xxxii, No. 6, 14 pp., 1 pl., 1886, see also Ann. Sci. Nat. (7) i, No. 2, pp. 95–108, pl. v. [*Cf. Zool.* Rec. xxiii, *Moll.* pp. 3 & 40.]

Blackford, E. G. Report on the Oyster investigation in New York, with the steamer Lookout. Rep. U. S. Fish Comm. xiii, for 1885, App., pp. 157–163.

Borcherding, E. Beiträge zur Molluskenfauna der nordwestdeutschen Tiefebene. JH. Ver. Lüneb, 1887, pp. 43–73.

Böttger, O. (1) Vier neue westindische Pneumonopomen. JB. mal. Ges. xiv, pp. 101–104, pl. iv, figs. 7–10.

——. (2) Zur Kenntniss der Melanien Chinas und Japans, II. *T. c.* pp. 105–117.

——. (3) Die ostasiatischen Vertreter der Gattung *Rissoina*. I. *T. c.* pp. 125–135, pl. vi, figs. 1 & 2.

——. (4) Die Rissoidengattung *Stossichia*, Brus., ihre Synonymie u. ihre lebenden u. fossilen Vertreter. *T. c.* pp. 136–147, pl. vi, figs. 3–5.

——. (5) Aufzählung der zur Gattung *Assiminea* Fleming gehörigen Arten. *T. c.* pp. 147–234, pl. vi, figs. 6–11.

——. (6) Zwei neue Formen transkaukasischer Landschnecken. Nachr. mal. Ges. xix, pp. 55–57.

Bouchon-Brandely, G. Rapport sur sa mission à Tahiti (Partie technique). Les pêcheries des iles Tuamotu. J. officiel Repub. Franç. xvii, pp. 3186–3189, 3220, 3221, 3234–3236, 3250–3252, 23, 25, 26, & 27, June, 1885; abstr., Rev. Tr. Sci. vi, p. 400; transl., Rep. U. S. Fish. Comm. xiii, App. pp. 353–377.

Bourguignat, J. R. (1) Études sur les noms génériques des petites Paludinidées à opercule spirescent suivie de la description du nouveau genre *Horatia*. Paris: 1887, 8vo, 56 pp., 1 pl.

——. (2) Mollusques nouveaux de la région du Nyanza-Oukéréwé (Victoria Nyanza). Bull. Soc. mal. Fr. iv, pp. 267–272.

——. [See also Letourneux.]

Bouvier, E. L. (1) Système nerveux, morphologie générale et classification des Gastéropodes prosobranches. Ann. Sci. Nat. (7) iii, pp. 1–510, pls. i–xix; also separately, Paris: 1887; abstr., J. R. Micr. Soc. 1888, pp. 21–24.

——. (2) Système nerveux et morphologie des Cyclobranches. Bull. Soc. Philom. (7) xi, pp. 34 & 35.

——. (3) Observations sur le genre *Ceratoptilus* créé dans la famille des Cérithidés. *T. c.* pp. 36–38.

——. (4) Résumé d'observations faites sur le système nerveux des Prosobranches et la formation du système nerveux typique des Cténobranches. *T. c.* pp. 42–45.

[Bouvier, E. L.] (5) Sur le système nerveux chiastoneure des Prosobranches sénestres. *T. c.* pp. 45–48.

——. (6) Sur la morphologie de l'Ampullaire. *T. c.* pp. 92 & 93.

——. (7) L'Organisation des Volutes comparée à celle des Toxiglosses. *T. c.* pp. 102–107.

——. (8) Sur le système nerveux et les deux cordons ganglionnaires pédieux et scalariformes des Cyprées. *T. c.* pp. 127 & 128.

——. (9) Sur la torsion et la symétrie primitive des Gastéropodes. *T. c.* pp. 128–130.

——. (10). Observations sur le système nerveux des Prosobranches ténioglosses. C.R. civ, pp. 447 & 448 ; abstr., J. R. Micr. Soc. 1887, pp. 374 & 375.

——. (11). Sur l'organisation des Gastéropodes sénestres. Le Nat. ix, pp. 18–20.

——. (12) Sur la prétendue glande à venin des Toxiglosses (Mollusques gastéropodes). *T. c.* pp. 168–171, cuts.

†Brancsik, K. (1) Reise an der Küste Dalmatiens im Jahre 1885. Trencsén. term. egy. viii ; abstr., Mal. Bl. ix, p. 177.

——. (2) Die Formen der *Clausilia dubia*, Drp., im Trencsiner Comitate und deren Verbreitung. *Op. cit.* x, pp. 45–55, pl. i, figs. 1–8.

——. (3) *Pupa brancsikii*, Clessin keine Species. *T. c.* pp. 81–85, pl. i, figs. 12–19.

Braun, M. (1) Was thut uns Noth? Ein Mahnwort an Alle, die es angeht. Nachr. mal. Ges. xix, pp. 97–102.

——. (2) Notiz über die Zahl der vor der Begattung verbrauchten Liebespfeile. *T. c.* pp. 102 & 103.

——. (3) Zur Landmolluskenfauna einiger dalmatinischen Inseln. *T. c.* pp. 106–111.

——. (4) Ueber eine Art Stimme bei *Helix aperta*, Born. *T. c.* p. 125.

Brazier, J. *Trochidæ* and other Genera of South Australia, with their Synonyms. Tr. R. Soc. S. Austr. ix, pp. 116–125.

Brock, J. (1) Zur Systematik der Cephalopoden. Nachr. Ges. Götting. 1887, pp. 317–322.

——. (2) Indische Cephalopoden. Zool. JB. ii, pp. 591–614, pl. xvi.

——. (3) Ueber die doppelten Spermatozoen einiger exotischer Prosobranchier. *T. c.* pp. 615–624, pl. xvi, figs. 5–9.

Brockmeier, H. (1) Biologische Mittheilungen über *Ancylus fluviatilis*, Müll., und *Ancylus* (*Acroloxus*) *lacustris*, L. Nachr. mal. Ges. xix, pp. 45–49.

——. (2) Einige seltenere Schnecken von Grevenbrück im südlichen Westfalen und *Helix lapicida*, L. ohne Carina. *T. c.* pp. 103–105.

——. (3) Eine neue Erklärung für das Schwimmen mancher Schnecken an der Oberfläche des Wassers. *T. c.* pp. 111–118 & 150.

BROT, A. (1) Diagnose de deux espèces nouvelles de *Melania* de l'Annam. J. de Conch. xxvii, pp. 32–35.

——. (2) Note sur quelques espèces de Mélanies nouvelles ou imparfaitement connues. Rec. Z. Suisse, iv, pp. 87–109, pls. v–vii.

BUISSERET, A. (1) Les Mollusques du Tanganyka. Rev. Quest. sci. xxi, pp. 289–292,

——. (2) Le système nerveux et les appendices céphaliques des Ptéropodes. *T. c.* pp. 292–294. [Abstr. of PELSENEER, Zool. Rec. xxiii, *Moll.* p. 19.]

——. (3) La Structure des Firoles. *Op. cit.* xxii, pp. 315 & 316. [Abstr. of WARLOMONT, Zool. Rec. xxiii, *Moll.* p. 25.]

BUCQUOY, E., DAUTZENBERG, P., & DOLLFUSS, G. Les Mollusques marins du Roussillon, Part XIV (vol. ii, pt. 1). Paris : 1887, 8vo, pp. 1–23, pls. i–vi.

CALDERON, S. Distribución geográfica de los *Helix* de grupo *Macularia*. An. Soc. Esp. xvi, Actas, pp. 56–61. [Abstr. of KOBELT (18) *postea*.]

CALL, R. E. (1) Note on the Ctenidium of *Unio aberti*, Conrad. Am. Nat. xxi, pp. 857–860, cuts.

——. (2) Description of a New Streptomatid Mollusk of the genus *Goniobasis* (*G. ozarkensis*). Bull. Washb. Coll. i, pp. 189 & 190, pl. vii, figs. 1–10.

——. (3) Notes on the Land *Mollusca* of the Washburn College Biological Survey of Kansas. *T. c.* pp. 201–206, cut.

——. (4) Sixth Contribution to a Knowledge of the Fresh-water *Mollusca* of Kansas. *Op. cit.* ii, pp. 11–25.

—— & BEECHER, C. E. Description of a New Rissoid Mollusk [*Bythinella aldrichii*]. Bull. Washb. Coll. i, pp. 190–192, cut, pl. vii, figs. 11–14.

CARPENTER, A. Monkeys opening Oysters. Nature, xxxvi, p. 53 ; abstr. La Nature, xv, 2, p. 46.

CASTELFRANCO, P. Les fonds de cabane. Rev. d'Anthropol. (2) x, pp. 182–200 ; abstr. Nachr. mal. Ges. xix, p. 93.

CASTELLARNAU Y DE LLEOPART, J. M. DE. Procédés pour l'examen et la conservation des animaux à la station zoologique de Naples. J. Microgr. xi, pp. 183, 215, & 376–381. [*Mollusca*, pp. 376–381.]

CHEESEMAN, T. F. On the *Mollusca* of the Vicinity of Auckland. Tr. N. Z. Inst. xix, pp. 161–176.

CHIA, M. DE. Catalogo de los Moluscos testáceos terrestres y fluviátiles, de la Comarca de Gerona Gerona : 1886, 8vo, 43 pp.

CLAUS, C. Lehrbuch der Zoologie. Ed. IV. Marburg & Leipzig : 1887, 8vo, 886 pp., 792 cuts. [*Mollusca*, pp. 558–613.]

CLESSIN, S. (1) Die Mollusken-Fauna Oesterreich-Ungarns und der Schweiz, pts. i & ii. Nuremberg : 1887, 8vo, pp. 1–320, cuts.

——. (2) *Mytilacea* : continued in, Martini & Chemnitz, Conch. Cab. pts. 345, 347, 351, 352, & 353, vol. viii, pt. 3, pp. 29–128, pls. xiii–xxv.

[Bouvier, E. L.] (5) Sur le système nerveux chiastoneure des Prosobranches sénestres. *T. c.* pp. 45–48.

——. (6) Sur la morphologie de l'Ampullaire. *T. c.* pp. 92 & 93.

——. (7) L'Organisation des Volutes comparée à celle des Toxiglosses. *T. c.* pp. 102–107.

——. (8) Sur le système nerveux et les deux cordons ganglionnaires pédieux et scalariformes des Cyprées. *T. c.* pp. 127 & 128.

——. (9) Sur la torsion et la symétrie primitive des Gastéropodes. *T. c.* pp. 128–130.

——. (10). Observations sur le système nerveux des Prosobranches ténioglosses. C.R. civ, pp. 447 & 448 ; abstr., J. R. Micr. Soc. 1887, pp. 374 & 375.

——. (11). Sur l'organisation des Gastéropodes sénestres. Le Nat. ix, pp. 18–20.

——. (12) Sur la prétendue glande à venin des Toxiglosses (Mollusques gastéropodes). *T. c.* pp. 168–171, cuts.

†Brancsik, K. (1) Reise an der Küste Dalmatiens im Jahre 1885. Trencsén. term. egy. viii ; abstr., Mal. Bl. ix, p. 177.

——. (2) Die Formen der *Clausilia dubia*, Drp., im Trencsiner Comitate und deren Verbreitung. *Op. cit.* x, pp. 45–55, pl. i, figs. 1–8.

——. (3) *Pupa brancsikii*, Clessin keine Species. *T. c.* pp. 81–85, pl. i, figs. 12–19.

Braun, M. (1) Was thut uns Noth? Ein Mahnwort an Alle, die es angeht. Nachr. mal. Ges. xix, pp. 97–102.

——. (2) Notiz über die Zahl der vor der Begattung verbrauchten Liebespfeile. *T. c.* pp. 102 & 103.

——. (3) Zur Landmolluskenfauna einiger dalmatinischen Inseln. *T. c.* pp. 106–111.

——. (4) Ueber eine Art Stimme bei *Helix aperta*, Born. *T. c.* p. 125.

Brazier, J. *Trochidæ* and other Genera of South Australia, with their Synonyms. Tr. R. Soc. S. Austr. ix, pp. 116–125.

Brock, J. (1) Zur Systematik der Cephalopoden. Nachr. Ges. Götting. 1887, pp. 317–322.

——. (2) Indische Cephalopoden. Zool. JB. ii, pp. 591–614, pl. xvi.

——. (3) Ueber die doppelten Spermatozoen einiger exotischer Prosobranchier. *T. c.* pp. 615–624, pl. xvi, figs. 5–9.

Brockmeier, H. (1) Biologische Mittheilungen über *Ancylus fluviatilis*, Müll., und *Ancylus* (*Acroloxus*) *lacustris*, L. Nachr. mal. Ges. xix, pp. 45–49.

——. (2) Einige seltenere Schnecken von Grevenbrück im südlichen Westfalen und *Helix lapicida*, L. ohne Carina. *T. c.* pp. 103–105.

——. (3) Eine neue Erklärung für das Schwimmen mancher Schnecken an der Oberfläche des Wassers. *T. c.* pp. 111–118 & 150.

BEOT, A. (1) Diagnose de deux espèces nouvelles de *Melania* de l'Annam. J. de Conch. xxvii, pp. 32–35.

——. (2) Note sur quelques espèces de Mélanies nouvelles ou imparfaitement connues. Rec. Z. Suisse, iv, pp. 87–109, pls. v–vii.

BUISSERET, A. (1) Les Mollusques du Tanganyka. Rev. Quest. sci. xxi, pp. 289–292,

——. (2) Le système nerveux et les appendices céphaliques des Ptéropodes. *T. c.* pp. 292–294. [Abstr. of PELSENEER, Zool. Rec. xxiii, *Moll.* p. 19.]

——. (3) La Structure des Firoles. *Op. cit.* xxii, pp. 315 & 316. [Abstr. of WARLOMONT, Zool. Rec. xxiii, *Moll.* p. 25.]

BUCQUOY, E., DAUTZENBERG, P., & DOLLFUSS, G. Les Mollusques marins du Roussillon, Part XIV (vol. ii, pt. 1). Paris : 1887, 8vo, pp. 1–23, pls. i–vi.

CALDERON, S. Distribución geográfica de los *Helix* de grupo *Macularia*. An. Soc. Esp. xvi, Actas, pp. 56–61. [Abstr. of KOBELT (18) *postea*.]

CALL, R. E. (1) Note on the Ctenidium of *Unio aberti*, Conrad. Am. Nat. xxi, pp. 857–860, cuts.

——. (2) Description of a New Streptomatid Mollusk of the genus *Goniobasis* (*G. ozarkensis*). Bull. Washb. Coll. i, pp. 189 & 190, pl. vii, figs. 1–10.

——. (3) Notes on the Land *Mollusca* of the Washburn College Biological Survey of Kansas. *T. c.* pp. 201–206, cut.

——. (4) Sixth Contribution to a Knowledge of the Fresh-water *Mollusca* of Kansas. *Op. cit.* ii, pp. 11–25.

—— & BEECHER, C. E. Description of a New Rissoid Mollusk [*Bythinella aldrichii*]. Bull. Washb. Coll. i, pp. 190–192, cut, pl. vii, figs. 11–14.

CARPENTER, A. Monkeys opening Oysters. Nature, xxxvi, p. 53 ; abstr. La Nature, xv, 2, p. 46.

CASTELFRANCO, P. Les fonds de cabane. Rev. d'Anthropol. (2) x, pp. 182–200 ; abstr. Nachr. mal. Ges. xix, p. 93.

CASTELLARNAU Y DE LLEOPART, J. M. DE. Procédés pour l'examen et la conservation des animaux à la station zoologique de Naples. J. Microgr. xi, pp. 183, 215, & 376–381. [*Mollusca*, pp. 376–381.]

CHEESEMAN, T. F. On the *Mollusca* of the Vicinity of Auckland. Tr. N. Z. Inst. xix, pp. 161–176.

CHIA, M. DE. Catalogo de los Moluscos testáceos terrestres y fluviátiles, de la Comarca de Gerona Gerona : 1886, 8vo, 43 pp.

CLAUS, C. Lehrbuch der Zoologie. Ed. IV. Marburg & Leipzig : 1887, 8vo, 886 pp., 792 cuts. [*Mollusca*, pp. 558–613.]

CLESS, S. (1) Die Mollusken-Fauna Oesterreich-Ungarns und der Schweiz, pts. i & ii. Nuremberg : 1887, 8vo, pp. 1–320, cuts.

——. (2) *Mytilacea* : continued in, Martini & Chemnitz, Conch. Cab. pts. 345, 347, 351, 352, & 353, vol. viii, pt. 3, pp. 29–128, pls. xiii–xxv.

[Clessin, S.] (3) *Carditaceæ*: commenced in, Martini & Chemnitz, *Op. cit.* pt. 353, vol. x, pt. 1, pp. 1–16, pls. i–v.

——. (4) *Solenacea*: continued in, Martini & Chemnitz, *Op. cit.* pts. 347 & 351, vol. xi, 3, pp. 1–16, pls. i, ii, iv, vi, & vii.

——. (5) Beitrag zur Fauna der Binnen-Mollusken Dalmatiens [*contd.*]. Mal. Bl. ix, pp. 49–65.

——. (6) Binnen-Conchylien von Pola in Istrien. *T. c.* p. 66.

——. (7) Neue Arten des genus *Corbicula*, Mühlf. aus Vorder- und Hinterindien, Borneo und Sumatra. *T. c.* pp. 67–80, pls. ii & iii.

——. (8) Binnen-Mollusken aus Kleinasien. *T. c.* pp. 164–166.

Cockerell, S. C. (1) *Planorbis complanatus* monst. *terebrum* in East Kent. J. of Conch. v, p. 150.

——. (2) *Pisidium roseum* and *Vertigo antivertigo* in East Kent. *T. c.* p. 176.

——. (3) *Mollusca* of Coniston and Carnforth, Lancashire. Naturalist, 1887, p. 190.

——. (4) Middlesex *Mollusca*. Zool. (3) xi, p. 354.

Cockerell, T. D. A. (1) Notes on some Species of Inland-*Mollusca*. Ann. N. H. (5) xix, pp. 174–176.

——. (2) Marine *Mollusca* at Land's End, Cornwall. J. of Conch. v, p. 151.

——. (3) *Helix ericetorum*. Naturalist, 1887, p. 38.

——. (4) The Variation and Abnormal Development of the *Mollusca*. iv. Sci. Goss. 1887, pp. 177 & 178, cuts.

——. (5) Marine *Mollusca* of Kerry. Zool. (3) xi, pp. 115 & 116.

Cole, A. C. Studies in Microscopical Science, iv. Ser. 4, Popular Microscopy. [*Mollusca*, pp. 49–51, pl. xi.]

Coles, R. F. A List of Kirkcudbright Mollusks. Tr. Dumfries & Gall. N. H. Soc. No. 4, pp. 103–108.

Collin, J. Brachionopoder, Muslinger og Snegle fra Kara-Havet: in, Dijmphna-Togtets zool. bot. Udbytte; Copenhagen: 1887, 8vo, pp. 439–472, pls. xl & xli; also separately, Copenhagen.

Collinge, W. E. (1) Additions to the '*Mollusca* of Clapham.' J. of Conch. v, p. 195.

——. (2) Abnormal *Helix aspersa*. *T. c.* p. 227.

——. (3) Secretion of a violet-coloured fluid by certain of the *Limnæidæ*. Zool. (3) xi, p. 309.

Cooke, A. H. (1) Sur la véritable distribution géographique du *Purpura patula*. J. de Conch. xxvii, pp. 228–238.

——. (2) On the genus *Cuma*. J. of Conch. v, pp. 166–172.

——. (3) On the Position of the Operculum in *Concholepas peruvianus*, Lam. *T. c.* pp. 193 & 194, pl. i, fig. 5.

FISCHER, H.] (4) On a New Species of Sinistral *Limnæa*, from Central Australia, with some Remarks on so-called Species of *Physa*, from Australia. *T. c.* pp. 241–243, pl. ii, figs. 5 & 6.

——, J. G. West Coast *Pulmonata*; Fossil and Living. Bull. Cal. Ac. Sci. ii, pp. 355–376 & 497–514.

CORNISH, T. *Octopus* at Penzance. Zool. (3) xi, p. 309.

COUSIN, A. Faune malacologique de la république de l'Équateur. Bull. Soc. Z. Fr. xii, pp. 187–287, pls. iii & iv.

CRAGIN, F. W. A New Species of *Unio* from Indian Territory. Bull. Washb. Coll. ii, p. 6.

CRICK, W. D. *Achatina acicula* in Northamptonshire. J. of Conch. v, p. 151.

CROSSE, H. (1) Note complémentaire sur le genre *Guestieria*, suivie d'un catalogue des espèces actuellement connues. J. de Conch. xxvii, pp. 1–10.

——. (2) Diagnoses Molluscorum Novæ Caledoniæ incolarum. *T. c.* pp. 303–305.

——, & FISCHER, P. (1) Diagnosis *Cyclostomatis* novi, insulæ Madagascar dictæ incolæ. *T. c.* pp. 227 & 228.

—— & ——. (2) Observations sur le genre *Berthelinia*. *T. c.* pp. 305–311, pl. x.

CUÉNOT, L. Études sur le sang, son role et sa formation dans la série animale. 2e partie: Invertébrés. Arch. Z. expér. (2) v, pp. xliii–xlvii.

CUNDALL, J. W. Marine *Mollusca* of Lyme Regis. J. of Conch. v, pp. 196 & 197.

DALL, W. H. The Distribution of Colours in the Animal Kingdom. Science, vii, p. 572, 1886.

DANKS, B. On the Shell-Money of New Britain. J. Anthrop. Inst. xvii, pp. 305–317.

DAUTZENBERG, P. (1) Une excursion malacologique à Saint Lunaire (Ille et Vilaine) et aux environs de cette localité. Bull. Soc. étud. sci. Paris, ix, 2, 27 pp.; also separately, Rennes & Paris: 1887, 8vo, 27 pp.; abstr., Nachr. mal. Ges. xix, p. 155.

——. (2) Nouvelle liste de coquilles de Cannes. Feuill. Nat. xvi, pp. 127–130, 1886.

——, & LE BARON L. D'HAMONVILLE. (1) Description d'Espèces nouvelles du Tonkin et observations sur quelques autres Mollusques de la même région. J. de Conch. xxvii, pp. 213–225, pl. viii; also separately, Paris: 1887, 8vo.

1887 & ——. (2) Description de deux nouvelles espèces de Mollusques terrestres du Tonkin. *T. c.* pp. 301–303

——. [See also BUCQUOY.]

[Clessin, S.] (3) *Carditaceæ*: commenced in, Martini & Chemnitz, *Op. cit.* pt. 353, vol. x, pt. 1, pp. 1–16, pls. i–v.

——. (4) *Solenacea*: continued in, Martini & Chemnitz, *Op. cit.* pts. 347 & 351, vol. xi, 3, pp. 1–16, pls. i, ii, iv, vi, & vii.

——. (5) Beitrag zur Fauna der Binnen-Mollusken Dalmatiens [*contd.*]. Mal. Bl. ix, pp. 49–65.

——. (6) Binnen-Conchylien von Pola in Istrien. *T. c.* p. 66.

——. (7) Neue Arten des genus *Corbicula*, Mühlf. aus Vorder- und Hinterindien, Borneo und Sumatra. *T. c.* pp. 67–80, pls. ii & iii.

——. (8) Binnen-Mollusken aus Kleinasien. *T. c.* pp. 164–166.

Cockerell, S. C. (1) *Planorbis complanatus* monst. *terebrum* in East Kent. J. of Conch. v, p. 150.

——. (2) *Pisidium roseum* and *Vertigo antivertigo* in East Kent. *T. c.* p. 176.

——. (3) *Mollusca* of Coniston and Carnforth, Lancashire. Naturalist, 1887, p. 190.

——. (4) Middlesex *Mollusca*. Zool. (3) xi, p. 354.

Cockerell, T. D. A. (1) Notes on some Species of Inland-*Mollusca*. Ann. N. H. (5) xix, pp. 174–176.

——. (2) Marine *Mollusca* at Land's End, Cornwall. J. of Conch. v, p. 151.

——. (3) *Helix ericetorum*. Naturalist, 1887, p. 38.

——. (4) The Variation and Abnormal Development of the *Mollusca*. iv. Sci. Goss. 1887, pp. 177 & 178, cuts.

——. (5) Marine *Mollusca* of Kerry. Zool. (3) xi, pp. 115 & 116.

Cole, A. C. Studies in Microscopical Science, iv. Ser. 4, Popular Microscopy. [*Mollusca*, pp. 49–51, pl. xi.]

Coles, R. F. A List of Kirkcudbright Mollusks. Tr. Dumfries & Gall. N. H. Soc. No. 4, pp. 103–108.

Collin, J. Brachionopoder, Muslinger og Snegle fra Kara-Havet: in, Dijmphna-Togtets zool. bot. Udbytte; Copenhagen: 1887, 8vo, pp. 439–472, pls. xl & xli; also separately, Copenhagen.

Collinge, W. E. (1) Additions to the '*Mollusca* of Clapham.' J. of Conch. v, p. 195.

——. (2) Abnormal *Helix aspersa*. *T. c.* p. 227.

——. (3) Secretion of a violet-coloured fluid by certain of the *Limnæidæ*. Zool. (3) xi, p. 309.

Cooke, A. H. (1) Sur la véritable distribution géographique du *Purpura patula*. J. de Conch. xxvii, pp. 228–238.

——. (2) On the genus *Cuma*. J. of Conch. v, pp. 166–172.

——. (3) On the Position of the Operculum in *Concholepas peruvianus*, Lam. *T. c.* pp. 193 & 194, pl. i, fig. 5.

FISCHER, H.] (4) On a New Species of Sinistral *Limnæa*, from local Australia, with some Remarks on so-called Species of *Physa*, su[illegible]from Australia. *T. c.* pp. 241–243, pl. ii, figs. 5 & 6.

[illegible] J. G. West Coast *Pulmonata*; Fossil and Living. Bull. Cal. Ac. Sci. ii, pp. 355–376 & 497–514.

CORNISH, T. *Octopus* at Penzance. Zool. (3) xi, p. 309.

COUSIN, A. Faune malacologique de la république de l'Équateur. Bull. Soc. Z. Fr. xii, pp. 187–287, pls. iii & iv.

CRAGIN, F. W. A New Species of *Unio* from Indian Territory. Bull. Washb. Coll. ii, p. 6.

CRICK, W. D. *Achatina acicula* in Northamptonshire. J. of Conch. v, p. 151.

CROSSE, H. (1) Note complémentaire sur le genre *Guestieria*, suivie d'un catalogue des espèces actuellement connues. J. de Conch. xxvii, pp. 1–10.

——. (2) Diagnoses Molluscorum Novæ Caledoniæ incolarum. *T. c.* pp. 303–305.

——, & FISCHER, P. (1) Diagnosis *Cyclostomatis* novi, insulæ Madagascar dictæ incolæ. *T. c.* pp. 227 & 228.

—— & ——. (2) Observations sur le genre *Berthelinia*. *T. c.* pp. 305–311, pl. x.

CUÉNOT, L. Études sur le sang, son role et sa formation dans la série animale. 2e partie: Invertébrés. Arch. Z. expér. (2) v, pp. xliii–xlvii.

CUNDALL, J. W. Marine *Mollusca* of Lyme Regis. J. of Conch. v, pp. 196 & 197.

DALL, W. H. The Distribution of Colours in the Animal Kingdom. Science, vii, p. 572, 1886.

DANKS, B. On the Shell-Money of New Britain. J. Anthrop. Inst. xvii, pp. 305–317.

DAUTZENBERG, P. (1) Une excursion malacologique à Saint Lunaire (Ille et Vilaine) et aux environs de cette localité. Bull. Soc. étud. sci. Paris, ix, 2, 27 pp.; also separately, Rennes & Paris: 1887, 8vo, 27 pp.; abstr., Nachr. mal. Ges. xix, p. 155.

——. (2) Nouvelle liste de coquilles de Cannes. Feuill. Nat. xvi, pp. 127–130, 1886.

——, & LE BARON L. D'HAMONVILLE. (1) Description d'Espèces nouvelles du Tonkin et observations sur quelques autres Mollusques de la même région. J. de Conch. xxvii, pp. 213–225, pl. viii; also separately, Paris: 1887, 8vo.

188[illegible]

& ——. (2) Description de deux nouvelles espèces de Mollusques terrestres du Tonkin. *T. c.* pp. 301–303

——. [See also BUCQUOY.]

DELAGE, Y. Sur une fonction nouvelle des otocystes comm Chemnitz, d'orientation locomotrice. Arch. Z. expér. (2) v, pp. 1– Zool. Rec. xxiii, *Moll.* p. 9.] *cit.* pts.

DE STEFANI, C. La *Lucina pomum* sinonimo della *Lucina a* Mgh. Atti Soc. Tosc. P.-v. v, pp. 270–272.

DEWITZ, J. Ueber die Gesetzmässigkeit in der Ortsveränderung der Spermatozoen und in der Vereinigung derselben mit dem Ei. Arch. Phys. Pflüger, xxxviii, pp. 358–385, 1886. [*Mollusca*, p. 369.]

DOLLFUSS, G. [See BUCQUOY.]

DOMERGUE, F. Les parasites microscopiques de l'huitre et de la moule comestibles. Le Nat. ix, pp. 116 & 117.

DOMINIQUE, J. *Osmia* habitant les coquilles d'*Helix*. Feuill. Nat. xviii, p. 22.

DUBOIS, R. De la fonction photogénique chez le *Pholas dactylus*. C.R. cv, pp. 690–692 ; abstr., J. R. Micr. Soc. 1888, p. 26, C.R. Soc. Biol. (8) iv, pp. 564–566, and La Nature, xv, 2, p. 335.

DURAND, W. F. Internal Parasites of *teredo navalis*. Am. Micr. J. viii, pp. 224–226.

DURÈGNE, —. (1) [*Pleurophyllidia lineata* (Otto) and *Eledone octopodia* in the Bay of Biscay.] Act. Soc. L. Bord. C.R. xli, pp. xxiii & xxiv.

——. (2) [*Chenopus pes-carbonis* at Arcachon.] *T. c.* p. xxix.

DYBOWSKI, W. (1) Ueber die Zahnplatten der *Gulnaria*-Arten. Bull. Soc. Mosc. 1887, pp. 206–215.

——. (2) Studien über die Mundwerkzeuge der *Gulnaria peregra*, Müll. SB. Ges. Dorp. viii, pp. 2–8, pl. i.

——. (3) Studien über die Mundwerkzeuge der *Limnæa palustris*. *T. c.* pp. 8–12, pl.

——. (4) Die Gasteropoden-Fauna des Kaspischen Meeres. Nach der Sammlung des Akademikers Dr. K. E. von Baer. Mal. Bl. x, pp. 1–64 (unfinished).

EGGER, E. *Jouannetia cumingii*, Sow. Arb. Inst. Würzb. viii, pp. 129–199, pls. viii–xi ; also separately, Würzburg: 1887 ; abstr., J. R. Micr. Soc. 1887, p. 737.

ENGELMANN, T. W. Ueber die Function der Otolithen. Zool. Anz. x, pp. 439–444 ; abstr., J. R. Micr. Soc. 1887, p. 938.

ESMARCK, [MISS] BIRGITHE. On the Land and Freshwater *Mollusca* of Norway. J. of Conch. v, pp. 129–131.

FAGOT, P. Historique du genre *Cæcilianella*. Bull. Soc. mal. Fr. iv, pp. 49–58.

FAUSSEK, V. Zur Mollusken-Fauna des nördlichen Kaukasus anliegenden Steppen. Nachr. mal. Ges. xix, pp. 83–89.

FENN, F. G. *Mollusca* of Merionethshire. J. of Conch. v, pp. 198 & 199.

FISCHER, P. (1) Manuel de Conchyliologie et de Paléontologie conchyliologique ou Histoire naturelle des Mollusques vivants et fossiles, suivi d'un appendice sur les Brachiopodes par D. P. Œhlert. Paris: 1880–1887, 8vo, 1369 pp., 23 pls., cuts. [Concluding part, No. xi, pp. 1009–1369, issued 1887.]

——. (2) Note sur la réforme du genre *Melania*, de Lamarck, proposée par Bowdich, en 1822. J. de Conch. xxvii, pp. 192–201.

——. (3) Sur un nouveau type de Mollusques. *T. c.* pp. 201–206.

——. (4) Descriptions d'espèces nouvelles du genre *Scalenostoma*. *T. c.* pp. 225–227, pl. vii, figs. 4 & 5.

——. [See also CROSSE.]

FOLIN, MARQUIS DE. Sous les mers. Campagnes d'explorations du "Travailleur" et du "Talisman." Paris: 1887, 8vo, 340 pp., cuts.

FOLLOWS, H. [See GRIFFITHS.]

FONTANNES, F. Faune malacologique des terrains néogènes de la Roumanie. Arch. Mus. Lyon, iv, pp. 321–365, pls. xxv *bis*, *ter*.

FRÉDÉ, P. La pêche aux perles. Paris: 1887, 8vo, 128 pp., cuts.

FREDERICQ, L. L'autotomie chez les étoiles de mer. Rev. Sci. (3) xxxix, pp. 589–592; abstr., Rev. Quest. Sci. xxii, pp. 657–661.

FRENZEL, J. (1) Einiges über den Mitteldarm der Insecten sowie über Epithelregeneration. Arch. Mikr. Anat. xxvi, pp. 229–306, pls. vii–ix, 1886.

——. (2) Zum feineren Bau des Wimperapparates. *Op. cit.* xxviii, pp. 53–80, pl. viii, 1886.

FURTADO, A. Sur une nouvelle espèce de Céphalopode appartenant au genre *Ommatostrephes*. Mem. Sci. Lisb.; separately in advance, Lisbon: 1887, 4to, 18 pp., 2 pls.

GANONG, W. F. Is *Littorina litorea* Introduced or Indigenous? Am. Nat. xxi, pp. 287 & 288.

GARBINI, A. Intorno ad un nuovo organo dell' *Anodonta*. Zool. Anz. x, pp. 114 & 115, cut.

GARNAULT, P. (1) Recherches anatomiques et histologiques sur le *Cyclostoma elegans*. Act. Soc. L. Bord. xli, pp. 11–128, pls. i–ix [unfinished, but completed, 1888, by addition of pp. 129–158]; abstr., J. R. Micr. Soc. 1887, pp. 716 & 717.

——. (2) Sur la glande à concrétions du *Cyclostoma elegans*. C.R. civ, pp. 708–710; abstr., J. R. Micr. Soc. 1887, p. 376.

——. (3) Sur la structure et le développement de l'œuf et de son follicule chez les Chitonides. C.R. cv, pp. 621–623; abstr., J. R. Micr. Soc. 1887, p. 940; also Act. Soc. L. Bord. C.R. xli, pp. lxxiii & lxxiv.

GARRETT, A. (1) Mollusques terrestres des îles marquises (Polynésie). Traduit de l'anglais par M. C. F. Ancey. Bull. Soc. mal. Fr. iv, pp. 1–48.

DELAGE, Y. Sur une fonction nouvelle des otocystes comm Chemnitz, d'orientation locomotrice. Arch. Z. expér. (2) v, pp. 1- Zool. Rec. xxiii, *Moll.* p. 9.] *l. cit.* pts.

DE STEFANI, C. La *Lucina pomum* sinonimo della *Lucina a* Mgh. Atti Soc. Tosc. P.-v. v, pp. 270–272.

DEWITZ, J. Ueber die Gesetzmässigkeit in der Ortsveränderung der Spermatozoen und in der Vereinigung derselben mit dem Ei. Arch. Phys. Pflüger, xxxviii, pp. 358–385, 1886. [*Mollusca*, p. 369.]

DOLLFUSS, G. [See BUCQUOY.]

DOMERGUE, F. Les parasites microscopiques de l'huitre et de la moule comestibles. Le Nat. ix, pp. 116 & 117.

DOMINIQUE, J. *Osmia* habitant les coquilles d'*Helix*. Feuill. Nat. xviii, p. 22.

DUBOIS, R. De la fonction photogénique chez le *Pholas dactylus*. C.R. cv, pp. 690–692 ; abstr., J. R. Micr. Soc. 1888, p. 26, C.R. Soc. Biol. (8) iv, pp. 564–566, and La Nature, xv, 2, p. 335.

DURAND, W. F. Internal Parasites of *teredo navalis*. Am. Micr. J. viii, pp. 224–226.

DURÈGNE, —. (1) [*Pleurophyllidia lineata* (Otto) and *Eledone octopodia* in the Bay of Biscay.] Act. Soc. L. Bord. C.R. xli, pp. xxiii & xxiv.

——. (2) [*Chenopus pes-carbonis* at Arcachon.] *T. c.* p. xxix.

DYBOWSKI, W. (1) Ueber die Zahnplatten der *Gulnaria*-Arten. Bull. Soc. Mosc. 1887, pp. 206–215.

——. (2) Studien über die Mundwerkzeuge der *Gulnaria peregra*, Müll. SB. Ges. Dorp. viii, pp. 2–8, pl. i.

——. (3) Studien über die Mundwerkzeuge der *Limnæa palustris*. *T. c.* pp. 8–12, pl.

——. (4) Die Gasteropoden-Fauna des Kaspischen Meeres. Nach der Sammlung des Akademikers Dr. K. E. von Baer. Mal. Bl. x, pp. 1–64 (unfinished).

EGGER, E. *Jouannetia cumingii*, Sow. Arb. Inst. Würzb. viii, pp. 129–199, pls. viii–xi ; also separately, Würzburg: 1887 ; abstr., J. R. Micr. Soc. 1887, p. 737.

ENGELMANN, T. W. Ueber die Function der Otolithen. Zool. Anz. x, pp. 439–444 ; abstr., J. R. Micr. Soc. 1887, p. 938.

ESMARCK, [MISS] BIRGITHE. On the Land and Freshwater *Mollusca* of Norway. J. of Conch. v, pp. 129–131.

FAGOT, P. Historique du genre *Cæcilianella*. Bull. Soc. mal. Fr. iv, pp. 49–58.

FAUSSEK, V. Zur Mollusken-Fauna des nördlichen Kaukasus anliegenden Steppen. Nachr. mal. Ges. xix, pp. 83–89.

FENN, F. G. *Mollusca* of Merionethshire. J. of Conch. v, pp. 198 & 199.

FISCHER, P. (1) Manuel de Conchyliologie et de Paléontologie conchyliologique ou Histoire naturelle des Mollusques vivants et fossiles, suivi d'un appendice sur les Brachiopodes par D. P. Œhlert. Paris : 1880–1887, 8vo, 1369 pp., 23 pls., cuts. [Concluding part, No. xi, pp. 1009–1369, issued 1887.]

——. (2) Note sur la réforme du genre *Melania*, de Lamarck, proposée par Bowdich, en 1822. J. de Conch. xxvii, pp. 192–201.

——. (3) Sur un nouveau type de Mollusques. *T. c.* pp. 201–206.

——. (4) Descriptions d'espèces nouvelles du genre *Scalenostoma*. *T. c.* pp. 225–227, pl. vii, figs. 4 & 5.

——. [See also CROSSE.]

FOLIN, MARQUIS DE. Sous les mers. Campagnes d'explorations du "Travailleur" et du "Talisman." Paris : 1887, 8vo, 340 pp., cuts.

FOLLOWS, H. [See GRIFFITHS.]

FONTANNES, F. Faune malacologique des terrains néogènes de la Roumanie. Arch. Mus. Lyon, iv, pp. 321–365, pls. xxv *bis*, *ter*.

FRÉDÉ, P. La pêche aux perles. Paris : 1887, 8vo, 128 pp., cuts.

FREDERICQ, L. L'autotomie chez les étoiles de mer. Rev. Sci. (3) xxxix, pp. 589–592 ; abstr., Rev. Quest. Sci. xxii, pp. 657–661.

FRENZEL, J. (1) Einiges über den Mitteldarm der Insecten sowie über Epithelregeneration. Arch. Mikr. Anat. xxvi, pp. 229–306, pls. vii–ix, 1886.

——. (2) Zum feineren Bau des Wimperapparates. *Op. cit.* xxviii, pp. 53–80, pl. viii, 1886.

FURTADO, A. Sur une nouvelle espèce de Céphalopode appartenant au genre *Ommatostrephes*. Mem. Sci. Lisb.; separately in advance, Lisbon : 1887, 4to, 18 pp., 2 pls.

GANONG, W. F. Is *Littorina litorea* Introduced or Indigenous? Am. Nat. xxi, pp. 287 & 288.

GARBINI, A. Intorno ad un nuovo organo dell' *Anodonta*. Zool. Anz. x, pp. 114 & 115, cut.

GARNAULT, P. (1) Recherches anatomiques et histologiques sur le *Cyclostoma elegans*. Act. Soc. L. Bord. xli, pp. 11–128, pls. i–ix [unfinished, but completed, 1888, by addition of pp. 129–158] ; abstr., J. R. Micr. Soc. 1887, pp. 716 & 717.

——. (2) Sur la glande à concrétions du *Cyclostoma elegans*. C.R. civ, pp. 708–710 ; abstr., J. R. Micr. Soc. 1887, p. 376.

——. (3) Sur la structure et le développement de l'œuf et de son follicule chez les Chitonides. C.R. cv, pp. 621–623 ; abstr., J. R. Micr. Soc. 1887, p. 940; also Act. Soc. L. Bord. C.R. xli, pp. lxxiii & lxxiv.

GARRETT, A. (1) Mollusques terrestres des îles marquises (Polynésie). Traduit de l'anglais par M. C. F. Ancey. Bull. Soc. mal. Fr. iv, pp. 1–48.

[Garrett, A.] (2) The Terrestrial *Mollusca* inhabiting the Samoa, or Navigator Islands. P. Ac. Philad. 1887, pp. 124–153.

——. (3) On the Terrestrial Mollusks of the Viti Islands. P. Z. S. 1887, pp. 164–189 & 284–316.

——. (4) The Terrestrial *Mollusca* inhabiting the Society Islands. J. Ac. Philad. (2) ix, pp. 17–114, pls. ii & iii, 1884 [hitherto unabstracted].

Gatliff, J. H. A list of some of the Shells of the Marine *Mollusca* found upon the Victorian Coast. Vict. Nat. iv, pp. 57–60.

Giard, A. (1) Synopsis de la Faune marine de la France septentrionale (*suite*). Bull. Sci. Nord. (2) x, pp. 142–146.

——. (2) L'autotomie dans la série animale. Rev. Sci. (3) xxxix, pp. 629 & 630.

Gioli, G. La *Lucina pomum*, Duj. Atti Soc. Tosc. viii, pp. 301–314, pls. xiv & xv.

Girod, P. Recherches sur les pigments animaux. Rev. d'Auvergne, 9 pp.

Godwin-Austen, H. H. Land- and Fresh-water *Mollusca* of India, including South Arabia, Baluchistan, Afghanistan, Kashmir, Nepal, Burmah, Pegu, Tenasserim, Malay Peninsula, Ceylon, and other Islands of the Indian Ocean. Part v [text]. London: 1886, 8vo, pp. 165–205, pls. xliii–li; also Part vi [plates], pls. lii–lxii, 1887.

Gourret, P. Considérations sur la faune pélagique du Golfe de Marseille suivies d'une étude anatomique et zoologique de la *Spadella marioni* espèce nouvelle de l'ordre des Chœtognathes (Leuckart). Ann. Mus. Marseille, ii, 2, 175 pp., 5 pls. [dated, 1884-1885]. [*Mollusca*, pp. 24–26, 78, 80, 82, & 83.]

Graff, L. von. Die Fauna der Alpenseen. MT. Ver. Steierm. 1886, pp. 47–68.

Grandidier, A. Mollusques de l'Ousaghara, de l'Oukami, &c. (Afrique équatoriale). Bull. Soc. mal. Fr. iv, pp. 185–194.

Granger, A. (1) Les Solénidés (Mollusques bivalves). Le Nat. ix, pp. 73 & 74. [Nothing new.]

——. (2) Les Gastrochènes et les Saxicaves (Mollusques bivalves). *T. c.* pp. 95 & 96. [Nothing new.]

Gredler, V. (1) Zur Conchylien-Fauna von China, x Stück. Uebersicht. der continentalen chinesischen Binnenschnecken. Mal. Bl. ix, pp. 121–163.

——. (2) Zur Conchylien-Fauna von China, xi Stück. Ann. Hofmuseum Wien, ii, pp. 283–290, pl. xi; also separately, Vienna, 1887, 8vo.

——. (3) *Vertigo arctica* in Tirol. Nachr. mal. Ges. xix, pp. 57 & 58.

——. (4) Excursion nach Val Sella und dem Alpendistricte der Sette Communi in Tirol. *T. c.* pp. 133–139.

[Gredler, V.] (5) Zur Conchylien-Fauna von China, xii Stück. *T. c.* pp. 168–178, cut.

Greene, C. A List of Marine Shells obtained at Filey in August and Sept[illegible] x, 1887. J. of Conch. v, pp. 233–235.

Greening, F.: in, Cole's Studies in Microscopical Science, iv. Sec. 2: Animal Histology. [*Mollusca*, pp. 33–40, pls. ix & x.]

Gregorio, A. de. Noto intorno ad alcune Conchiglie Mediterranee viventi e fossili. Nat. Sicil. v, pp. 259–265; vi, pp. 13 & 27: also separately, Palermo: 1886, 8vo, 16 pp.

Grieb, A. Ricerche intorno ai nervi del tubo digerente dell' *Helix aspersa*. Naples: 1887, 4to, 13 pp., 2 pls.

Griffin, G. W. The Pearl Fisheries of Australia. Bull. U. S. Fish Comm. vi, pp. 433–435; also Zool. (3) xi, pp. 289–292.

Griffiths, A. B. On the Nephridia and 'Liver' of *Patella vulgata*. P. R. Soc. xlii, pp. 392–394; abstr. J. R. Micr. Soc. 1887, p. 941.

—— & Follows, H. Chemico-Biological Examination of the organs of Bojanus in *Anodonta*. Chem. News, li, 1885, p. 241; abstr. Arch. Z. exper. (2) v, pp. xxix & xxx.

Grobben, C. (1) Zur Morphologie des Fusses der Heteropoden. Arb. z. Inst. Wien, vii, pp. 221–232, cut; also separately, Vienna: 1887, 8vo; abstr. J. R. Micr. Soc. 1888, p. 24.

——. (2) Die Pericardialdrüse der Opisthobranchier und Anneliden, sowie Bemerkungen über die perienterische Flüssigkeit der letzteren. Zool. Anz. x, pp. 479–481; abstr. J. R. Micr. Soc. 1887, p. 939.

Guerne, J. de. (1) Sur la faune des îles de Fayal et de San Miguel (Açores). C.R. cv, pp. 764–767.

——. (2) Notes sur la faune des Açores. Diagnoses d'un Mollusque, d'un Rotifère et de trois Crustacés nouveaux. Le Nat. ix, pp. 194 & 195.

[Günther, A., & Smith, E. A.] Guide to the Shell and Starfish Galleries (*Mollusca, Echinodermata, Vermes*) in the Department of Zoology of the British Museum (Natural History), Cromwell Road, London, S.W. London: 1887, 8vo, 74 pp., cuts & plan. [*Mollusca*, pp. 1–51. Prepared by E. A. Smith and edited by A. Günther.]

Guppy, H. B. The Solomon Islands and their Natives. London: 1887, 8vo, xvi+384 pp. [*Mollusca*, pp. 336–351; see also p. 54 *postea*.]

Haddon, A. C. An Introduction to the Study of Embryology. London: 1887, 8vo, 336 pp., cuts.

Hadfield, A. Muscular Power of Snails. Zool. (3) xi, pp. 114 & 115.

Haller, B. Erwiederung an Herrn Dr. L. Boutan. Zool. Anz. x, pp. 207–212.

Hamonville, [Baron] L. de. [See Dautzenberg.]

[Garrett, A.] (2) The Terrestrial *Mollusca* inhabiting the Samoa, or Navigator Islands. P. Ac. Philad. 1887, pp. 124–153.

——. (3) On the Terrestrial Mollusks of the Viti Islands. P. Z. S. 1887, pp. 164–189 & 284–316.

——. (4) The Terrestrial *Mollusca* inhabiting the Society Islands. J. Ac. Philad. (2) ix, pp. 17–114, pls. ii & iii, 1884 [hitherto unabstracted].

Gatliff, J. H. A list of some of the Shells of the Marine *Mollusca* found upon the Victorian Coast. Vict. Nat. iv, pp. 57–60.

Giard, A. (1) Synopsis de la Faune marine de la France septentrionale (*suite*). Bull. Sci. Nord. (2) x, pp. 142–146.

——. (2) L'autotomie dans la série animale. Rev. Sci. (3) xxxix, pp. 629 & 630.

Gioli, G. La *Lucina pomum*, Duj. Atti Soc. Tosc. viii, pp. 301–314, pls. xiv & xv.

Girod, P. Recherches sur les pigments animaux. Rev. d'Auvergne, 9 pp.

Godwin-Austen, H. H. Land- and Fresh-water *Mollusca* of India, including South Arabia, Baluchistan, Afghanistan, Kashmir, Nepal, Burmah, Pegu, Tenasserim, Malay Peninsula, Ceylon, and other Islands of the Indian Ocean. Part v [text]. London : 1886, 8vo, pp. 165–205, pls. xliii–li ; also Part vi [plates], pls. lii–lxii, 1887.

Gourret, P. Considérations sur la faune pélagique du Golfe de Marseille suivies d'une étude anatomique et zoologique de la *Spadella marioni* espèce nouvelle de l'ordre des Chœtognathes (Leuckart). Ann. Mus. Marseille, ii, 2, 175 pp., 5 pls. [dated, 1884-1885]. [*Mollusca*, pp. 24–26, 78, 80, 82, & 83.]

Graff, L. von. Die Fauna der Alpenseen. MT. Ver. Steierm. 1886, pp. 47–68.

Grandidier, A. Mollusques de l'Ousaghara, de l'Oukami, &c. (Afrique équatoriale). Bull. Soc. mal. Fr. iv, pp. 185–194.

Granger, A. (1) Les Solénidés (Mollusques bivalves). Le Nat. ix, pp. 73 & 74. [Nothing new.]

——. (2) Les Gastrochènes et les Saxicaves (Mollusques bivalves). *T. c.* pp. 95 & 96. [Nothing new.]

Gredler, V. (1) Zur Conchylien-Fauna von China, x Stück. Uebersicht. der continentalen chinesischen Binnenschnecken. Mal. Bl. ix, pp. 121–163.

——. (2) Zur Conchylien-Fauna von China, xi Stück. Ann. Hofmuseum Wien, ii, pp. 283–290, pl. xi ; also separately, Vienna : 1887, 8vo.

——. (3) *Vertigo arctica* in Tirol. Nachr. mal. Ges. xix, pp. 57 & 58.

——. (4) Excursion nach Val Sella und dem Alpendistricte der Sette Communi in Tirol. *T. c.* pp. 133–139.

[Gredler, V.] (5) Zur Conchylien-Fauna von China, xii Stück. *T. c.* pp. 168–178, cut.

Greene, C. A List of Marine Shells obtained at Filey in August and Sept[illegible]x, 1887. J. of Conch. v, pp. 233–235.

Greening, F.: in, Cole's Studies in Microscopical Science, iv. Sec. 2: Animal Histology. [*Mollusca*, pp. 33–40, pls. ix & x.]

Gregorio, A. de. Note intorno ad alcune Conchiglie Mediterranee viventi e fossili. Nat. Sicil. v, pp. 259–265; vi, pp. 13 & 27: also separately, Palermo: 1886, 8vo, 16 pp.

Grier, A. Ricerche intorno ai nervi del tubo digerente dell' *Helix aspersa*. Naples: 1887, 4to, 13 pp., 2 pls.

Griffin, G. W. The Pearl Fisheries of Australia. Bull. U. S. Fish Comm. vi, pp. 433–435; also Zool. (3) xi, pp. 289–292.

Griffiths, A. B. On the Nephridia and 'Liver' of *Patella vulgata*. P. R. Soc. xlii, pp. 392–394; abstr. J. R. Micr. Soc. 1887, p. 941.

—— & Follows, H. Chemico-Biological Examination of the organs of Bojanus in *Anodonta*. Chem. News, li, 1885, p. 241; abstr. Arch. Z. expér. (2) v, pp. xxix & xxx.

Grobben, C. (1) Zur Morphologie des Fusses der Heteropoden. Arb. z. Inst. Wien, vii, pp. 221–232, cut; also separately, Vienna: 1887, 8vo; abstr. J. R. Micr. Soc. 1888, p. 24.

——. (2) Die Pericardialdrüse der Opisthobranchier und Anneliden, sowie Bemerkungen über die perienterische Flüssigkeit der letzteren. Zool. Anz. x, pp. 479–481; abstr. J. R. Micr. Soc. 1887, p. 939.

Guerne, J. de. (1) Sur la faune des îles de Fayal et de San Miguel (Açores). C.R. cv, pp. 764–767.

——. (2) Notes sur la faune des Açores. Diagnoses d'un Mollusque, d'un Rotifère et de trois Crustacés nouveaux. Le Nat. ix, pp. 194 & 195.

[Günther, A., & Smith, E. A.] Guide to the Shell and Starfish Galleries (*Mollusca*, *Echinodermata*, *Vermes*) in the Department of Zoology of the British Museum (Natural History), Cromwell Road, London, S.W. London: 1887, 8vo, 74 pp., cuts & plan. [*Mollusca*, pp. 1–51. Prepared by E. A. Smith and edited by A. Günther.]

Guppy, H. B. The Solomon Islands and their Natives. London: 1887, 8vo, xvi+384 pp. [*Mollusca*, pp. 336–351; see also p. 54 *postea*.]

Haddon, A. C. An Introduction to the Study of Embryology. London: 1887, 8vo, 336 pp., cuts.

Hadfield, A. Muscular Power of Snails. Zool. (3) xi, pp. 114 & 115.

Haller, B. Erwiederung an Herrn Dr. L. Boutan. Zool. Anz. x, pp. 207–212.

Hamonville, [Baron] L. de. [See Dautzenberg.]

HARGREAVES, J. A. Scalariform *Planorbis spirorbis* near Bingley. Naturalist, 1887, p. 86.

HARTING, J. E. Land and Freshwater *Mollusca*, and the Methods of Collecting and Preserving them. Ess. Nat. pp. 169–175.

HARTWIG, W. Ueber die Fortpflanzung von *Helix lactea*, L., und *Helix undata*, Lov. [? Lowe]. Zool. Gart. xxviii, pp. 302–309.

HAZAY, J. Fisch und Muschel. Circ. deutsch. Fisch. Ver. 1886, No. 4, pp. 231–235.

HEATHCOTE, W. H. *Physa fontinalis*, var. *albina*, at Farington, South Lancashire. J. of Conch. v, p. 185.

HECKERT, G. Zur Naturgeschichte des *Leucochloridium paradoxum*. Zool. Anz. x, pp. 456–461.

HEILPRIN, A. (1) The Geographical and Geological Distribution of Animals. London: 1887, 8vo, 435 pp. [*Mollusca*, pp. 258–272.]

——. (2) Explorations on the West Coast of Florida, and in the Okeechobee Wilderness, with Special Reference to the Geology and Zoology of the Floridian Peninsula. Tr. Wagner Inst. i, pp. 1–134, pls. 1–19.

——. (3) A New Species of *Aplysia*. P. Ac. Philad. 1886, p. 364.

HEIMBURG, H. VON. Abbildung und Beschreibung neuer Arten. JB. mal. Ges. xiv, pp. 1–4, pl. i.

HENSEN, V. Ueber die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thieren. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 1–108 + xix, pls. i–vi. [*Mollusca*, pp. 57–59.]

HERDMAN, W. A. An Ideal Natural History Museum. P. Soc. Liverp. xli, pp. 61–81, pl.

HEY, W. C. (1) Reversed specimen of *Helix virgata* at Coatham. Naturalist, 1887, p. 20.

——. (2) Notes on Land and Fresh-water Shells, near Bridlington. *T. c.* p. 374.

HIDALGO, J. G. (1) Description d'un *Amphidromus* et d'un *Cyclophorus* nouveaux, provenant des îles Philippines. J. de Conch. xxvii, pp. 36 & 37, pl. ii, figs. 1 & 2.

——. (2) Recherches conchyliologiques de M. Quadras aux îles Philippines. *T. c.* pp. 37–58 & 93–191, pl. ii, figs. 3–6, pls. iii–vii.

HOCKER, F. Ein weiterer Fundort von *Clausiliastra orthostoma* Mke. in Thüringen. Nachr. mal. Ges. xix, pp. 149 & 150.

HOYLE, W. E. (1) List of Shells collected by Mr. John Rattray, B.Sc., F.R.S.E., on the West Coast of Africa and the adjacent Islands. P. R. Phys. Soc. Edin. ix, pp. 337–341.

——. (2) Additional Note on the Genus *Cuma*. J. of Conch. v, p. 209.

HUDSON, B. Description of a New Variety of *Planorbis carinatus*, Müll. *T. c.* p. 249.

HURST, C. H. [See MARSHALL, A. M.]

HYATT, A. On Primitive forms of Cephalopods. Am. Nat. xxi, pp. 64–66.

IMHOF, O. E. Studien über die Fauna hochalpiner Seen insbesondere des Kantons Graubünden. JB. Ges. Graub. xxx, pp. 45–164.

INGERSOLL, E. American Shell-Money. Sci. Goss. 1887, pp. 145–147 & 174–176.

JAMES, J. H. Land and Fresh-water Shells collected about New Quay, Cornwall, Sept., 1886. J. of Conch. v, pp. 164–166.

JATTA, G. (1) Sopra il cosi detto ganglio olfattivo dei Cefalopodi. Boll. Soc. Nat. Napoli, i, pp. 30–33.

——. (2) Sulla vera origine del nervo olfattivo dei Cefalopodi. *T. c.* pp. 92 & 93.

JEFFERYS, C. (1) A Complete Catalogue of British *Mollusca*, compiled from Jeffreys' "British Conchology," with alterations and additions to date. Gloucester: 1887, 8vo, 53 pp.

—— (2) A Catalogue of British Land and Fresh-water *Mollusca*. Compiled from Jeffreys' "British Conchology," with alterations and additions to date. Gloucester: 1887, 8vo, 16 pp.

JHERING, H. VON. Giebtes Orthoneuren? Z. wiss. Zool. xlv, pp. 499–531, pl. xxiv, 3 cuts; abstr., Arch. Zool. expér. (2) v, pp. xvii–xx.

JOUBIN, L. Sur l'anatomie et l'histologie des glandes salivaires chez les Céphalopodes. C.R. cv, pp. 177–179; abstr., Ann. N. H. (5) xx, pp. 251 & 252; J. R. Micr. Soc. 1887, p. 734.

JOUSSEAUME, F. (1) Mollusques nouveaux de la république de l'Équateur. Bull. Soc. Z. Fr. xii, pp. 165–186, pl. iii.

——. (2) Mollusques nouveaux. Le Nat. ix, pp. 5–7.

——. (3) La famille des *Cancellariidæ* (Mollusques Gastéropodes). *T. c.* pp. 155–157, 192–194, 213, 214, & 221–223, cuts.

——. (4) Diagnoses de coquilles nouvelles de la famille des *Cancellariidæ*. *T. c.* pp. 163–165.

JURINAC, A. E. Prilog hrvatskoj fauni ogalinsko-slunjske okolice i pećina. Rad. jugoslav. Akad. lxxxiii, pp. 86–127, 3 pls. [*Mollusca*, pp. 111–114.]

KELLER, O. Thiere des classischen Alterthums in culturgeschichtlicher Beziehung. Innsbruck: 1887, 8vo, 448 pp.

KENT, W. S. Parliament of Tasmania. Superintendent and Inspector of Fisheries: Report for 1885. Hobart Town: 1886, fol., 21 pp.

KEW, H. W. *Zonites fulvus* rediscovered in its ancient locality in Lincolnshire. J. of Conch. v, p. 199.

HARGREAVES, J. A. Scalariform *Planorbis spirorbis* near Bingley. Naturalist, 1887, p. 86.

HARTING, J. E. Land and Freshwater *Mollusca*, and the Methods of Collecting and Preserving them. Ess. Nat. pp. 169–175.

HARTWIG, W. Ueber die Fortpflanzung von *Helix lactea*, L., und *Helix undata*, Lov. [? Lowe]. Zool. Gart. xxviii, pp. 302–309.

HAZAY, J. Fisch und Muschel. Circ. deutsch. Fisch. Ver. 1886, No. 4, pp. 231–235.

HEATHCOTE, W. H. *Physa fontinalis*, var. *albina*, at Farington, South Lancashire. J. of Conch. v, p. 185.

HECKERT, G. Zur Naturgeschichte des *Leucochloridium paradoxum*. Zool. Anz. x, pp. 456–461.

HEILPRIN, A. (1) The Geographical and Geological Distribution of Animals. London : 1887, 8vo, 435 pp. [*Mollusca*, pp. 258–272.]

——. (2) Explorations on the West Coast of Florida, and in the Okeechobee Wilderness, with Special Reference to the Geology and Zoology of the Floridian Peninsula. Tr. Wagner Inst. i, pp. 1–134, pls. 1–19.

——. (3) A New Species of *Aplysia*. P. Ac. Philad. 1886, p. 364.

HEIMBURG, H. VON. Abbildung und Beschreibung neuer Arten. JB. mal. Ges. xiv, pp. 1–4, pl. i.

HENSEN, V. Ueber die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thieren. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 1–108 + xix, pls. i–vi. [*Mollusca*, pp. 57–59.]

HERDMAN, W. A. An Ideal Natural History Museum. P. Soc. Liverp. xli, pp. 61–81, pl.

HEY, W. C. (1) Reversed specimen of *Helix virgata* at Coatham. Naturalist, 1887, p. 20.

——. (2) Notes on Land and Fresh-water Shells, near Bridlington. *T. c.* p. 374.

HIDALGO, J. G. (1) Description d'un *Amphidromus* et d'un *Cyclophorus* nouveaux, provenant des îles Philippines. J. de Conch. xxvii, pp. 36 & 37, pl. ii, figs. 1 & 2.

——. (2) Recherches conchyliologiques de M. Quadras aux îles Philippines. *T. c.* pp. 37–58 & 93–191, pl. ii, figs. 3–6, pls. iii–vii.

HOCKER, F. Ein weiterer Fundort von *Clausiliastra orthostoma* Mke. in Thüringen. Nachr. mal. Ges. xix, pp. 149 & 150.

HOYLE, W. E. (1) List of Shells collected by Mr. John Rattray, B.Sc., F.R.S.E., on the West Coast of Africa and the adjacent Islands. P. R. Phys. Soc. Edin. ix, pp. 337–341.

——. (2) Additional Note on the Genus *Cuma*. J. of Conch. v, p. 209.

HUDSON, B. Description of a New Variety of *Planorbis carinatus*, Müll. *T. c.* p. 249.

HURST, C. H. [See MARSHALL, A. M.]

HYATT, A. On Primitive forms of Cephalopods. Am. Nat. xxi, pp. 64–66.

IMHOF, O. E. Studien über die Fauna hochalpiner Seen insbesondere des Kantons Graubünden. JB. Ges. Graub. xxx, pp. 45–164.

INGERSOLL, E. American Shell-Money. Sci. Goss. 1887, pp. 145–147 & 174–176.

JAMES, J. H. Land and Fresh-water Shells collected about New Quay, Cornwall, Sept., 1886. J. of Conch. v, pp. 164–166.

JATTA, G. (1) Sopra il così detto ganglio olfattivo dei Cefalopodi. Boll. Soc. Nat. Napoli, i, pp. 30–33.

——. (2) Sulla vera origine del nervo olfattivo dei Cefalopodi. *T. c.* pp. 92 & 93.

JEFFERYS, C. (1) A Complete Catalogue of British *Mollusca*, compiled from Jeffreys' "British Conchology," with alterations and additions to date. Gloucester: 1887, 8vo, 53 pp.

—— (2) A Catalogue of British Land and Fresh-water *Mollusca*. Compiled from Jeffreys' "British Conchology," with alterations and additions to date. Gloucester: 1887, 8vo, 16 pp.

JHERING, H. VON. Giebtes Orthoneuren? Z. wiss. Zool. xlv, pp. 499–531, pl. xxiv, 3 cuts; abstr., Arch. Zool. expér. (2) v, pp. xvii–xx.

JOUBIN, L. Sur l'anatomie et l'histologie des glandes salivaires chez les Céphalopodes. C.R. cv, pp. 177–179; abstr., Ann. N. H. (5) xx, pp. 251 & 252; J. R. Micr. Soc. 1887, p. 734.

JOUSSEAUME, F. (1) Mollusques nouveaux de la république de l'Équateur. Bull. Soc. Z. Fr. xii, pp. 165–186, pl. iii.

——. (2) Mollusques nouveaux. Le Nat. ix, pp. 5–7.

——. (3) La famille des *Cancellariidæ* (Mollusques Gastéropodes). *T. c.* pp. 155–157, 192–194, 213, 214, & 221–223, cuts.

——. (4) Diagnoses de coquilles nouvelles de la famille des *Cancellariidæ*. *T. c.* pp. 163–165.

JURINAC, A. E. Prilog hrvatskoj fauni ogalinsko-slunjske okolice i pećina. Rad. jugoslav. Akad. lxxxiii, pp. 86–127, 3 pls. [*Mollusca*, pp. 111–114.]

KELLER, O. Thiere des classischen Alterthums in culturgeschichtlicher Beziehung. Innsbruck: 1887, 8vo, 448 pp.

KENT, W. S. Parliament of Tasmania. Superintendent and Inspector of Fisheries: Report for 1885. Hobart Town: 1886, fol., 21 pp.

KEW, H. W. *Zonites fulvus* rediscovered in its ancient locality in Lincolnshire. J. of Conch. v, p. 199.

KOBELT, W. (1) Iconographie der schalentragenden europäischen Meeresconchylien, VI & VII, pp. 121–171, pls. xxi–xxviii. Cassel : 1887, 4to.

——. (2) Rossmässler's Iconographie der Europäischen Land- & Süsswasser-Mollusken. Mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten. New series, iii, 1–4, pp. 1–36, pls. lxi–lxxx. Wiesbaden : 4to.

——. (3) Prodromus Faunae Molluscorum Testaceorum maria europaea inhabitantium, II–IV. Nüremberg : 1887, 8vo, pp. 129–550 + iv.

——. (4) Die Landdeckelschnecken : in, C. SEMPER's Reisen im Archipel der Philippinen. II. Wiss. Result. iv, 2. Wiesbaden : 1886, 4to, pp. 1–80, pls. i–vii.

——. (5) *Pleurotomidæ* : completed in, Martini & Chemnitz, Conch. Cab. pt. 355, vol. iv, 3, pp. 185–248, pls. xxxvii–xlii.

——. (6) *Admete* : complete in, Martini & Chemnitz, *Op. cit.* pt. 346, vol. iv, 4, pp. 97–108, pl. xxiv.

——. (7) *Pecten* : continued in, Martini & Chemnitz, *Op. cit.* pts. 348, 350, & 354, vol. vii, 2, pp. 153–224, pls. xliii–lx.

——. (7A) Ein neuer *Pecten*. JB. Mal. Ges. xiv, p. 84.

——. (8) *Murex fusulus*, Brocchi. *T. c.* pp. 120–124, pl. v.

——. (9) Die Binnenmolluskenfauna von Neu Guinea (concluded). Nachr. mal. Ges. xix, pp. 1–12.

——. (10) Eine neue *Admete*. *T. c.* p. 12.

——. (11) Catalog der Gattung *Admete*, Kroyer. *T. c.* pp. 43–45.

——. (12) Die Fauna der Atlantischen Inseln. *T. c.* pp. 50–55 ; abstr., Naturforscher, xx, p. 449.

——. (13) Die Stellung der Pteropoden. Nachr. mal. Ges. xix, pp. 90–92. [Abstr. of BOAS (2) ; *cf.* Zool. Rec. xxiii, *Moll.* pp. 3 & 65.]

——. (14) Diagnosen neuer Arten. *T. c.* pp. 122–125.

——. (15) Suezcanal und Mittelmeerfauna. *T. c.* pp. 129–132.

——. (16) Das Verhältniss der europäischen Landmolluskenfauna zur westindisch-centralamerikanischen. *T. c.* pp. 145–148.

——. (17) Diagnosen neuer Pectenarten. *T. c.* pp. 185 & 186.

——. (18) Die geographische Verbreitung der Heliceengruppe *Macularia*. JB. nass. Ver. xl, pp. 245–259.

——. (19) Das Verhältniss der europäischen fossilen und lebenden Heliceen zur amerikanischen Fauna. Tag. Deut. Nat. Vers. lx, p. 92.

——. (20) *Unios* y *Anodontas* nuevos de la fauna española. An. Soc. Esp. xvi, pp. 435–439.

KOCH, V. v. Erster Nachtrag zur Molluskenfauna der Umgebung von Braunschweig. JB. Ver. Braunschw. iv, pp. 66–72.

KOEHLER, R. (1) Contributions à l'étude de la Faune littorale des îles anglo-normandes. Bibl. haut. études, xxxii, No. 4, 62 pp., 1 pl., 1886. [*Cf.* Zool. Rec. xxiii, *Moll.* p. 15.]

[Koehler, R.] (2) Supplément aux Recherches sur la faune marine des îles anglo-normandes. Bull. Soc. Nancy (2) viii, pp. 100–126; abstr., Rev. Tr. Sci. vii, p. 328. [*Mollusca*, pp. 110, 111, 113 & 126.]

Krause, A. (1) Beiträg zur marinen Fauna des nördlichen Norwegen. Wissenschaftliche Beilage zum Programm der Luisenstädtischen Oberrealschule; Ostern, 1887. Berlin: 1887, 4to, 24 pp., cut; abstr. Nachr. mal. Ges. xix, p. 126.

——. (2) Eine für die Mark neue Molluskenspecies *Helix candidula* Stud. SB. nat. Fr. 1887, pp. 183 & 184.

Lacaze-Duthiers, H. de. (1) Histoire de la Testacelle. Arch. Z. expér. (2) v, pp. 459–596, pls. xxix–xl; abstr. J. R. Micr. Soc. 1888, pp. 562 & 563.

——. (2) Système nerveux des Gastéropodes (type Aplysie, *Aplysia depilans* et *A. fasciata*). C.R. cv, pp. 978–982; abstr. Rev. Sci. (3) xl, p. 729; J. R. Micr. Soc. 1888, pp. 20 & 21.

——. (3) Considerations on the Nervous System of the *Gasteropoda*. Ann. N. H. (5) xix, pp. 243–245 [transl. *cf.* Zool. Rec. xxiii, *Moll.* pp. 15 & 35].

—— & Pruvot, G. Sur un œil anal larvaire des Gastéropodes opisthobranches. C.R. cv, pp. 707–710; abstr. J. R. Micr. Soc. 1888, pp. 19 & 20.

Lee, W. S. How the Musk-rat opens the *Unio*. J. Trenton Soc. i, p. 8, 1886.

Letourneux, A. Aperçu monographique sur le genre *Digyreidum*. Bull. Soc. mal. Fr. iv, pp. 67–72.

—— & Bourguignat, J. R. Prodrome de la Malacologie terrestre et fluviatile de la Tunisie. Exploration scientifique de la Tunisie, Zoologie, Malacologie; also separately, Paris: 1887, 8vo, 166 pp.

List, J. H. Zur Kenntniss der Drüsen im Fusse von *Tethys fimbriata* L. Z. wiss. Zool. xlv, pp. 308–326, pl. xvii; also Arb. z. Inst. Graz, Bd. i, No. 6; abstr. J. R. Micr. Soc. 1887, pp. 569 & 570.

Löbbecke, T. (1) *Cancellaria*: completed in, Martini & Chemnitz, Conch. Cab. pt. 346, vol. iv, 4, pp. 81–96, pls. xxi–xxiii.

——. (2) Catalog der Gattung *Cancellaria*, Lam. Nachr. mal. Ges. xix, pp. 25–43.

Locard, A. (1) Prodrome de malacologie française. Mollusques marins. Ann. Soc. Agric. Lyon (5) viii, pp. 1–216, 1885; ix, pp. 1–320, 1886.

——. (2) Observations sur la faune marine des cotes de France. Ann. Soc. L. Lyon, xxxii, pp. 191–263, 1886. [These two works were published separately in one volume; *cf.* Zool. Rec. xxiii, *Moll.* p. 16.]

——. (3) Contributions à la faune malacologique française, x. Monographie des espèces de la famille des *Buccinidæ*. *Op. cit.* xxxiii, pp. 17–127, pl.

KOBELT, W. (1) Iconographie der schalentragenden europäischen Meeresconchylien, VI & VII, pp. 121–171, pls. xxi–xxviii. Cassel : 1887, 4to.

——. (2) Rossmässler's Iconographie der Europäischen Land- & Süsswasser-Mollusken. Mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten. New series, iii, 1–4, pp. 1–36, pls. lxi–lxxx. Wiesbaden : 4to.

——. (3) Prodromus Faunae Molluscorum Testaceorum maria europaea inhabitantium, II–IV. Nüremberg : 1887, 8vo, pp. 129–550 + iv.

——. (4) Die Landdeckelschnecken : in, C. SEMPER's Reisen im Archipel der Philippinen. II. Wiss. Result. iv, 2. Wiesbaden : 1886, 4to, pp. 1–80, pls. i–vii.

——. (5) *Pleurotomidæ* : completed in, Martini & Chemnitz, Conch. Cab. pt. 355, vol. iv, 3, pp. 185–248, pls. xxxvii–xlii.

——. (6) *Admete* : complete in, Martini & Chemnitz, *Op. cit.* pt. 346, vol. iv, 4, pp. 97–108, pl. xxiv.

——. (7) *Pecten* : continued in, Martini & Chemnitz, *Op. cit.* pts. 348, 350, & 354, vol. vii, 2, pp. 153–224, pls. xliii–lx.

——. (7A) Ein neuer *Pecten*. JB. Mal. Ges. xiv, p. 84.

——. (8) *Murex fusulus*, Brocchi. *T. c.* pp. 120–124, pl. v.

——. (9) Die Binnenmolluskenfauna von Neu Guinea (concluded). Nachr. mal. Ges. xix, pp. 1–12.

——. (10) Eine neue *Admete*. *T. c.* p. 12.

——. (11) Catalog der Gattung *Admete*, Kroyer. *T. c.* pp. 43–45.

——. (12) Die Fauna der Atlantischen Inseln. *T. c.* pp. 50–55 ; abstr., Naturforscher, xx, p. 449.

——. (13) Die Stellung der Pteropoden. Nachr. mal. Ges. xix, pp. 90–92. [Abstr. of BOAS (2) ; *cf.* Zool. Rec. xxiii, *Moll.* pp. 3 & 65.]

——. (14) Diagnosen neuer Arten. *T. c.* pp. 122–125.

——. (15) Suezcanal und Mittelmeerfauna. *T. c.* pp. 129–132.

——. (16) Das Verhältniss der europäischen Landmolluskenfauna zur westindisch-centralamerikanischen. *T. c.* pp. 145–148.

——. (17) Diagnosen neuer Pectenarten. *T. c.* pp. 185 & 186.

——. (18) Die geographische Verbreitung der Heliceengruppe *Macularia*. JB. nass. Ver. xl, pp. 245–259.

——. (19) Das Verhältniss der europäischen fossilen und lebenden Heliceen zur amerikanischen Fauna. Tag. Deut. Nat. Vers. lx, p. 92.

——. (20) *Unios* y *Anodontas* nuevos de la fauna española. An. Soc. Esp. xvi, pp. 435–439.

KOCH, V. v. Erster Nachtrag zur Molluskenfauna der Umgebung von Braunschweig. JB. Ver. Braunschw. iv, pp. 66–72.

KOEHLER, R. (1) Contributions à l'étude de la Faune littorale des îles anglo-normandes. Bibl. haut. études, xxxii, No. 4, 62 pp., 1 pl., 1886. [*Cf.* Zool. Rec. xxiii, *Moll.* p. 15.]

[Koehler, R.] (2) Supplément aux Recherches sur la faune marine des îles anglo-normandes. Bull. Soc. Nancy (2) viii, pp. 100–126; abstr., Rev. Tr. Sci. vii, p. 328. [*Mollusca*, pp. 110, 111, 113 & 126.]

Krause, A. (1) Beiträg zur marinen Fauna des nördlichen Norwegen. Wissenschaftliche Beilage zum Programm der Luisenstädtischen Oberrealschule; Ostern, 1887. Berlin: 1887, 4to, 24 pp., cut; abstr. Nachr. mal. Ges. xix, p. 126.

——. (2) Eine für die Mark neue Molluskenspecies *Helix candidula* Stud. SB. nat. Fr. 1887, pp. 183 & 184.

Lacaze-Duthiers, H. de. (1) Histoire de la Testacelle. Arch. Z. expér. (2) v, pp. 459–596, pls. xxix–xl; abstr. J. R. Micr. Soc. 1888, pp. 562 & 563.

——. (2) Système nerveux des Gastéropodes (type Aplysie, *Aplysia depilans* et *A. fasciata*). C.R. cv, pp. 978–982; abstr. Rev. Sci. (3) xl, p. 729; J. R. Micr. Soc. 1888, pp. 20 & 21.

——. (3) Considerations on the Nervous System of the *Gasteropoda*. Ann. N. H. (5) xix, pp. 243–245 [transl. *cf.* Zool. Rec. xxiii, *Moll.* pp. 15 & 35].

—— & Pruvot, G. Sur un œil anal larvaire des Gastéropodes opisthobranches. C.R. cv, pp. 707–710; abstr. J. R. Micr. Soc. 1888, pp. 19 & 20.

Lee, W. S. How the Musk-rat opens the *Unio*. J. Trenton Soc. i, p. 8, 1886.

Letourneux, A. Aperçu monographique sur le genre *Digyreidum*. Bull. Soc. mal. Fr. iv, pp. 67–72.

—— & Bourguignat, J. R. Prodrome de la Malacologie terrestre et fluviatile de la Tunisie. Exploration scientifique de la Tunisie, Zoologie, Malacologie; also separately, Paris: 1887, 8vo, 166 pp.

List, J. H. Zur Kenntniss der Drüsen im Fusse von *Tethys fimbriata* L. Z. wiss. Zool. xlv, pp. 308–326, pl. xvii; also Arb. z. Inst. Graz, Bd. i, No. 6; abstr. J. R. Micr. Soc. 1887, pp. 569 & 570.

Löbbecke, T. (1) *Cancellaria*: completed in, Martini & Chemnitz, Conch. Cab. pt. 346, vol. iv, 4, pp. 81–96, pls. xxi–xxiii.

——. (2) Catalog der Gattung *Cancellaria*, Lam. Nachr. mal. Ges. xix, pp. 25–43.

Locard, A. (1) Prodrome de malacologie française. Mollusques marins. Ann. Soc. Agric. Lyon (5) viii, pp. 1–216, 1885; ix, pp. 1–320, 1886.

——. (2) Observations sur la faune marine des cotes de France. Ann. Soc. L. Lyon, xxxii, pp. 191–263, 1886. [These two works were published separately in one volume; *cf.* Zool. Rec. xxiii, *Moll.* p. 16.]

——. (3) Contributions à la faune malacologique française, x. Monographie des espèces de la famille des *Buccinidæ*. *Op. cit.* xxxiii, pp. 17–127, pl.

[Locard, A.] (4) Histoire des Mollusques dans l'antiquité. Mém. Ac. Lyon, xxvii, pp. 75–312, 1885; abstr. Rev. Tr. Sci. vi, p. 149, 1886.

——. (5) Matériaux pour servir à l'histoire de la malacologie française. VII. Description de quelques espèces nouvelles pour la faune française. Bull. Soc. mal. Fr. iv, pp. 165–184.

Loë, A. de. [See Raeymaekers.]

Ludwig, H. Ueber den angeblichen neuen Parasiten der Firoliden: *Trichelina paradoxa*, Barrois. Zool. Anz. x, pp. 296–298; abstr. Z. f. Parasit. ii, p. 163.

°Mabille, J. (1) Molluscorum Tonkinensium diagnoses. Paris: 1887. [Preliminary notice of (2), to which latter the references in the sequel are made.]

——. (2) Sur quelques mollusques du Tonkin. Bull. Soc. mal. Fr. iv, pp. 73–164, pls. i–iv.

Macfadzean, R. W. Arctic Shell-beds of the Clyde. Tr. Dumfries & Gall. N. H. Soc., No. 4, pp. 93 & 94.

M'Intosh, W. C. (1) Notes from the St. Andrews Marine Laboratory (under the Fishery Board for Scotland). No. VII, 5, On the Occurrence of *Clione borealis*, Pallas. Ann. N. H. (xx, pp. 103 & 104.

——. (2) Report on the St. Andrews Marine Laboratory. No. cluded). 1st January, 1886, to 31st December, 1886. Rep. Fish. Scot. , 1886, App. G, pp. 354, 360. [*Mollusca*, pp. 358 & 359.]

MacMunn, C. A. On the Hæmatoporphyrin of *Solecurtus strigillatus*. J. of Phys. viii, pp. 384–390, pl. xi.

Malard, —. (1) La structure des glandes salivaires sécrétrices d'acide sulfurique ches les Ténioglosses carnassiers. Bull. Soc. Philom. (7) xi, pp. 95–99.

——. (2) La système glandulaire œsophagien des Tænioglosses carnassiers. *T. c.* pp. 108–111.

Maltzan, H. von. (1) Neue Kretenser Landschnecken. JB. mal. Ges. xiv, pp. 117–119.

——. (2) [Mimicry in *Helix*]. Tag. Deut. Nat. Vers. lix, p. 415.

Mann, A. Die Yoruba-Küste. III. Das Muschel-Geld (Kauris). JB. Württemb. Ver. Handelsgeogr. iii & iv, pp. 72 & 73, 1886; abstr. Zool. Gart. xxviii, p. 157.

Marion, A. F. Faune malacologique de l'étang de Berre. C.R. cv, pp. 71–73.

Marshall, A. M. & Hurst, C. H. A Junior Course of Practical Zoology. London: 1887, 8vo, 440 pp., cuts. [*Mollusca*, pp. 75–103.]

Marshall, J. T. On some New British Shells. J. of Conch. v, pp. 186–192, pl. i, figs. 1–4.

MARSHALL, W. Atlas der Tierverbreitung in BERGHAUS, Physikalischer Atlas, pt. vi, pp. 1–10, pls. 52–60; also separately, Gotha: 1887, fol. [*Mollusca*, pl. 59.]

MARTENS, E. v. (1) Conchologische Mittheilungen, ii, pts. 5 & 6, pp. 155–213, pls. xxxi–xxxvi, 1885. [Hitherto unabstracted.]

——. (2) *Mollusca*: in LANSDELL, H. Russian Central Asia, including Kuldja, Bokhara, Khiva, and Merv. London: 1885, 8vo, 2 vols. [*Mollusca*, ii, pp. 537–543; abstr. Geogr. JB. 1887. p. 180.]

——. (3) *Nerita*, continued in, Martini & Chemnitz, Conch. Cab. pt. 349, vol. ii, 11, pp. 1–64, pls. iv–viii.

——. (4) List of the Shells of Mergui and its Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. J. L. S. xxi, pp. 155–219, pls. xiv–xvi.

——. (5) Austern von der Guadiana-Mündung. SB. nat. Fr. 1887, pp. 13 & 14.

——. (6) Conchylien aus dem Suezkanal. *T. c.* pp. 89–96.

——. (7) Eine neue Art der afrikanischen Süsswasserschnecken-Gattung *Lanistes*. *T. c.* pp. 96 & 97.

——. (8) Ein lebendes Exemplar von *Unio tumidus*. *T. c.* pp. 105 & 106.

——. (9) Einige Süsswassermuscheln aus Guatemala. *T. c.* pp. 106–108.

——. (10) Bemerkung über die geographische Vertheilung der Land- und Süsswassermollusken Madagascars. *T. c.* pp. 179–181.

——. (11) Ueber eine Insectenlarve, welche eine Nacktschnecke täuschend ähnlich sieht. *T. c.* p. 183.

—— & PFEFFER, G. Die Mollusken von Süd-Georgien nach der Ausbeute der Deutschen Station, 1882–83. JB. Hamb. iii, pp. 63–135, 4 pls. [Species here described for the first time are ascribed to Dr. Pfeffer.]

MARTINI & CHEMNITZ. Systematisches Conchylien-Cabinet, pts. 345–355. Nüremberg: 1887, 4to. Pt. 345, vol. viii, 3, *Mytilacea*, pp. 29–60, pls. xiii–xviii (CLESSIN); pt. 346, vol. iv, 4, *Cancellaria*, pp. 81–96, pls. xxi–xxiii (LÖBBECKE), and *Admete*, pp. 97–108, pl. xxiv (KOBELT); pt. 347, vol. viii, 3, pp. 61–76, pls. xix–xxi (CLESSIN), vol. xi, 3, *Solenacea*, pp. 1–8, pls. i, ii, & iv (CLESSIN); pt. 348, vol. vii, 2, *Pecten*, pp. 153–176, pls. xliii–xlviii (KOBELT); pt. 349, vol. ii, 11, *Nerita*, pp. 1–64, pls. iv–viii (MARTENS); pt. 350, vol. vii, 2, *Pecten*, pp. 177–200, pls. xlix–liv (KOBELT); pt. 351, vol. viii, 3, pp. 77–92, pls. xxii–xxvi (CLESSIN), vol. xi, 3, *Solenacea*, pp. 9–16, pls. vi & vii (CLESSIN); pt. 352, vol. viii, 3, pp. 93–116, pls. xxvii–xxxii (CLESSIN); pt. 353, vol. viii, 3, pp. 117–124, pl. xxv (CLESSIN), vol. x, 1, *Cardita*, pp. 1–16, pls. i–v (CLESSIN); pt. 354, vol. vii, 2, *Pecten*, pp. 201–224, pls. lv–lx (KOBELT); pt. 355, vol. iv. 3, *Pleurotoma*, pp. 185–248, pls. xxxvii–xlii (KOBELT).

MELVILL, J. C. (1) *Mollusca*: in, Handbook of Manchester. Prepared by the Local Committee for the Members of the British Association at the Manchester Meeting, 1887. Manchester: 1887, 8vo, 109 pp. [*Mollusca*, pp. 78–87.]

——. (2) Notes on the Subgenus *Cylinder* (Montfort) of *Conus*. Mem. Manch. Soc. (3) x, pp. 76–90. [Published separately, 1885 ; *cf.* Zool. Rec. xxii, *Moll.*, p. 16.]

MENNELL, H. T. A Plea for Collecting Shells. P. Holmesdale Nat' Hist. Club, 1884–1885, pp. 8 & 9, 1886.

MERKEL, E. (1) *Vertigo ronnebyensis* West., in Deutschland. Nachr. mal. Ges. xix, pp. 13–16.

——. (2) Zur Molluskenfauna Schlesiens. *T. c.* pp. 139–144.

MILNE, J. G. *Mollusca* near Ashley, Cheshire. Naturalist, 1887, p. 228.

MÖBIUS, K. (1) Systematische Darstellung der Thiere des Plankton gewonnen in der westlichen Ostsee und auf einer Fahrt von Kiel in den atlantischen Ocean bis jenseit der Hebriden. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 109–126, pls. vii & viii. [*Mollusca*, p. 116.]

——. (2) Ueber Miesmuscheln als Nahrungsmittel. MT. d[illegible] Fisch. Ver. pp. 151–156.

——. (3) Schlussbericht über den Versuch des deutschen Fische[illegible] kanadische Austern in der Ostsee anzusiedeln: und, Kann a[illegible] deutschen Nordseeküste künstliche Austernzucht mit Gewinn betrieben werden? *Op. cit.* Sec. f. Küst. u. Hochseef. 1887, Nos. 1 & 2, 12 pp. ; abstr., Nachr. mal. Ges. xix, pp. 95 & 96.

MÖLLENDORFF, O. F. VON. (1) Die Landschnecken von Korea. JB. mal. Ges. xiv, pp. 9–22, pl. ii, figs. 1–4.

——. (2) Ueber die *Ennea*-Arten China's. *T. c.* pp. 22–30.

——. (3) Revision der chinesischen Naniniden. *T. c.* pp. 31–50, pl. iii.

——. (4) Von den Philippinen. *T. c.* pp. 85–97, pl. iv, figs. 1–6. II. Die Insel Cebu. *T. c.* pp. 235–283, pls. vii & viii. III. Umgegend von Manila. Majayjay an der Laguna de Bay. *T. c.* pp. 292–305.

——. (5) Landschnecken von der Insel Bongao zwischen Sulu und Borneo. *T. c.* pp. 284–291.

——. (6) The Landshells of Perak. J. A. S. B. lv, pp. 299–316 [erratum in Nachr. mal. Ges. xix, p. 150] ; also separately, Calcutta : 1887, 4to.

MONACO, PRINCE ALBERT DE. Sur les recherches zoologiques poursuivies durant la seconde campagne scientifique de l'Hirondelle, 1886. C.R. civ, pp. 452–454.

MORELET, A. Malacologie des Comores (cinquième article). Deuxième voyage de M. Humblot. J. de Conch. xxvii, pp. 281–291, pl. ix.

MORGAN, J. B. (1) Occurrence of *Planorbis lineatus* in Montgomeryshire. J. of Conch. v, p. 217.

[Morgan, J. B.] (2) The Land and Fresh-water Shells of Montgomeryshire. Coll. Powys-land Club, xxi, pp. 103–106.

Morinière, A. de la. Œufs de Bulimes. Feuill. Nat. xvi, p. 123, 1886.

Morlet, L. Diagnoses de Mollusques terrestres et fluviatiles du Tonkin. Paris: 1887, 8vo, 7 pp.

Mott, F. T. On Mr. John Plant's Catalogue of Leicestershire *Mollusca*. Tr. Leicester Soc. ii, pp. 22 & 23. [Nothing new.]

Moussaye, Comte de la. *Sindosmya alba*. Feuill. Nat. xvii, p. 57.

Mousson, A. (1) Coquilles terrestres et fluviatiles recueillies par M. Louis Græser, dans le bassin de l'Amour. J. de Conch. xxvii, pp. 10–32, pl. i.

——. (2) Coquilles recueillies dans le Sud-Ouest de l'Afrique par M. le Dr. H. Schinz. *T. c.* pp. 291–301, pl. xii.

Munthe, H. Om postglaciala aflagringar med *Ancylus fluviatilis* på Gotland. Œfv. Ak. Förh. 1887, pp. 719–732.

Murray, J. A. The Conchology of the Sind Coast. Ind. Ann. i, pp. 26–28.

N[illegible], F. The Structure and Combination of the Histological Elements of the Central Nervous System. Bergens Mus. Aarsber. 86, pp. 29–215, 11 pls.; abstr., J. R. Micr. Soc. 1888, pp. 194–196.

Nelson, W. Notes on the *Limnæidæ*. *Limnæa peregra* var. *Burnetti* (Alder). J. of Conch. v, p. 180.

Newell, J. A. On the Anatomy of the Limpet (*Patinella radians*, Quoy). Tr. N. Z. Inst. xix, pp. 157–160, pl. xi.

Nicholson, H. A. A Manual of Zoology for the use of Students. 7th ed. Edinburgh: 1887, 8vo, 939 pp., cuts. [*Mollusca*, pp. 444–503.]

Ninni, A. P. Catalogo dei Cefalopodi osservati nell' Adriatico. Atti Soc. Ven.-Trent. ix, pp. 159–174, pl. ii. [Published separately, 1884, *cf.* Zool. Rec. xxi, *Moll.* p. 8.]

Noack, T. Beiträge zur Kenntniss der Säugethier-Fauna von Ost- und Central-Africa. Zool. JB. ii, p. 254. [*Mollusca*, p. 254.]

Noüe, A. (1) Remarques sur la faune malacologique marine des possessions portugaises de l'Afrique occidentale. J. Sci. Lisb. xii, pp. 107–120.

——. (2) Exploração scientifica da Ilha de S. Thomé. Conchas terrestres e marinhas recolhidas pelo Sr. Adolpho Moller na Ilha de S. Thomé em 1886. Boll. Soc. Geogr. Lisboa (6) iv, pp. 213–227, 1886.

Oldham, C. *Helix arbustorum* monst. *sinistrorsum* in Derbyshire. Naturalist, 1887, p. 272.

Osborn, H. L. (1) Notes on *Mollusca* observed at Beaufort, N.C., during summers of 1882 and 1884. Stud. Biol. Lab. J. Hopkins Univ. iv, pp. 63–81.

[Osborn, H. L.] (2) Osphradium in *Crepidula*. Zool. Anz. x, pp. 118 & 119; abstr., Am. Nat. xxi, p. 486, J. R. Micr. Soc. 1887, p. 376.

——. (3) Spengel's olfactory organ, or osphradium in *crepidula*. Am. Micr. J. viii, pp. 61–64, cuts.

——. (4) On the early history of the foot in Prosobranch gasteropods. *T. c.* pp. 209 & 210.

Paetel, F. Catalog der Conchylien-Sammlung von ——, pts. 1–6. Berlin: 1887, 8vo, pp. 1–480.

Pantanelli, D. (1) *Melanopsis* fossili e viventi d'Italia. Bull. Soc. mal. Ital. xii, pp. 65–82, pl. iii.

——. (2) Molluschi dello Stagno di Orbetello. *T. c.* pp. 89–95.

——. (3) La *Melania curricosta* Desh. dell' Abissinia. Atti Soc. Tosc. P.-v. v, pp. 204–206.

——. (4) *Melanopsis bonellii* e *M. nazzolina*. *Op. cit.* iv, p. 233, 1885.

Parkinson, R. Im Bismarck-Archipel. Erlebnisse und Beobachtungen auf der Insel Neu-Pommern (Neu-Britannien). Leipzig: 1887, 8vo, 154 pp., and map; abstr., Nachr. mal. Ges. xix, pp. 58 & 59. [*Mollusca*, pp. 104, &c.]

Parville, H. L'autotomie. La Nature, xv, 2, pp. 81–83, cut.

Patten, W. Eyes of Molluscs and Arthropods. Journ. Mo... pp. 67–92, pl. iii. [Abstr. of Patten (2), Zool. Rec. xxiii, *Mo...* pp. 19 & 37.]

Pearce, S. S. (1) Notes on the Land and Fresh-water *Mollusca* of the Upper Engadine and the Bregaglia Valleys, East Switzerland. J. of Conch. v, pp. 210–217.

——. (2) *Helix lapicida*, L., var. *albina*. *T. c.* p. 255.

Pelseneer, P. (1) Report on the *Pteropoda* collected by H.M.S. 'Challenger,' during the years 1873–76. Part i. The *Gymnosomata*. Reports on the Scientific Results of the Challenger Expedition. Zoology, xix, pt. lviii, 74 pp., 3 pls. London, Edinburgh, Dublin: 1887, 4to.

——. (2) Sur la valeur morphologique de l'épipodium des Gastropodes Rhipidoglosses (*Streptoneura aspidobranchia*). C.R. cv, pp. 578–580 abstr., J. R. Micr. Soc. 1887, pp. 941 & 942.

——. (3) Description of a new Genus of Gymnosomatous *Pteropoda*. Ann. N. H. (5) xix, pp. 79 & 80 [*cf.* Zool. Rec. xxiii, *Moll.* pp. 19 & 65].

Pfeffer, G. (1) Mollusken, Krebse und Echinodermen von Cumberland-Sund nach der Ausbeute der deutschen Nordexpedition 1882 und 1883. JB. Hamb. iii, pp. 25–50 pl., 1886. [*Mollusca*, pp. 27–41, figs. 1–6.]

——. (2) Zoologische Kleinigkeiten:—1. Beitrag zur Meeres-Mollusken-Fauna von Helgoland. Verh. Ver. Hamb. vi, pp. 98 & 99.

[Pfeffer, G.] (3) II. Die Binnenconchylien der Insel Helgoland. *T. c.* p. 99.

——. (4) X. *Photinula ringei* nov. spec. von der Lemaire-Strasse. *T. c.* pp. 113–116.

——. (5) XI. Ueber die auf Seesternen schmarotzenden Schnecken. *T. c.* pp. 116 & 117.

——. (6) XII. *Anisospira Strebelii*, nov. spec. aus Mexico. *T. c.* pp. 117 & 118.

——. (7) XIII. Zur Kenntniss von *Helix globulus* Müller. *T. c.* pp. 118–120.

——. (8) XIV. Zur Naninen-Gruppe *Thapsia* Albers. *T. c.* pp. 120 & 121.

——. (9) XV. *Opeas juncea* Gould von Tahiti. *T. c.* p. 121.

——. (10) XVI. Von Jhering's Vorschläge zur Bezeichnung der Radula-Zähne von Landschnecken. *T. c.* pp. 122–126.

——. [See also Martens, E. von.]

Philippi, R. A. Ueber die Veränderungen welche der Mensch in der Fauna Chile's bewirkt hat. Fest. Ver. Nat. Cassel, pp. 1–20, 1886.

Pilsbry, C. H. *Clausilia rugosa* var. *gracilior* at Clapham, Yorks. Nautilus, 1886 of Conch. v, p. 183.

Pruvot, A. Sur la structure du tube digestif de quelques poissons de mer. Bull. Soc. Z. Fr. x, pp. 283–308, 1886. [*Mollusca*, p. 300.]

Pilsbry, H. A. Notes on the Larger Florida *Planorbes*. Am. Nat. xxi, pp. 286 & 287.

Pini, N. Nuova forma di *Acme* italiana. Atti Soc. Ital. xxix, pp. 521 & 522.

Plant, J. The Land and Fresh-water *Mollusca* indigenous to Leicestershire, 1850. P. Leicester. Soc. ii, pp. 24–33.

Platania-Platania, G. Contribuzione alla fauna malacologica estramarina della Sicilia e delle Isole Adiacenti. Bull. Soc. mal. Ital. xii, pp. 83–88.

Platner, G. Ueber die Entstehung des Nebenkerns und seine Beziehung zur Kerntheilung. Arch. mikr. Anat. xxvi, pp. 343–369, pl. xiv, 1886.

Pohlig, H. Die Land-, Süsswasser- und Binnenconchylien des nördlichen Persien. Nachr. mal. Ges. xix, pp. 118–121. [Abstr., *cf.* Zool. Rec. xxii, *Moll.* p. 18.]

Poirier, J. (1) Observations anatomiques sur le genre *Urocyclus*. Bull. Soc. mal. Fr. iv, pp. 195–232, pls. v–x.

(2) Description de l'*Estria Alluaudi*, nouveau genre de limacien. Bull. Soc. Philom. (7) xi, pp. 181 & 182.

Pollard, H. Land and Fresh-water Shells in the Neighbourhood of Whitby. Naturalist, 1887, pp. 134–138.

POLLONERA, C. (1) Specie nuove o mal conosciute di *Arion* europei. Atti Acc. Torino, xxii, pp. 290–313, pl.

——. (2) Appunti anatomici in appoggio ad una classificazione dei molluschi geofili del Piemonte. Bull. Soc. mal. Ital. xii, pp. 102–122, pl. iv; also separately, Modena: 1887, 8vo.

——. (3) Note malacologiche. I. Molluschi della Valle del Natisone (Friuli). II. Monografia degli *Sphyradium* italiani. III. Degli *Odontocyclas* italiani. *T. c.* pp. 204–223, pl. vi.

——. (4) Intorno ad alcuni Limacidi europei poco noti. Boll. Mus. Zool. Anat. Comp. Torino, ii, No. 21, 4 pp., pl. i.

——. (5) Sulla classificazione dei Limacidi del sistema europeo. *Op. cit.* No. 23, 6 pp., pl. iii.

——. (6) Nuove specie di Molluschi dello Scioa. *Op. cit.* No. 34, 2 pp.

PONSONBY, J. H. Land Shells of Gibraltar. J. of Conch. v, pp. 194 & 195.

POULTON, E. B. Habits of *Testacella haliotidea*. Zool. (3) xi, p. 29. [*Cf.* Zool. Rec. xxiii, *Moll.* pp. 21 & 46.]

PRENANT, A. Note sur la cytologie des éléments seminaux chez les gastéropodes pulmonés (*G. Hélix et Arion*). C.R. Soc. Biol. (8) iv, pp. 723–726.

PRUVOT, G. [See LACAZE-DUTHIERS.]

PURDIE, A. Studies in Biology for New Zealand Students. No. 3. The Anatomy of the Common Mussels (*Mytilus latus, edulis,* and *magellanicus*). Wellington: 1887, 8vo, 45 pp., 10 pls.

RAEYMAEKERS, D. Quelques recherches malacologiques faites à Tervueren. P.-v. Soc. mal. Belg. xvi, pp. lxxvi–lxxviii.

——, & DE LOË, A. Note sur les dépots quaternaires du sud de Tirlemont. *T. c.* pp. liii–lxv.

RATTE, F. Notes on some Australian Fossils. II.—On the Muscular Impression of the Genus *Notomya*. P. Linn. Soc. N.S.W. (2) ii, p. 139, pl. iii.

RAVENEL, W. DE C. Report of Operations at St. Jerome Oyster-Breeding Station during 1885. Rep. U. S. Fish. Comm. xiii, for 1885, pp. 165–183.

RAWITZ, B. (1) Über den Mantelraud der Feilenmuschel. Anat. Anz. ii, pp. 398 & 399.

——. (2) Das zentrale Nervensystem der Acephalen. Jen. Z. Nat. xx, pp. 384–460, pls. xxv–xxix; also separately, Jena: 1887, 8vo; abstr., J. R. Micr. Soc. 1887, pp. 736 & 737.

REICHEL, L. Über das Byssusorgan der Lamellibranchiaten. Zool. Anz. x, pp. 488–490; transl., Ann. N. H. (5) xx, pp. 3[illegible]4, abstr., J. R. Micr. Soc. 1887, p. 942, and Biol. Centralbl. vii, p.

REINHARDT, O. (1) Einige Abnormitäten von Schneckengehäusen. SB. nat. Fr. 1887, pp. 60–62.

[Reinhardt, O.] (2) Zwillingseier von Schnecken (*Amphipeplea glutinosa*, Müll.). *T. c.* pp. 78 & 79.

——. (3) Ägyptische Schnecken. *T. c.* pp. 79 & 80.

——. (4) Eine Anzahl von P. Ascherson in Ægypten gesammelten Schnecken. *T. c.* pp. 203–206.

†Riabinine, J. [The *Naiadæ* of the Governments of Karkow and Pultova.] Trudui Kharkoff Univ. xix, pp. 159–204, pls. iv–vii. [In Russian.]

Rivière, E. La grotte des Gerbai. C.R. Ass. Fr. Sci. xv, pp. 476–478, pl. viii.

Roberts, G. Notes on Varieties of *Bythinia tentaculata*. Naturalist, 1887, pp. 19 & 20.

Robertson, D. Jottings from my Note Book. *Scaphander lignarius*. P. N. H. Soc. Glasg. (n.s.) i, pp. 293 & 294.

Robson, C. W. On a New Species of Giant Cuttlefish, stranded at Cape Campbell, June 30th, 1886 (*Architeuthis Kirkii*). Tr. N. Z. Inst. xix, pp. 155–157.

Roebuck, W. D. (1) Annotated List of the Land and Fresh-water *Mollusca* of Lincolnshire. Naturalist, 1887, pp. 245–272.

——. (2) *Limax maximus*. Tr. Leeds Nat. Club, 1886, pp. 19 & 20. [Nothing new.]

——, & Taylor, J. W. Bibliography of the Works and Papers relating to the *Mollusca* of Northamptonshire. J. Northampt. Soc. iv, pp. 108–112.

Rogers, T. On *Planorbis dilatatus*, *P. glaber*, and *Sphærium ovale*. J. of Conch. v, pp. 218–220.

Rolle, H. Auf Corsica. Eine naturwissenschaftliche Reise nebst specieller Beschreibung des Molluskenfanges an den Küsten bei Bonifacio im Monat Mai–Juni 1886. JB. mal. Ges. xiv, pp. 51–83.

Roule, L. Recherches histologiques sur les Mollusques lamellibranches. J. de l'Anat. xxiii, pp. 31–86, pls. iv–viii.

Ruddy, T. Contributions towards a list of the shells of Merioneth. J. of Conch. v, pp. 184 & 185.

Ryder, J. A. (1) An Exposition of the Principles of a rational System of Oyster Culture, together with an Account of a new and practical Method of obtaining Oyster Spat on a scale of commercial importance. Rep. U. S. Fish. Comm. xiii, App. pp. 381–421, pls. i–iv.

——. (2) On a Tumour in the Oyster. P. Ac. Philad. 1887, pp. 25–27.

Sacco, F. Nuove specie terziarie di Molluschi terrestri, d'acqua dolce e salmastra del Piemonte. Atti Soc. Ital. xxix, pp. 427–476, pls. xiii & xiv.

Salensky, M. Études sur le développement du Vermet. Arch. Biol. vi, pp. 655–759, pls. xxv–xxxii ; abstr., J. R. Micr. Soc. 1888, pp. 201–204.

SAMPSON, F. A. Notes on the Distribution of Shells. Am. Nat. xxi, pp. 83 & 84.

SANDBERGER, F. v. (1) *Pupa* (*Vertigo*) *parcedentata-Genesii* und ihre Varietäten-Reihe in der Eiszeit und der gegenwärtige Periode. Verh. Ges. Würzb. xx, pp. 229–235, pl. viii.

——. (2) Bemerkungen über einige Heliceen im Bernstein der preussischen Küste. Schr. Ges. Danz. (2) vi, pp. 137–141, pl. ii.

SARASIN, C. F., & P. B. (1) Ueber zwei parasitische Schnecken. Ergebnisse naturwissenschaftlicher Forschungen auf Ceylon in den Jahren 1884–1886, I, i, pp. 21–32, pls. iv & v. Wiesbaden: 1887, 4to. [*Cf.* Zool. Rec. xxiii. *Moll.* pp. 22 & 30.]

——. (2) Aus der Entwicklungsgeschichte der ceylonesischen *Helix Waltoni*, Reeve. Zool. Anz. x, pp. 599–602; also Tag. Deut. Nat. Vers. lx, pp. 91 & 92; Z. Biol. vii, p. 543; J. R. Micr. Soc. 1888, p. 24.

——. (3) Notiz über directe Communication des Blutes mit dem umgebenden Medium. Arb. z. Inst. Würzb. viii, pp. 94–101, 1886.

SAUNDERS, S. (1) *Teredo navalis* (The Shipworm). Tr. E. Kent Nat. Hist. Soc. (n.s.) i, pp. 1–9, 1885. [Nothing new.]

——. (2) On the Dental Apparatus of the Higher *Mollusca*. *T. c.* pp. 58–63, 1886. [Nothing new.]

SCHARFF, R. F. How does a snail crawl? J. of Conch. v, pp. 239 & 240.

SCHEDEL, J. Die Schutzfärbung der Tiere (mit Berücksichtigung der Fauna der Ostsee). Zool. Gart. xxviii, pp. 140–145.

SCHEPMANN, M. M. Bijdrage tot de Kennis der Mollusken-Fauna van de Schelpritsen van Suriname, naar dei door den Heer Voltz gemaakte verzameling. Samml. Geol. Reichsmus. Leiden (2) i, pp. 150–168; abstr., Nachr. mal. Ges. xix, p. 127.

——, & SNELLEMAN, J. F. *Mollusca* in P. J. Veth, Midden-Sumatra. Reizen en Onderzoekingen der Sumatra-Expeditie, intgemst door het aardrijkskundig Genootschap, 1877–1879. IV. Natuurlijke Historie: i, Fauna, pp. 1–18, 3 pls. [whole volume published 1887; this part probably 1886].

SCHIEMENZ, P. Über die Wasseraufnahme bei Lamellibranchiaten und Gastropoden (einschliesslich der Pteropoden), II. MT. z. Stat. Neap. vii, pp. 423–472, pls. xvi & xvii; abstr., J. R. Micr. Soc. 1888, pp. 199 & 200.

SCHULZE, F. E. Eine lebende *Tethis fimbriata*. SB. nat. Fr. 1887, pp. 136 & 137.

SCHUMANN, E. Zur Kenntniss der Weichthiere Westpreussens. Schr. Ges. Danz. (2) vi, pp. 159–167.

Scott, T. (1) Notes on the Land and Fresh-water *Mollusca* of Greenock and surrounding District. P. N. H. Soc. Glasg. (n.s.) i, pp. 279–285.

——. (2) Natural History. *Mollusca*. *T. c.* pp. 377 & 378.

——. (3) Some Conchological Notes of a Visit to Fifeshire, N.B. J. of Conch. v, pp. 173–176.

——. (4) Conchological Notes. *T. c.* pp. 228–231.

Semper, C. Ueber Brock's Ansichten über Entwickelung des Molluskengenitalsystems. Arb. z. Inst. Würzb. viii, pp. 213–222 ; abstr., J. R. Micr. Soc. 1887, pp. 735 & 736 ; Biol. Centralbl. vii, p. 754.

†Sénéchal, R. Le. Catalogue des animaux recueillis au laboratoire maritime de Luc pendant les années 1884 et 1885 ; abstr. Rev. Tr. Sci. vi, p. 400.

Servain, G. Histoire malacologique du Lac de Grandlieu dans la Loire-inférieure. Bull. Soc. mal. Fr. iv, pp. 237–266.

Silva e Castro, J. da. Contributions à la faune malacologique du Portugal. J. Sci. Lisb. xi, pp. 232–249.

Simroth, H. (1) Über die Genitalentwicklung der Pulmonaten und die Fortpflanzung des *Agriolimax laevis*. Z. wiss. Zool. xlv, pp. 646–663, pl. xxxiv ; abstr., Biol. Centralbl. vii, p. 754.

——. (2) Ueber das Gleiten der Schnecken an der Oberfläche des Wassers (Schwimmen). Nachr. mal. Ges. xix, pp. 148 & 149.

——. (3) Einige Bemerkungen, betreffend die Systematik der europäischen Nacktschnecken. *T. c.* pp. 161–168.

Smart, R. W. J. New Habitat for *Odostomia pallida*. J. of Conch. v, p. 152.

Smith, E. A. (1) Notes on some Land-Shells from New Guinea and the Solomon Islands, with descriptions of new Species. Ann. N. H. (5) xix, pp. 416–426, pl. xv.

——. (2) Note on *Tudicula inermis*, &c. *T. c.* pp. 465 & 466.

——. (3) Descriptions of some new Species of Land-Shells from Sumatra, Java, and Borneo. *Op. cit.* xx, pp. 130–133.

——. (4) Notes on *Volutharpa perryi*. *T. c.* pp. 347 & 348.

——. (5) Notes on *Argonauta Böttgeri*. *T. c.* pp. 409–411, pl. xvii, figs. 1–6.

——. (6) Note on the Pearly *Nautilus*. J. of Conch. v, pp. 226 & 227.

——. (7) Notes on Australian Species of *Bithinia*, *Segmentina*, and *Fusus*, and Description of a new *Melania*. *T. c.* pp. 235–238.

——. (8) Description of a New Species of *Conus*, and a note on a white Variety of *C. eburneus*. *T. c.* pp. 244 & 245.

——. (9) On the *Mollusca* collected at the Cameroons Mountain by Mr. H. H. Johnston. P. Z. S. 1887, pp. 127 & 128, cut.

——. (10) Notes on a small Collection of Shells from the Loo Choo Islands. *T. c.* pp. 316–319, cut.

[Smith, E. A.] (11) Mollusks: in, Report on a Zoological Collection made by the Officers of H.M.S. 'Flying Fish,' at Christmas Island, Indian Ocean. *T. c.* pp. 507–526, pl. xiv, cut. [*Mollusca*, pp. 517–519.]

——. [See also Günther.]

Snelleman, J. F. [See Schepmann.]

Somerville, A. [Reversed Shells.] P. N. H. Soc. Glasg. (n.s.) i, p. lxxxi.

Sourbieu, E. Espèces nouvelles pour la faune française. Bull. Soc. mal. Fr. iv, pp. 233–236.

Sowerby, G. B. (1) Illustrated Index of British Shells. Containing figures of all the recent species, with names and other information. Second Edition. London: 1887, 26 pls., with expls.

——. (2) Thesaurus Conchyliorum, or figures and descriptions of recent Shells: Part xliv containing supplements to the monographs of *Conus* and *Voluta*. London: 8vo, vol. v, pp. 249–318, pls. 507–517.

Spengel, J. W. Mittheilungen über eine Untersuchung des Hrn. Stud. Köhler. Tag. Deut. Nat. Vers. lx, p. 257.

Standen, R. Lancashire Land and Fresh-water *Mollusca*. Naturalist, 1887, pp. 155–176; also separately, Leeds: 1887, 8vo.

Statuti, A. Note malacologiche sulla fauna romana. Atti Acc. Pontif. Lincei, xxxix, pp. 132–138.

Steel, J. [Fresh-water *Mollusca* in the Timber-basins.] P. N. H. Soc. Glasg. (n.s.) i, pp. vi & vii.

Steenstrup, J. J. S. (1) Notæ Teuthologicæ. 6. Species generis *Sepiolæ* Maris Mediterranei. Overs. Dan. Selsk. 1887, pp. 1–20.

——. (2) 7. *T. c.* pp. 21–80.

Steiner, —. Ueber die Physiologie des Nervensystems einiger wirbelloser Thiere. Tag. Deut. Nat. Vers. lx, p. 254; abstr. J. R. Micr. Soc. 1887, p. 559.

Sterki, V. Zur Fauna von Ohio. Nachr. mal. Ges. xix, pp. 178–184.

Streeter, E. Pearls and Pearling Life. London: 1886, 8vo, 329 pp., 9 pls., cuts and maps.

Stuxberg, A. Faunan på och kring Novaja Semlja: in, Vega-Expeditionens Vetenskapliga Jakttagelser, v, pp. 1–239, pl. i.

Székely, B. A pulmonatumok talpmirigye. Ueber die Fussdrüse der Pulmonaten. Orvos-termész. Értesitö, ix, pp. 7–34 & 247–251, pls. i–iii.

Tate, R. (1) Descriptions of some New Species of South Australian Marine and Freshwater *Mollusca*. Tr. R. Soc. S. Australia, ix, pp. 62–75, pls. iv & v.

——. (2) A Revision of the recent Lamellibranch and Palliobranch *Mollusca* of South Australia. *T. c.* pp. 76–111.

TAYLOR, J. W. (1) *Helix hortensis*, monst. *sinistrorsum* and *H. aspersa* var. *exalbida* in Pembrokeshire. J. of Conch. v, p. 166.

——. (2) Discovery of *Clausilia Rolphii* in North Lincolnshire. *T. c.* p. 220.

——. (3) *Helix arbustorum*, monst. *sinistrorsum* in Derbyshire. *T. c.* p. 225.

——. (4) Occurrence of *Vertigo alpestris* Alder in Yorkshire. *T. c.* p. 238.

——. (5) *Pisidium roseum* in Yorkshire. Naturalist, 1887, p. 272.

THIELE, J. Ein neues Sinnesorgan bei Lamellibranchiern. Zool. Anz. x, pp. 413 & 414 ; abstr. J. R. Micr. Soc. 1887, p. 942.

THOMPSON, F. C. The Anatomy of the Fresh-Water Mussel. J. Northampt. Soc. iv, pp. 82–86, pl. [Nothing new.]

THURSTON, E. Preliminary Report on the Marine Fauna of Rámés-waram and the Neighbouring Islands. Madras: 1887, 8vo, 41 pp., 6 pls. [*Mollusca*, pp. 21 & 22.]

TOMLIN, J. R. B. (1) Land Shells of Ilfracombe and Neighbourhood. J. of Conch. v, pp. 181–183.

——. (2) Monstrosities of various Lancashire Shells. Naturalist, 1887, p. 20.

——. (3) Variation in *Helix cricetorum* near Cheshire. *Ibid.*

TOPSENT, E. Sur les prétendus prolongements périphériques des Cliones. C.R. cv, p. 1188.

°TOROSSI, G. B. I Pesci e i Molluschi fluviatili della provincia di Vicenza. Vicenza : 1887, 8vo, 32 pp., 4 pls.

TRINCHESE, S. (1) Ricerche anatomiche ed embriologiche sulla *Flabellina affinis*, Gm. Rend. Acc. Bologna, 1886–87, pp. 86–88. [Prelim. notice of (2).]

——. (2) Ricerche anatomiche sulla *Flabellina affinis*, Gm. Mém. Acc. Bologna (4) viii, pp. 227–232.

——. (3) Nuove osservazioni sulla *Rhodope Veranii* (Kölliker). Rend. Acc. Nap. xxvi, pp. 131–137.

TRYON, G. W. (1) Manual of Conchology, Structural and Systematic. IX. *Solariidæ*, *Ianthinidæ*, *Trichotropidæ*, *Scalariidæ*, *Cerithiidæ*, *Rissoidæ*, *Littorinidæ*. Pt. xxxiii, pp. 1–64, pls. i–x ; pt. xxxiv, pp. 65–128, pls. xi–xxvi ; pt. xxxv, pp. 129–224, pls. xxvii–xxxix ; pt. xxxvi, pp. 225–448, pls. xl–lxxi. Philadelphia : 1887, 8vo.

——. (2) *Op. cit.*, Second Series, *Pulmonata*. III. *Helicidæ*, i, pt. ix, pp. 1–64, pls. i–xv ; pt. x, pp. 65–128, pls. xvi–xxxi ; pt. xi, pp. 129–176, pls. xxxii–xlviii ; pt. xii, pp. 177–313, pls. xlix–lxiii.

TSCHAPECK, H. Vom Grimming bis Alt-Aussee. Nachr. mal. Ges. xix, pp. 65–82.

TYE, G. S. Notes on the Epidermis or Periostracon of *Mollusca*. J. of Conch. v, pp. 221–225.

VAN DER STRICHT, O. Recherches sur le cartilage hyalin. Arch. d. Biol. vii, pp. 1–92, pls. i–iii. [*Mollusca*, pp. 40–43.]

VAYSSIÈRE, A. Atlas d'Anatomie comparée des invertebrés. Fasc. 1. Paris: 1888, fol., 17 pls., with expls. [Issued 1887, *Mollusca*, pls. 1–3, 5, 7, & 8–12.]

VIALLETON, L. Développement de la Seiche (1ère partie). Zool. Anz. x, pp. 383–387; abstr. J. R. Micr. Soc. 1887, pp. 734 & 735.

VIGNAL, W. Sur l'endothelium de la paroi interne des vaisseaux des Invertébrés. C.R. cii, pp. 1027 & 1028, 1886.

VOGT, C., & YUNG, E. Lehrbuch der praktischen vergleichenden Anatomie. Brunswick: 1887, 8vo. [*Mollusca*, pp. 734–768, to be continued. Also published in French.]

WATT, W. On Developing the Oyster Fisheries of Scotland. Tr. Highl. Agric. Soc. Edin. (4) xviii, pp. 188–198, 1886.

WEBER, M. [Om Perler og Perlefiskerierne.] Boierische Fischerei-zeitung, transl. Norsk Fiskeritidende, 1886, pp. 252–265; also Bull. U.S. Fish Comm. vi, pp. 321–328.

WEGMANN, H. Notes sur l'organisation de la *Patella vulgata*, L. Rec. Z. Suisse, iv, pp. 269–303, pls. xii & xiii.

WESTERLUND, C. A. (1) Fauna der in der paläarctischen Region (Europa, Kaukasien, Sibirien, Turan, Persien, Kurdistan, Armenien, Mesopotamien, Kleinasien, Syrien, Arabien, Egypten, Tripolis, Tunesien, Algerien und Marocco) lebenden Binnenconchylien. III. Gen. *Buliminus*, *Sesteria*, *Pupa*, *Stenogyra*, & *Cionella*. Lund & Berlin: 1887, 8vo, 183+15 pp.

——. (2) Vierte Beilage, *id.* (1), 26 pp.

——. (3) Land- och Söttvatten-mollusker. Insamlade under Vega-expeditionen af O. Nordqvist och A. Stuxberg: in, Vega-Expeditionens Vetenskapliga Jakttagelser, iv, pp. 141–220, pls. ii–vi.

WILLIAMS, J. W. (1) Our British Slugs. Sci. Goss. 1887, p. 10.

——. (2) A Dextral *Physa fontinalis*. J. of Conch. v, p. 220.

——. (3) A New Variety of *Sphærium corneum*, Linn. *T. c.* p. 255.

WILSON, J. On the Development of the Common Mussel. Rep. Fish. Scot. v, for 1886, App. F, pp. 247–256, pls. xii–xiv.

WILSON, J. B. List of *Gastropoda*, *Lamellibranchiata*, and *Brachiopoda* obtained at or near Port Phillip Heads. Vict. Nat. iv, pp. 116–118.

WOLFF, G. Einiges über die Niere einheimischer Prosobranchiaten. Zool. Anz. x, p. 317; abstr. J. R. Micr. Soc. 1887, pp. 569 & 940.

YOUNG, A. Fifth Annual Report to the Fishery Board for Scotland, containing an account of the Salmon, Sea-Trout, and Oyster and Mussel Fisheries in the Orkney and Shetland Islands. Rep. Fish. Scot. v, for 1886, App. G, pp. 363–413. [*Mollusca*, pp. 376–381, 393, & 394.]

YUNG, E. (1) Rélations hypothétiques entre le sang des Lamellibranches et le milieu ambiant. Act. Soc. Helv. lxx, p. 56.

——. (2) La physiologie comparée des animaux invertebrés. Arch. Sci. Nat. (3) xviii, pp. 428 & 429.

——. (3) Relations de l'organe de Bojanus chez les Mollusques lamellibranches et en particulier chez *Anodonta anatina*. *T. c.* pp. 436 & 437.

——. (4) Contributions à l'histoire physiologique de l'Escargot (*Helix pomatia*). Mém. Cour 4to, xlix ; also separately, Brussels : 1887, 4to, 119 pp., 2 pls.

——. [See also VOGT.]

ZACHARIAS, O. Ergebnisse einer faunistischen Excursion an dem süssen und salzigen See bei Halle-a.-S. Tag. Deut. Nat. Vers. lx, p. 255.

ARON. (1) Collecting *Mollusca* in the Celtic Region (on the coast of France), near Brest. J. of Conch. v, pp. 177–179. [Abstr. of DANIEL, *cf.* Zool. Rec. xxii, *Moll.* pp. 6 & 44.]

——. (2) Das Kauri-Geld und seine Verbreitung. Naturforscher, xx, pp. 427–429.

——. (3) Die Kameen-Industrie in Italien. Ausland, 1887, pp. 85–88; abstr., Nachr. mal. Ges. xix, p. 59.

——. (4) [Mode of Growth of Shells.] Naturforscher, xx, pp. 137 & 138 ; abstr., J. R. Micr. Soc. 1887, p. 374.

——. (5) Einige Bemerkungen über Cephalopodenschalen. *T. c.* pp. 153 & 154. [Abstr. of RIEFSTAHL, *cf.* Zool. Rec. xxiii, *Moll.* pp. 21 & 32.]

——. (6) Forgiftningen Nydelsen af Fisk og Muslinger. Norsk. Fiskeritidende, 1886, pp. 180–187.

——. (7) Land Shells of San Diego. West Amer. Sci. ii, pp. 1 & 2, 1886.

——. (8) Mollusks of San Diego. *T. c.* pp. 3 & 4. [Nothing new.]

——. (9) Rate of Progress by Snails. Zool. (3) xi, p. 309.

——. (10) [Transportation of *Helix nemoralis*.] Nat. Canad. xvi, p. 79.

CONCHOLOGICAL JOURNALS, TEXT-BOOKS, &c.

Annales [et Bulletin] de la société malacologique de Belgique, vol. xxi (series 4, vol. i), année 1886 (1887). Brussels : 8vo, pp. xi + 296 + clxxxi, 14 pls. [Ann. Soc. mal. Belg.].

Bulletins de la société malacologique de France, sous la direction de

MM. C. F. Ancey, J. R. Bourguignat, et d'autres, vol. iv. Paris: 8vo, 316 pp., 10 pls. [Bull. Soc. mal. Fr.]

Bullettino della società malacologica Italiana, vol. xii, pp. 65–227, pls. iii–vi. Pisa: 8vo. [Bull. Soc. mal. Ital.].

Jahrbücher der Deutschen Malakozoologischen Gesellschatt, by W. Kobelt, vol. xiv. Frankfort-on-the-Main: 8vo, pp. 1–305, pl. i–viii [unfinished]. [JB. mal. Ges.]

Journal de Conchyliologie, comprenant l'étude des Mollusques vivants et fossiles, publié sous la direction de H. Crosse et P. Fischer, vol. xxxv (series 3, vol. xxvii). Paris: 8vo, 358 pp., 12 pls. [J. de Conch.].

Journal of Conchology, established in 1874, as The Quarterly Journal of Conchology, vol. v, Nos. 5–8. Leeds, Berlin, Hobart Town: 8vo, pp. 129–256. [J. of Conch.]

Malakozoologische Blätter, by S. Clessin, new series, vol. ix, pp. 49–180 + xi, 3 pls.; vol. x, pp. 1–64. Cassel and Berlin: 8vo. [Mal. Bl.]

Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft, by W. Kobelt, vol. xix. Frankfort-on-the-Main: 8vo, 192 pp. [Nachr. mal. Ges.].

Procés verbaux des Séances de la Société royale Malacologique, xvi for 1887. Brussels: 8vo, pp. i–lxxx [P.-v. Soc. mal. Belg.]

Martini & Chemnitz's Systematisches Conchylien-Cabinet, edited by Kobelt, has completed its 355th fascicule; for details, see p. 17, *antea*.

Kobelt (1) has completed the first volume of his "Iconographie" with the monograph of the genus *Nassa*.

Sowerby (1) has published a second edition of his father's handbook of British shells, and (2) second supplements to his monographs on *Conus* and *Voluta*.

Fischer (1) completes his "Manuel," which extends to 1369 pp. (including the *Brachiopoda*).

Tryon (1, 2) has issued a volume of each series of his Manual.

Clessin (1) has issued two parts of a handbook on the Land-shells of Austria, Hungary, and Switzerland, in continuation of his work on German species [*cf.* Zool. Rec. xxii, *Moll.* p. 5.]

Westerlund (1, 2) continues his work on Palæarctic *Mollusca*.

See also Claus; Nicholson; Paetel.

ANATOMY AND PHYSIOLOGY.

As the results of an exhaustive study of *Cyclostoma elegans*, the author claims to have demonstrated the following facts:—The calcium carbonate of the shell is crystalline; the stomach is lined by a cuticle pierced with minute canals; all parts of the digestive tract have an alkaline reaction; there is no endothelial lining in the circulatory lacunæ; a rudimentary gill is present. The organ of Bojanus is traversed mainly by blood from the lower part of the body; its circulatory system is lacunar; the wall of the pericardium is glandular; uric acid is absent from the kidney; neither the kidney nor the pericardium communicate with the exterior; the concretionary gland contains uric acid and also bacilli, which are, perhaps, symbiotic. The supra-pedal gland contains a network of canals, which establish a communication between the circu-

ory system of the animal and the exterior. The extremity of the tacle is probably olfactory in function. The follicular cells are not med in the interior of the egg ; GARNAULT (1).

elaborate account, impossible to abstract within small compass, is ...en of *Testacella* : its anatomical peculiarities are due mainly to the depression of the mantle and shell and the elevation of the liver and reproductive organs ; LACAZE-DUTHIERS (1).

Jouannetia cumingii has been carefully studied : the chief peculiarities in its organisation may be interpreted as results of the shortening of its longitudinal axis ; and relate in the first place to the shell, muscles, and boring apparatus. The adductor muscles are approximated. The ventricle of the heart lies transversely, and the dorsal vessel acquires a sharp bend. The kidney is also compressed longitudinally, but this is compensated for by the development of diverticula between the neighbouring organs. The gills are shortened and correspondingly thickened. The modifications of each developmental stage are discussed, as also the systematic position of the species ; EGGER.

Detailed anatomy of *Urocyclus* ; POIRIER (1). Also of *Estria alluaudi* ; *id.* (2).

Anatomical notes on *Guestieria*, showing that it belongs to the *Testacellidæ* ; CROSSE (1).

The anatomy of *Ceratoptilus*, n.g. of *Cerithiidæ*, is treated by BOUVIER (3).

Flabellina affinis : anatomy described, TRINCHESE (2) ; preliminary notice, *id.* (1).

Patinella radians distinguished from *Patella vulgata* by the arrangement of the gills, intestine, and nervous system ; general account of anatomy ; NEWELL.

Various points in the anatomy of *Patella* and its relation to *Haliotis* are discussed ; WEGMANN.

A reply to criticisms in Dr. Boutan's memoir on *Fissurella* is made by HALLER.

An elaborate discussion of the anatomy of the *Prosobranchiata* is summed up by the author in 49 theses. The scheme of classification adopted to express the relations observed is, in general, the following :—

" DIOTOCARDES.

ZYGOBRANCHES (dialyneures)
- Rhipidoglosses — *Pleurotomaridés.* *Haliotidés.* *Fissurellidés.*
- Docoglosses — *Tecturidés.* *Patellidés.* *Lepetidés.*

AZYGOBRANCHES (dialyneures ou orthoneuroïdes)
- Chiastoneures — *Turbonidés.* *Trochidés.* *Stomatiidés.* *Delphinulidés.*
- Arthoneuroides — *Néritopsidés.* *Hydrocænidés.* *Néritidés.* *Helicinidés.*

"MONOTOCARDES.

Ténioglosses (dialyneures ou zygoneures)	Rostrifères	*Paludinidés.*
		Littorinidés.
		Rissoïdés.
		Pseudomelaniidés.
		Vermétidés.
		Turritellidés.
	Proboscidifères holostomes	*Scalaridés.*
		Solaridés.
	Proboscidifères siphonostomes	*Colombellinidés.*
		Tritoniidés.
		Cassididés.
		Doliidés.
	Semiproboscidifères	*Cypræidés.*
		Naticidés.
		Janthinidés.
	Hétéropodes	*Atlantidés.*
Sténoglosses (zygoneures)	Rhachiglosses	*Turbinellidés—Fusidés.*
		Volutidés.
	Toxiglosses	*Pleurotomidés.*

net.

Bouvier (1).

In a paper devoted to the anatomy of sinistral species, the conclusion is enunciated that the twisting in the Prosobranchs does not displace the organs, whilst it does in the Pulmonates; *id.* (11).

Remarks on the torsion of the body in the *Gastropoda*; *id.* (9).

Meladomus purpuraceus and *Lanistes bolteniana*, sinistral Prosobranchs, resemble in their organisation the dextral *Ampullariæ*. *Valvata* has a left unipectinate gill, which is innervated like the false branchiæ of *Prosobranchiata*: the filiform appendix is merely a prolongation of the mantle border, and the nervous system, on the whole, resembles that of *Bythinia*; *id.* (5).

In *Ampullaria* (1) the penis is a pallial formation; (2) the epipodium is innervated by pallio-parietal nerves; (3) the gill directed to the right is the left gill of the Ctenobranchs; (4) the prominent bipinnate organ is the false left gill; *id.* (6).

The *Toxiglossa* and *Rhachiglossa* form only a single group, which may be termed *Stenoglossa*, with the following characters: (1) radula reduced to 3, 2, or 1 row of teeth, or atrophied; (2) at least one pair of salivary glands, whose ducts do not traverse the œsophageal collar; (3) a special unpaired gland, opening by a narrow duct into the œsophagus; (4) a very reduced buccal mass; (5) the nervous system concentrated and zygoneurous and chiastoneurous; (6) buccal ganglia almost in contact with the cerebral ganglia; *id.* (7).

An examination of the genera *Cerithium* and *Ampullaria* leads to the justification of the group *Orthoneura*; Jhering.

Anatomy of *Pleuroleura pustulosa*, *P. gonatophora*, and *Phyllidiella verrucosa*, is treated by Bergh (2): of the *Marseniadæ*; *id.* (2).

Simroth's work on the *Limacidæ* criticised; Pollonera (5). For reply, see Simroth (3).

The histology of the *Naiadæ* is treated under the headings Blood, nective Tissue, Epithelium, Muscle, and Nerve; APATHY.

or the comparative histology of certain *Mollusca*; NANSEN.

OULE's memoir is published in full, with illustrations; the conclu- have already been given from a preliminary communication [*cf.* Rec. xxiii, *Moll.* p. 32].

Anatomy of *Anodonta cygnæa* and *Helix pomatia*, treated by MARSHALL & HURST; of the former by VOGT & YUNG, and THOMPSON.

General account of anatomy of three species of *Mytilus*; PURDIE.

Anatomy of certain forms figured; VAYSSIÈRE.

Importance of anatomical, in addition to merely conchological, study insisted on; BRAUN (1).

Analyses of edible Mollusks; ATWATER.

Rhodope veranii (Kölliker) is not a Mollusc; TRINCHESE (3).

1. *Shell, Integument, and Connective Tissue.*

A review of the principal theories regarding the mode of shell-growth; ANON. (4).

Notes on "epidermis" of shells, with list of 32 spp. in which it is hispid; TYE.

A specimen of *Nautilus pompilius* detached itself suddenly from the shell; the view is suggested that if the muscles separate from their attachments, when a new septum is to be made, possibly the animal remains attached by the siphon; SMITH (6).

Regarding the shell of *Sepia* the following conclusions are maintained:—(1) The oldest part of the shell lies immediately before the rostrum, and from this point growth is most rapid forwards. (2) The porous consistency of the spongy mass is of secondary origin, and is due to the contraction of the layers in certain places, at which strong processes arise. (3) Each layer extends over the whole shell, but the form is due to differences in growth and calcification. (4) The shell grows by apposition, not intussusception. When a layer has once been completed and overlaid, it cannot grow any more, though a certain amount of calcification can still take place; APPELLÖF.

Riefstahl's views on the mode of growth of the Cephalopod shell are criticised by BATHER. See also ANON. (4, 5).

General discussion of certain Cephalopod shells: *Baculites* regarded as polyphyletic; HYATT.

The operculum in *Concholepas* "lies across the mouth [of the shell] in a plane at right angles with its length"; this arrangement is probably protective; COOKE (3).

Fringed outline of muscular impression in *Notomya*; RATTE.

Hinge in a fossil *Lucina*; GIOLI.

The minute structure of the ciliated epithelium of certain Molluscs is described by FRENZEL (2).

Some details regarding the minute structure of the cartilage of *Loligo* are given by VAN DER STRICHT.

Criticism of supposed statement by Camerano [*cf.* Zool. Rec. xxii, *Moll.* p. 43] regarding occurrence of green in *Mollusca*; DALL.

2. *Muscular System.*

Creeping of certain Gastropods at the surface of the water attributed to capillarity and the formation of a meniscus; BROCKMEIER (3): for references to literature, see SIMROTH (2).

In the *Heteropoda* the primitive creeping foot degenerates into a kind of sucker (absent in the females of the *Pterotrachæida*). The shortening of the foot leads to the formation of a special operculigerous organ, which constitutes the tail-like hinder extremity of the body, and is in correlation with the pelagic habits of the animal; GROBBEN (1).

Locomotion of snail; SCHARFF.

3. *Digestive System.*

Digestive tract of *Helix aspersa*; GRIER.

Masticatory organs of certain *Geophila* described, and their systematic bearing compared with that of the genital apparatus; POLLONERA (2).

Von Jhering's descriptive terms for the radula are criticised by PFEFFER (10).

Radula of *Gulnaria peregra*; DYBOWSKI (2): of *Limnæa palustris*; *id.* (3): of various species of *Gulnaria*; *id.* (1): of *Cyclostoma elegans*, figured; COLE.

Radula of *Fusus craticulatus* and some others figured; KOBELT, (8) pl. v, figs. 4–6.

The salivary gland of the carnivorous *Taenioglossa* is divided into two parts: the anterior racemose, the posterior composed of very fine tubules; MALARD (1).

A single unpaired salivary gland beneath the œsophagus of the *Cephalopoda Decapoda* corresponds to the pair of glands situated against the buccal bulb of the *Octopoda*. The glands found by Livon on one side of the tongue in *Octopus vulgaris* form a sheet of acini opening into the space which separates the tongue from the mandible. In the *Octopoda* the extra-bulbar glands are situated in large blood-lacunæ, but such is not the case in the *Decapoda*. In all cases the extra-bulbar glands are constructed on the same type, consisting of groups of acini, formed of cells resembling the serous cells of vertebrates. The cells of the abdominal glands, on the other hand, resemble the mucous cells: in the *Decapoda* these glands are acinous; tubular in the *Octopoda*; JOUBIN.

The salivary glands of *Octopus vulgaris* replace, functionally, the absent gastric glands; PILLIET.

In certain carnivorous *Taenioglossa* the so-called "crop" is a glandular organ, apparently secreting a ferment, and destined to replace to some extent the salivary glands; MALARD (2).

In the *Invertebrata* gastric and intestinal digestion are not separate, but carried on together; YUNG (2).

In the Molluscan liver regeneration of the epithelium takes place by holoschisis; FRENZEL (1).

4. *Circulatory System.*

The general question of the inception of water by Pelecypods and Gastropods is taken up, and the possibility of its occurrence in certain cases is shown, though not in those in which it was asserted by Kollman, Griesbach, &c. It does not take place in Pteropods, Heteropods, or Pulmonates, and probably not in Opisthobranchs or Pelecypods; SCHIEMENZ.

Blood-spaces in Lamellibranchs do not communicate with the external medium; YUNG (1).

A communication is established by intercellular spaces between the blood and the surrounding medium; the apertures are, however, too minute to admit of more than an osmotic interchange; SARASIN (3).

The blood-vessels of *Helix* are lined by epithelium, which ceases where they open into lacunæ: they are compared with the lymphatics of *Vertebrata*; VIGNAL.

The existence of hæmatoporphyrin in *Solecurtus strigillatus* is shown by MACMUNN.

The lymphatic glands of *Mollusca* are generally near the respiratory apparatus; in *Dreissensia* and *Mytilus* the gland is in the gill itself; in the *Gastropoda* it varies much in position; in *Paludina* it lies along the gill near its base; in *Pleurobranchus* it is the red gland of Lacaze-Duthiers; in *Helix* and *Limax* it has the form of a thick stroma surrounding each of the large pulmonary vessels; in *Lymnæus* and *Planorbis* the gland is not clearly marked off from the vessels; CUÉNOT.

5. *Respiratory System.*

The gill of the *Prosobranchiata* is of the same type in all the forms examined. The epithelium consists of columnar and muciparous elements; the basal membrane forms a resistant thickening, triangular in section, but is not cartilaginous. Stellate connective tissue-cells and muscle-fibres are also described. The "vessels" of Wegmann are believed to be lacunæ in the connective tissue; BERNARD (1).

6. *Excretory and Secretory Systems.*

Ink-sac said to be absent in *Cirroteuthis müllери* and *Octopus arcticus*. In *Sepiola* the simple and trilobed form which Peters and Girod have attributed to sexual or seasonal variations, is due to specific difference; STEENSTRUP (1).

On the upper surface of the foot of *Tethys fimbriata* are unicellular glands, (1) mucous, (2) with fatty contents (possibly phosphorescent), (3) with special contents and often arranged in a lamellar fashion, and (4) with granular material. On the lower surface there are found (1) goblet cells, (2) small mucous glands, not numerous, (3) cells presumably phosphorescent, and (4) isolated gland-cells with granular contents. There are also structures resembling the colour- and chalk-

glands of Leydig, which are probably referable to the connective tissue ; LIST.

Certain Pelecypods, after attachment, regain their freedom by throwing off the byssus. In *Dreissensia polymorpha* this takes place regularly at the commencement of the cold season, so that the animal may retire to deep water. The byssus itself is a cuticular formation in the walls of the inner crescentic portion of a longitudinal groove in the foot ; REICHEL.

The margin of the mantle of *Lima* contains both sensory and glandular threads ; the former are short, and 3–5 in number, the latter secrete the material by which the nest is cemented ; RAWITZ (1).

The reno-pericardial orifice appears to be generally present : it is least reduced in *Valvata*, where it has strong cilia wanting in *Paludina* and *Bithynia*. In *Paludina* this orifice is functionally related to the passage of fluid into the water-reservoir, for the muscles which surround it are connected with the sphincter around the other opening of the kidney. In *Bithynia* there are two openings to the exterior, the pericardial orifice being near the upper ; WOLFF.

The concretionary gland of *Cyclostoma elegans*, which contains uric acid, and was regarded by Barfurth as the functional kidney, consists of tufts of tubules, surrounded by a rich vascular plexus. In the adult there is no excretory duct, but the concretions become absorbed. Many bacilli fill the tubes, which perhaps contribute to the formation of the uric acid. Organ of Bojanus appears to be the true kidney ; GARNAULT (2).

The nephridia of *Patella* secrete uric acid, whilst its so-called "liver" is a pancreas ; GRIFFITHS.

The organ of Bojanus in *Anodonta* frees the blood from urea and uric acid ; GRIFFITHS & FOLLOWS.

The homology of the pericardial gland of *Mollusca* and *Annelida* is still further expounded. In the former it is clearly a development of the epithelium of the secondary cœlom. Similar structures are found in the chloragogue cells of many Annelids, *e.g.*, the well-known tubular contractile appendages of the dorsal vessel of the *Lumbricidæ* ; GROBBEN (2).

Near the organ of Bojanus in some specimens of *Anodonta* is a bundle of very delicate tubules, which seem either (1) to constitute a mucous gland, (2) to form the vasa efferentia of the spermatic gland, or (3) to be a modified spermatic gland in hermaphrodite individuals ; GARBINI.

Limnæa peregra and *L. palustris* both secrete a violet-coloured fluid ; COLLINGE (3).

Pigments ; GIROD.

The so-called "poison-gland" of *Conus*, *Pleurotoma*, and some *Terebræ* is essentially a muscular organ ; BOUVIER (12).

From the luminous matter of *Pholas dactylus* two substances have been isolated : (1) *Luciferine*, a crystalline substance soluble in water, alcohol, benzine, and ether ; (2) *Luciferase*, an active albuminoid resembling the soluble ferments ; DUBOIS.

7. *Nervous System.*

The central nervous system of the *Acephala* contains no apolar cells; unipolar cells are the most common, bipolar the least. Details regarding minute structure are given. There is no "neuroglia" between the cells. The peripheral nerves consist of simple axial fibrils. There is considerable intercommunication between the various ganglia, in consequence of which the least peripheral stimulus leads to immediate combined action of all the muscles of the mantle-edge, foot, and shell. The *Ostræidæ* are regarded as being high in the systematic scale, owing to the development of the visceral ganglion; Rawitz (2).

Criticisms of Rawitz; Nansen.

In *Aplysia*, the pedal ganglia are placed laterally, and their commissure is very long. The brain consists of two rounded ganglia, from the infero-external angles of which connectives pass to the pedal ganglia and to the first of the asymmetrical group, which again have special short connectives with the pedal ganglia. Each tentacle contains five ganglionic thickenings. There is a double pedal commissure. The distribution of nerves from the pedal ganglia is described. "Mantle, viscera, and gill are supplied as usual by the asymmetric centre, the median ganglia of which are far separated from the collar, and in the cardiac region. . . . . The mantle-like lobes of the foot are innervated from the pedal ganglia"; Lacaze-Duthiers (2).

The pedal nerve-cord of *Trochus* is single, and the epipodium is a part of the foot; it has no connection with the mantle, but surrounds the operculum, the pedal nature of which is indubitable; Pelseneer (2).

The nervous system of *Lepeta* and *Acmæa* resembles essentially that of *Patella*; Bouvier (2).

Some modifications of the typical strepsineurous arrangement are described in Prosobranchs as leading on to the zygoneurous condition; *id.* (10).

Nervous system of the *Cypræidæ*; *id.* (8).

A left pallial anastomosis may give rise to a left zygoneury, as in *Ampullaridæ*, *Natica*, &c., but this arrangement is less common and zoologically less important than the right-handed one. Modifications of other parts of the nervous system are described; *id.* (4).

Von Jhering has overlooked the portion of the visceral commissure which arises from the right pleural ganglion, and passes to the supra-intestinal ganglion, and also the subintestinal ganglion; Spengel.

The olfactory ganglion of authors is partly ganglionic, partly connective tissue. It is connected to the cerebral ganglia by fine fibres; it must be regarded as accessory to the optic nerve and ganglion. The connective tissue, so closely connected with many ganglia of the higher *Mollusca*, is perhaps the remains of nervous matter which has degenerated from want of use; Jatta (1).

The olfactory nerve of the *Cephalopoda* originates in the supra-œsophageal ganglion, called superior frontal ganglion by Dietl; *id.* (2).

In *Pterotrachea* removal of the cerebral ganglion had no effect: that of

the pedal ganglion destroyed locomotion. When this was carried out on one side in *Cymbulia*, motion took place in a circle round the injured side. This happened also in *Octopus*, where removal of the cerebral ganglia destroyed spontaneous motion, but not visceral reflexes; STEINER.

8. *Organs of Sense.*

A larval anal eye is present in several Opisthobranchs. In *Philine aperta*, in close proximity to the incipient intestine, four ectodermal cells protrude and become pigmented: between them a fifth ectodermal cell gives origin to the crystalline body, and they leave a small pupil above it. When the larva becomes free, the organ is completely formed, and has a retina and a nerve-centre. It evidently compensates for the absence of cephalic eyes in the larval *Philine*. In *Bulla hydatis* a similar apparatus is formed, but degenerates before the larva is hatched. Its homology is probably to be sought in a vibratile pit, set on a ganglion at the entrance of the mantle-cavity of aquatic *Pulmonata*; LACAZE-DUTHIERS & PRUVOT.

DELAGE's paper on the function of otoliths is published in full; his experiments are extended to other groups of animals; ENGELMANN.

The false gill of the *Prosobranchiata* is considered in general to be a sensory organ formed by folds of the mantle, richly provided with nervous structures. In some of the higher forms it constitutes a respiratory apparatus, but little less differentiated than the branchial lamellæ themselves; BERNARD (2).

The osphradium of *Crepidula* consists of a central axis, carrying a series of very numerous independent papillæ, each consisting of a narrow stalk and an enlarged tip, and containing a nerve-branch; OSBORN (2, 3).

Two yellow papillæ near the anal papillæ in *Arca noæ* are covered by long immobile hairs, and their epithelium resembles that of the lateral organ of the *Capitellidæ*. These "abdominal sense-organs" are supplied by a nerve from the visceral ganglion: a small ganglion is situated beneath each organ; they are found also in *Pectunculus*, *Auriculidæ*, *Pectinidæ*, and *Ostræidæ*, but not hitherto in any siphonate Mollusc; THIELE.

In the foot-gland of the *Pulmonata*, the cells which have been regarded as sensory could not be found, and hence this must not be regarded as a sense-organ; SZÉKELY.

Sensory cells of *Lima*; RAWITZ (1); *vide* p. 36 *suprà*.

9. *Generative Organs.*

Brock's speculations on the development of the male organs in the *Stylommatophora* are criticised. Brock is said to have confused the receptaculum seminis with the glandular appendage of the penis: the former is really formed from the male duct, as shown by Rouzaud; SEMPER.

Rouzaud's views are maintained, with other criticisms on Brock's views. *Agriolimax lævis* occurs only in the female sex, and reproduces parthenogenetically; SIMROTH (1).

Ovary of *Mytilus* and ovo-testis of *Helix* figured in section ; Greening.

The double forms of spermatozoa in certain Prosobranchs are described; Brünn's explanation of them is rejected, but no alternative one suggested ; Brock (3).

The spermatozoa of *Dreissensia* move in small circular tracks ; Dewitz.

The formation of the seminal elements in *Helix* and *Arion* is discussed, the author agreeing in the main with the views of La Valette Saint-George ; Prenant.

In *Chiton cinereus* and *C. fascicularis* the ova arise from a germinal epithelium, and the follicle consists of cells homologous with the ova. "The internal corpuscles, said to move to the periphery, are not really nuclear, but only intravitelline, albuminoid bodies." The stalked ovum exhibits protrusions of the vitellus, the summit of each of which is closely associated with the nucleus of the follicular cell. The protrusions retract, the stalk degenerates, and finally ruptures, the point of rupture corresponding to the micropyle. The structureless membrane described by Sabatier does not exist ; Garnault (3).

Hectocotylus rightly forms the basis of a natural classification of *Cephalopoda*. Importance must be attached rather to which pair of arms is affected, than to which arm of the pair ; Steenstrup (2).

Helix ponzolzi receives several spicula amoris at short intervals ; Braun (2).

In *Helix lactea*, after reciprocal copulation, both individuals laid fertile eggs ; Hartwig.

Copulation of *Natica monilifera*, Lmk. ; Giard, (1) p. 143.

The accessory nucleus arises as a rounded process of the nucleus, and forms a very complicated knot ; it may attain half the size of the nucleus, and becomes separated from it only to unite again after the microsomes have arranged themselves in regular groups. After the nucleus has divided, and the microsomes of the daughter nuclei have formed knots, it reappears, and probably takes part in the formation of the spiral envelopes which enclose the axial threads ; Platner.

10. *Embryology.*

The account of the development of *Vermetus* is now given in full, with figures ; for abstract from a preliminary communication see Zool. Rec. xxii, *Moll.* p. 40 ; Salensky.

The egg of *Sepia*, when it escapes from the follicle, is ovoid, and consists of a chorion and nutrient and formative yolk, which latter can be easily separated. The germinal vesicle has already disappeared : at the periphery two polar bodies are distinguishable, and in the interior are the larger female and smaller male pronuclei ; the first cleavage furrow has the direction of a line joining them. The process of segmentation is described in detail and compared with that of other Molluscs ; the micromeres of the latter being compared with the separated blastomeres of the *Sepia*, to which this term is restricted. Those which are continuous with the yolk are called "blastocones," and compared with the macromeres ; Vialleton.

The segmentation of the ovum of the mussel and the histology of various organs are described by J. Wilson.

Twin eggs of *Amphipeplea glutinosa*; Reinhardt (2).

In *Helix waltoni* the eggs are about as large as those of a sparrow, and the embryo attains the size of *H. nemoralis* before hatching. The cardial vesicle and primitive kidney attain large dimensions, the former being a larval respiratory organ. Sense organs are found beside the mouth and in other places, consisting of pyriform cells, bearing a stout, clear process. They recal the lateral organs of *Amphibia*. The cerebral ganglia appear as rounded masses of cells, connected with a thickening of the epithelium. Later on, two tubular invaginations with distended ends appear on either side; the discrepancies in the accounts of previous observers probably arise from their having studied different developmental stages; Sarasin (2).

Arrangement of brood-pouches in the gill of *Unio* described; no byssus, such as is borne by the glochidium of *Anodonta*, has been observed in the larvæ; Call (1).

The parasitic embryos of the *Naiadæ* are found only upon fish; Hazay.

Origin of the foot as a pair of elevations in certain Gastropods; Osborn (4).

Embryology in general; Haddon.

11. *Stray Biological Notes.*

Oysters rest on the left valve; Ryder, pp. 417–420.

Some criticisms of Lankester's article on green oysters; *id.* pp. 420 & 421.

Nests of *Helix aspersa*, found June 17 to July 16, in hollows in the ground, contained 40–96 eggs. Nests of *H. nemoralis*, found June 17; of *Arion ater* and *Limax agrestis*, August 22; of *Limax flavus*, September 15; notes on other forms; Scott (4).

Possible vocal expression of feeling in a Snail; Braun (4).

Observation on lifting power of Snails; Hadfield. Snails observed to travel at the rate of a mile in 14 days; Anon (9).

Ancylus has been observed to spend the whole winter out of water; Brockmeier (1).

Planorbis spirorbis alive after 4 months dessication; Schumann.

Many *Neritæ* withstood submersion in sea-water for 12 hours, but not one for 5 days; probably dispersed as eggs protected by calcareous capsules; Guppy, p. 339.

Influence of the external medium on the growth of *Limnæus stagnalis* and *Planorbis*; Balasheva.

Formation of reef on west coast of Florida by *Vermetus*; Heilprin (2).

Instances of voluntary amputation of parts; Frédericq, Giard (2), and Parville.

Figures of tracks formed by creeping *Unionidæ*; Riabinine.

Crepitation of eggs of *Bulimus decollatus* on being placed in spirit; MORINIÈRE.

Colouration of certain Mollusks in relation to their surroundings; SCHEDEL.

Helix vermiculata escapes its enemies by mimicking *H. cretica*; MALTZAN (2) Mimicry of a slug by an insect larva; MARTENS (11).

Oysters opened by monkeys; CARPENTER. Snails eaten by *Herpestes fasciatus*, which breaks them against stones; NOACK. Opening of *Unio* by *Fiber zibethicus*; LEE: see also AIGAR.

Melania guppyi, over 1 in. long, swallowed and dead shell ejected by fish from 5–10 inches in length; GUPPY, p. 337.

Succinea amphibia, near Leipzig, infested with *Leucochloridium paradoxum* to the extent of 1 in from 50 to 70; HECKERT. Larvæ of *Eristalus* parasitic in *Succinea putris*; SCHUMANN. Protozoan parasites of Oyster and Mussel; DOMERGUE. Infusorian parasite of *Patella* described; WEGMANN. Parasites of *Teredo navalis*; DURAND. Enemies and parasites of Pearl-oysters; BOUCHON-BRANDELY, Bull. U.S. Fish Comm. pp. 371 & 372. Parasites of shells; TOPSENT. *Firola* infested by *Trichælina paradoxa*, n. sp.; BARROIS: said to be pedicellariæ which have been detached from a sea-urchin; LUDWIG.

Dead shells of *Helix hortensis*, &c., used by *Hymenoptera* of the genus *Osmia* to build their cells in; DOMINIQUE.

Odostomia pallida lives on the operculum of *Turritella terebra*; SMART.

Tumour in the Oyster; RYDER.

Shells in amber; SANDBERGER (2).

For a few references to *Mollusca* in classical monuments, see KELLER.

12. *Abnormalities.*

Classification of abnormal Gastropod shells; REINHARDT (1).

Subscalar *Helix lapicida*; BALLÉ.

Sinistral *Limnæa palustris* and dextral *Clausilia rugosa*; SOMERVILLE.

Dextral *Physa fontinalis*; WILLIAMS (2).

Sinistral *Limnæa*; COOKE (4). *Helix arbustorum*; TAYLOR (3), OLDHAM. See also COCKERELL, S. C. (1), COCKERELL, T. D. A. (4), TOMLIN (2, 3), HARGREAVES, HEY (1).

Red albinism in *Vivipara*; SCHUMANN. Coloured varieties of *Arion ater*, L.; COCKERELL, T. D. A. (1).

Mandible absent and radula very small in *Helix aspersa*; COLLINGE (2).

MODES OF COLLECTING AND PRESERVING.

Modes of preservation practised at Naples; CASTELLARNAU.

Notes on collecting; HARTING. See also MENNELL.

Arrangement of collections; HERDMAN.

Handbook to British Museum; GÜNTHER & SMITH.

GEOGRAPHICAL DISTRIBUTION.

LAND AND FRESH-WATER MOLLUSCA.

The general facts of the distribution of the principal families are illustrated in maps by W. MARSHALL.

Distribution in space and time; HEILPRIN.

I.—PALÆARCTIC ZONE.

WESTERLUND (1, 2) continues his "Fauna," describing upwards of 500 species, with localities.

1. *Septentrional Region.*

Greenland. Discussion of Molluscan fauna; WESTERLUND (3).

Iceland. 21 species; *id. op. cit.*

Scandinavia. Lists from various parts; *id. op. cit.*

Norway. 121 species, 44 in Sweden, not in Norway; ESMARK.

Sweden. *Pupa dalliaca* and *P. clerei*, n. spp., WESTERLUND, (1) p. 130. *Arion*, n. sp., POLLONERA (1).

Faroe Is. 10 spp.; WESTERLUND (3).

British Isles.

Catalogue with illustrations; SOWERBY (1). List; JEFFREYS (1, 2). Slugs; WILLIAMS (1).

Fifeshire. 15 species; SCOTT (3).

Clyde. 8 species in timber-basins; STEEL.

Greenock. Additions to local lists; SCOTT (1).

Kirkcudbrightshire. 44 species; COLES.

Durham. *Planorbis carinatus*, Müll., n. var.; HUDSON.

Yorkshire. List of 40 species; GREENE. See also TAYLOR (4, 5), PIERSON, COLLINGE (1), HEY (1, 2).

Whitby. POLLARD.

Lancashire. List, with notes; STANDEN; *cf.* MILNE, COCKERELL, S. C. (3). Possible introduction of certain species; ROGERS, BATES. See also HEATHCOTE.

Manchester. MELVILL (1).

Cheshire. MILNE.

Derbyshire. TAYLOR (3).

Montgomeryshire. MORGAN (1, 2).

Merioneth. 18 species; FENN. 28 species, with notes; RUDDY.

Caermarthen. *Limnæa peregra*, var. *burnetti*; NELSON.

Pembrokeshire. See TAYLOR (1).

Cornwall. 20 species, with notes; JAMES.

Devon. 36 species, with notes; TOMLIN (1).

Somersetshire. PEARCE (2).

Hampshire. 79 species, with notes; ASHFORD.

Northamptonshire. Bibliography of *Mollusca*; ROEBUCK & TAYLOR; see also CRICK.

Lincolnshire. KEW, TAYLOR (2), ROEBUCK (1).

Leicestershire. 82 species; PLANT.

Middlesex. Williams (3), Cockerell, S. C. (4).
Kent. Cockerell, S. C. (2).
Further notes on variations of British shells in "Science Gossip," by Cockerell; Williams; Jeffery; Tomlin.

France.

5 species (1 new) added to fauna; Sourbieu. *Helix*, 5 new species; Locard (5).
Loire-inférieure. 62 species (12 new); Servain.

Netherlands.

Terveeren. Few species recorded; Raeymaekers.

Germany.

Heligoland. 10 species enumerated; Pfeffer (3).
North-west German Plain. Lists of species from lakes; Borcherding.
Brunswick. 12 species additional to former list; Koch.
Thuringia. One or two additions to fauna; Hocker.
Grevenbrück. Few rare *Helicidæ*; Brockmeier (2).
Halle-a.-S. Few species from lakes; Zacharias.
Prussia. 2 species (1 new) in amber; Sandberger (2).
E. Prussia. Helix candidula, Stud.; Krause (2).
Danzig. Lists of species (some new to locality); Schumann.
Silesia. Notes on a few species; Merkel (2). *Vertigo ronnebyensis* and some other species in snowy heights; *id.* (1); see also Gredler (3).

Switzerland.

Alpine Lakes. Few species from deep water; Imhof. Remarks on the relations of their *Mollusca*; Graff.
Engadine and Bregaglia Valleys. 37 species recorded, with notes; Pearce (1).

Austro-Hungary.

Tyrol. Vertigo arctica; Gredler (3). Excursion with records of few species; *id.* (4).
Serneus. 16 additional species; Am-Stein [*cf.* Zool. Rec. xxiii, *Moll.* pp. 1 & 49].
Aussee. 62 species recorded with notes; Tschapeck.
Galicia. Hyalina opinata and *H. jachnoi*, n. spp., Clessin, (1) pp. 89 & 183.
Trencsin. Clausilia dubia, Drp., several n. varr.; Brancsik (2).

2. *Circum-Mediterranean Region.*

Spain and Portugal.

Portugal. 16 new species (*Helix, Planorbis*); Silva e Castro. *Arion*, Brot, Pollonera (1).
Spain. 6 new species (*Unio, Anodonta*); Kobelt (20).
Montserrat. Pupa microdon, n. sp., Westerlund, (1) p. 104.

Gibraltar. *Pupa cylindracea*, Da Costa, and *Testacella* sp. added to fauna; PONSONBY.

Gerona. Catalogue with notes, 1 n. var.; CHIA.

France.

3 new species of *Arion*; POLLONERA (1). *Helix*, n. sp., LOCARD (5).

Berre. Remarks on fauna of brackish lagoon, with enumeration of species; MARION.

Gerbai. 4 species in a cave; RIVIÈRE.

Pyrenees. *Pupa schista*, n. sp., WESTERLUND, (1) p. 112.

Aude. *Pupa*, 2 new species, *id. l. c.* pp. 113 & 114.

Roussillon. Enumeration of *Pelecypoda* commenced; BUCQUOY, DAUTZENBERG & DOLLFUSS.

North Africa.

Five divisions based on land *Mollusca*, especially *Macularia*; KOBELT (18); also CALDERON.

Algeria. *Buliminus bonensis*, n. sp., WESTERLUND, (1) p. 32.

Oran. *Helix*, 4 new species, *Leucochroa*, n. sp., KOBELT (14).

Tunis. The results of the French exploration indicate a total of 473 species, of which 256 (including 174 *Helix*) are regarded as new; LETOURNEUX & BOURGUIGNAT.

Cyrene. *Helix cyrenaica*, n. sp., MARTENS (1).

Italy.

Addition to fauna of *Odontocyclas kockeilii*, Rossm.; POLLONERA, (3) p. 222.

Piedmont. Classification of *Geophila* on anatomical basis; *id.* (2).

Piedmont and Lombardy. *Arion*, n. sp.; *id.* (1).

Isser. *Leucochroa isserica*; KOBELT (2).

Modena. *Acme elegantissima*, n. sp.; PINI.

Vicenza. TOROSSI.*

Pisa. *Hyalinia*, 2 new species; WESTERLUND, (2) p. 2.

Corsica. Account of a trip, with a few species recorded; ROLLE.

Sardinia. *Pomatias*, 4 new species; WESTERLUND, (2) pp. 16 & 17.

Friuli. 53 species, 3 new; POLLONERA, (3) pp. 205–208.

Rome. Few species recorded, with notes; 2 new varieties; STATUTI.

Sicily. 6 species, 1 new, with notes; PLATANIA. *Hyalinia*, n. sp.; WESTERLUND, (2) p. 3.

Austria.

Croatia. List of 21 species; JURINAC.

Pola. 5 species; CLESSIN (6).

Dalmatia. 27 species, *Pomatias kleciaki*, n. sp.; BRAUN (3). 83 species (4 new); CLESSIN (5). See also BRANCSIK (1).

Turkey and Greece.

TAYLOR:

Corfu. *Digyreidum*, 4 new species; LETOURNEUX.

Crete. *Cionella maltzani*, n. sp.; WESTERLUND, (1) p. 174. 6 new species; MALTZAN (1).

Black Sea.

Crimea. *Buliminus nanus*, n. sp., WESTERLUND, (1) p. 41.
Batoum. *Clausilia* (*Euxina*) *reuleauxi*, n. sp., BÖTTGER (6).

Levant.

Syria. *Buliminus mirus*, n. sp., WESTERLUND, (1) p. 4.
Palestine. *Buliminus*, 4 new species; WESTERLUND, (1) pp. 57–64.
Asia Minor. 15 species; CLESSIN (8).

Caspian Basin.

The line which bounds the Sarmatian limestone on a level with Stavropol, north of the river Kuma, also limits the Caucasian fauna to the north and north-east; lists of species collected in the region are given; FAUSSEK.

Caspian Sea. 26 species, mostly from the collection of Von Baer, 13 new, *Caspia* and *Clessinia*, n. gg.; DYBOWSKI (4).
Baikal Sea. List of species; WESTERLUND (3).
Caucasus. *Cionella obtusata*, n. sp., *id.*, (1) p. 187.

3. *Central Asiatic Region.*

Most genera are European; the absence of *Clausilia* is remarkable: fresh-water *Mollusca* mainly those characteristic of stagnant water. Lists of species are given; MARTENS (2).
Siberia. Lists from various localities; WESTERLUND (3).
Northern Persia. Few species mentioned; no *Clausilia* found, in spite of special search; POHLIG.

4. *Chinese Region.*

China. List of *Mollusca* as complete as possible to date, with some notes and criticisms; GREDLER (1). Notes on species of *Melania*; several new varieties; BÖTTGER (2). 15 species (3 new); GREDLER (2). *Melania subcylindrica*, n. sp.; BROT (2). *Ennea*, 12 species (1 new); MÖLLENDORFF (2). *Naninidæ* enumerated, 4 new species; *id.* (3).
Basin of the Amour. 34 species (7 new); MOUSSON (1). List; WESTERLUND (3).
Hunan. 7 species (1 new); GREDLER (5).
Kiangsi. 13 species (3 new); *id. op. cit.*
Canton. *Melania biconica*, n. sp.; BROT (2).
Hongkong. 12 species (1 new); WESTERLUND (3).
Tonkin. 88 species (59 new): *Proctostoma*, *Tonkinia*, *Pseudartemon*, *Stremmatopsis*, *Dasytherion*, n. gg.; MABILLE (2). Notes on 27 species, 3 new species; DAUTZENBERG & HAMONVILLE (1). *Trochatella nozieri*, *Pterocyclus berthæ*, n. spp.; *iid.* (2). *Corbicula*, n. sp.; CLESSIN (7). See also MORLET.*

5. *Japanese Region.*

Japan. *Helix oscitans*, n. sp.; MARTENS (1). *Melania lineatula*, n. sp.; BROT (2). *Clausilia lewisi*, n. sp.; ANCEY, (1) p. 289. General discussion of Molluscan fauna; WESTERLUND (3).
Corea. 26 species (5 new); MÖLLENDORFF (1).
Liu Kiu Is. 9 new species, with remarks on variations; SMITH (10).

6. *Atlantidean Region.*

Azores. *Pisidium*, n. sp, first Pelecypod found in the islands; *Physa acuta*, Drap.; GUERNE (1). *Pisidium dalnegi*, n. sp.; *id.* (2).

II.—PALÆOTROPICAL AFRICAN ZONE.

7. *Central African Region.*

Egypt. *Amphiscopus*, n. subg.; *Buliminus ægyptiacus*, n. sp.; WESTERLUND, (1) pp. 55 & 56. *Leucochroa candidissima* and few others; REINHARDT (3): also *Helix aschersoni*, n. sp.; *id.* (4).
Abyssinia. *Melania curvicosta*, Desh.; PANTANELLI (3).
Victoria Nyanza. 4 new species; BOURGUIGNAT (2).
Shoa. 7 new species; POLLONERA (6).
Usagara and Ukami. 13 species (6 new), *Leroya*, n. g.; GRANDIDIER.
Usambara. *Lanistes sculptus*, n. sp.; MARTENS (7).
Mozambique. Few forms mentioned; ANCEY (2).
Tanganika. Sketch of Molluscan fauna; BUISSERET (1).

8. *West African Region.*

Congo. *Limicolaria tulipa*, n. sp.; JOUSSEAUME (2).
Assinie. *Estria alluaudi*, n. g. & sp.; POIRIER (2).
Cameroons Mt. 7 species (1 new); SMITH (9).
S. Thomé. 11 species, *Cyclophorus* 2 n. spp.; NOBRE (2).

9. *South African Region.*

S. W. Africa. 8 new species, with notes on a few others; MOUSSON (2).
Madagascar. *Cyclostoma eustolum*, n. sp.; CROSSE & FISCHER (1). *Urocyclus*, 2 new species; POIRIER (1).

10. *Malagasy Region.*

Madagascar is characterised (1) by the great development of the *Cyclostomatidæ*; (2) by the number of large *Helices* belonging to the groups *Ampelita* and *Helicophanta*. In general the *Mollusca* resemble those of the Indo-Malayan region rather than of the African continent; MARTENS (10).
Comoro Is. 7 new species; MORELET.

11. *Afro-Arabian Region.*

Arabia. *Buliminus*, n. sp.; WESTERLUND, (1) pp. 57–64.
Aden. *Pedipes*, 2 new species; ANCEY, (1) p. 283.

III.—PALÆOTROPICAL ORIENTAL ZONE.

12. *Indian Region.*

India. Study of the *Mollusca* continued, the genera *Diplommatina*, *Alycæus*, and *Rhaphaulus* being discussed and 13 new species described; GODWIN-AUSTEN.

Ceylon. *Corbicula*, 2 new species; CLESSIN (7). List; WESTERLUND (3).

Perak. MÖLLENDORFF (6).

13. *Indo-Chinese Region.*

Assam. *Corbicula nevilli*, n. sp.; CLESSIN (7).

Siam. *Melania*, 3 new species; BROT (2).

Mergui Archipelago. 29 species, none new; MARTENS (4).

Cochin China. *Corbicula*, 3 new species; CLESSIN (7).

Perak. 57 species, 9 new; MÖLLENDORFF (6).

Annam. *Melania*, 2 new species; BROT (1).

Singapore. 4 species; WESTERLUND (3).

Sumatra. *Melania verbecki*, Böttger; BROT (2). *Corbicula*, 2 new species; CLESSIN (7). 25 species, 3 new species (*Helicarion*, *Melania*); SCHEPMAN & SNELLEMAN. 3 species (*Helicarion*, n. sp., *Nanina*, n. sp.); SMITH (3).

Java. *Helix* (*Geotrochus*) *bantamensis*, n. sp.; SMITH (3).

Borneo. *Melania tayloriana*, n. sp.; BROT (2). 12 species, 5 new; MÖLLENDORFF (5). *Plectostoma*, n. sp.; ANCEY, (1) p. 276. *Corbicula pisidioides*, n. sp.; CLESSIN (7). 9 species (*Nanina*, n. sp., *Leptopoma*, n. sp.); SMITH (3). See also WESTERLUND (3).

15. *Philippine Region.*

Philippines. Semper's collection described, 7 new forms (for other new species *cf.* KOBELT, Zool. Rec. xxi, *Moll.* pp. 78 & 80, and *id.* (2) *op. cit.* xxiii, *Moll.* p. 14); KOBELT (4). Record of collections made, 6 new species; MÖLLENDORFF (4). *Amphidromus*, *Cyclophorus*, n. spp.; HIDALGO (1). An annotated catalogue of *Mollusca* from these islands is commenced, 12 new species included; *id.* (2).

Manila. Account of collections made, 11 new species; MÖLLENDORFF, (4) pp. 292–305.

Cebu. 109 species, 30 new; *id. op. cit.*

IV.—AUSTRALIAN ZONE.

16. *Austro-Malayan Region.*

New Guinea. Lists of species from this and adjacent islands, none new; KOBELT (9). *Nanina*, 3 new species, *Helix*, 5 new species, *Helicina*, 2 new species, &c.; SMITH (1).

Christmas I. 4 species, 1 new; SMITH (11).

Solomon Is. 68 species; GUPPY [previously recorded by Smith, *cf.* Zool. Rec. xxii, *Moll.* pp. 21 & 51]. *Helix belmorei*, var.; SMITH, (1) p. 423.

17. *Australian Region.*

Australia. *Limnæa physopsis*, n. sp., and occurrence of other sinistral species; COOKE (4).

South Australia. 3 new species; TATE (1). 4 species of *Unio*; *id.* (2) p. 101.

18. *Austro-Polynesian Region.*

New Caledonia. 4 new species: CROSSE (2).

Fiji Is. Complete account of shells, with descriptions of 13 new species; GARRETT (3).

19. *Polynesian Region.*

Pelew Is. *Melania*, 2 new species; BROT (2)

Samoa. 65 species, 32 endemic, none new; GARRETT (2).

Society Is. 139 species (17 new); *id.* (4).

Tahiti. *Opeas juncea*, Gould; PFEFFER (9).

Marquesas Is. 52 species (13 new); GARRETT (1).

20. *Neo-Zelanian Region.*

Thames Gold Fields. 52 species enumerated; ADAMS.

VI.—NEO-TROPICAL ZONE.

24. *Columbian Region.*

Galapagos Is. *Bulimus amastroides*, n. sp.; ANCEY, (1) p. 293.

Surinam. 40 species enumerated, with notes; SCHEPMAN.

New Granada. *Tatutor tatutor*, n. sp.; JOUSSEAUME (2). *Nenia stylina*, n. sp.; ANCEY, (1) p. 291.

Ecuador. List of species (13 new); COUSIN. 18 new species described; JOUSSEAUME (1).

25. *Brazilian Region.*

Notes on several species (5 new); MARTENS (1).

Amazon. *Dorysa glans*, n. sp.; BROT (2).

Upper Amazon. *Bulimus lacrimosus*, n. sp.; HEIMBURG.

26. *Mexican Region.*

Mexico. *Anisospira strebelii*, n. sp.; PFEFFER (6).

Guatemala. *Unio*, 2 new species; MARTENS (9).

27. *Caribbean Region.*

Hayti. *Helicina*, 2 new species; BÖTTGER (1).

Porto Rico. *Cyclotus portoricensis*, n. sp.; *id. op. cit.*

Dominica. *Helicina goldfussi*, n. sp.; *id. op. cit.*

VII.—NEARCTIC ZONE.

28. *Atlanto-American Region.*

Florida. Notes on 6 species of *Planorbis*; Pilsbry.

Arkansas. List of 13 species, with notes; Sampson.

Kansas. 30 forms enumerated, 1 new species; Call (3). List of species, with notes and exact localities; *id.* (4).

Missouri. *Goniobasis ozarkensis*, n. sp.; *id.* (2). *Bythinella aldrichii*, n. sp.; Call & Beecher.

Indian Territory. *Unio quintardii*, n. sp.; Cragin.

Ohio. Notes on *Unionidæ*; Sterki.

29. *Californian Region.*

West Coast. Discussion of *Pulmonata*; Cooper.

San Francisco Bay. 45 species; *id.*

30. *Canadian Region.*

Alaska and Bering I. Lists, with 6 new species; Westerlund (3).

Marine Mollusca.

Oceanic Areas.

Remarks on distribution and habits of pelagic forms; Gourret.

A few forms noted in the material collected by the surface net; Hensen, Möbius (1).

Species of *Assiminea* arranged geographically; Böttger (5).

Some deep-water *Mollusca* recorded; Folin.

North Atlantic. 9 Pteropods; Pelseneer, (1) p. 64.

North Pacific. 5 Pteropods; *id. t. c.* p. 65.

South-East Pacific. 3 Pteropods; *id. ibid.*

Antarctic Ocean. *Spongiobranchæa australis*; *id. ibid.*

1. *Arctic Province.*

Arctic Ocean and Bering Sea. 3 Chitons and 118 Gastropods (9 new species and several n. varr.); Aurivillius.

Kara Sea. List of 65 species (2 new); Collin.

Novaja Semlja. 12 species of all groups, none new; Stuxberg.

Cumberland Sound. 11 species, *Buccinum sarsii*, n. sp.; Pfeffer (1).

Arctic Norway. 96 species; Krause (1).

2. *Boreal Province.*

Northern Norway. 61 species; Krause (1).

3. *Celtic Province.*

European Seas. List of species, with short diagnosis; Kobelt (3).

British Isles. *Scalaria pseudoscalaris*, Brocchi, new to fauna; J. T. Marshall. List of species; Jefferys (1).

Tarbert, Loch Fyne. Notes on *Lamellaria perspicua, Pleurobranchus plumula, Xylophaga dorsalis* ; SCOTT (2).

St. Andrews. Occurrence of 2 Pteropods (*Clione borealis* and *Spirialis retroversus*) ; M'INTOSH (1).

Dorsetshire. See CUNDALL.

Cornwall. 12 species ; COCKERELL, T. D. A. (2)

Penzance. See CORNISH.

Kerry. Few species recorded ; COCKERELL, T. D. A. (5).

Heligoland. About 25 species enumerated ; PFEFFER (2).

France. *Buccinidæ* monographically treated by LOCARD (3).

Northern France. *Natica*, 5 species, *Velutina*, 2 species ; GIARD (1).

4. *Lusitanian Province.*

Channel Is. Lists, with localities, given by KŒHLER (1, 2).

Bay of Biscay. *Pleurophyllidia lineata* (Otto), *Eledone octopodia* (Pennant), and *Chenopus pes-carbonis* ; DURÈGNE (1, 2). *Astarte sulcata*, Da Costa ; MONACO.

Ille-et-Villaine. 154 species, *Raphitoma rowisiana*, n. ; DAUTZENBERG (1).

Portugal. *Ommatostrephes caroli*, n. sp. ; FURTADO.

Guadiana. Notes on oysters ; MARTENS (5).

Mediterranean. Notes on few species ; GREGORIO. *Mytilus lamarckianus*, n. sp. ; CLESSIN (2).

Roussillon. Catalogue of *Pelecypoda*, commenced with the genus *Ostrea* ; BUCQUOY, DAUTZENBERG, & DOLLFUSS.

Luc. SÉNÉCHAL.

Gerbai. 2 species in cave ; RIVIÈRE.

Cannes. List of shells observed ; DAUTZENBERG (2).

Orbetello. 18 species from brackish water ; PANTANELLI (2).

Corsica. List of forms collected and dredged ; ROLLE.

Madeira. *Nassa watsoni*, n. sp.; KOBELT, (1) p. 151, pl. xxvi, figs. 5 & 6.

Canary Is. 8 species ; HOYLE (1).

5. *Aralo-Caspian Province.*

Caspian Sea. Few species recorded ; POHLIG.

6. *West-African Province.*

West Africa. 70 species (none new) ; NOBRE (1). 109 species (none new) ; HOYLE (1).

S. Thomé. 43 species (none new) ; NOBRE (2).

Congo Mouth. *Assiminea hessei* n. sp. ; BÖTTGER, (5) p. 180.

C. Verde Is. 20 species ; HOYLE (1).

7. *South African Province.*

Mauritius. *Scalenostoma lubricum*, n. sp. ; FISCHER (4).

8. *Indo-Pacific Province.*

Arabia. *Conus milesi*, n. sp. ; SMITH (8).

Suez Canal. 18 species have entered from the Red Sea, 8 from the Mediterranean ; KOBELT (15). 27 species with notes ; MARTENS (6).

Mozambique. *Nerita incurca*, n. sp. ; *id.* (3).

Sind. Few forms mentioned ; MURRAY. *Inter alia*, *Sepia vulgaris* [*sic*].

Râmêswaram. List of 70 species ; THURSTON.

Nicobar Is. *Mytilus plicatus*, n. sp. ; CLESSIN (2).

Chagos Archipelago. *Argonauta böttgeri*, Maltzan ; SMITH (5).

Christmas I. 12 species (1 new) ; *id.* (11).

Mergui Archipelago. 368 species (2 new), 40 from brackish water ; 3 Cephalopods ; MARTENS (4).

Philippines. *Argonauta böttgeri*, Maltzan ; SMITH (5). *Mytilus* and *Modiola*, n. spp. ; CLESSIN (2).

Manila. *Assiminea philippinica*, n. sp. ; BÖTTGER, (5) p. 195.

Amboina. 14 *Cephalopoda*, including several specimens of *Nautilus pompilius* and *Octopus*, 6 new species, with notes ; BROCK (2). *Pecten amaliæ*, n. sp. ; KOBELT (7, 7A).

China Sea. *Argonauta böttgeri*, Maltzan ; SMITH (5). 10 species *Rissoina*, 2 new species ; BÖTTGER (3).

Macao. *Assiminea mœllendorffi*, n. sp. ; *id.* (5) p. 190.

Hongkong. *Assiminea schmackeri* and *A. subeffusa*, n. sp. ; *id. t. c.* pp. 201 & 205.

Torres Strait. *Melania supralirata*, n. sp. ; SMITH (7).

Fiji. *Pecten*, 3 new species ; KOBELT (14).

New Caledonia. *Scalenostoma mariei*, n. sp. ; FISCHER (4).

9. *Australo-Zealand Province.*

Australasian Seas. 4 Pteropods ; PELSENEER, (1) p. 65. *Argonauta böttgeri*, Maltzan ; SMITH (5). *Pecten loxeoides*, Sowb. ; KOBELT (17). *Mytilus* and *Modiola*, n. spp. ; CLESSIN (2).

New South Wales. *Octopus robustus*, n. sp. ; BROCK (1).

Port Jackson. *Conus sydneyensis*, n. sp. ; SOWERBY (2).

South Australia. 21 new species ; TATE (1). Revision of *Pelecypoda*, 166 species recorded ; *id.* (2). *Trochus*, 12 species, with notes and synonymies ; BRAZIER.

Victoria. List of species ; GATLIFF.

Port Phillip. List given by WILSON.

Tasmania. *Assiminea sienæ*, n. sp. ; BÖTTGER, (5) p. 202.

New Zealand, Cape Campbell. *Architeuthis kirkii*, n. sp. ; ROBSON.

Auckland. 241 species ; CHEESEMAN.

10. *Japanese Province.*

Japan. 13 species *Rissoina* ; BÖTTGER (3). *Admete cancellata*, n. sp. ; KOBELT (6, 10).

Liu Kiu Islands. *Volutharpa perryi*, new so far south ; SMITH (4). *Rissoina*, 5 species ; BÖTTGER (3).

12. *Californian Province.*

California. *Solen rosaceus*, Carpenter ; CLESSIN (4).

13. *Panamic Province.*

Panama. *Purpura patula* occurs without variation on both sides of the isthmus ; COOKE (1).

Mexico. *Modiola subfuscata*, Sowerby ; CLESSIN (2).

14. *Peruvian Province.*

Chile. *Mytilus patagonicus*, d'Orb. ; CLESSIN (2).

15. *Antarctic Province.*

South Georgia. 46 species in 27 genera ; 9 purely antarctic, 18 also arctic or subarctic ; many new species, new genera, *Pellilitorina*, *Laevilitorina*, *Skenella*, *Streptocionella*, *Philippiella* ; MARTENS & PFEFFER.

Lemaire Strait. *Photinula ringei*, n. sp. ; PFEFFER (4).

17. *Caribbean Province.*

Brazil. *Mytilus platensis*, d'Orb. ; CLESSIN (2).

West Indies. *Mytilus orbignyianus*, n. sp. ; *id. op. cit.*

Domingo. *Modiola domingensis*, n. sp. ; *id. op. cit.*

18. *Transatlantic Province.*

Florida. Lists of many new fossil and some recent forms ; HEILPRIN (2). *Aplysia willcoxi*, n. sp. ; *id. op. cit.* & (3).

Beaufort, N.C. List of species observed, with notes on habits and occurrence ; OSBORN (1).

PALÆONTOLOGY.

The miocene European land Molluscan fauna is so similar to that at present existing in the Antilles and North America that one is driven to imagine a direct communication to have taken place between them ; the migration of *Mollusca* has been from east to west ; KOBELT (12, 16, 19).

Relations of living and fossil *Pulmonata* of West America treated, and deductions drawn from them ; COOPER.

Forty subfossil forms collected at Surinam are identical with West Indian forms, except a *Pecten* (*P. sowerbyi* vel *P. schrammi*?) ; SCHEPMANN.

Few Arctic forms near Greenock ; MACFADZEAN.

One or two northern and Alpine forms from Moravia ; RZEHAK, Verh. Ver. Brünn. xxv, p. 35.

Variation in glacial and present times of *Pupa parcedentata* ; SANDBERGER (1).

Partula, 3 species in miocene of Florida; genus now confined to Polynesia: HEILPRIN (2).

Some recent forms found fossil; RAEYMAEKERS & DE LOË. See also MUNTHE; FOLIN.

Murex fusulus, recent as well as fossil; KOBELT (8).

See also BELLARDI, FONTANNES, SACCO.

HISTORICAL CHANGES.

Further remarks on indigenous character of *Littorina litorea*; GANONG.

Planorbis dilatatus probably introduced into Lancashire with American cotton; ROGERS; see also BATES.

Notes on introduced forms in Sutherland; BAILLIE.

Migration into Suez Canal; MARTENS (6), KOBELT (15)

List of 5 species imported into Chile; PHILIPPI.

Helix nemoralis, transported from Lourdes to Canada, has been found to breed freely; Nat. Canad. xvi, p. 79.

Limnæa humilis suddenly appeared by hundreds in small artificial pond in California; West American Scientist°; also Garner, i, p. 90.

Sudden appearance of large numbers of *Syndosmya alba* at Dunkirk; MOUSSAYE.

Pecten glaber, L., and *Modiola adriatica*, Lmk., recently extinct in the neighbourhood of Berre; MARION.

USE BY MAN.

Oysters and Mussels. Oyster fisheries in Orkney and Shetland; YOUNG. In Scotland; WATT. In United States; RYDER; BLACKFORD; RAVENEL, with details of temperature of water. In Tasmania; KENT.

The difficulties which seem to render the profitable culture of oysters in the North Sea almost hopeless, are set forth by MÖBIUS (3).

35,000,000 oysters were exported from France during the first eight months of 1887; Nature, xxxvii, p. 139.

716,000 kilos. (about 700 tons) of *Mytilus galloprovincialis* dredged annually at Berre; MARION.

Mussels as diet; MÖBIUS (2). Poisoning by mussels; ANON (5).

Pearl Fisheries. List of Molluscs which produce pearls, with notes on various fisheries and statistics; WEBER.

Pearl fisheries of Tahiti and Tuamotu; BOUCHON-BRANDELY. Particulars regarding Vogtland pearl fishery in 1886; Nachr. mal. Ges. xix. p. 151. Australian pearl fisheries; GRIFFIN.

Large pearl, weighing 3·85 gram., found in Australia; Melbourne Argus,† Sep. 8, 1887; La Nature, xv (2) p. 367.

Popular accounts of pearls and of their capture are given by STREETER and by FRÉDÉ. Suggestion for pearl culture; HAZAY.

Shell Money. Particulars regarding its use in New Britain and Admiralty Archipelago, given by PARKINSON. See also DANKS. Remarks on shell-money in Africa; MANN. See also INGERSOLL and ANON. (2)

Cassis tuberosa, *C. cornuta*, and *Strombus gigas* are the shells most frequently used for cameos; for particulars regarding the trade, see ANON. (3).

Tridacna eaten by Solomon islanders, p. 91; bivalve shell used for epilation, p. 118; shells in dress, p. 131; conchs used as instruments, p. 143; canoes decorated by inlaying, p. 146; GUPPY.

Necklaces made of *Lithoglyphus rufofilosus*; Bull. Soc. Anthrop. Bruxelles, v. p. 117, 1886.

Use of Molluscs for various purposes in ancient times; LOCARD (4).

Meleagrina margaritifera, which must have been obtained from the Red Sea, found in prehistoric dwellings, Upper Italy; CASTELFRANCO.

Mode of *Octopus*-catching in Hawaii; BECKLEY.

Ostrea virginiana, *Mya arenaria*, *Venus mercenaria*, *Mytilus edulis*, and *Pecten irradians* have been analysed, with respect to their nutritive value, by ATWATER.

Successful experiments with boroglyceride as a means of preserving mussels for bait; MCINTOSH (2).

CEPHALOPODA.

DIBRANCHIATA.

OCTOPODA.

ARGONAUTIDÆ.

Argonauta böttgeri, Maltzan, described and figured, hab. Australia and Indo-Chinese regions; SMITH (5).

OCTOPODIDÆ.

Octopus robustus, n. sp., New South Wales, BROCK, (1) p. 317. *O. elegans*, p. 597, *O. amboinensis*, p. 598, *O. machikii*, p. 599, *O. fusiformis*, p. 601, pl. xvi, figs. 1 & 2, *O. inconspicuus*, p. 603, pl. xvi, fig. 4, *O. pulcher*, p. 607, n. spp., Amboina, *id.* (2).

Pteroctopus, Fischer, maintained; STEENSTRUP (2).

DECAPODA.

MYOPSIDA.

SEPIOLINI.

Euprymna, n. g., for *Inioteuthis morsei*, Verrill, and *I. bursa* (Pfeffer); STEENSTRUP (1).

Semirossia, n. g., for *Rossia tenera* (Verrill) and *R. patagonica* Verb. Smith; *id. op. cit.*

Sepiola: 5 species distinguished in Mediterranean and North Sea; *S. petersii* and *S. scandica*, n. spp.; *id. op. cit.*

SEPIARII.

Sepioloidea is related to *Sepiadarium*, not to *Sepiola*; *id.* (2).

ŒGOPSIDA.

OMMASTREPHINI.

Architeuthis kirkii, n. sp., New Zealand, ROBSON.
Ommatostrephes caroli, n. sp., Portugal, FURTADO.

CRANCHIÆFORMES.

Cranchia reinhardtii, descriptive remarks on various specimens; BROCK (1).

TETRABRANCHIATA.

NAUTILIDÆ.

Nautilus pompilius: capture of some dozen examples, at Amboina; BROCK, (2) p. 593.

PTEROPODA.

GYMNOSOMATA.

In a work which amounts practically to a monograph of this group, the distinctions between it and the *Thecosomata* are stated: five families are recognised, *Clionopsidæ*, for the single genus *Clionopsis*, being added. *Dexiobranchæa* is regarded as the most primitive genus, and *Halopsyche* as the most modified; an account of their supposed phylogenetic origin is given; PELSENEER (1).

Clionopsis modesta, n. sp., N. Pacific, *id. t. c.* p. 37, pl. iii, fig. 2.

Dexiobranchæa minuta, n. sp., N. Pacific, *id. t. c.* p. 16, pl. i, fig. 2.

Notobranchæa inopinata, n. sp., off Japan, *id. t. c.* p. 40, pl. iii, figs. 5 & 6.

Pneumonoderma boasi, n. sp., *P. violaceum*, Boas (*pars*), *P. souleyeti*, n. sp., N. Pacific; *id. t. c.* pp. 30 & 31, pl. ii, figs. 3 & 6.

GASTROPODA.

PULMONATA.

STYLOMMATOPHORA.

GEOPHILA.

AGNATHA.

TESTACELLIDÆ.

Ennea bulimiformis, n. sp., Equatorial Africa, GRANDIDIER, p. 188. *E. hungerfordiana*, n. sp., Perak, MÖLLENDORFF, (6) p. 301. *E. phanero-*

don, n. sp., Comoro Is., MORELET, p. 288, pl. ix, fig. 8. *E.* (*Diaphora*) *tuba*, *E.* (*D.*) *quadrasi*, n. spp., Cebu, MÖLLENDORFF, (4) pp. 257 & 259, pls. vii, figs. 14 & 15, & viii, fig. 1. *E.* (*Huttonella*) *sericina*, n. sp., Philippines, *id. t. c.* p. 96, pl. iv, fig. 6. Chinese species enumerated, with table of characters; *E.* (*Microstrophia*) *micropleuris*, n. sp., [illegible], *id.* (2) p. 28.

Gibbus (*Edentulina*) *johnstoni*, n. sp., Cameroons Mt.; SMITH (9).

Guestieria, account of the genus and of the two known species; CROSSE (1). *G. locardi*, *G. martinida*, n. spp., Ecuador, JOUSSEAUME, (1) pp. 175 & 176, pl. iii, figs. 13 & 19.

Pseudartemon, n. g.: shell thin, vitreous, with opaque white variciform thickenings; umbilicus large and deep; mouth not dentate; peristome scarcely thickened; for *P. bourguignati*, n. sp., Tonkin; MABILLE, (2) p. 125, pl. iv, figs. 4–6.

Stremmatopsis, n. g., near *Ennea*, with irregular whorls, inflected upwards, the last compressed; mouth vertical, oval, its outer margin forming a channel; for *S. poirieri*, n. sp., Tonkin; *id. t. c.* p. 131, pl. i, figs. 15 & 16.

Streptaxis diespiter, pl. iii, figs. 7 & 8, *S. anceyi*, *S. fagoti*, pl. iv, figs. 7 & 8, n. spp., Tonkin, *id. t. c.* pp. 127–130.

S. pupilla, n. sp., Comoro Is., MORELET, p. 283, pl. ix, fig. 2.

GNATHOPHORA.

LIMACIDÆ.

Agriolimax valentianus, Férussac, described and figured; POLLONERA (4), with synopsis of European species of the genus. Three additional species, with synopsis of European *Limacidæ*; *id.* (5).

Ammonoceras cyclina, n. sp., Ecuador; COUSIN, p. 245, pl. iv, fig. 6. *A. lyzarzaburui*, n. sp., Ecuador; JOUSSEAUME, (1) p. 174, pl. iii, fig. 17.

Ariophanta broti, n. sp., Tonkin; DAUTZENBERG & HAMONVILLE, (1) p. 214, pl. viii, fig. 1.

Conulus? *coreanus*, n. sp., Corea; MÖLLENDORFF, (1) p. 10, pl. ii, fig. 1.

Estria, n. g., near *Aspidelus*, but with a well-developed spiral nucleus; for *E. alluaudi*, n. sp., Assinie; POIRIER (2).

Euplecta cebuensis, *E. confusa*, n. spp., Cebu; MÖLLENDORFF, (4) pp. 262 & 263, pls. vii, fig. 16, & viii, fig. 2.

Helicarion bocki, n. sp., Sumatra; SMITH (3). *H. maleficus*, n. sp., Tonkin; MABILLE, (2) p. 74, pl. i, figs. 10–12. *H. ragazii*, n. sp., Shoa; POLLONERA (6). *H. sumatrensis*, n. sp., Sumatra; SCHEPMAN & SNELLEMAN, p. 6, pls. i, fig. 1, & ii, fig. 2.

Hyalina: *Helix balmei*, Shuttlew., referred here; TRYON, (2) p. 30. *Hyalinia* (*Conulus*) *alveolus*, n. sp., in amber, on Prussian coast; criticisms on species described by Klebs; SANDBERGER (2). *H. beauforti*, n. sp., Dalmatia; CLESSIN, (5) p. 50. *H. mülleri*, n. sp., Crete; MALTZAN, (1) p. 117. *H. cossonii*, n. sp., Tunis; LETOURNEUX & BOURGUIGN[illegible] verh. *H.* (*Euhyalinia*) *arctispira*, *H.* (*E.*) *obtusa*, n. spp., Japan; WESTERL[illegible] (3) p. 193, pl. ii, fig. 4. *H.* (*Polita*) *riggii*, Adami, n. sp., Sicily; *H.* (*P.*) *oropensis*, West., 1886, = *H. polygyra*, Pollonera, 1885; *id.* (2) p. 3.

H. (*Vitrea*) *appelii* and *H.* (*V.*) *pisana*, n. spp., Pisa; *id. t. c.* p. 2. *H.* (*V.*) *opinata*, Ulieny, n. sp., Galicia; CLESSIN, (1) p. 89, fig. 29. *H.* (*V.*) *minura*, n. sp., Japan; WESTERLUND, (3) p. 194, pl. iii, fig. 6.

Macrochlaxys angulata, n. sp., Bougao; MÖLLENDORFF, (5) p. 289.

Microcystis hunancola, n. sp., Hunan; *id.* (3) p. 42, pl. iii, fig. 4. *M. semiglobulus*, n. sp., Manila; *id.* (4) p. 304. *M. alba*, *M. crystallina*, *M. gemmula*, *M. globulus*, n. spp., Cebu; *id. t. c.* pp. 265–267, pl. viii, figs. 3–6. *M. stearnsiana*, n. sp., Fiji; GARRETT, (3) p. 171. *M. subcenosa*, Ancey, *M. lenta*, *M. pura*, *M. contigua*, n. spp., Marquesas Is.; *id.* (1) pp. 4–8. *M. angustivoluta*, *M. scalpta*, n. spp., Society Is.; *id.*, (4) pp. 20 & 21, pl. ii, figs. 34 & 30.

Naninidæ: after some criticisms of Tryon, the Chinese forms are enumerated in their subdivisions; several forms figured, and one or two described as new; MÖLLENDORFF (3).

Nanina vernacula, *N. excepta*, *N. infima*, *N. despecta*, pl. i, figs. 13 & 14, *N. zero*, n. spp., Tonkin; MABILLE, (2) pp. 75–81. *N. quadrasi*, n. sp., Philippines; HIDALGO, (2) p. 53, pl. iii, fig. 4. *N. hoodjongensis*, *N. rumphii*, var., Sumatra, *N. subconsul*, Borneo, n. spp.; SMITH (3). *N. hunsteini*, p. 416, pl. xv, fig. 6, *N. fraudulenta*, p. 417, *N. cairni*, *ibid.*, pl. xv, fig. 5, *N. exilis*, juv., p. 418, pl. xv, fig. 13, n. spp., New Guinea; *id.* (1). *N. cesacaensis*, n. sp., Fiji; GARRETT, (3) p. 169.

Sitala hainanensis, n. sp., Hainan I.; MÖLLENDORFF, (3) p. 46, pl. iii, fig. 5. *S. philippinarum*, n. sp., Cebu; *id.*, (4) p. 268, pl. viii, fig. 7.

Trochonanina subconula, *T. gummea*, n. spp., Marquesas Is.; GARRETT, (1) pp. 13 & 14. *T. subrugosa*, *T. tahitensis*, n. spp., Society Is.; *id.*, (4) pp. 22 & 23, pl. ii, figs. 38 & 39.

Urocyclus: characters and anatomy of genus, and 6 species given; *U. acuminatus*, p. 200, and *U. madagascariensis*, p. 201, n. spp., Madagascar; POIRIER (1).

Vitrina hiemalis, Koch, = *V. pellucida*, Müller, var.; *V. alpestris*, Cless., and *V. charpentieri*, Am-Stein, = *V. nivalis*, Charpentier; CLESSIN, (1) pp. 57 & 61.

Zonites mooreana, n. sp., Society Is.; GARRETT, (4) p. 23, pl. ii, fig. 28. *Z. schmeltziana*, n. sp., Fiji; *id.*, (3) p. 173.

HELICIDÆ.

TRYON (2) commences the systematic treatment of this family with the genus *Helix*.

Arion. Simroth's division into *Monatriidæ* and *Diatriidæ* is condemned as illusory; author proposes four groups, represented by *A. rufus*, *A. subfuscus*, *A. hortensis*, and *A. bourguignati*; POLLONERA, (1) p. 291. *A. da-silvæ*, n. sp., Portugal; *id. t. c.* p. 293, figs. 8–10 & 20. *A. brevièrei*, n. sp., France; *id. t. c.* p. 294, figs. 28 & 36. *A. bavayi*, n. sp., [illegible]; *id. t. c.* p. 299, fig. 15. *A. alpinus*, n. sp., Piedmont and Lom[illegible]; *id. t. c.* p. 305, figs. 25 & 26. *A. nilssoni*, n. sp., Sweden; *id. t. c.* p. 306, figs. 31 & 34. *A. celticus*, n. sp., France; *id. t. c.* p. 306, figs. 11, 22, 33, & 37.

Bulimus punicus, p. 105, *B. berthieri*, p. 106, n. spp., Tunis; LETOUR-

NEUX & BOURGUIGNAT. *B. humbloti*, n. sp., Comoro Is.; MORELET, p. 284, pl. ix, fig. 9. *B. lacrimosus*, n. sp., Upper Amazon; HEIMBURG. *B.* (*Dryptus*) *stübeli*, n. sp., New Grenada; MARTENS, (1) p. 172, pl. xxxii, figs. 5–7. *Bulimus*, sp., Böttger (Ber. Senck. Ges., 1886), is *Helix* (*Dorcasia*) *globulus*, Müll.; PFEFFER (7).

Cochlostyla crossei, p. 141, pl. v, fig. 4, *C. vidali*, p. 162, pl. vii, fig. 2, *C. villari*, p. 166, pl. vi, fig. 3, *C. naujanica* (= *C. brachyodon*, Mörch, *pars*), p. 171, *C. möllendorffi*, p. 187, pl. vii, fig. 3, n. spp., Philippines; HIDALGO (2). *C. barandæ*, n. n., = *Bulimus aegle*, Pfr. (*nec* Brod.), p. 153, *C. bustoi*, n. n., = *Bulimus bullula*, Rv. (*nec* Brod.), *C. marinduquensis*, n. n., = *Bulimus woodianus*, Auct. (*nec* Lea), p. 157; *id. t. c.*

Fruticicola, Held., has as synonyms *Hygromia*, Risso, *Bradybæna*, Beck, and *Hygromanes* (Fér.), Gray; TRYON, (2) p. 167. *F. scioana*, *F. strigelloides*, n. spp., Shoa; POLLONERA (6).

Geotrochus phonicus, n. sp., Tonkin; MABILLE, (2) p. 94, pl. ii, figs. 8 & 9.

Helix. TRYON (2) in his systematic review of this genus proposes to arrange the species in "Groups," and to subdivide these into "Sections." The following are treated in the present volume:—I. *Sayda* (secc. 1, *Sayda*; 2, *Hyalosagda*). II. *Leucochroa* (secc. 1, *Leucochroa*; 2, *Mima*). III. *Patula* (secc. 1, *Discus*, with subsecc. *Punctum*, *Planogyra*, *Goniodiscus*, *Amphidoxa*, *Macrocycloides*, *Trichodiscus*, *Thysanophora*, *Pyramidula*, and *Acanthinula* [= *Zoogenetes*]; 2, *Anguispira*; 3, *Endodonta*, with subsec. *Laoma*; 4, *Libera*; 5, *Trochomorpha*, with subsecc. *Nigritella*, *Videna*, *Thysanota*, *Pararhytida*, and *Pœcilozonites*; 6, *Microphysa*, with subsec. *Pelia*; 7, *Pella*). IV. *Macrocyclis* (sec. *Glyptostoma*). V. *Anchistoma* (secc. 1, *Gonostoma*, with subsecc. *Drepanostoma*, *Trigonostoma*, and *Caracolina*; 2, *Polygyra*, with subsecc. *Polygyratia*, *Polygyra*, *Polygyrella*, *Dædalochila*, and *Sculptaria*; 3, *Strobila*; 4, *Stenotrema*; 5, *Triodopsis*, with subsecc. *Triodopsis*, *Isognomonostoma*, *Xolotrema*, and *Metodontia*; 6, *Mesodon*, with subsecc. *Mesodon* and *Ulostoma*; 7, *Atopa*, with subsecc. *Atopa* and *Plectopylis*). VI. *Vallonia*. VII. *Helicella* (secc. 1, *Fruticicola*, with subsecc. *Petasia*, *Trochiscus*, *Trichia*, *Zenobia*, *Monachia*, *Carthusiana*, *Nummulina*, *Eulota*, *Dorcasia*, *Satsuma*, *Hispidella*, and *Ciliella*; 2, *Xerophila*, with subsecc. *Euparypha*, *Heliomanes*, *Helicella*, and *Jacosta*). *Helix balmei*, Pot. et Mich., = *H. flavescens*, Parr., *H. striolata*, Phil., *H. teresæ*, Benoit, and *H. flavida*, Zgl., but not *H. balmei*, Pfr. & Shuttlew., which is a *Hyalina*; *id. t. c.* p. 30. *Helix cespitoides*, Fischer, is referred to *H. cooperi*; *id. t. c.* p. 56, following Ancey; CROSSE objects, J. de Conch. xxvii, p. 211.

Helix. Hispid species; TYE.

Palæarctic Species.

Helix pisana is subdivided into 24 species; LETOURNEUX & BOURGUIGNAT, pp. 79–81. *H. hortensis* and *H. nemoralis* are not specifically distinct; BEAUMONT. *H. lapicida*, keelless variety; BROCKMEIER (2). *H. beaudoini*, p. 165, *H. duesmensis*, p. 168, *H. latiscensis*, p. 172, *H. sarinica*, Bour-

guignat, p. 174, *H. ægila*, p. 178, *H. papalis*, p. 181, n. spp., France ; LOCARD (5). *H. nevesiana*, p. 232, *H. conimbricensis*, p. 235, *H. platylasia*, p. 236, *H. rosai*, p. 237, *H. aporina*, p. 237, *H. henriquesi*, p. 245, *H. bussacona*, p. 246, *H. gallæciana*, p. 247, *H. microstigmæa*, p. 248, *H. spermatia*, p. 249, n. spp., Portugal ; SILVA E CASTRO. *H. æconria*, p. 7, *H. cheffiana*, p. 8, *H. acorta*, p. 9, *H. glischra*, *H. persordida*, p. 10, *H. rypa*, *H. zaritosi*, Berthier, p. 11, *H. tauchoniana*, p. 12, *H. cælestis*, p. 13, *H. barrattei*, *H. slougina*, *H. artara*, p. 14, *H. burella*, *H. khangetina*, p. 15, *H. boudriesa*, *H. zitanica*, p. 16, *H. lotophagorum*, *H. meninxica*, p. 17, *H. mesembrica*, *H. ammederana*, p. 18, *H. haidrana*, *H. birta*, p. 19, *H. fratisiana*, *H. tafermica*, p. 20, *H. mezessaria*, *H. axiotheata*, p. 21, *H. eucalla*, Hagenmüller, p. 22, *H. bradybæna*, *H. terricola*, *H. galeomma*, p. 23, *H. æglia*, *H. argoderma*, p. 24, *H. briaræa*, *H. aggarica*, *H. eucoræa*, p. 25, *H. amicula*, *H. amphibola*, p. 26, *H. ambloza*, *H. anasia*, *H. goniogyra*, p. 27, *H. concholeuca*, *H. vivida*, Hagenmüller, p. 28, *H. dexia*, *H. neftana*, p. 29, *H. psammathæa*, p. 30, *H. psammacella*, p. 31, *H. crisia*, p. 32, *H. istera*, *H. mehediana*, p. 33, *H. incolumnis*, p. 34, *H. lecouffei*, *H. irrita*, Berthier, p. 35, *H. rozetopsis*, p. 36, *H. hola*, *H. diloricata*, p. 37, *H. rafella*, *H. halia*, p. 38, *H. salivosa*, p. 39, *H. menzelensis*, *H. membronica*, Berthier, p. 40, *H. artomilla*, Hagenmüller, *H. astonara*, Hagenmüller, p. 41, *H. noctuella*, *H. pleurabdota*, p. 42, *H. cacista*, *H. vaganensis*, Hagenmüller, p. 43, *H. syntela*, *H. perlutosa*, Hagenmüller, *H. parthenia*, Hagenmüller, p. 44, *H. isæa*, Hagenmüller, *H. irana*, Hagenmüller, p. 45, *H. taria*, p. 46, *H. privata*, Galland, *H. salentina*, Blanc, *H. zeryuana*, Hagenmüller, p. 47, *H. messapia*, *H. krizensis*, p. 48, *H. tremata*, p. 49, *H. fera*, *H. casertana*, p. 50, *H. tacapica*, *H. tabarkana*, p. 51, *H. una*, *H. tebourbana*, p. 52, *H. therella*, *H. thera*, p. 53, *H. ferianica*, *H. creta*, p. 54, *H. anephela*, *H. pediana*, p. 55, *H. pedianopsis*, Hagenmüller, *H. certa*, p. 56, *H. caudefacta*, *H. leucophora*, p. 57, *H. ingenua*, *H. acela*, p. 58, *H. monerea*, *H. chioidea*, *H. phœbeia*, p. 59, *H. spilmenti*, *H. catarota*, p. 60, *H. catarotella*, *H. cana*, p. 61, *H. leucestha*, p. 62, *H. latastei*, *H. latasteopsis*, p. 63, *H. æstuosa*, *H. etæma*, p. 64, *H. amome*, *H. panurga*, p. 65, *H. euphorcella*, Pechaud, p. 66, *H. esnorca*, *H. meticulosa*, p. 67, *H. hadrumetorum*, p. 68, *H. urbarana*, Pechaud, *H. eucana*, Hagenmüller, p. 69, *H. microspila*, *H. maxalana*, p. 70, *H. mayeti*, *H. valeryana*, p. 71, *H. cumona*, *H. pachestha*, p. 72, *H. charmesiana*, *H. billottiana*, p. 73, *H. entara*, *H. cucestella*, p. 74, *H. occonella*, p. 75, *H. stercolena*, *H. adisana*, p. 76, *H. blossara*, *H. elithia*, *H. arbana*, p. 77, *H. ionostoma*, *H. ianthinostoma*, p. 78, *H. amethysta*, p. 79, *H. byrsæ*, Marès, p. 81, *H. chambardi*, *H. donatii*, Berthier, p. 82, *H. pisanella*, Servain, *H. levesquei*, Berthier, p. 83, *H. salemensis*, *H. gergisensis*, *H. subpisana*, p. 84, *H. dermoi*, Servain, *H. radesiana*, Marès, p. 85, *H. carpiensis*, *H. hamadanica*, *H. djerbanica*, p. 86, *H. zitanensis*, p. 87, *H. enica*, p. 88, *H. idia*, *H. sageti*, p. 89, *H. chola*, Pechaud, *H. tineiformis*, p. 90, *H. tissotiana*, p. 91, *H. zengitana*, *H. callistoderma*, p. 92, *H. [illegible]fidana*, *H. morini*, p. 93, *H. conicala*, p. 94, *H. newskopsis*, p. 95, *H. [illegible]mis*, *H. tisemsinica*, p. 96, *H. zitoumica*, *H. madana*, *H. capuana*, p. 97, *H. galactina*, *H. dyrrachiensis*, p. 98, *H. ceneriana*, *H. anombra*, p. 99, *H. spaella*, *H. spaellina*, p. 100, *H. mactanica*, *H. kelibiana*, p. 101, *H. bellucciana*, p. 103, described as new, Tunis; LETOURNEUX & BOURGUIGNAT.

H. sitiensis, n. sp., Crete; MALTZAN, (1) p. 118. *H. oscitans*, n. sp., Japan; MARTENS, (1) p. 180, pl. xxxiii, figs. 1–3. *H. cyrenaica*, n. sp., Cyrene; *id. t. c.* p. 187, pl. xxxi, figs. 4–7.

H. plectotropis, Martens, varr.; ANCEY (3).

H. (*Ægista*) *gottschei*, n. sp., Korea; MÖLLENDORFF, (1) p. 14, pl. ii, fig. 3.

H. (*Camæna*?) *græseri*, n. sp., Amour Basin; MOUSSON, (1) p. 17, pl. i, fig. 4.

H. (*Campylæa*) *hazayana*, n. sp., North Hungary; CLESSIN, (1) p. 151, fig. 65.

H. (*Carthusiana*) *daphnica*, n. sp. & var. *flavida*, n., Madonie; PLATANIA, p. 83.

H. (*Cryptomphalus*) *cincto-inflata*, n. sp., Amour Basin; MOUSSON, (1) p. 15, pl. i, fig. 3.

H. (*Fruticicola*) *eumenes*, n. sp., Japan; WESTERLUND, (3) p. 197, pl. iii, fig. 8.

H. (*Macularia*) *arichensis*, *H.* (*M.*) *pseudembia*, *H.* (*M.*) *lobethana*, *H.* (*M.*) *bailloni*, n. spp., Oran; KOBELT (14).

H. (*Patula*) *lepta*, n. sp., Japan; WESTERLUND, (3) p. 195, pl. iii, fig. 7.

H. (*Satsuma*) *gradata*, n. sp., Korea; MÖLLENDORFF, (1) p. 13.

H. (*Trichia*) *kusmici*, n. sp., Dalmatia; CLESSIN, (5) p. 51. *H.* (*T.*) *dieckmanni*, n. sp., Amour Basin; MOUSSON, (1) p. 13, pl. i, fig. 2.

H. (*Xerophila*) *jachnoi*, n. sp., = *H. instabilis*, Ziegler in Rossm., Galicia; CLESSIN, (1) p. 183. *H.* (*X.*) *oertzeni*, *H.* (*X.*) *hierapetrana*, n. spp., Crete; MALTZAN, (1) pp. 117 & 118.

Palæotropical African species:—

Helix aschersoni, n. sp., Egypt; REINHARDT (4). *H. miliaris*, n. sp., Comoro Is.; MORELET, p. 282, pl. ix, fig. 1.

H. (*Cochlicella*) *opposita*, n. sp., Upingtonia, S. Africa; MOUSSON, (2) p. 293, pl. xii, fig. 2.

Palæotropical Oriental Species:—

Helix holotoma, *H. mucronata*, n. spp., Cebu; MÖLLENDORFF, (4) pp. 275 & 276, pl. viii, figs. 12 & 13. *H. hahni*, pl. iv, figs. 9 & 10, *H. bathmophora*, pl. ii, figs. 6 & 7, *H. miara*, pl. i, figs. 6 & 7, *H. jaculata*, pl. i, figs. 8 & 9, *H. mercatorina*, pl. ii, figs. 10 & 11, *H. onestera*, pl. ii, figs. 4 & 5, *H. chytrophora*, *H. struposa*, *H. tenellula*, n. spp., Tonkin; MABILLE, (2) pp. 82–93. *H. gabriellæ*, *H. morleti*, n. spp., Tonkin; DAUTZENBERG & HAMONVILLE, (1) pp. 216 & 217, pl. viii, figs. 2 & 3.

H. (*Acarus*) *coraliolabris*, n. sp., New Guinea; SMITH, (1) p. 419, pl. xv, fig. 4. *H.* (*A.*) *latiaxis*, E. A. Sm., figured, with notes; *id. t. c.* p. 420, pl. xv, fig. 7.

H. (*Camæna*) *lagunæ*, n. spp., Philippines; HIDALGO, (2) p. 108, pl. iv, fig. 5.

H. (*Corasia*) *eydouxi*, n. n., = *H. valenciennesi*, Pfr. (*nec* Eydoux & Souleyet); *id. t. c.* p. 115. *H.* (*C.*) *irosinensis*, n. sp., Philippines; *id. t. c.* p. 119, pl. iv, fig. 6.

H. (*Geotrochus*) *bantamensis*, n. sp., Java ; Smith (3). *H.* (*G.*) *lacteolata*, n. sp., New Guinea ; *id.* (1) p. 420, pl. xv, fig. 9.

H. (*Obba*) *bustoi*, *H.* (*O.*) *saranganica*, n. spp., Philippines; Hidalgo, (2) pp. 100 & 191, pl. ii, figs. 3 & 4.

H. (*Papuina*) *roseolabiata*, *H.* (*P.*) *albocarinata*, *H.* (*P.*) *rollsiana*, n. spp., New Guinea ; Smith, (1) pp. 421, 422, & 425, pl. xv, figs. 2, 12, & 3. *H.* (*P.*) *tayloriana*, Ad. & Rv., figured, with notes ; *id. t. c.* p. 421, pl. xv, fig. 1.

H. (*Plectotropis*) *squamulifera*, n. sp., Bongao ; Möllendorff,(5) p. 290.

H. (*Satsuma*) *trochus*, *H.* (*S.*) *microtrochus*, n. spp., Cebu ; *id.* (4) pp. 274 & 275, pl. viii, figs. 10 & 11.

H. (*Stenogyra*) *didyma*, n. sp., Singapore ; Westerlund, (3) p. 197, pl. iii, fig. 9.

H. (*Trachia*) *malayana*, n. sp., Perak ; Möllendorff, (6) p. 303.

Australian and Polynesian species :—

H. reteporoides, p. 62, pl. v, fig. 14, *H. tomsetti*, p. 63, pl. v, fig. 13, n. spp., S. Australia ; Tate (1).

H. (*Sphærospira*) *rehsei*, Martens: *H. gerrardi*, Smith, referred to this; Smith, (1) p. 418.

H. (*Trochomorpha*) *belmorei*, Cox, n. var., Solomon Is. ; Smith, (1) p. 423, pl. xv, fig. 8.

Neotropical species :—

H. (*Isomeria*) *scalena*, n. sp., New Grenada; Martens, (1) p. 170, pl. xxxi, figs. 1–3.

Isomeria aloagana, *I. mauritii*, n. spp., Ecuador ; Jousseaume, (1) pp. 179 & 180, pl. iii, figs. 6 & 7.

Kaliella stenopleuris, *K. luzonica*, n. spp., Manila ; Möllendorff, (4) pp. 304 & 305. *K. trochospira*, *K. ? costigera*, n. spp., Hainan I. ; *id.* (3) pp. 44 & 50, pl. iii, fig. 7.

Leucochroa saharica, n. sp., Oran ; Kobelt (14). *L. isserica*, n. sp., Isser, *id.* (2) p. 33, pl. lxxix, figs. 429–432.

Libera gregaria, *L. recedens*, n. spp., Society Is. ; Garrett, (4) p. 36, pl. ii, figs. 6 & 7.

Martinella martinella, n. sp., Ecuador ; Jousseaume, (1) p. 173, pl. iii, fig. 14.

Neopetræus, n. subg. : jaws as in *Otostomus*, but the flattened margins not so distinctly overlapping ; for *O. convexus*, *O. sachsei*, and *O. lobbi* ; Martens, (1) p. 194.

Otostomus millegranus, n. sp., Peru ; *id. t. c.* p. 177, pl. xxxii, figs. 1–4.

Patula lamellicosta, n. sp., Society Is. ; Garrett, (4) p. 30, pl. ii, fig. 11. *P. irregularis*, Mousson, n. sp., Fiji ; *id.* (3) p. 179. *P. costulata*, n. sp., Korea ; Möllendorff, (1) p. 11, pl. ii, fig. 2.

Pitys woapoensis, *P. octolamellata*, *P. marquesana*, *P. anceyana*, n. spp., [illegible]sas Is. ; Garrett, (1) pp. 17–19. *P. consobrina*, *P. subtilis*, *P.* [illegible]*tiperforata*, *P. borabórensis*, n. spp., Society Is. ; *id.* (4) pp. 31 & 32, pl. ii, figs. 17, 15, 16, & 18.

Plectopylis jovia, *P. phylaria*, pl. ii, figs. 1–3, n. spp., Tonkin ; Mabille,

(2) pp. 99 & 100. *P. polyptychia*, *P. trochospira*, n. spp., Cebu ; Möllendorff, (4) pp. 272 & 273, pl. viii, figs. 8 & 9.

Proctostoma, n. g., near *Polygyra*, for *Helix eastlakeana*, Möllendf., *H. trisinuata*, v. Mrts., and *P. loxotatum*, n. sp., Tonkin; Mabille, (2) pp. 102–104, pl. i, figs. 1–3.

Solaropsis cousini, n. sp., Ecuador ; Jousseaume, (1) p. 177.

Tatutor, n. g., for *Bulimus melanocheilus*, Nyst, *B. thompsoni*, Pfr., and *T. tatutor*, n. sp., New Granada ; Jousseaume (2).

Thapsia leroyi, n. sp., Equatorial Africa ; Grandidier, p. 185. Pfeffer (8) reminds Morelet of his contributions to the anatomy of this genus.

Triodopsis, review of the genus ; *T. cragini*, n. sp., Kansas; Call, (3) p. 202, fig. 5.

Trochomorpha subtricolor, *T. tonkinorum*, pl. iii, figs. 1–3, n. spp., Tonkin ; Mabille, (2) pp. 96 & 97. *T. sibuyanica*, *T. loocensis*, n. spp., Philippines ; Hidalgo, (2) pp. 96 & 97, pl. iv, figs. 3 & 4. *T. themis*, n. n., = *T. ludersi*, Mousson (*nec* Pfeffer), *T. kantavuensis*, n. sp., Fiji ; Garrett, (3) p. 177. *T. assimilis*, n. sp., Society Is. ; *id.*, (4) p. 27, pl. iii, fig. 44.

Vallonia, Risso, has as synonyms : *Zurama*, Leach, *Amplexus*, Brown, *Chilostoma*, Fitz. (*p.p.*), *Glaphyra*, Albers, and *Lucina*, Moq.-Tand. ; Tryon, (2) p. 166.

Vega, n. g., for *V. nordenskiöldi*, n. sp., Ceylon ; Westerlund, (3) pp. 189 & 190, pl. ii, fig. 1.

Orthalicidæ.

Hemibulimus, n. subg. for *Liguus* (*H.*) *excisus*, n. sp., Columbia ; Martens, (1) p. 173, pl. xxxv, figs. 1, 2, 4, & 5.

Porphyrobaphe augusti, n. sp., Ecuador ; Jousseaume, (1) p. 165, pl. iii, fig. 10.

Bulimulidæ.

Amphidromus quadrasi, n. sp., Philippines ; Hidalgo (1).

Bulimulus and *Otostomus* discussed, with lists of known species ; Martens (1). *B. amastroides*, n. sp., Galapagos Is. ; Ancey, (1) p. 293.

Mesembrinus vesperus, n. sp., Ecuador ; Jousseaume, (1) p. 168, pl. iii, fig. 2.

Placostylus vitiensis, n. sp., Fiji ; Garrett, (3) p. 184.

Rhabdotus cousini, n. sp., Ecuador ; Jousseaume, (1) p. 167, pl. iii, fig. 18.

Thaumastus juana, *T. alausiensis*, n. spp., Ecuador ; Cousin, p. 228, pl. iv, figs. 10 & 13.

Cylindrellidæ.

Anisospira strebeli, n. sp., Mexico ; Pfeffer (6).

Pupidæ.

Amphiscopus, n. subg. of *Buliminus*, for *B. arabicus*, Dohrn, &c. ; *B.* (*A.*) *ægyptiacus*, n. sp., Egypt ; Westerlund, (1) pp. 55 & 56.

Buliminus antinorii, n. sp., Shoa, Pollonera (6).

B. (*Chondrulus*) *nanus*, Ret., n. sp., Crimea ; WESTERLUND, (1) p. 41. *B.* (*C.*) *oribatha*, n. sp., = *B.* (*C.*) *scapus*, var., Ret., Crimea; *id. t. c.* p. 54.

B. (*Leucochiloides*) *minusculus*, n. sp., Ku-Ganab, S. Africa ; MOUSSON, (2) p. 235, pl. xii, fig. 5.

B. (*Napæus*) *bonensis*, n. sp., Bona, Algiers ; WESTERLUND, (1) p. 32.

B. (*Petræus*) *marsabensis*, Marsaba, Palestine, *B.* (*P.*) *neortius*, Dead Sea, *B.* (*P.*) *mixtus*, Antioch, *B.* (*P.*) *eryx*, Arabia, n. spp. ; WESTERLUND, (1) pp. 57–64.

B. (*Zebrinus*) *mirus*, n. sp., Syria ; *id.*, (1) p. 4.

Clausilia bonneti, p. 111, *C. philora*, p. 112, *C. cossoni*, p. 113, n. spp., Tunis ; LETOURNEUX & BOURGUIGNAT. *C. lewisi*, n. sp., Japan ; ANCEY (1) p. 289. *C. ruminiformis*, *C. polydona*, *C. duella*, *C. lypra*, *C. theristica*, *C. ophthalmophana* [*ophthalmorica* on p. 164], pl. iii, figs. 4 & 5, n. spp., Tonkin ; MABILLE, (2) pp. 112–119.

C. (*Euphædusa*) *gottschei*, n. sp., Korea ; MÖLLENDORFF, (1) p. 19, pl. ii, fig. 4.

C. (*Euxina*) *reuleauxi*, n. sp., Batoum ; BÖTTGER (6).

C. (*Hemiphædusa*) *protrita*, Kiangsi, *C.* (*H.*) *lyra*, Hunan, figured, n. spp. ; GREDLER, (5) pp. 168 & 169.

C. (*Siciliaria*) *benoiti*, n. n. for *C. proxima*, Benoit ; PLATANIA, p. 86.

Copina, n. n., subg. of *Pupa*, for *Sphyradium*, Hartm. (*nec* Charp.) ; WESTERLUND, (1) p. 87.

Hypselostoma rochebruni, n. sp., Tonkin ; MABILLE, (2) p. 121.

Isthmia doumeti, n. sp., Tunis ; LETOURNEUX & BOURGUIGNAT, p. 110.

Nenia orientalis, *N. horrida*, n. spp., Tonkin ; MABILLE, (2) pp. 108 & 109, pl. iii, figs. 9 & 10. *N. perezi*, *N. reyrei*, n. spp., Ecuador ; JOUSSEAUME, (1) pp. 171 & 172, pl. iii, figs. 11 & 9. *N. stylina*, n. sp., New Grenada ; ANCEY, (1) p. 291.

Odontocyclas, Schlüter, preferred to *Scopelophila*, Albers ; POLLONERA, (3) p. 222.

Omphaloconus, n. subg. of *Baliminus*, for *B. euryomphalus*, Let. ; WESTERLUND, (1) p. 22.

Pupa punica, p. 107, *P. barattei*, p. 108, n. spp., Tunis ; LETOURNEUX & BOURGUIGNAT.

P. (*Alæa*) *daliaca*, n. spp., Sweden ; WESTERLUND, (1) p. 130. *P.* (*A.*) *isarica*, n. n., = *Vertigo leontina*, Cless. (*nec* Gredler) ; *id. t. c.* p. 134.

P. (*Orcula*) *brancsikii*, n. sp., Upper Hungary ; CLESSIN, (1) p. 236, fig. 139. This form = *P. dolium*, var. *kimakowiczi* ; BRANCSIK (3).

P. (*Sphyradium*) *parreyssii*, n. varr. ; CLESSIN, (1) pp. 247 & 248.

P. (*Torquilla*) *avenacea*, n. varr. ; *id. t. c.* p. 229. *P.* (*T.*) *microdon*, Montserrat, p. 104, *P.* (*T.*) *schista*, Pyrenees, p. 112, *P.* (*T.*) *leptospira*, p. 113, *P.* (*T.*) *attenuata*, Fagot, Aude, France, p. 114, n. spp. ; WESTERLUND (1). *P.* (*T.*) *limonensis*, n. n., = *P. mortilleti*, Bttg. (*nec* Stab.), Piedmont ; *id. t. c.* p. 118.

P. (*Vertigo*) *clevei*, n. sp., Sweden ; *id. t. c.* p. 142. *P.* (*V.*) *denudata*, [illegible], Amour basin ; MOUSSON, (1) p. 19, pl. i, fig. 6.

Sandahlia, n. subg. of *Pupa*, = *Pupilla*, Beck (*pars*), for *P. cylindrica*, Mich. ; WESTERLUND, (1) p. 92.

Sphyradium : Italian species revised, with notes and key ; POLLONERA, (3) pp. 209–222.

Tonkinia, n. g., near *Hypselostoma*, but recalling *Strophostoma* in its form and the position of its mouth ; for *T. mirabilis*, n. sp., Tonkin ; MABILLE, (2) p. 123, pl. i, figs. 4 & 5.

Vertigo latasteana, n. sp., Tunis; LETOURNEUX & BOURGUIGNAT, p. 109.

Zootecus, n. subg. of *Buliminus*, for *B. insularis*, Ehrbg., &c. ; WESTERLUND, (1) p. 75.

Zospeum isselianum, n. sp., Friuli ; POLLONERA, (3) p. 205, pl. vi, fig. 13.

STENOGYRIDÆ.

Achatina schinziana, n. sp., Ondonga, S. Africa ; MOUSSON, (2) p. 294, pl. xii, fig. 3.

Cæcilianella to be attributed to Bourguignat, not to Férussac ; FAGOT, BERTHIER.

Calaxis, n. g., allied to *Ferussacia* ; columella provided inferiorly with a strong lamella, obstructing the base of the mouth ; for *C. hierosolymarum*, *C. rothi*, &c., Bgt. ; LETOURNEUX & BOURGUIGNAT, p. 115.

Cionella (*Cæcilianella*) *obtusata*, n. sp., Caucasus ; WESTERLUND, (1) p. 181.

C. (*Hohenwarthia*) *maltzani*, Clessin, n. sp., Crete ; *id. t. c.* p. 174.

Ferussacia splendens, p. 117, *F. obesa*, *F. lamellata*, p. 118, *F. littoralis*, *F. nymopharum*, p. 119, *F. hagenmülleri*, *F. montana*, p. 120, *F. stenostoma*, p. 121, *F. gibbosa*, *F. punica*, *F. polyodon*, p. 122, *F. maresi*, *F. doumeti*, p. 123, *F. barattei*, p. 124, *F. lallemanti*, *F. berthieri*, p. 125, *F. cossoni*, p. 126, n. spp., Tunis ; LETOURNEUX & BOURGUIGNAT.

Hohenwarthia tunetana, p. 126, *H. pechaudi*, *H. hagenmülleri*, n. spp., Tunis ; *iid.*, p. 127.

Homorus ragazii, n. sp., Shoa ; POLLONERA (6).

Leptinaria valenzuela, n. sp , Ecuador ; JOUSSEAUME, (1) p. 170, pl. iii, fig. 4.

Limicolaria tulipa, n. sp., Congo ; *id.* (2).

Obeliscus jousseaumei, n. sp., Ecuador ; COUSIN, p. 238, pl. iv, fig. 1.

Opeas hedeius, *O. fagoti*, n. spp., Tonkin ; MABILLE, (2) pp. 105 & 106.

Phylacus, n. subg. of *Cionella*, for *C. splendens*, Bgt., &c. ; WESTERLUND, (1) p. 158.

Stenogyra vulgaris, *S. ornata*, n. spp., Comoro Is. ; MORELET, pp. 286 & 287, pl. ix, figs. 4 & 6.

S. (*Subulina*) *vitrea*, n. sp., Ku-Ganab, S. Africa ; MOUSSON, (2) p. 296, pl. xii, fig. 6.

Subulina chiarinii, n. sp., Shoa ; POLLONERA (6). *S. servaini*, n. sp., Tonkin ; MABILLE, (2) p. 104, pl. iv, fig. 13.

Tornatellina peaseana, n. sp., Society Is. ; GARRETT, (4) p. 83, pl. ii, fig. 19.

SUCCINEIDÆ.

Neritostoma martini, n. sp., Ecuador ; JOUSSEAUME, (1) p. 169, pl. fig. 12. *N. marianita*, n. sp., Ecuador ; COUSIN, p. 236, pl. iv, fig. 5.

Succinea putris, var. *vitrea*, Jeffr., regarded as a distinct species, and

figured; COCKERELL, T. D. A. (1). *S. pfefferi*, Rossm. (= *S. ovalis*, Gld.), note on; *id. ibid.* *S. insularis*, n. sp., Amour basin; MOUSSON, (1) p. 20, pl. i, fig. 5. *S. arborea*, n. sp., Kalaruri, S. Africa; *id.* (2) p. 297, pl. xii, fig. 7. *S. solidula*, n. sp., Christmas I.; SMITH (11). *S. marquesana*, n. sp., Marquesas Is.; GARRETT, (1) p. 37. *S. chrysis*, *S. annexa*, n. spp., Alaska; WESTERLUND, (3) pp. 198 & 199, pl. iii, figs. 10 & 11.

VAGINULIDÆ.

Vaginulus stuxbergii, *V. reticulatus*, n. spp., Borneo; WESTERLUND, (3) pp. 191 & 192, pl. ii, fig. 2.

Veronicella marianita, n. sp., Ecuador; COUSIN, p. 190, pl. iv, fig. 14.

BASOMMATOPHORA.

GEHYDROPHILA.

AURICULIDÆ.

Alexia enhalia, p. 129, *A. cossoni*, *A. terrestris*, p. 130, *A. globulus*, *A. letourneuxi*, p. 131, *A. pechaudi*, p. 132, n. spp., Tunis; LETOURNEUX & BOURGUIGNAT.

Cassidula labio, n. sp., Cebu; MÖLLENDORFF, (4) p. 2, pl. viii, fig. 14.

Melampus consanguineus, *M. crebristriatus*, *M. rusticus*, *M. incisus*, n. spp., Fiji; GARRETT, (3) pp. 287 & 289.

Pedipes deschampsi, *P. leoniæ*, n. spp., Aden; ANCEY, (1) pp. 283 & 286.

HYGROPHILA.

LIMNÆIDÆ.

Limnæa mongazonæ, p. 241, *L. precia*, p. 244, n. spp., France; SERVAIN. *L. discreta*, pl. iii, fig. 6, *L. hagenmülleri*, n. spp., Tonkin; MABILLE, (2) pp. 133 & 134. *L. debaizei*, n. sp., Victoria Nyanza; BOURGUIGNAT, (2) p. 268. *L. physopsis*, n. sp., River Darling, Australia; COOKE, (4) p. 243, pl. ii, figs. 1–4: *Physa hainesii*, Tryon, and *P. newcombi*, Ad. and Ang., probably belong to same genus; *id. op. cit.* *L. nitidella*, n. sp., Ecuador; MARTENS, (1) p. 178, pl. xxxv, figs. 16 & 17. *L. cousini*, *L. raphaelis*, n. spp., Ecuador; JOUSSEAUME, (1) pp. 182 & 183, pl. iii, figs. 8 & 1. *L. onychia*, Japan, *L. scalaris*, Alaska, n. spp.; WESTERLUND, (3) pp. 200 & 201, pls. iii, fig. 12, & iv, fig. 13.

Planorbis carinatus var. *alba*, n.; HUDSON. *P. gallicus*, n. sp. (undescribed), France; SERVAIN, p. 249. *P. castroi*, *P. lepidophorus*, p. 241, *P. renei*, p. 242, *P. lusitanus*, *P. carvalhoi*, p. 243, *P. rosai*, p. 244, n. spp., Portugal; SILVA E CASTRO. *P. vorticinus*, n. sp., Hunan; GREDLER, (2) [illegible] pl. xi, figs. 32 & 33. *P. cecchii*, n. sp., Shoa; POLLONERA (6). *P.* [illegible]*anus*, n. sp., New Caledonia; CROSSE (2). *P. clerei*, Jousseaume. *P. equatorius*, *P. canonicus*, n. spp., Ecuador; COUSIN, pp. 263 & 264, pl. iv, figs. 9, 8, & 11.

P. (*Gyraulus*) *illibatus*, *P.* (*G.*) *hiemantium*, Japan, *P.* (*G.*) *demissus*, *P.* (*G.*) *associatus*, *P.* (*G.*) *liratus*, Ceylon, n. spp.; Westerlund, (3) pp. 202–206, pl. iv, figs. 14–18.

P. (*Hippeutis*) *versicolor*, n. sp., Ceylon; *id. t. c.* p. 206, pl. iv, fig. 19.

P. (*Segmentina*) *mica*, Japan, *P.* (*S.*) *spirodelus*, Ceylon, n. spp.; *id. t. c.* pp. 207–209, pls. iv, fig. 20, & v, fig. 21.

Segmentina australiensis, notes on; Smith (7).

Zagrabica brusiniana, n. sp., Caspian Sea; Dybowski, (4) p. 52, pl. ii, fig. 7.

Physidæ.

Aplecta gualbertoi, n. sp., Ecuador; Cousin, p. 261, pl. iv, fig. 3. *A. carolita*, n. sp., Ecuador; Jousseaume, (1) p. 184, pl. iii, fig. 5.

Physa hainesii, Tryon, and *P. newcombi*, Ad. & Ang., probably *Limnæa*; Cooke (4). *P. alixiana*, n. sp., France; Servain, p. 247. *P. parietalis*, n. sp., Ondonga, S. Africa; Mousson, (2) p. 298, pl. xii, fig. 8.

Physopsis leroyi, n. sp., Equatorial Africa; Grandidier, p. 189.

OPISTHOBRANCHIATA.

NUDIBRANCHIATA.

KLADOHEPATICA.

Æolidiadæ.

Abranchus glaucoleucus, v. Hass., is probably a marine Planarian; Bergh, (2) p. 311.

Æolis schraderi, *Æ. antarctica*, *Æ. georgiana*, n. spp., South Georgia; Martens & Pfeffer, pp. 110–112, pl. iii, figs. 7–9.

Eolidia leuconotus, v. Hass., insufficiently characterised; Bergh, (2) p. 306.

Phyllidiidæ.

Phyllidia verrucosa and *P. nigra*, v. Hass., referred to *Phyllidiella*, and figured, with notes on anatomy; Bergh, (2) pp. 313 & 319–322, pl. vi, figs. 7 & 6.

Tritoniadæ.

Tritonia antarctica, n. sp., South Georgia; Martens & Pfeffer, p. 112, pl. iii, fig. 6. *T. psoloides*, n. sp., Arctic Sea; Aurivillius, pp. 373 & 381, pl. xiii, fig. 20.

Pleuroleuridæ.

Pleuroleura, Bgh, = (and is preferred to) *Dermatobranchus*, v. Ben. *P. striata*, v. Hass., *P. pustulosa*, v. Hass., *P. gonatophora*, v. Hass., figured, with notes on anatomy; Bergh, (2) pp. 311–313 & 314–319, pl. vi, figs. 1–4.

TETHYIDÆ.

Living specimen of *Tethys fimbriata* ; SCHULZE.

HOLOHEPATICA

DORIDIDÆ.

Asteronotus bertrana, Bgh., = *A. cespitosa*, v. Hass.; BERGH, (2) p. 307.

Chromodoris striatella, Bgh., = *C. lineolata*, v. Hass., and *C. funerea*, Collingw. ; *id. t. c.* p. 308.

Doris javanica, v. Hass., indeterminable ; *D. radiata*, perhaps, = *Doriopsis* ; *id. t. c.* p. 307.

D. (Adalaria) sibirica, n. sp., Arctic Sea ; AURIVILLIUS, pp. 372 & 380, pl. xiii, fig. 19.

Miamira nobilis, Bgh., = *M. sinuata*, v. Hass. ; BERGH, (2) p. 309.

TECTIBRANCHIATA.

TORNATINIDÆ.

[illegible] antarcticus, n. sp., South Georgia ; MARTENS & PFEFFER, p. [illegible], pl. iii, fig. 5.

PHILINIDÆ.

Philine polaris, n. sp., Arctic Sea ; AURIVILLIUS, pp. 371 & 380, pls. xii, figs. 21, 22, & xiii, fig. 18.

APLYSIIDÆ.

Aplysia willcoxi, n. sp., Florida ; HEILPRIN, (2, 3) p. 130, pl. xix.

PROSOBRANCHIATA.

PECTINIBRANCHIATA.

TOXOGLOSSA.

CONIDÆ.

Bela : monograph completed ; 50 species recorded, none new ; KOBELT (5).

Conus : a second supplement to the monograph is issued, bringing the number of species up to 534 ; *C. sydneyensis*, n. sp., Port Jackson, p. 260, [illegible] SOWERBY (2). *C. milesi*, n. sp., Muscat, Arabia, *C. eburneus*, [illegible] variety ; SMITH (8).

Mangelia antarctica, n. sp., South Georgia ; MARTENS & PFEFFER, p. 74, pl. i, fig. 5.

Pleurotoma: monograph completed, 276 species admitted, none new; KOBELT (5). *P. beringi*, n. sp., Arctic Sea; AURIVILLIUS, pp. 354 & 377, pl. xiii, fig. 3.

Raphitoma powisiana, Récl., MS., described; DAUTZENBERG (1).

CANCELLARIIDÆ.

Admete: monograph of genus, 19 species recognised; KOBELT (6). *A. cancellata*, n. sp., Japan; *id. t. c.* p. 105, pl. xxiv, fig. 14, and (10). 21 species enumerated in a catalogue; *id.* (11).

Bivetia, n. g., for *B. cancellata* (L.); JOUSSEAUME, (3) p. 193. *B. mariei*, n. sp., hab ?; *id.* (4).

Bivetopsia, n. g., for *B. chrysostoma*; *id.*, (3) p. 193.

Bonellitia, n. g., for *B. bonelli* (Brocchi); *id. t. c.* p. 223.

Brocchinia, n. g., for *B. mitraformis* (Brocchi); *id. t. c.* p. 222.

Calcarata, n. g., for *C. calcarata* (Brocchi); *id. t. c.* p. 214.

Cancellaria: monograph completed, 100 species recognised, none new; LÖBBECKE (1). 95 species are enumerated in a catalogue of the genus; *id.* (2).

Gulia, n. g., for *G. acutangula* (Faujas); JOUSSEAUME, (3) p. 194.

Narona hidalgoi, n. sp., hab ?; *id.* (4).

Nevia, n. g., for *N. excavata* (Sow.); *id.*, (3) p. 222.

Ovilia, n. g., for *O. cumingiana* (Petit); *id. t. c.* p. 194.

Scalptia, n. g., for *S. articularis* (Sow.); *id. t. c.* p. 213.

Solatia, n. g., for *S. solat* (Adams); *id. t. c.* p. 222.

Sveltia, n. g., for *S. varicosa* (Brocchi); *id. t. c.* p. 214.

Tribia, n. g., for *T. angasi* (Crosse); *id. t. c.* p. 221.

Uxia, n. g., for *U. angulata* (Wat.); *id. t. c.* p. 222.

Ventrilia, n. g., for *V. bullata* (Sow.); *id. t. c.* p. 194. *V. ventrilia*, n. sp., hab ?; *id.* (4) p. 164.

RHACHIGLOSSA.

VOLUTIDÆ.

Guivillea alabastrina, Watson, referred to *Voluta*; SOWERBY, (2), p. 304.

Voluta: second supplement to monograph issued, bringing the number of species up to 102; *id. t. c.* *Voluta provocator*, n. n., = *Provocator pulcher*, Watson; *id. t. c.* p. 305.

MITRIDÆ.

Mitra pellucida, n. sp., S. Australia; TATE (1) p. 63, pl. iv, fig. 13.

FASCIOLARIIDÆ.

Fusus pricei, n. n., = *F. corpulentus*, Smith (*nec* Conrad, ...erh. SMITH (7). *F. decipiens*, n. sp., Arctic Sea; AURIVILLIUS, pp. 356 & 377, pl. xiii, figs. 4, 5, & 13.

F.(Euthria)conulus, n. sp., Arctic Sea; *id. t.c.* pp. 354 & 377, pl. xiii, fig. 6. *F. (Sipho) turritus*, *F. (S.) olivaceus*, n. spp., Arctic Sea; *id. t. c.* pp. 365, 366, 379, & 380, pl. xiii, fig. 10.

TURBINELLIDÆ.

Liostomia (?) *georgiana*, n. sp., S. Georgia; MARTENS & PFEFFER, p. 98, pl. ii, fig. 9.

Tudicula, 3 species distinguished; SMITH (2).

BUCCINIDÆ.

LOCARD (3) here includes the genera *Neritula*, *Sphæronassa*, *Nassa*, *Amycla*, and *Buccinum*.

Buccinum, 5 French species described; *B. atractodeum*, p. 119, *B. monterosatoi*, p. 121, fig. 15; LOCARD (3). *B. tenebrosum* & *B. hydrophanum*, Hancock, and *B. hancocki*, Mörch, annotated and figured; PFEFFER, (1) pp. 26–40, figs. 2 & 4–6. *B. sarsii*, n. sp., Cumberland Sound; *id. t. c.* p. 40, fig. 3. *B. boasii*, n. sp., Kara Sea; COLLIN, p. 464, pl. xl, fig. 6. *B. angulosum*, Gray, var. *lævis*, n. and other varr., Arctic Sea; AURIVILLIUS, p. 336.

perryi: animal described; operculum present, but only diameter; SMITH (4).

NASSIDÆ.

Amycla: 4 French species described; LOCARD, (3) pp. 103–111.

Nassa: 32 French species described; *N. sarcaini*, p. 41, fig. 2, *N. rochebrunei*, p. 43, fig. 3, *N. bourguignati*, p. 49, fig. 6, *N. poirieri*, p. 52, fig. 7, *N. cutacta*, p. 78, fig. 11, *N. mabillei*, p. 83, *N. bucquoyi*, p. 93, n. spp.; several others figured; LOCARD (3). *N. watsoni*, n. sp., Madeira; KOBELT, (1) p. 151, pl. xxvi, figs. 5 & 6.

Neritula: 3 French species admitted by LOCARD (3).

Sphæronassa, Locard, not accepted by KOBELT, (1) p. 121.

MURICIDÆ.

Concholepas of Sarasin is a *Capulus* of the subg. *Thyca*; PFEFFER (5). *C. peruvianus*, position of operculum; COOKE (3), *vide* p. 33, *antea*.

Cuma, which should be quoted as of Swainson not Humphrey, contains only the one species, *C. tectum* (Chem.); the distinctive generic character is a strong ridge on the columella, the extremity of which forms a "strong angular tooth;" COOKE (2). HOYLE (2) points out that *Cuma*, as instituted by Swains., is preoccupied among *Crustacea*.

on cinguliferus, n. sp., S. Georgia; MARTENS & PFEFFER, pl. i, fig. 2. *T. fusulus* (Brocchi); *Murex fusulus*, so placed on basis of a drawing of the radula by Gwatkin; KOBELT, (8) p. 165, pl. xxviii, figs. 23–25.

TÆNIOGLOSSA.

CASSIDIDÆ.

Cassis semigranosa (Lmk.), synonymy ; BRAZIER.

CYPRÆIDÆ.

Siphocypræa, n. subg. *Cypræa*, with a deep comma-shaped sulcus, occupying the apical portion of the shell, for *C.* (*S.*) *problematica*, n. sp., Florida, tertiary ; HEILPRIN, (2), p. 86, fig. 12.

STROMBIDÆ.

Wagneria, n. g. : columellar lip so developed as to envelope a large part of the shell duplicating the outer wall and labrum ; a dome built over the spire through an apparent conjunction of both folds of the mantle ; for *W. pugnax*, n. sp., Florida, miocene ; HEILPRIN, (2) p. 105, fig. 36 [Nom. præocc.]

CERITHIIDÆ.

TRYON, (1) pp. 112–121, here includes the genera *Cerithium* (n[illegible]s subgg.), *Fastigiella*, *Bittium*, *Potamides* (numerous subgg.), ? *Sandbe[illegible]a*, *Diastoma*, *Mesostoma*, ? *Excelissa*, ? *Pterostoma*, *Cerithiopsis* (several subgg.), *Ceritella*, *Eustoma*, and *Triforis* (several subgg.).

Bittium lacteum and *B. reticulatum*, numerous synonyms ; *id. t. c.* p. 150. *B. amblyterum*, Wats., includes *B. gracile*, Jeffr., and *B. mammillanum*, Wats. ; *id. t. c.* p. 151. *B. pigrum*, Wats., thought to include *B. luscinia*, *B. philomela*, and *B. œdonicum*, Wats ; *id. t. c.* p. 153.

Ceratoptilus, n. g., for *Cerithium lave*, Q. and G., with an account of its anatomy ; BOUVIER (3).

Cerithidea tonkiniana, n. sp., Tonkin ; MABILLE, (2) p. 158.

Cerithiopsis punctatum, Linn., = *C. emersonii*, C. B. Ad. ; TRYON, (1) p. 170.

Cerithium vulgatum includes numerous varieties and so called species ; *id. t. c.* p. 125. *C. eburneum*, numerous synonyms ; *id. t. c.* p. 129. *C. manitum* is of Sowb., not Phil., and hab. Philippines and Fiji, not Mediterranean ; *id. ibid.* *C. brazieri*, n. sp., Australia ; *id. t. c.* p. 142, pl. xxvi, fig. 16. *C. georgianum*, n. sp., S. Georgia ; MARTENS & PFEFFER, p. 97, pl. ii, fig. 7.

C. (*Potamides*) *mönachus*, Cr. & F., synonymy ; BRAZIER.

Potamides fluviatilis, Pot. & Mich., several synonyms ; TRYON, (1) p. 159. *P.* (*Lampanella*) *minimus*, Gmel, numerous synonyms ; *id.* p. 167.

Pyrazisinus, n. subg. of *Potamides*, but with non-canaliculate aperture ; for *P. campanulatus*, n. sp., Florida, miocene ; HEILPRIN, (2) p. 115, fig. 59.

PLANAXIDÆ.

TRYON, (1) p. 237–239, divides this family as follows: subfam. *Planaxinæ*, including genus *Planaxis* (subgg. *Quadrasia*, *Quoyia*, *Hqleostoma*), and subfam. *Litiopinæ*, with genus *Litiopa* (subgg. *Alaba*, *Diala*, *Styliferina*); this is followed by the family *Giraudidæ* (with a ?), containing the genera *Giraudia* and *Reymondia*.

Planaxis lineatus, Da Costa, numerous synonyms; *id. t. c.* p. 278: var. *labiosa*, A. Ad., includes *P. striatula*, Phil., *P. vestitus*, Dkr., *P. plumbeus*, Pease, *P. pediculus*, Krauss, and *P. bronni*, Dkr.; *id. t. c.* p. 279.

TRICHOTROPIDÆ.

TRYON, (1) pp. 40–42, includes here the genera *Trichotropis* (subgg. *Alora*, *Gyrotropsis*), *Separatista*, *Torellia*, and *Seguenzia*.

Trichotropis solida, n. sp., Arctic Sea; AURIVILLIUS, pp. 328 & 375, pl. xii, fig. 16.

MELANIIDÆ.

Dorysea glans, n. sp., Amazon; BROT, (2) p. 88, pl. v, fig. 2.

Melania: review of the generic names applied to various sections of the group; FISCHER (2). Notes on some Chinese forms, with several n. varr.; BÖTTGER (2). *M. dunkeri*, Heimb., described and figured; HEIMBURG. *M. brauniana*, *M. diminuta*, n. spp., Hunan; GREDLER, (2) pp. 287 & 288, pl. xi, figs. 29–31. *M. hamonvillei*, Tonkin, *M. beaumetzi*, Bay of Touranne, n. spp.; BROT (1). *M. subplicata*, *M. snellemanni*, n. spp., Sumatra, SCHEPMAN & SNELLEMAN, pp. 14 & 15, pls i, figs. 2–6, & iii, figs. 8 & 9. *M. verbecki*, Böttger, Sumatra, p. 90, pl. vi, fig. 9, *M. siamensis*, p. 90, pl. vii, fig. 3, Siam, *M. cylindrus*, p. 92, pl. vi, fig. 7, = *M. frethii*, Brot (*nec* Grey, *nec* Hanley), Siam, *M. biconica*, p. 100, pl. vi, fig. 4, Canton, *M. citrinoides*, p. 101, pl. v, fig. 4, Siam, *M. subcylindrica*, p. 102, pl. vi, fig. 2, China, *M. tayloriana*, p. 104, pl. vii, fig. 2, Borneo, *M. liratula*, p. 105, pl. vi, fig. 5, Japan, *M. godeffroyana*, p. 106, pl. v, fig. 8, *M. kubaryi*, Mousson, p. 107, pl. vii, fig. 5, Pelew Is., n. spp.; BROT (2). *M. supralirata*, n. sp., Torres Strait, N. Australia; SMITH (7). *M. curvicosta*, Desh., from Abyssinia; PANTANELLI (3). Several n. varr. from Japan and Ceylon; WESTERLUND, (3) pp. 213–215.

Melanopsis fallax, n. n. for *M. acicularis*, Capellini, p. 67; several species and varieties figured; PANTANELLI (1). *M. bonellii* = *M. impressa*; *M. nazzolina* = *M. mathesoni*; *id.* (4). *M. divala*, p. 156, *M. doumeti*, p. 157, *M. latastei*, p. 158, *M. duveyrieri*, p. 160, n. spp., Tunis; LETOURNEUX & BOURGUIGNAT.

PLEUROCERIDÆ.

Goniobasis ozarkensis, n. sp.; CALL (2).

Littorinidæ.

Tryon, (1) pp. 229–235, here includes the genera *Littorina* (several sections), ? *Portlockia*, ? *Rhabdopleura*, *Cremnoconchus*, *Tectarius* (subg. *Brachytrema*), *Purpurina*, *Modulus*, *Risella* (subgg. *Peasiella*, *Plesiotrochus*, and *Limnotrochus*), ? *Cyclocheila*, *Lacuna* (subgg. *Lacunella* and *Spironema*, and several sections).

Echinella tectiformis, Watson, referred to *Tectarius* ; *id. t. c.* p. 258.

Haloconcha antarctica (Mrts.) (*Lacunella*, Dall, = *Haloconcha* ; *cf.* Zool. Rec. xxiii, *Moll.* p. 83) includes *Litorina pumilis*, Smith, descrip. and fig. ; Martens & Pfeffer, p. 89, pl. ii, fig. 1.

Lacuna puteolus, Turton, and *L. divaricata*, Fabr., numerous synonyms; Tryon, (1) pp. 265 & 266.

Lævilitorina, n. g., for *Litorina caliginosa*, Gld., *L. venusta*, *L. pygmæa*, *L. granum*, and *L. umbilicata*, n. spp., S. Georgia ; Martens & Pfeffer, pp. 81–88, pl. i, figs. 8–12.

Leroya, n. g., with the facies of *Littorina*, but differing in the operculum and the sinistral shell ; for *L. bourguignati* and *L. charmetanti*, n. spp., Equatorial Africa ; Grandidier, p. 191.

Littorina scabra, L., var. *lineata*, Gm., includes *L. scabra*, d'Orb., *L. ahenea*, Rv., *L. aurea*, Bonnet, and varr. *flavescens*, *rubra*, and *striata*, Phil. ; Tryon, (1) p. 243. *L. irrorata*, Say, includes *L. sayi*, Rv. (*nec* Phil.) and *L. exarata*, Phil. ; *id. t. c.* p. 246. *L. mauritiana*, Lamk., numerous synonyms ; *id. t. c.* p. 247. *L. granicostata*, n. sp., Christmas I. ; Smith (11). *L. rubropicta*, n. sp., Mergui Archipelago ; Martens, (4) p. 170, pl. xvi, fig. 2.

Pellilitorina, n. g., very slightly calcified and with characteristic epidermis ; for *Litorina setosa*, E. A. Smith, and *L. pellita*, Mrts., S. Georgia ; Martens & Pfeffer, p. 77, pl. i, figs. 6 & 7.

Risella melanostoma, Gm., numerous synonyms ; Tryon, (1) p. 262.

Tectarius bullatus, L., numerous synonyms ; *id. t. c.* p. 257. *T. nodulosus*, Gm., numerous synonyms ; *id. t. c.* p. 258.

Fossaridæ.

Tryon, (1) pp. 235–237, includes the following genera : *Fossarus* (subgg. *Fossariopsis*, *Raulinia*, and *Iphitus*, and several sections), *Fossarina*, and *Atresius*.

Fossarus caledonicus, Crosse, referred to *Risella* ; *id. t. c.* p. 263.

Solariidæ.

Tryon (1) classifies the family thus : subfam. *Solariinæ*, with genera *Solarium* (subgg. *Solarium s.str.*, and *Philippia*), *Platyschisma*, and *Fluxina* ; subfam. *Torininæ*, with genera *Torinia* (several subgg.) and *Omalaxis* ; subfam. *Euomphalinæ*, with genera *Ophileta*, *Euomphalus*, *Schizostoma*, and *Eccyliomphalus*.

Solarium tryoni, Marshall, n. sp., Moluccas ?; *id. t. c.* p. 10, pl. ii, figs. 28 & 29.

HOMALOGYRIDÆ.

TRYON (1) p. 324, here includes only genus *Homalogyra*, with 5 spp.

Homalogyra densicostata, Jeffr., includes *H. trilix*, Bush; *id. t. c.* p. 399.

SKENEIDÆ.

TRYON, (1) p. 323, here includes only the genus *Skenea*, with 3 established and 3 unfigured and doubtful species.

JEFFREYSIIDÆ.

TRYON, (1) p. 323, includes only *Jeffreysia* (subgg. *Tatea*, *Dardania*), with 21 spp. (11 unfigured).

LITIOPIDÆ.

Diala: synonymy of 2 S. Australian species; BRAZIER.

RISSOIDÆ.

TRYON, (1) pp. 314–322, here includes the following genera: *Rissoia* (subgg. *Rissoia*, *s.str.*, *Sabanæa*, *Cingula*, *Rissopsis*, *Alvania*, numerous sections), *Rissoina* (subg. *Eatoniella*, several sections), *Barleeia*, *Keilostoma*, *Fairbankia*, *Iravadia*, *Fenella*, *Putilla*, *Skenella*.

Cingula mörchii, n. sp., Kara Sea; COLLIN, p. 454, pl. xl, fig. 5.

Rissoa striata, Mtg., includes *R. minutissima*, Mich., *R. communis*, Forbes, *R. semicostata*, Turton, *R. gracilis*, Macg., *R. mariomæ*, Macg., *Pyramis discors* and *P. candidus*, Brown; TRYON, (1) p. 347. *R. semistriata*, Mtg., several synonyms; *id. t. c.* p. 352: also *R. cimex*, L.; *id. t. c.* p. 359: also *R. pagodula*, Bucq., Dautz., & Dollf.; *id. t. c.* p. 366. *R. georgiana*, n. sp., S. Georgia; MARTENS & PFEFFER, p. 92, pl. ii, fig. 3.

Rissoina: 29 Chinese and Japanese species enumerated; BÖTTGER (3). *R. plicata*, A. Ad., several synonyms; TRYON, (1) p. 375. *R. bryerea*, Mtg., synonymy; *id. t. c.* p. 379: also *R. striata*, Quoy; *id. t. c.* p. 385: also *R. spirata*, Sowb.; *id. t. c.* p. 388: also *R. oryza*, Garrett; *id. t. c.* p. 390.

R. (*Phosinella*) *schmackeri*, n. sp., Hongkong; BÖTTGER, (3) p. 128, pl. vi, fig. 2.

R. (*Schwartziella*) *subfirmata*, n. sp., Hongkong; *id. t. c.* p. 126, pl. vi, fig. 1.

Skenella, n. g. "Shell depressed, umbilicate. Peristome simple, continuous. Operculum subspiral, with a large process perpendicular to the nucleus." For *S. georgiana*, n. sp., S. Georgia; MARTENS & PFEFFER, p. 96, pl. ii, fig. 6.

Stossichia, Brusina: history and description of the genus given, with

enumeration of 8, and descriptions of 5 species; *S. multicingula*, p. 142, pl. vi, fig. 3, *S. semicostulata*, p. 143, pl. vi. fig. 4, and *S. costata*, p. 144, pl. vi, fig. 5, n. spp.; BÖTTGER (4).

HYDROBIIDÆ.

Amnicola singularis, p. 142, *A. ondrefica*, *A. latasteana*, p. 143, *A. subscalaris*, *A. bythinopsis*, *A. saharica*, p. 144, *A. sterea*, p. 146, *A. globulina*, *A. doumeti*, *A. barattei*, p. 147, *A. ragia*, p. 148, n. spp., Tunis; LETOURNEUX & BOURGUIGNAT.

Bythinella limnopsis, *B. mauritanica*, *B. microcochlia*, p. 149, *B. punica*, p. 150, n. spp., Tunis; *iid.* *B. aldrichii*, n. sp., Missouri; CALL & BEECHER.

Bythinia tentaculata vars.; ROBERTS. *B. cettinensis*, n. sp., Dalmatia; CLESSIN, (5) p. 62. *B. hagenmülleri*, *B. punica*, Hagenmüller, n. spp., Tunis; LETOURNEUX & BOURGUIGNAT, p. 141 *B. australis* (Tryon) includes *B. hyalina*, Brazier. *B. tryoni*, n. n., = *B. australis*, Smith (*nec* Tryon); SMITH (7). *B. tumida*, n. sp., Ceylon; WESTERLUND, (3) p. 211, pl. v, fig. 23.

Bythiospeum ? tellinii, n. sp., Friuli; POLLONERA, (3) p. 205, pl. vi, fig. 14.

Caspia, n. g. Small thin *Hydrobia*-like shell, with slightly-arched whorls and slightly produced peristome. For *C. baeri*, p. 36, pl. iii, fig. 2, *C. pallasi*, p. 37, pl. iii, fig. 3, *C. gmelinii*, p. 37, pl. iii, fig. 7, *C. ulskii*, p. 38, pl. iii, fig. 8, *C. grimmi*, p. 39, pl. iii, fig. 5, *C. orthii*, p. 40, pl. iii, fig. 6, *C. kowalewskii*, p. 40, pl. iii, fig. 9, n. spp., Caspian Sea; DYBOWSKI, (4) p. 34.

Digyreidum: review of genus; *D. renei*, *D. corcyrense*, *D. servainianum*, *D. viride*, n. spp., Corfu; LETOURNEUX.

Gabbia australis, a *Bithinia*; SMITH (7).

Hydrobia grimmi, Clessin, n. n. for *H. stagnalis*, Grimm; DYBOWSKI, (4) p. 55, pl. iii, fig. 2. *H. cristella*, n. sp., Kiangsi; GREDLER, (5) p. 173. *H. georgiana*, n. sp., S. Georgia; MARTENS & PFEFFER, p. 91, pl. ii, fig. 2. *H. savesi*, n. sp., New Caledonia; CROSSE (2).

Micromelania grimmi, p. 27, pl. i, fig. 2, *M. elegantula*, p. 33, pl. i, fig. 7, *M. turricula*, p. 34, pl. i, fig. 3, n. spp., Caspian Sea; DYBOWSKI (4).

Nematura ceylonica, n. sp., Ceylon; WESTERLUND, (3) p. 216, pl. v, fig. 25.

Nematurella sieversii, Clessin, n. sp., Caspian Sea; DYBOWSKI, (4) p. 45, pl. ii, fig. 1.

Paludestrina forumjuliana, n. sp., Friuli; POLLONERA, (3) p. 206, pl. vi, figs. 15 & 16. *P. meca*, *P. cossoni*, p. 151, *P. mecyna*, *P. oxitata*, p. 152, *P. vitracea*, p. 153, n. spp., Tunis; LETOURNEUX & BOURGUIGNAT.

Peringia punica, p. 154, *P. paradoxa*, *P. solitaria*, p. 155, *P. admirabilis*, p. 156; *iid.*

Stenothyra exilis, n. sp., Kiangsi; GREDLER, (5) p. 172.

Streptocionella, n. g., shell an elongated spiral, with thin epidermis, peristome discontinuous, columella as in *Volutaxis*, a depression near the umbilicus recalling some forms of *Lacuna*; for *S. singularis*, n. sp., S. Georgia; MARTENS & PFEFFER, p. 99, pl. ii, fig. 8.

PALUDINIDÆ.

The small *Paludinidæ* with spiral operculum are treated; the generic names *Hydrobia*, *Leachia*, *Paludinella*, *Vitrella*, *Littorinella*, *Littoridina*, *Micœna*, *Thermhydrobia*, *Pseudamnicola*, *Frauenfeldia*, and *Arenionia* are abandoned, and *Paludestrina*, *Amnicola*, *Bythinella*, *Belgrandia*, *Peringia*, *Maresia*, *Trachysma*, *Bythiospeum*, and *Paulia* maintained; BOURGUIGNAT (1).

Clessinia, n. g., for *Paludina variabilis*, *P. triton*, Eichwald, and *C. martensii*, n. sp., p. 43, pl. ii, fig. 5, Caspian Sea; DYBOWSKI, (4) p. 41.

Horatia, n. n., for *Aristidia*, Bgt., preoccupied in Botany, for *H. klecakiana*, *H. obtusa*, *H. fontinalis*, *H. albanica*, *A. servaini*, *H. palustris*, *H. verlikana*, *H. obliqua*, *H. præclara*, *H. letourneuxi*, n. spp., Dalmatia and Albania; BOURGUIGNAT, (1) pp. 47–56, figs.

Paludina lirata, n. sp., S. Australia; TATE, (1) p. 63, pl. iv, fig. 6.

VALVATIDÆ.

Valvata mergella, n. sp., Alaska, WESTERLUND, (3) p. 209, pl. v, fig. 22.

AMPULLARIIDÆ.

Ampullaria decocta, n. sp., Tonkin; MABILLE, (2) p. 155. *A. occidentalis*, n. sp., Kunene, S. Africa; MOUSSON, (2) p. 299, pl. xii, fig. 9. *A. cousini*, n. sp., Ecuador; JOUSSEAUME, (1) p. 185, pl. iii, fig. 3. *A. puntaplaya*, *A. reyrei*, n. spp., Ecuador; COUSIN, pp. 278 & 279, pl. iv, figs. 2 & 7.

Lanistes sculptus, n. sp., E. Africa; MARTENS (7).

ASSIMINEIDÆ.

Acmella polita, n. sp., Manila; MÖLLENDORFF, (4) p. 301.

Assiminea: revision of the genus, with descriptions of 75 recent and 4 fossil spp.; arrangement under subgg. *Euassiminea* and *Pseudomphala*, Hde., synopsis of geographical distribution and index; *A. annamitica*, n. n., = *A. elegans*, Wattebled (*nec* Paladilhe), p. 158; *A. hessei*, Congo, p. 180, pl. vi, fig. 7; *A. mœllendorffi*, Macao, p. 190, pl. vi, fig. 10; *A. philippinica*, Manila, p. 195; *A. schmackeri*, Hongkong, p. 201, pl. vi, fig. 9; *A. sienæ*, Ten. Woods, Tasmania, p. 202, pl. vi, fig. 8; *A. subeffusa*, Hongkong, p. 205, pl. vi, fig. 11; *A. subovata*, n. n., = *Hydrocena ovata*, Pease (*nec* Krauss), p. 206: n. spp.; BÖTTGER (5). *A. castanea*, n. sp., Japan, WESTERLUND, (3) p. 209, pl. v, fig. 26.

CYCLOPHORIDÆ.

Alycæus. Account of the genus, with *A. damsangensis*, Bhutan Hills, p. 192, pl. xliii, fig. 3; *A. chennelli*, Naga Hills, p. 192, pl. xlviii, fig. 2.

A. brahma, Brahmakhund, p. 195, pl. xlviii, fig. 2, n. spp.; Godwin-Austen. *A. tomotrema*, n. sp., Manila; Möllendorff, (4) p. 298. *A. excisus*, n. sp., Bongao; *id.* (5) p. 287. *A. diplochilus*, *A. oligopleuris*, p. 310, *A. microdiscus*, *A. parvulus*, *A. microconus*, p. 311, n. spp.; *id.* (6). *A. requiescens*, *A. anceyi*, n. spp., Tonkin; Mabille, (2) p. 151, pl. iii, figs. 11, 12, 14, & 15.

Avinia holopleuris, *A. minutissima*, *A. devians*, *A. costata*, n. spp., Cebu; Möllendorff, (4) pp. 247–249, pl. vii, figs. 4–6.

Callia microstoma, n. sp., Philippines; Kobelt, (4) p. 64, pl. vii, fig. 22.

Cyathopoma (*Jerdonia*) *philippinense*, n. sp., Philippines; Möllendorff, (4) p. 96, pl. iv, fig. 5.

Cyclophorus unicus, *C. dodrans*, pl. iii, fig. 13, *C. tetrachrous*, n. spp., Tonkin; Mabille, (2) pp. 143–146. *C.* (*acutimarginatus*, var.?) *alabatensis*, n., p. 18, pl. iii, figs. 14–16, *C. intercedens*, p. 22, pl. iv, figs. 9–11, *C. semperi*, p. 25, pl. ii, figs. 14 & 15, *C. trochiformis*, p. 25, pl. iv, figs. 20 & 21, *C. umbilicatus*, p. 26, pl. iv, figs. 22 & 23, n. spp., Philippines; Kobelt (4). *C. barandæ*, n. sp., Philippines; Hidalgo (1). *C. antonii*, n. sp., Ecuador; Cousin, p. 271, pl. iv, fig. 4. *C. vandelii*, *C. molleri*, n. spp., S. Thomé; Nobre, (2) p. 227.

Cyclotopsis horrida, n. sp., Comoro Is.; Morelet, p. 290, pl. ix, fig. 3.

Cyclotus hungerfordianus, n. sp., Perak; Möllendorff, (6) p. 306. *C. portoricensis*, n. sp., Porto Rico; Böttger, (1) p. 101, pl. iv, fig. 7.

Dasytherion, n. g., coiled like a *Planorbis*, umbilicus large, mouth circular, straight blunt peristome, neither reflected nor doubled, with peculiar hirsute cuticle, for *D. tonkinianum*, *D. locardi*, n. spp., Tonkin; Mabille, (2) pp. 140 & 141, pl. iv, figs. 1–3.

Diplommatinaceæ: 7 genera are recognised; Ancey (1).

Diplommatina occidentalis, Trinidad, p. 173, pl. xlv, fig. 8, *D. theobaldi* and *D. daflaensis*, Himalayas, p. 174, pls. xlix, fig. 11, & xlv, fig. 4, *D. saltuense*, *D. silvicola*, Cachar Hills, p. 178, pl. xlv, figs. 6 & 3, *D. henzadaensis*, Pegu, p. 179, pl. xlvi, fig. 6, *D. exserta*, *D. edentula*, Moulmain, pp. 184 & 185, pl. xlix, figs. 2 & 7, *D. nicobarica*, Nicobar Is., p. 185, pl. xlvi, fig. 7, n. spp.; Godwin-Austen. *D. canaliculata*, n. sp., Perak; Möllendorff, (6) p. 312. *D. amurensis*, n. sp., Amour basin; Mousson, (1) p. 23, pl. i, fig. 7. *D. cebuensis*, *D. rupicola*, n. spp., Cebu; Möllendorff, (4), pp. 250 & 251, pl. vii, figs. 7 & 8. *D. roebeleni*, n. sp., Bongao; *id.* (5) p. 287.

D. (*Palaina*) *quadrasi*, *D.* (*P.*) *saxicola*, *D. böttgeri*, n. spp., Philippines; *id.* (4) pp. 92–95, pl. iv, figs. 1–3. *D.* (*Palaina*?) *chrysalis*, *D.* (*P.*?) *ulingensis*, n. spp., Cebu; *id.* (4) pp. 254 & 255, pl. vii, figs. 12 & 13.

D. (*Sinica*) *kochiana*, *D.* (*S.*) *microstoma*, *D.* (*S.*) *irregularis*, n. spp., Cebu; *id. t. c.* pp. 252 & 253, pl. vii, figs. 9–11. *D.* (*S.*) *bicolor*, *D.* (*S.*) *elisabethæ*, n. spp., Manila; *id. t. c.* pp. 299 & 300.

Gyrostropha, n. subg., for *Opisthostoma pauluccia* and *O. perakensis*; Ancey, (1) p. 275.

Hybocystis rochebruni, n. sp., Tonkin; Mabille, (2) p. 138, pl. ii, figs. 12 & 13. *H. crossei*, n. sp., Tonkin; Dautzenberg & Hamonville, (1) p. 220, pl. viii, fig. 4.

Lagocheilus ciliger, n. sp., Kiangsi ; GREDLER, (5) p. 171. *L. hagenmulleri*, *L. medicans*, n. spp., Tonkin ; MABILLE, (2) pp. 147–149, pl. iv, fig. 14. *L. quinqueliratus*, n. sp., Bongao ; MÖLLENDORFF, (5) p. 286. *L. omphalotropis*, *L. quadrasi*, n. spp., Manila ; *id.* (4) pp. 297 & 298. *L. bätligeri*, *L. subcarinatus*, n. spp., Cebu ; *id. t. c.* p. 243, pl. vii, figs. 1 & 2.

Leptopoma whiteheadi, n. sp., Borneo ; SMITH (3).

Megalomastoma brazieræ, n. n. for *Braziera typica*, Brazier ; *id.* (1 p. 424, pl. xv, fig. 15.

Plectostoma wallacei, n. sp., Borneo ; ANCEY, (1) p. 276.

Pomatias rugosus, n. sp., Dalmatia ; CLESSIN, (5) p. 61. *P. kleciaki*, n. sp., Lesina ; BRAUN (3). *P. cretensis*, n. sp., Crete ; MALTZAN, (1) p. 119. *P. belloiri*, *P. latasteanus*, p. 135, *P. tunetanus*, *P. benoni*, p. 136, *P. euristoma*, *P. cyclonixius*, p. 137, *P. rogeri*, *P. cuneus*, p. 138, *P. monticola*, *P. doumeti*, *P. punicus*, p. 139, n. spp., Tunis ; LETOURNEUX & BOURGUIGNAT.

P. (*Auritus*) *apostata*, *P.* (*A.*) *sardous*, *P.* (*A.*) *maltzani*, *P.* (*A.*) *perdix*, n. spp., Sardinia ; WESTERLUND, (2) pp. 16 & 17.

Pterocyclus berthæ, n. sp., Tonkin ; DAUTZENBERG & HAMONVILLE (2).

Pupina illustris, *P. exclamationis*, n. spp., Tonkin : MABILLE, (2) pp. 136 & 137, pl. iv, figs. 11 & 12. *P. gracilis*, n. sp., Cebu ; MÖLLENDORFF, (4) p. 245, pl. vii, fig. 3.

Rhaphaulus assamica, n. sp., Brahmakhund ; GODWIN-AUSTEN, p. 201, pl. xlvii, fig. 2.

CYCLOSTOMATIDÆ.

Atropis obesa, n. sp., Society Is. ; GARRETT, (4) p. 99, pl. iii, fig. 72.

Cyclostoma elegans, monograph of anatomy ; GARNAULT (1) : radula figured ; COLE. *C. eustolum*, n. sp., Madagascar ; CROSSE & FISCHER (1).

Omphalotropis layardiana, n. n., = *Realea rosea*, Mousson, and *O. bythinæformis*, Paetel, Fiji ; GARRETT, (3) p. 310.

Rochebrunia delmaresi, *R. letourneuxi*, Ancey, n. spp., Victoria Nyanza ; BOURGUIGNAT, (2) pp. 269 & 270. *R. letourneuxi*, n. (undescribed), Equatorial Africa ; GRANDIDIER, p. 190.

ACICULIDÆ.

Acme elegantissima, n. sp., Modena ; PINI.

TRUNCATELLIDÆ.

Truncatella avenacea, n. sp., Fiji ; GARRETT, (3) p. 301.

CAPULIDÆ.

Trochatella nogieri, n sp., Tonkin ; DAUTZENBERG & HAMONVILLE (2)

MARSENIADÆ.

The monograph of this family is concluded; anatomical descriptions of all the species mentioned, being given [for names of several recorded as new, see Zool. Rec. xxiii, *Moll.* p. 89]; BERGH (1).

Lamellaria patagonica, Smith, referred to *Chelyonotus*; *id. t. c.* p. 285.

CHORISTIDÆ.

TRYON, (1) p. 323, here includes only the genus *Choristes*.

PTENOGLOSSA.

IANTHINIDÆ.

TRYON, (1) pp. 33–35, includes in the family three genera: *Ianthina*, *Recluzia*, and *Scalites* (subgg. *Raphistoma*, *Holopea*).

Ianthina: 3 species recognized; *id. t. c.* pp. 36–38.

SCALARIIDÆ.

TRYON, (1) pp. 49–54, here includes *Scalaria* (several sections, and subgg. *Constantia* and *Crosseia*), *Scaliola*, *Funis*, *Eglisia*, *Aclis* (several sections), *Stilbe*, *Holopella*, and *Elasmonema*.

Scalaria smithii, n. n., = *S. miranda*, E. A. Sm. (*nec* A. Ad.); *S. jeffreysii*, n. n., = *S. tenera*, Jeffr. (*nec* H. Ad.): *id. t. c.* pp. 60 & 62. *S. pseudoscalaris*, Brocchi, described and recorded as British; MARSHALL, J.T.

GYMNOGLOSSA.

EULIMIDÆ.

Scalenostoma lubricum, Mauritius, *S. mariei*, New Caledonia, n. spp.; FISCHER (4).

PYRAMIDELLIDÆ.

Odostomia pallida found on operculum of *Turritella terebra*; SMART.

SCUTIBRANCHIATA.

RHIPIDOGLOSSA.

PROSERPINIDÆ.

Proserpinella cousini, n. sp., Ecuador; JOUSSEAUME, (1) p. 181, pl. iii, figs. 15 & 16.

Helicinidæ.

Helicina caroli, p. 70, pl. vii, figs. 26 & 27, *H. amaliæ*, p. 73, pl. vii, fig. 25, n. spp., Philippines; Kobelt (4). *H. cyrtopoma*, n. sp., Manila; Möllendorff, (4) p. 302. *H. novo-guineensis*, *H. solitaria*, n. spp., New Guinea; Smith (1) p. 425, pl. xv, figs. 11 & 10. *H. simulans*, *H. raiatensis*, n. spp., Society Is.; Garrett, (4) pp. 105 & 106, pl. iii, figs. 66 & 69. *H. consors*, *H. versilis*, Ancey, n. spp., Marquesas Is.; *id.*, (1) pp. 41 & 42. *H. pohliana*, n. sp., Fiji; *id.*, (3) p. 313. *H. alrici*, *H. mondaini*, n. spp., New Caledonia; Crosse (2). *H. decussata*, *H. wolffi*, Haiti, *H. goldfussi*, Dominica, n. spp.; Böttger, (1) pp. 102 & 103, pl. iv, figs. 8–10.

Hydrocenidæ.

Georissa subglabrata, n. sp., Philippines; Möllendorff, (4) p. 96, pl. iv, fig. 5. *G. rufescens*, n. sp., Manila; *id.*, *t. c.* p. 303. *G. conspicua*, *G. poirieri*, n. spp., Tonkin; Mabille, (2) pp. 152–154.

Neritidæ.

Nerita: monograph commenced; the following subdivisions established:—(1) *Theliostyla*, Mörch; (2) *Cymostyla*, n.; (3) *Pila*, Klein; (4) *Tenare*, Gray, (*a*) *Peloronta*, Troschel, (*b*) *Ilynerita*, n.; (5) *Nerita*, *s. str.*; (6) *Amphinerita*, n.; (7) *Heminerita*, n.: Martens, (3) p. 9. *N. incurva*, n. sp, Mozambique; *id. t. c.* p. 50, pl. viii, figs. 14–16.

Neritina deficiens, n. sp., Tonkin; Mabille, (2) p. 160.

N. (*Clithon*) *nordquisti*, n. sp., Japan; Westerlund, (3) p. 211, pl. v, fig. 24.

Turbinidæ.

Turbo gruneri, Phil., synonymy; Brazier.

Trochidæ.

Isanda pulchella, A. Adams, redescribed and figured, Mergui Archipelago; Martens (4), p. 197, pl. xvi, fig. 3.

Photinula ringei, n. sp., Lemaire Strait; Pfeffer (4).

Trochus: 12 S. Australian forms, with notes and full synonymy; Brazier.

POLYPLACOPHORA.

Chitonidæ.

Chiton zschaui, n. sp., S. Georgia; Martens & Pfeffer, p. 105, pl. iii, fig. 2.

Leptochiton pagenstecheri, n. sp., S. Georgia : *iid. t. c.* p. 107, pl. iii, fig. 3.

Trachydermon steinenii, n. sp., S. Georgia ; *iid. t. c.* p. 103, pl. iii, fig. 1.

PELECYPODA.

TETRABRANCHIA.

The discussion of this order is completed ; the following suborders being adopted :—vi, *Erycinacea* ; vii, *Cardiacea* ; viii, *Chamacea* ; ix, *Conchacea* ; x, *Myacea* ; xi, *Adesmacea* : Fischer (1).

PECTINACEA.

Limidæ.

Limea australina, n. sp., S. Australia ; Tate, (1) p. 73, pl. iv, fig. 7.

Pectinidæ.

Pecten : monograph continued; Kobelt (7). *P. amaliæ*, n. sp., Amboina ?, *id. t. c.* p. 198, pl. liii, figs. 5 & 6 ; also (7a). *P. nigromaculatus*, *P. schmeltzii*, *P. sulphureus*, Dunker, MSS., Fiji, and *P. loxeoides*, Sowb., Australia, described ; *id.* (17). *P. bednalli*, *P. pulleineanus*, n. spp., S. Australia ; Tate, (1) p. 73, pl. iv, figs. 3 & 1.

P. (*Vola*) *löbbeckei*, n. sp., hab. ? ; Kobelt, (7) p. 174, pl. xlviii, figs. 4 & 5.

MYTILACEA.

Prasinidæ.

Berthelinia : account of characters, diagnosis, and discussion of systematic relations ; to be placed with *Aviculidæ* and *Prasinidæ* ; Crosse & Fischer (2).

Aviculidæ.

Pinna inermis, n. sp., S. Australia ; Tate, (1) p. 71, pl. iv, fig. 6.

Mytilidæ.

Modiola : monograph continued ; *M. paeteliana*, p. 111, pl. xxxi, figs. 7 & 8, Philippines, *M. spatula*, Menke, p. 113, pl. xvii, figs. 3 & 4, hab. ?, *M. dragei*, Angas, p. 119, pl. xxv, fig. 15, Australia, *M. emarginata*, Benson, p. 120, pl. xxv, figs. 7 & 8, Philippines, *M. domingensis*, p. 121, pl. xxxii, figs. 6 & 7, Domingo, *M. subfuscata*, Sowerby, p. 122, pl. xxv, fig. 13, Mexico, described as new ; Clessin (2).

Modiolarca subquadrata, *M. nigromarginata*, *M. faba*, n. spp., S. Georgia ; MARTENS & PFEFFER, pp. 121–126, pl. iv, figs. 8–11.

Mytilus : monograph completed ; 73 species recognised. *M. inflatus*, p. 61, pl. viii, figs. 7 & 8, Philippines, *M. latissimus*, p. 71, pl. x, figs. 1 & 2, Philippines, *M. oblongus*, p. 78, pl. xxii, figs. 1 & 2, America, *M. paetelianus*, p. 78, pl. xxiii, figs. 3 & 4, Australia, *M. similis*, Dunker, p. 82, pl. xvi, figs. 3 & 4, hab. ?, *M. patagonicus*, d'Orb., p. 82, pl. xviii, figs. 5 & 6, Chile, *M. platensis*, d'Orb., p. 83, pl. xi, figs. 5 & 6, Brazil, *M. lamarckianus*, p. 84, pl. xxiv, figs. 1 & 2, Mediterranean, *M. plicatus*, p. 85, pl. xv, figs. 5 & 6, Nicobar Is., *M. castaneus*, Parreyss, p. 86, pl. xxiv, figs. 9 & 10, hab. ?, *M. biceps*, Menke, p. 87, pl. xxiv, figs. 7 & 8, hab.?, *M. orbignyianus*, p. 87, pl. xxv, figs. 1 & 2, W. Indies, *M. arcuatus*, p. 89, pl. xxv, figs. 3 & 4, hab. ?, described as new ; CLESSIN (2). [*M. patagonicus* and *M. platensis*, d'Orb., are not MS. names, but were described in the Voy. Amér. Mérid.]

Mytilus (? *Septifer*) *andersoni*, n. sp., Mergui Archipelago ; MARTENS, (4) p. 205, pl. xvi, fig. 5.

Tichogonia : monograph completed ; 30 species recorded : *T.* (*Septifer*) *pilosus*, Recluz., n. sp., hab. ?, p. 23, pl. xii, figs. 5 & 6 ; CLESSIN (2).

ARCACEA.

ARCIDÆ.

Arcoptera, n. subg. of *Arca* : pterinate and rostrate, so as to have the outline of *Avicula* ; chamber of the shell attenuate anteriorly ; for *A.* (*A.*) *aviculaformis*, n. sp., Florida, pliocene : HEILPRIN, (2) p. 98, fig. 32.

Limopsis rubricata, n. sp., S. Australia ; TATE, (1) p. 71, pl. v, fig. 6.

NUCULIDÆ.

Nucula minuscula, n. sp., S. Georgia ; MARTENS & PFEFFER, p. 128, pl. iv, fig. 15.

SUBMYTILACEA.

UNIONIDÆ.

Anodonta calderoni, *A. bætica*, n. spp., Guadaira ; KOBELT (20). *A. coupha*, *A. ovula*, n. spp., France ; SERVAIN, pp. 261 & 264.

Unio carcasinus, n. sp., France ; SOURBIEU. *U. mongazonæ*, p. 253, *U. baroni*, p. 254, *U. cavarellus*, p. 256, *U. strigatus*, p. 257, *U. asticus*, p. 259, *U. eutrapelus*, p. 260, n. spp., France ; SERVAIN. *U. orniensis*, Heimb., figured, with description ; HEIMBURG. *U. hispalensis*, Guadalquivir, *U. bæticus*, *U. calderoni*, Guadaira, *U.* (*hispanus*, var.?) *sevillensis*, n. spp. ; KOBELT (20). *U. delevieleusæ*, Hagenmüller, p. 162, *U. doumeti*, *U. zenaticus*, p. 163, *U. rouirei*, p. 164, n. spp., Tunis ; LETOURNEUX & BOURGUIGNAT. *U. diespiter*, n. sp., Tonkin ; MABILLE, (2) p. 162. *U.*

lourdeli, n. sp., Victoria Nyanza; BOURGUIGNAT, (2) p. 271. *U. kunensis*, n. sp., R. Kunene, S. Africa; MOUSSON, (2) p. 300, pl. xii, fig. 10. *U. popenoi*, Call, 1885, = *U. aberti*, Conrad, 1850; CALL (1). *U. quiatardii*, n. sp., Indian Territory; CRAGIN. *U. tumidus*, remarks on a living specimen; MARTENS (8). *U. percompressus*, *U. microdon*, n. spp., Guatemala; *id.* (9).

CARDITIDÆ.

Cardita, monograph commenced; *C. racuti*, Angas, p. 11, pl. ii, figs. 7 & 8, New Zealand, *C. godeffroyi*, Dunker, p. 12, pl. iv, figs. 6 & 7, Bass Strait, *C. velutina*, Sinth, p. 12, pl. i, figs. 7 & 8, Mexico, *C. ventricosa*, Gould, p. 13, pl. i, figs. 6 & 7, Vancouver I., *C. floridana*, Conrad, p. 14, pl. iv, figs. 1 & 2, Florida, *C. novæ-angliæ*, Morse, p. 15, pl. v, figs. 12 & 13, Newfoundland, described as though new; CLESSIN (3).

[*Cardita racuti*, Angas, = *C. raouli*, P. Z. S. 1872, p. 613, pl. xlii, fig. 12, *C. velutina*, Sinth., = *C. velutina*, Smith, *op. cit.* 1881, p. 42, pl. v, fig. 8.]

C. rosulenta, *C. obliquissima*, n. spp., S. Australia; TATE, (1) pp. 69 & 70, pl. v, figs. 3 & 9.

Carditella subtrigona, n. sp., S. Australia; *id. t. c.* p. 70, pl. iv, fig. 10.

ASTARTIDÆ.

Pachytypus, Munier-Chalmas, n. g. for *Cardita problematica*, Buvignier; FISCHER, (1) p. 1017.

Plesiastarte, n. n. for *Anomala*, Cossman, 1886 (*nec* Schmidt, 1832); *id. ibid.*

KELLYELLIDÆ.

Cyamium imitans, *C. willii*, *C. mosthaffi*, n. spp., S. Georgia; MARTENS & PFEFFER, pp. 115–118, pl. iv, figs. 5, 3, & 4.

ERYCINACEA.

ERYCINIDÆ.

Kellia angasiana, n. sp., S. Australia; TATE, (1) p. 68, pl. v, fig. 7.

Lepton ovatum, n. sp., S. Australia; *id. ibid.*, pl. v, fig. 11.

Montacuta meridionalis, n. sp., S. Australia; *id. ibid.*, pl. v, fig. 4.

Chlamydoconcha: discussion of anatomical characters indicates its position near *Galeommidæ* and *Erycinidæ*; FISCHER (3).

GALEOMMIDÆ.

Scintilla (?) *lunata*, n. sp., S. Australia; TATE, (1) p. 69, pl. iv, fig. 8.

CHAMACEA.

Chamidæ.

Echinochama, n. n. for *Arcinella*, Schumacher, 1817 (*nec* Oken, 1815, *nec* Philippi, 1844) ; Fischer, (1) p. 1049.

Radiolitidæ.

Bournonia, n. g., for *B. bournoni*, Des Moulins ; Fischer, (1) p. 1067.

CONCHACEA.

Cyprinidæ.

Plesiocyprina, Munier-Chalmas, n. g., for *P. gaudryi*, Mun.-Chal. ; Fischer, (1) p. 1073.

Pygocardia, Munier-Chalmas, n. g , for *P. tumida* (Nyst); *id. t.c.* p. 1071.

Veneridæ.

? *Pronoella*, n. n., = *Pronoë*, Agassiz, 1843 (*nec* Guérin-Méneville, 1836) ; Fischer, (1) p. 1087.

Venerupis crebrelamellata, n. sp., S. Australia ; Tate, (1) p. 66, pl. iv, fig. 14.

Cyrenidæ.

Calyculina japonica, n. sp., Japan ; Westerlund, (3) p. 216, pl. vi, fig. 31.

Corbicula desolata, n. sp., S. Australia; Tate, (1) p. 67, pl. iv, fig. 11. *C. crebricostis*, n. sp., Hongkong ; Westerlund, (3) p. 218, pl. vi, fig. 32. *C. tongkingensis*, Tonkin, p. 67, pl. ii, fig. 1, *C. flava*, hab. ?, p. 68, pl. ii, fig. 2, *C. pisidioides*, Borneo, p. 69, pl. ii, fig. 4, *C. nevilli*, Assam, p. 70, pl. ii, fig. 5, *C. petiti*, p. 71, pl. ii, fig. 6, *C. tenuis*, p. 72, pl. ii, fig. 7, *C. cochinchinensis*, p. 73, pl. ii, fig. 8, Cochin China, *C. jullieniana*, hab. ?, p. 73, pl. iii, fig. 1, *C. solida*, p. 76, pl. iii, fig. 4, *C. subnitens*, p. 77, pl. iii, fig. 5, Ceylon, *C. huttoniana*, India, p. 77, pl. iii, fig. 6, *C. sumatrana*, p. 78, pl. iii, fig. 7, *C. verbecki*, p. 79, pl. iii, fig. 8, Sumatra, n. spp. ; Clessin (7).

Pisidium dabneyi, n. sp., Azores ; Guerne. *P. arcticum*, *P. glaciale*, n. spp., Alaska ; Westerlund, (3) pp. 217 & 218.

Sphærium compressum, n. sp., Amour basin ; Mousson, (1) p. 28, pl. i, fig. 9. *S. corneum*, var. *brunneofasciata*, n. ; Williams (3).

Ungulinidæ.

Philippiella, n. g., for *P. quadrata* and *P. ungulata*, n. spp., S. Georgia ; Martens & Pfeffer, p. 119.

UNICARDIIDÆ.

Pseudedmondia, n. g., for *P. puzosi* (de Koninck); FISCHER, (1) p. 1100.

DONACIDÆ.

Liodonax, n. subg. of *Donax*, for forms with entire margin to the valves; FISCHER, (1) p. 1102.

PSAMMOBIIDÆ.

Psammobia brazieri, n. sp., S. Australia; TATE, (1) p. 65, pl. v, fig. 1.
Psammotellina, n. n., = *Psamotella*, Adams, 1856 (*nec* Blv., 1826); FISCHER, (1) p. 1105.

SOLENIDÆ.

Solen: monograph commenced; *S. rosaceus*, Carpenter, p. 13, pl. ii, fig. 2, n. sp., California; CLESSIN (4).

MYACEA.

MACTRIDÆ.

Hemimactra versicolor, n. sp., S. Australia; TATE, (1) p. 64, pl. iv, fig. 12.

MYIDÆ.

Bicorbula, n. subg. of *Corbula*, for *C. gallica*, Lamk.; FISCHER, (1) p. 1123.

ADESMACEA.

PHOLADIDÆ.

Aspidopholas, n. n.,= *Scutigera*, Cossman (*nec* Latreille); FISCHER, (1) p. 1137.
Heteropholas, n. subg. of *Xylophaga*; *id. t. c.* p. 1136.
Pragmopholas, *Holopholas*, n. subgg. of *Pholas*; *id. t. c.* p. 1133.

DIBRANCHIA.

This order includes the following suborders:—i, *Lucinacea*; ii, *Tellinacea*; iii, *Anatinacea*: FISCHER (1).

LUCINACEA.

LUCINIDÆ.

Cavilucina, n. subg. of *Lucina* ; FISCHER, (1) p. 1143.
Dentilucina, n. n., = *Lucina*, Lmk, 1801 (*nec* 1799) *id. ibid.*
Lucina crassilirata, n. sp, S. Australia ; TATE (1) p. 67, pl. iv, fig. 2.
L. pomum = *L. dicomani* ; DE STEFANI.

TELLINACEA.

TELLINIDÆ.

Eutellina, *Liotellina*, *Eurytellina*, *Mœrella*, n. subgg. of *Tellina* ; FISCHER, (1) p. 1147.
Tellina subdiluta, n. sp., S. Australia ; TATE, (1) p. 65, pl. iv, fig. 9.
T. aldingensis, n. sp. ; *id. t. c.* p. 66, pl. v, fig. 2.

ANATINACEA.

ARCOMYIDÆ.

Argyromya, n. sect. *Arcomya* ; FISCH. (1) p. 1166.

ANATINIDÆ.

Homœodesma, n. sect. of *Thracia* ; FISCHER, (1) p. 1171.

CLAVAGELLIDÆ.

Aspergillum multangulare, n. sp., S. Australia ; TATE, (1) p. 64, pl. iv, fig. 4.
Brechites preferred to *Aspergillum* ; FISCHER, (1) p. 1181 : CROSSE objects, J. de Conch. xxvii, p. 240.

BRACHIOPODA.

BY

WILLIAM E. HOYLE, M.A., F.R.S.E.

BUISSERET, A. Les affinités des Brachiopodes. Rev. Quest. sci. xxii, pp. 316–319. [Abstr. of JOUBIN, Zool. Rec. xxiii, *Brach.* p. 2.]

CASTELLARNAU Y DE LLEOPART, J. M. DE. Procédés pour l'examen et la conservation des animaux à la station zoologique de Naples. J. Microgr. xi, pp. 183, 215, & 376–381. [*Brachiopoda*, p. 379.]

CHEESEMAN, T. F. On the *Mollusca* of the vicinity of Auckland. Tr. N. Z. Inst. xix, pp. 161–176. [*Brachiopoda*, p. 176.]

CLAUS, C. Lehrbuch der Zoologie, 4th ed. Marburg & Leipzig: 1887, 8vo, 886 pp., 792 cuts. [*Brachiopoda*, pp. 621–625.]

COLLIN, J. Brachiopoder, Muslinger og Snegle fra Kara-Havet: in, Dijmphna-Togtets zool.-bot. Udbytte. Copenhagen: 1887, 8vo, pp. 439–472, pls. xl & xli; also separately, Copenhagen. [*Brachiopoda*, p. 441.]

DAUTZENBERG, P. Nouvelle liste de coquilles de Cannes. Feuill. Nat. xvi, pp. 127–130, 1886.

DAVIDSON, T. A Monograph of Recent *Brachiopoda*. Part II. Tr. L. S. (2) iv, pp. 75–182, pls. xiv–xxv.

DODD, B. S. On the Discovery of a New Marine Shell, found at Skegness and Sutton-on-Sea. Tr. Nott. Nat. Soc. 1886, p. 76.

[illegible] MARQUIS DE. Sous les mers. Campagnes d'explorations du "Travailleur" et du "Talisman." Paris: 1887, 8vo, 340 pp., cuts.

[illegible]HER, A., & SMITH, E. A. Guide to the Shell and Starfish Galleries (*Mollusca*, *Echinodermata*, *Vermes*) in the Department of Zoology [illegible] British Museum (Natural History), Cromwell Road, London, London: 1887, 8vo, 74 pp., cuts & plan. [Prepared by [illegible]MITH, edited by A. GÜNTHER. *Brachiopoda*, pp. 47 & 48.]

RIDLEY, [illegible] tion [illegible] abstr.,

HADDON, A. C. An Introduction to the Study of Embryology. London: 1887, 8vo, 336 pp., cuts.

HEILPRIN, A. The Geographical and Geological Distribution of Animals. London: 1887, 8vo, 435 pp. [*Brachiopoda*, pp. 252-258.]

JEFFERYS, C. A Complete Catalogue of British *Mollusca*. Compiled from Jeffreys' "British Conchology," with Alterations and Additions to date. Gloucester: 1887, 8vo, 53 pp. [*Brachiopoda*, p. 17.]

JOUBIN, L. Note sur l'anatomie des Brachiopodes articulés. Bull. Soc. Z. Fr. xii, pp. 119-126, pl. i; abstr. J. R. Micr. Soc. 1887, p. 573.

LIGHTON, W. R. Preliminary Notes on a Study of *Atrypa reticularis*, Linn. Bull. Washb. Coll. ii, pp. 2-5.

LOCARD, A. Prodrome de malacologie française. Mollusques marins. Ann. Soc. Agric. Lyon (5) ix, pp. 1-320, 1886; also separately, Paris, Lyon: 1886. [*Brachiopoda*, pp. 314-320.]

MARSHALL, J. T. On some new British Shells. J. of Conch. v, pp. 186-192, pl. i, figs. 1-4.

MARTENS, E. VON. Eine restaurirte Brachiopoden-Schale. SB. nat. Fr. 1887, p. 96.

—— & PFEFFER, G. Die Mollusken von Süd-Georgien nach der Ausbeute der Deutschen Station, 1882-1883. JB. Hamb. iii, pp. 63-135, 4 pls. [Species here described for the first time are ascribed to Dr. PFEFFER. *Brachiopoda*, pp. 130-132, pl. iv, fig. 16.]

NICHOLSON, H. A. A Manual of Zoology for the use of Students. 7th ed. Edinburgh: 1887, 8vo, 939 pp., cuts. [*Brachiopoda*, pp. 435-443.]

ŒHLERT, D. P. Brachiopodes: in, FISCHER, Manuel de Conchyliologie [*cf. Moll.* p. 9, *anteà*], pp. 1189-1334, cuts.

REIN, —. Ueber *Lingula anatina*, Lam., und die übrigen jetzt lebenden *Lingula*-Arten. SB. niederrhein. Ges. xliv, p. 119.

ROLLE, H. Auf Corsica. Eine naturwissenschaftliche Reise nebst specieller Beschreibung des Molluskenfanges an den Küsten bei Bonifacio im Monat Mai-Juni, 1886. JB. mal. Ges. xiv, pp. 51-83.

SOLLAS, W. J. The "Cœcal Processes" of the Shells of Brachiopods interpreted as sense-organs. Sci. P. R. Dubl. Soc. v, pp. 318-320, cut; abstr. J. R. Micr. Soc., 1887, p. 573.

STUXBERG, A. Faunan på och kring Novaja Semlja: in, Vega-Expeditionens Vetenskapliga Jakttagelser, v, pp. 1-239, pl. i. [*Brachiopoda*, p. 152.]

TATE, R. A Revision of the Recent Lamellibranch and P *Mollusca* of South Australia. Tr. R. Soc. S. Australia, iv [*Brachiopoda*, pp. 110 & 111.]

VOGT, C., & YUNG, E. Lehrbuch der praktischen vergleichenden Anatomie. Brunswick: 1887, 8vo. [*Brachiopoda*, pp. 699–733.]

WILSON, J. B. List of *Gastropoda*, *Lamellibranchiata*, and *Brachiopoda* Obtained at or Near Port Phillip Heads. Vict. Nat. iv, pp. 116–118.

TEXT-BOOKS, ANATOMY, &c.

DAVIDSON'S Monograph is continued; no new species are described in it.

CEHLERT issues a complete handbook to the *Brachiopoda*, both recent and fossil, as a conclusion to FISCHER'S "Conchyliologie." The anatomy, embryology, and distribution are treated, and the following classification is adopted :—

INARTICULATA, with fams.—1, *Lingulidæ*; 2, *Obolidæ*; 3, *Siphonotretidæ*; 4, *Discinidæ*; 5, *Craniidæ*; 6, *Trimerellidæ*.

ARTICULATA, with fams.—1, *Productidæ*; 2, *Strophomenidæ*; 3, *Koninckinidæ*; 4, *Spiriferidæ*; 5, *Atrypidæ*; 6, *Rhynchonellidæ*; 7. *Terebratulidæ*; 8, *Stringocephalidæ*; 9, *Megathyridæ*; 10, *Thecideidæ*.

The new generic terms proposed will be found in the sequel.

The peduncle of *Terebratulina* and *Argiope* is a closed sac, which is applied against the hind wall of the mantle. The minute structure is described. A varying number of small hairs, each terminating in a sucker, is formed, which are comparable as regards function with the byssus of Pelecypods; JOUBIN.

The cæcal processes in the shell of *Waldheimia* are epidermal outgrowths, with a granular invaginated terminal cell, continuous with a nerve-filament, a structure suggestive of the view that they may be sense-organs; SOLLAS.

General account of the anatomy are given by CLAUS, GÜNTHER & SMITH, NICHOLSON, and VOGT & YUNG. Of the embryology by HADDON. Modes of preservation; CASTELARNAU Y DE LLEOPART.

GEOGRAPHICAL DISTRIBUTION.

General discussion of; HEILPRIN.

Arctic Seas. *Rhynchonella psittacea*; COLLIN; STUXBERG.

British Seas. 8 spp. (none new); JEFFERYS.

Lincolnshire. *Terebratula papillosa*, n. sp.; MARSHALL; see also DODD.

Atlantic. Few deep water forms; FOLIN.

France. 16 spp.; LOCARD.

Cannes. *Cistella cordata* and *C. cuneata*; DAUTZENBERG.

Corsica. 3 spp. recorded; ROLLE.

VOL *Australia.* 5 spp. (none new); TATE.

RIDLEY, *illip.* 3 spp.; WILSON.

tion *d.* *Terebratella rubricunda*; CHEESEMAN.

abstr., *rgia.* *Waldheimia smithii*, n. sp.; MARTENS & PFEFFER.

INARTICULATA.

LINGULIDÆ.

Lingula anatina collected in basketfuls for market at Shimabara; REIN.

OBOLIDÆ.

* *Lukhmina*, n. n., = *Davidsonella*, Waagen, 1885 (*nec* Munier-Chalmas, 1880); ŒHLERT, p. 1265.

ARTICULATA.

PRODUCTIDÆ.

Etheridgina, n. subg. of *Productus*, for *P. complectens*, Etheridge; ŒHLERT, p. 1278.

Proboscidella, n. subg. of *Productus*, for *P. proboscideus*, Davidson; *id. t. c.* p. 1277.

STROPHOMENIDÆ.

Cadomella, Munier-Chalmas, n. g., for *C. moorei*, Davidson; ŒHLERT, p. 1285.

Douvillina, n. g., for *D. dutertrei*, de Verneuil; *id. t. c.* p. 1282.

Rhipidomys, n. subg. of *Orthis*, for *O. michelini*, Léveillé; *id. t. c.* p. 1288.

ATRYPIDÆ.

Atrypa reticularis, account of variations of; LIGHTON.

RHYNCHONELLIDÆ.

Peregrinella, n. sect. of *Rhynchonella*, for *P. multicarinata*, Lamk.; ŒHLERT, p. 1305.

Rhynchonella woothwardi, showing restoration after injury; MARTENS.

Rhynchoporina, n. n., = *Rhynchopora*, King, 1856 (*nec* Illiger & Latreille); ŒHLERT, p. 1305.

Sieberella, n. sect. of *Conchidium*, for *S. sieberi* (von Buch); *id. t. c.* p. 1311.

TEREBRATULIDÆ.

Liothyrina, n. n., = *Gryphus*, Megerle, 1811 (*nec* Brisso
Liothyris, Douvillé, 1880 (*nec* Conrad, 1875); ŒHLERT, p.

Rhynchorina, n. subg. of *Magas*, for *R. spathulata* (Wahlenberg); *id. t. c.* p. 1326.

Magellania, Bayle, 1880, adopted in preference to *Waldheimia*, King, 1850, which is said to be preoccupied by Brullé, 1846; *id. t. c.* p. 1317.

Terebratula papillosa, n. sp., Lincolnshire; MARSHALL, pp. 186–190, pl. i, figs. 1–3; see also DODD.

Waldheimia smithii, n. sp., S. Georgia; MARTENS & PFEFFER.

THECIDEIDÆ.

Thecidella, Munier-Chalmas, n. subg. of *Thecidea*, for *T. normaniana*, Munier-Chalmas, n. sp. [*sine descrip.*]; OEHLERT, p. 1330.

Thecidiopsis, Munier-Chalmas, n. sect. of *Thecidea*, for *T. digitata*, Sowerby; *id. ibid.*

vol.,

RIDLEY,
tion
abstr.,

POLYZOA.

BY

WILLIAM E. HOYLE, M.A., F.R.S.E.

BARROIS, J. Mémoire sur la métamorphose de quelques bryozoaires. Bibl. haut. études, xxxii, No. 5, 94 pp., 4 pls., 1886. [*Cf.* Zool. Rec. xxiii, *Pol.* p. 1.]

CASTELLARNAU Y DE LLEOPART, J. M. DE. Procédés pour l'examen et la conservation des animaux à la station zoologique de Naples. J. Microgr. xi, pp. 183, 215, & 376–381. [*Polyzoa*, p. 379.]

CLAUS, C. Lehrbuch der Zoologie. 4th Ed. Marburg & Leipzig: 1887, 8vo, 886 pp., 792 cuts. [*Polyzoa*, pp. 614–620.]

DOLLFUS, G. Bryozoaires. Ann. géol. univ. Paris, iii, pp. 181–188.

FOERSTE, A. F. (1) Coal Measure *Bryozoa* from Flint Ridge. Appendix III: in, HERRICK, C. L. A Sketch of the Geological History of Licking Co., Ohio, accompanying an Illustrated Catalogue of Coal Measure Fossils from Flint Ridge. Bull. Denison Univ. ii, pp. 4–88, pls. i–vii. [*Polyzoa*, pp. 71–88, pl. vii.]

——. (2) Recent Methods in the Study of *Bryozoa*. Science, x, pp. 225 & 226.

FOLIN, MARQUIS DE. Sous les mers. Campagnes d'explorations du "Travailleur" et du "Talisman." Paris: 1887, 8vo, 340 pp., cuts.

FOETTINGER, A. Sur l'anatomie des Pédicellines de la côte d'Ostende. Arch. Biol. vii, pp. 299–329, pl. x; abstr., J. R. Micr. Soc. 1888, pp. 208 & 209.

GUERNE, J. DE. (1) Sur la faune des îles de Fayal et de San Miguel (Açores). CR. cv. pp. 764–766.

VOIT, S. F. (1) Appendix: in, M'INTOSH *postea*. Pp. 39–47, cuts.

RIDLEY, ? Sur l'embryogénie des bryozoaires ectoproctes. Arch. Z. tion o. (2) v, pp. 443–458, pls. xvii & xviii; abstr., J. R. Micr. Soc. abstr., o. 721 & 722.

HENSEN, V. Ueber die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thieren. Ber. Komm. wiss. Unters deutsch. Meere, v, pp. 1–108 + xix, pls. i–vi. [*Polyzoa*, pp. 65–67.]

HERDMAN, W. A. The Reproductive Organs of *Alcyonidium gelatinosum*. Nature, xxxvii, p. 213; abstr., J. R. Micr. Soc. 1888, p. 208.

HINCKS, T. (1) Critical Notes on the *Polyzoa*. Ann. N. H. (5) xix, pp. 150–164; abstr., J. R. Micr. Soc. 1887, p. 377.

——. (2) The *Polyzoa* of the Adriatic; a Supplement to Prof. Heller's "Die Bryozoen des adriatischen Meeres," 1867. (Continued.) Ann. N. H. (5) xix, pp. 302–316, pl. ix.

——. (3) On the *Polyzoa* and *Hydroida* of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. J. Anderson, F.R.S., Superintendent of the Museum. J. L. S. xxi, pp. 121–135, pl. xii, & cuts. [*Polyzoa*, pp. 121–132.]

KAFKA, J. Die Süsswasserbryozoen Böhmens. Arch. naturw. Landesforsch. Böhmens, vi, No. 2, 73 pp., 39 cuts.

KOROTNEFF, A. (1) Zur Entwickelung der *Alcyonella fungosa*. Zool. Anz. x, pp. 193 & 194; abstr., J. R. Micr. Soc. 1887, pp. 741 & 742.

——. (2) Sur la spermatogénèse. C.R. cv, pp. 953–955; abstr., J. R. Micr. Soc. 1888, p. 27.

KRAEPELIN, K. (1) Die Deutschen Süsswasser-Bryozoen. Eine Monographie. I. Anatomisch-Systematischer Teil. Abh. Ges. Hamb. x, 168 pp., 7 pls.; abstr., Biol. Centralbl. vii, p. 724.

——. (2) Jahresbericht über die Bryozoën für 1882 und 1883. Arch. f. Nat. li, Bd. ii, pp. 174–196.

LOMAS, J. On the Occurrence of Internal Calcareous Spicules in *Polyzoa*. P. Liverp. Geol. Soc. v, 3 pp.

MACGILLIVRAY, P. (1) *Polyzoa*: in, MCCOY, Prodr. Zool. Vict., Dec. xii, pls. 116–118, 1886; Dec. xiii, pls. 126–128; Dec. xiv, pls. 136–138, Dec. xv, pls. 146–148.

——. (2) Descriptions of New or Little Known *Polyzoa*. Part IX. Tr. R. Soc. Vict. xxii, pp. 128–139, pls. i–iii.

——. (3) Part X. *Op. cit.* xxiii, pp. 34–38, 2 pls.

——. (4) Part XI. *T. c.* pp. 64–72, 3 pls.

——. (5) Part XII. *T. c.* pp. 179–186, 2 pls.

——. (6) Catalogue of the Marine *Polyzoa* of Australia. *T. c.* pp. 187–224.

M'INTOSH, W. C. Report on *Cephalodiscus dodecalophus*, M'Intosh, a new type of the *Polyzoa*, procured on the Voyage of H.M.S. 'Challenger,' during the years 1873–76: in, Report on the Results of the Voyage of H.M.S. 'Challenger,' vol. x London, Edinburgh, & Dublin: 1887, 4to, 48 pp., 7 pls.

MARSSON, T. Die Bryozoen der weissen Schreibkreide der Insel Rügen. Pal. Abh. iv, 112 pp., 10 pls.

MÖBIUS, K. (1) Systematische Darstellung der Thiere des Plankton gewonnen in der westlichen Ostsee und auf einer Fahrt von Kiel in den atlantischen Ocean bis jenseit der Hebriden. Ber. Komm. wiss. Unters deutsch. Meere, v, pp. 109–126, pls. vii & viii. [*Polyzoa*, p. 117.]

NICHOLSON, H. A. A Manual of Zoology for the use of Students. 7th ed. Edinburgh : 1887, 8vo, 939 pp., cuts. [*Polyzoa*, pp. 424–435].

OSTROUMOFF, A. (1) Erwiederung auf den Artikel Herrn Reinhard's "Zur Kenntnis der Süsswasserbryozoen" [Zool. Anz. No. 241]. Zool. Anz. x, pp. 168 & 169.

——. (2) Zur Entwickelungsgeschichte der cyclostomen Seebryozoen. MT. z. Stat. Neap. vii, pp. 177–190, pl. vi ; abstr., J. R. Micr. Soc. 1887, pp. 740 & 741.

——. (3) Opit izslyedovaniya mchanok Sevastopolskoi Bukhti v sistematitsheskom i morphologitsheskom othomeniyakh. Die Bryozoen der Bucht von Sebastopol, vollständigere Ausgabe mit einem ganz neuen Theile über die Morphologie der Bryozoen. Trudui Kazan. Univ. xvi, 2, 122 pp., 5 pls., 1886. [*Cf.* Zool. Rec. xxiii, *Pol.* p. 2.]

——. °(4) Metamorphoz u *Alcyonella* e ego znachenie. [The Metamorphosis of *Alcyonella* and its Significance.] Trudui Kazan. Univ. Protok. 1886–87, No. 91, 8 pp.

PERGENS, E. (1) Pliocäne Bryozoën von Rhodos. Ann. Hofmuseum Wien, ii, pp. 1–34, pl. i ; also separately, Vienna : 1887, 8vo.

——. (2) Les Bryozoaires du Tasmajdan, à Belgrade. P.-v. Soc. mal. Belg. xvi, pp. xiv–xxx.

——. (3) Note préliminaire sur les Bryozoaires fossiles des environs de Kolsovár. *T. c.* pp. xxxvii–xli.

——. (4) Note supplémentaire sur les Bryozoaires du Tasmajdan. *T. c.* pp. lxv & lxvi.

——. (5) Sur l'age de la partie supérieure du tufeau de Ciply. Bull. Soc. belg. géol. i, pp. 204–207.

——, & MEUNIER, A. La faune des bryozoaires garumniens de Faxe. Bull. Soc. mal. Belg. xxi, pp. 187–242, pls. ix–xiii.

REINHARD, W. (1) Zur Kenntniss der Süsswasser-Bryozoen. [Aus Anlass einer Bemerkung des Herrn Oostroumoff (Zool. Anz. No. 232).] Zool. Anz. x, pp. 19 & 20.

——. (2) Antwort auf die Notiz des Herrn Ostroumoff in No. 247 der vorlieg. Zeitschrift. *T. c.* pp. 382 & 383.

RIDLEY, S. O. On the Characters of the Genus *Lophopus*, with Description of a new Species from Australia. J. L. S. xx, pp. 61–64, pl. ii ; abstr., J. R. Micr. Soc. 1887, p. 742.

ROMINGER, C. Description of a new form of *Bryozoa*. P. Ac. Philad. 1887, p. 11, pl. i, fig. 10.

°STUCKENBERG, A. Koralli e Inshanke verkhnyago yarusa Srednerusskago kammenougolnago ezvestnyaka [Corals and *Polyzoa* of the Upper Carboniferous limestone of Middle Russia]. Trudui Kazan. Univ. Protok. 1886-87, No. 92, 3 pp.

STUXBERG, A. Faunan på och kring Novaja Sembja : in, Vega-Expeditionens Vetenskapliga Jakttagelser, v, pp. 1–239, pl. i. [*Polyzoa*, pp. 100–117]

VERWORN, M. Beiträge zur Kenntniss der Süsswasserbryozoen. Z. wiss. Zool. xlvi, pp. 99–130, pls. xii & xiii, cut ; abstr., J. R. Micr. Soc. 1888, pp. 27–29.

VIGELIUS, W. J. (1) Contributions à la Morphologie des Bryozoaires ectoproctes. Tijdschr. Nederl. Dierk. Ver. (2) i, pp. 77–92, pl. vi ; abstr., J. R. Micr. Soc. 1887, pp. 571 & 572.

——. (2) Zur Morphologie der marinen Bryozen. Zool. Anz. x, pp. 237–240 ; abstr., J. R. Micr. Soc. 1887, pp. 572 & 573.

VINE, G. R. (1) Notes on a Species of *Entalopora* from the Neocomian Clay of Lincolnshire. Ann. N. H. (5) xix, pp. 17–19.

——. (2) Jurassic *Polyzoa* in the neighbourhood of Northamptonshire. J. Northampt. Soc. iv, pp. 202–211, pl. i.

——. (3) Notes on the *Polyzoa* and other organisms from the Gayton Boring, Northamptonshire. *T. c.* pp. 255–266.

VOGT, C., & YUNG, E. Lehrbuch der praktischen vergleichenden Anatomie. Brunswick : 1887, 8vo. [*Polyzoa*, pp. 679–699.]

WALFORD, E. A. Notes on some *Polyzoa* from the Lias. Q. J. Geol. Soc. xliii, pp. 632–636, pl. xxv ; abstr., Ann. N. H. (5) xx, p. 142.

WATERS, A. W. (1) *Bryozoa* from New South Wales, North Australia, &c. Part I, Ann. N. H. (5) xx, pp. 81–95, pl. iv. Part II, *t. c.* pp. 181–203. Part III, *t. c.* pp. 253–265, pl. vii.

——. (2) On Tertiary Chilostomatous *Bryozoa* from New Zealand. Q. J. Geol. Soc. xliii, pp. 40–72, pl. vi–viii, and woodcut ; abstr., Ann. N. H. (5) xix, p. 236.

——. (3) On Tertiary Cyclostomatous *Bryozoa* from New Zealand. *T. c.* pp. 337–350, pl. xviii ; abstr., Ann. N. H. (5) xx, p. 139.

WHITELEGGE, T. Notes on some Australian *Polyzoa*. P. Linn. Soc. N.S.W. (2) ii, pp. 337–347.

°WIERZEJSKI, A. O Mszywiolach (*Bryozoa*) krajowych [On native *Bryozoa*]. Sprawozd. Kom. fizyjogr. xxi; also separately, Cracow : 1887, 8vo, 16 pp.

ANON. Analytical Key to the Fresh-water *Polyzoa*. J. Trenton Soc. i, pp. 59–67, pl.

ANATOMY AND PHYSIOLOGY.

The first part of an elaborate monograph of German fresh-water *Polyzoa* is issued, containing sections on History and Literature, Anatomy and Systematic arrangement, with phylogenetic conclusions which have been already indicated [*cf.* Zool. Rec. xxiii, *Pol.* pp. 2 & 5]; KRAEPELIN.

A smaller monograph, with zincographic illustrations, is given of the Bohemian forms (8 species); KAFKA.

The full description of *Cephalodiscus dodecalophus*, generally recognised as one of the most interesting organisms collected by the 'Challenger,' is given; for summary of characters *cf.* Zool. Rec. xix, *Moll.* p. 115; the supposed eyes are pigmented oviducts; relations to *Rhabdopleura*, *Phoronis*, and *Balanoglossus* discussed; MCINTOSH.

Cephalodiscus is found to possess an unpaired body-cavity in the proboscis, proboscis- and collar-pores, gill-slits, and a notochord. Under these circumstances, the question is raised whether it (and *Rhabdopleura* also ?) should not be removed to the *Hemichordata*; HARMER (1).

The chief peculiarities of *Cristatella* are the presence of a movable pedal disc, the absence of an ectocyst, and a fold of the endocyst, in consequence whereof the anterior and posterior parieto-vaginal muscles have disappeared. The ectoderm of the pedal disc contains large vesicular cells, clear mucous cells, and long cylindrical glandular cells, between which are excretory pores. The cylindrical cells secrete a chitinous membrane, which facilitates locomotion. The foot has both longitudinal and transverse muscles. Its cavities are lined with mesodermal ciliated epithelium. The walls of the separate individuals resemble, in the main, those of the disc; the tentacles are evaginations of the lophophore. The foregut is divisible into two distinct parts, the anterior lined by delicate ciliated cells, separated by clefts. The hinder has non-ciliated cells, which do not stain, and are not separated by clefts. Inferiorly there is a circular valve, at the margin of which the gastric epithelium begins. The lumen of the stomach is stellate, owing to its being lined by two kinds of cells of different lengths, and apparently discharging different functions. The process of digestion as observed in the living animal is described. The funiculus is formed solely by the mesoderm. A colonial nervous system was not detected, and an alternative explanation of the creeping movements is offered. The development of the statoblasts is described, and the view maintained that they are parthenogenetic winter ova which, unlike the fertilized ones, are developed on the funiculus; VERWORN.

The fine partition walls which separate the individuals of *Alcyonidium* are perforated, and correspond to the communication plates of *Ectoprocta*. The parenchymatous tissue generally agrees with that of *Flustra* and *Bugula*. *Zoobotryon* and *Mimosella* have a masticatory stomach. The circular canal is always present, and in *Alcyonidium mytili* contains on either side an organ like a ganglion. In *Crisia*, the generative cells are formed exclusively in the brood capsules. In *A. mytili* the intertentacular organ lies beneath the sheath of the tentacles, and has an epithelial covering; VIGELIUS (2).

Peculiar closure of cells in *Entalophora*, *vide postea*, p. 9.

Alcyonidium gelatinosum has internal spicules, which have perhaps been taken for those of Sponges when found fossil; LOMAS.

In *Farella repens* an epithelium of large cells seems to exist near the tegumentary skeleton, resembling the ectoderm of *Loxosoma* and *Pedicellina*. In *Flustra*, the endocyst and endosarc are non-epithelial, but consist of formative cells; the muscle-fibres are these cells elongated. Two embryonic layers take part in the budding: the epithelial layer which invests the cavity of the young bud represents both mesoderm and endoderm; VIGELIUS (1).

The mandible of *Catenicella* exhibits a comparatively large central portion, "consisting of only one layer, and nearly transparent," which may be called the "lucida"; particulars are also given regarding the mode of rooting of many species; WATERS, (1) pp. 83–85.

In *Pedicellina* the segmental organs terminate in a cell with a long vibratile filament; the two tubes open by a single orifice at the level of the intertentacular space. The individuals, and even the colonies, are unisexual. The testes are two, and their excretory duct opens near the segmental organs; there are two ovaries, whose ducts unite into a common canal, leading into the incubatory chamber. The oviducal apparatus serves also for the reception of spermatozoa, which are found in the ovaries themselves. The central nervous system consists of a bilobed brain, the position of which varies in different species; FOETTINGER.

In *Alcyonidium gelatinosum* the colony is hermaphrodite: certain colonies, which were spotted with grayish white or pale yellow, were virtually males. They contained only a few undeveloped ova, and hence are probably proterandrous; HERDMAN.

Spermatogenesis of *Alcyonella fungosa*; KOROTNEFF (2). See *Gen. Sub.* p. 35, *antea*.

In the early larva of the *Cyclostomata* Metschnikoff seems to have mistaken the mantle-cavity for the endodermal one. The larva becomes attached by its sucker, the hind wall of which forms a basal plate and secretes a cuticular substance. The mantle fuses with the periphery of the plate. At one point a little cellular plate is formed, which is the ectodermal rudiment of the polypide. A temporary endothelial sheath is formed around the nutrient tube. The "primitive Bryozoon" stage consists of two surfaces, separated by a cleft, one of which may be called pallial, the other basal: the primary zoœcium is formed at the expense of the former, and has the shape of a casket, which is regarded as a primitive phylogenetic form. The basal side gives off an outgrowth, comparable with the stolon of the *Vesicularïidæ*. In *Crisia* gemmation is independent of the basal wall. A comparison is instituted between the mantle-cavity of the *Polyzoa* and the cephalic amnion-cavity of *Sipunculus*; OSTROUMOFF (2).

In *Alcyonidium polyoum* the large ova segment in the mode characteristic of the *Ctenostomata* and *Cheilostomata*. There is reason to think that the region immediately behind the opening of the sucker represents the anal region; if so, the embryo is entoproctous. The cavity of the embryonic stomach is gigantic, but its epithelium is quite different from

an ordinary secreting one, hence it may be a rudimentary organ. The aboral groove is probably to allow of the involution of the ciliary circlet. The pyriform organ is probably sensory; it is compared with the cephalic shield of *Lepadorhynchus*. The nervous system seems to be epiblastic in origin, and to correspond with the dorsal organ of the *Entoprocta*. *Cyphonautes* is probably not archaic. Repiachoff's mantle cavity is very likely the internal sac or sucker; HARMER (2).

In *Alcyonella fungosa* the circular fold, which forms a cap to the planula, may appear either before or after the buds. In the former case it consists only of ectoderm, and is attached to the inner surface of the œcial sac; the line of fusion becomes broad and band-like, forming a true zonary placenta. The true cap appears later. After this placenta is formed two buds appear, and then another fold in the middle line, consisting of both ectoderm and endoderm. It pushes the placenta upwards, which then degenerates, and possibly serves as food for the developing polypide. The two folds may be compared with the ciliary bands of the Annelid larva; KOROTNEFF (1).

REINHARD (1) replies to a statement by OSTROUMOFF that in his account of the metamorphosis of *Alcyonella* he had described merely pathological processes; his remarks are criticised by the latter (1), and he replies (2).

A key to the fresh-water *Polyzoa*, based upon Jullien [*cf.* Zool. Rec. xxi, *Pol.* p. 1] is published by an anonymous writer; J. Trenton Soc. i, pp. 59–67.

Remarks on the determination of *Bryozoa* by means of sections; FOERSTE: see also JAMES, *t. c.* p. 252.

Preservation of specimens; CASTELLARNAU.

General text-books; CLAUS; NICHOLSON; VOGT & YUNG.

Records of literature; DOLLFUS; KRAEPELIN.

GEOGRAPHICAL DISTRIBUTION.

Murman and Kara Seas. 47 species, none new; STUXBERG.

Atlantic. Few deep-water forms; FOLIN. Few pelagic forms; HENSEN; MÖBIUS.

Northamptonshire. 15 species from Jurassic formation, none new; VINE (2): few other forms; *id.* (3). A few species are new, from the Lias; WALFORD.

Ciply. Few fossil species, none new; PERGENS (5).

Faxö. 55 fossil species, 6 new; *Tuberculipora*, n. g.; PERGENS & MEUNIER.

Rügen. List of fossil species, many new; MARSSON.

Germany. Monograph of fresh-water species; KRAEPELIN (1).

Bohemia. 8 species; KAFKA.

Klausenberg. 65 fossil species; PERGENS (3).

Sorrento. 2 new spp.; MACGILLIVRAY (4).

Belgrade. 22 fossil species, none new; PERGENS (2): also 4 additional; *id.* (4).

Rhodes. 60 Pliocene forms described; 2 n. spp.; *id.* (1).

Laqoa Grande, Azores. *Plumatella repens*, L., often 0·3 metre long; statoblasts often found isolated; Guerne.

Mergui Archipelago. List of species brought up to 20, 2 n. spp.; Hincks (3).

Gaspar Strait. 3 n. spp.; MacGillivray (5).

Australia. 93 species (7 n. spp.), many figured, with notes; Waters (1).

Victoria. A catalogue is given of the marine forms (about 350 species), with definitions of genera and references to descriptions of species; MacGillivray (6). Many species figured, 6 new species described; *id.* (1).

Paramatta River. *Lophopus tendenfeldi*, n. sp.; Ridley.

New Zealand. Of 78 fossil *Chilostomata*, 61 are known living, and 29 from New Zealand seas, 28 from Australian seas; Waters, (2) p. 43. Out of 28 fossil *Cyclostomata*, 18 are known living; *id.* (3) p. 339.

United States. *Patellipora stellata*, n. sp.; Rominger.

Flint Ridge, Ohio. 14 Carboniferous species, 5 new; *Chainodictyon*, n. g.; Foerste (1).

PTEROBRANCHIA.

Aspidophora.

Cephalodiscus, anatomy, &c.; *vide suprà*, p. 5.

EUPOLYZOA.

ENTOPROCTA.

Pedicellinidæ.

Pedicellina benedeni, n. sp., Belgium; Foettinger.

ECTOPROCTA.

PHYLACTOLÆMATA.

Plumatellidæ.

Lophopus: amended generic diagnosis. *L. tendenfeldi*, n. sp., N. S. Wales; Ridley.

Plumatella princeps, n. n. for *P. polymorpha*; Kraepelin, (1) pp. 119 & 122.

GYMNOLÆMATA.

CYCLOSTOMATA.

Waters (3) proposes to divide these into "(1) those in which the surface of the zoarium is to a considerable extent formed of the lateral walls of the zoœcia" (*Parallelata*), and "(2) those in which the zoœcia or cancelli open for the most part at right angles to the axis" (*Rectangulata*). The rays, or hair-like teeth, have been found preserved in *Entalophora intricaria*.

TUBULIPORIDÆ.

Clavisparsa turbinata, n. sp., Rügen, chalk ; MARSSON, p. 21, pl. i, fig. 7.

Clinopora, n. g., for *Entalophora lineata*, Beissel, and *C. costulata*, n. sp., Rügen, chalk; *id. t. c.* p. 24, pl. ii, fig. 3.

Crassohornera waipukurensis, n. sp., New Zealand ; WATERS, (3) p. 349, pl. xviii, figs. 2, 3, 4, & 9.

Entalophora gracilis, Goldf., var.?, peculiar closure, (1) in the throat of the tube, (2) also "over a similar position in the tube, but where the front wall of the cell is curved inwards and covering the whole throat of the tube ;" VINE (1). *E. wanganuiensis*, n. sp., New Zealand ; WATERS, (3) p. 340, pl. xviii, fig. 1.

Heteropora reticulata, n. sp., Rügen, chalk ; MARSSON, p. 26, pl. ii, fig. 4. *H. napierensis*, n. sp., New Zealand ; WATERS, (3) p. 348.

Liripora, n. g., for *Diastopora lineata* and *D. fasciculata*, MacG. ; MACGILLIVRAY, (5) p. 182.

Pustulopora smittii, n. sp., Pliocene, Rhodes ; PERGENS, (1) p. 8.

Rhipidopora, n. g. : zoarium erect, expanding like a fan from a narrow base, wavy or notched at the margin. Apertures of zoœcia tubular in loose quincunxes ; none in the upper part ; for *R. flabellum*, Rügen, chalk ; MARSSON, pp. 21 & 22, pl. i, fig. 8.

Stomatopora geminata, n. sp., Port Phillip Heads ; MACGILLIVRAY, (3) p. 36, pl. ii, fig. 3. *S. pedicellata*, n. sp., Rügen, chalk; MARSSON, p. 14, pl. i, fig. 1.

Sulcocava costulata, n. sp., Rügen, chalk ; *id. t. c.* p. 24, pl. ii, fig. 1.

Tubulipora inconstans, n. sp., Northamptonshire, Lias; WALFORD, p. 633, pl. xxv, figs. 1–9 & 12. *T. biduplicata*, n. sp., New Zealand ; WATERS, (3) p. 343, pl. xviii, figs. 12 & 14.

MONTICULIPORIDÆ.

Stenopora ohioensis, n. sp., Ohio ; FOERSTE, (1) p. 85, pl. vii, fig. 12.

DIASTOPORIDÆ.

Cavarinella, n. g., for *Cavaria ramosa*, v. Hagenow, Rügen, chalk ; MARSSON, p. 19, pl. i, fig. 6.

Cryptoglena, n. g., zoarium of one layer, with cells and accessory cells on one side. Zoœcia indistinctly quincuncial, accessory cells with narrow peduncular base, gradually widening, constricted, reaching to the surface, but closed ; for *C. adspersa*, n. sp., Rügen, chalk ; MARSSON, p. 16, pl. i, fig. 3.

Diastopora patina, Lmk., is not that of Heller, which is *Lichenopora radiata*, Aud. ; HINCKS, (2) p. 307. *D. nova*, n. sp., = *Tubulipora congesta*, Reuss (*pars*), Faxö ; PERGENS & MEUNIER, p. 200. *D. subreniformis*, n. sp., Rügen, chalk ; MARSSON, p. 16, pl. i, fig. 2. *D. sarniensis*, Norm., var. *perangusta*, n., New Zealand ; WATERS, (3) p. 342.

D. cristata, *D. capitata*, n. spp., Port Phillip Heads; MacGillivray, (3) pp. 36 & 37, pl. ii, figs. 1 & 2.

Epidictyon, n. g., for *Eschara tenuis*, v. Hagenow, Rügen, chalk: Marsson, p. 17, pl. i, fig. 4.

Idmoneidæ.

Bitubigera compressa, n. sp., Rügen, chalk; Marsson, *t. c.* p. 31, pl. iii, fig. 1.

Crisidmonea, n. g., for *Retepora cancellata* and *R. lichenoides*, Goldfuss, and *C. macropora*, n. sp., Rügen, chalk; *id. t. c.* p. 30, pl. ii, fig. 13.

Filisparsa pulchella, *F. fragilis*, n. spp., Rügen, chalk; *id. t. c.* p. 35, pl. iii, figs. 7 & 8. *F. delcauxi*, n. sp., Pliocene, Rhodes; Pergens (1) p. 6.

Idmonea dorsata, var. *faxoensis*, Faxö; Pergens & Meunier, p. 216, pl. xi, fig. 1. *I. striolata*, p. 28, pl. ii, fig. 9, *I. laticosta*, *I. insignis*, p. 29, pl. ii, figs. 11 & 12, Rügen, chalk; Marsson. *I. interjuncta*, n. sp., Port Phillip Heads; MacGillivray, (2) p. 137. *I. gasparensis*, n. sp., Gaspar St.; *id.* (5) p. 185, pl. ii, fig. 3.

Phormonotus, n. g., for *Filisparsa crassa*, d'Orb., and *P. gracilis*, n. sp., Rügen, chalk; Marsson, p. 34, pl. iii, fig. 6.

Phormopora, n. g.: allied to *Hornera*, but with non-laminate zoarial wall, beneath which is a layer of accessory cells, opening by small pores; for *P. irregularis*, n. sp., Rügen, chalk; *id. t. c.* p. 32, pl. iii, fig. 4.

Retecava areolata, n. sp., Rügen, chalk; *id. t. c.* p. 36, pl. iii, fig. 9.

Reticulipora complanata, n. sp., Rügen, chalk; *id. t. c.* p. 36, pl. iii, fig. 10.

Stigmatachos, n. g.: allied to *Hornera*, but with laminate zoarial wall, without accessory cells, and perforated by microscopic pores; for *S. punctatus*, n. sp., Rügen, chalk; *id. t. c.* p. 32, pl. iii, fig. 3.

Tubigeridæ.

Bisidmonea johnstrupi, n. sp., Faxö; Pergens & Meunier, p. 219, pl. xii, figs. 1–6.

Tuberculipora, n. g., with tubular zoœcia disposed in parallel lines, entirely surrounding the colonies, which have the form of tubercles, depressed at certain points; for *T. östrupi*, n. sp., Faxö; *iid. t. c.* p. 220, pl. ix, fig. 5.

Horneridæ.

Hornera steenstrupi, n. sp., Faxö; Pergens & Meunier, p. 218, pl. xiii, figs. 2–5. *H. ramosa*, n. sp., Port Phillip Heads; MacGillivray, (5) p. 181, pl. i, fig. 4.

Lichenoporidæ.

Flosculipora, n. g.: zoarium pedunculate, with smooth tubes and intervening cancelli above; zoœcia terminal, peristome produced, dimidiate or lacerated, with intervening cancelli; for *F. pygmæa*, n. sp., Port Phillip Heads; MacGillivray, (4) p. 71, pl. iii, fig. 1.

Lichenopora bullata, *L. magnifica*, n. spp., Port Phillip Heads ; *id. t. c.* p. 70, pl. iii, figs. 2 & 3. *L. wilsoni*, n. sp., Port Phillip Heads ; *id.*, (5) p. 187, pl. i, fig. 5. *L. wanganuiensis*, n. sp., New Zealand ; Waters, (3) p. 346, woodcut.

Patellipora stellata, n. sp., Drift, Ann Arbor, U.S.A. ; Rominger.

Reptocavea aspera, n. sp., New Zealand ; Waters, (3) p. 347, pl. xviii, figs. 10 & 13.

Radioporidæ.

Discocytis irregularis, n. sp., Rügen, chalk ; Marsson, p. 42, pl. iv, fig. 1.

Lopholepis foveolata, n. sp., Rügen, chalk ; *id. t. c.* p. 42, pl. iii, fig. 13.

Phyllofrancia, n. g. : zoarium erect, laminar ; zoœcia in multiple rows, which ramify from base to apex ; not separated by septa ; the margin with closely-set germinal pores ; for *P. grandis*, n. sp., Rügen, chalk ; *id. t. c.* p. 43, pl. iv, fig. 2.

Fenestellidæ.

Chainodictyon, n. g., near *Phyllopora*, but with elongated meshes, branches more flattened, and non-striated ; cells in oblique intersecting rows ; for *C. laxum*, n. sp., Ohio ; Foerste, (1) p. 81, pl. vii, fig. 8.

Fistella limbatus, n. sp., Ohio ; *id. t. c.* p. 83, pl. vii, fig. 10.

Cerioporidæ.

Ceriopora strangulata, n. n., = *C. tuberosa*, v. Hagenow (*nec* Römer) ; Marsson, p. 44, pl. iv, fig. 4.

Discosparsa costata, n. sp., Rügen, chalk ; *id. t. c.* p. 44, pl. iv, fig. 5.

Rhabdomesodontidæ.

Rhombopora multipora, n. sp., Ohio ; Foerste, (1) p. 72, pl. vii, fig. 1.

Acanthocladidæ.

Glauconome whitii, n. sp., Ohio ; Foerste, (1) p. 78, pl. vii, fig. 4.

CTENOSTOMATA.

Triticellidæ.

Valkeria verticillata, Heller, is a *Hippuraria*, and = ? *Lagenella nutans*, Joliet (*pars*) ; Hincks, (2) p. 311, pl. ix, fig. 8.

Buskiidæ.

Buskia socialis, n. sp., Adriatic ; Hincks, (2) p. 310, pl. ix, fig. 7. *B. setigera*, n. sp., Mergui Archipelago ; *id.*, (3) p. 127, pl. xii, figs. 9–13.

Vesiculariidæ.

Amathia semiconvoluta, Joliet, = *Bowerbankia citrina*, Hincks; Jullien, Bull. Soc. Z. Fr. xi, p. xxxiii. *A. inarmata*, n. sp., hab.?; MacGillivray, (5) p. 183.

Bowerbankia biserialis, n. sp., Adriatic; Hincks, (2) p. 309, pl. ix, fig. 6,

CHEILOSTOMATA.

Catenicellidæ.

Catenicella, terminology of; Waters, (1) p. 88. *C. urnula*, *C. venusta*, n. spp., Port Phillip Heads; MacGillivray, (3) pp. 34 & 35, pl. i, figs. 2 & 1. *C. geminata*, n. sp., Port Phillip Heads; *id.*, (4) p. 64, pl. i, fig. 1.

Claviporella, n. g., for *Catenicella aurita*, Busk, *C. pulchra*, and *C. imperforata*, n. spp., Port Phillip Heads; *id.* (4) pp. 65 & 66, pl. i, figs. 2 & 3.

Cellulariidæ.

Caberea glabra, n. sp., Port Phillip Heads; MacGillivray, (2) p. 129.

Menipea funiculata, n. sp., Port Phillip Heads; *id. t. c.* p. 128, pl. i, fi[illegible]res; p. 60, pl. vi, figs. 1 & 2. *S. annectens*, n. sp., Gaspar Strait; MacGillivray, (5) p. 184, pl. ii, fig. 1.

Scrupocellaria cretæ, *S. angulata*, n. spp., Rügen, chalk; Mars[illegible]

Bicellariidæ.

Beania conferta, n. sp., Portland, Port Phillip Heads; MacGillivray, (2) p. 130, pl. i, fig. 5.

Bugulella clavata, n. sp., Mergui Archipelago; Hincks, (3) p. 122, cut.

Gemellariidæ.

Dimetopia hirta, n. sp.; MacGillivray, (2) p. 128.

Farciminariidæ.

Farciminaria simplex, n. sp., Port Phillip Heads; MacGillivray, (2) p. 130, pl. i, fig. 1.

Verrucularia dichotoma = *Farciminaria dichotoma*, Busk; "the generic name proposed by Von Suhr, when he supposed it to be an alga"; *id.* (6) p. 189.

Flustridæ.

Biflustra scutelliformis, p. 51, pl. v, fig. 2, *B. munda*, *B. navicularis*, p. 52, pl. v, figs. 4 & 5, *B. radula*, p. 53, pl. v, fig. 6, n. spp., Rügen, chalk; Marsson.

Craspedozoum, n. g., for *Membranipora roborata*, Hincks, and *C. liga-*

latum and *C. spicatum*, n. spp., Port Phillip Heads; MacGillivray, (2) pp. 131 & 132, pl. i, figs. 3 & 2.

Flustra tenella, *F. pusilla*, n. spp., Adriatic; Hincks, (2) pp. 313 & 314, pl. ix, figs. 1 & 9. *F. militaris*, n. sp., Port Jackson; Waters, (1) p. 93, pl. iv, fig. 2.

Pithodella, n. g.: zoarium erect, prismatic, with four or five rows of zoœcia, which lie in areas separated by raised lines; lower part of zoœcium irregularly four or six-sided, broader than the upper; a small round aperture in the operculum; for *P. cincta* and *P. articulata*, n. spp., Rügen, chalk; Marsson, pp. 53 & 54, pl. v, figs. 7 & 8.

Solenophragma, n. g., for *Flustrina baculina*, d'Orb.; *id. t. c.* p. 54, pl. v, fig. 9.

Stichopora crassa, n. sp., Rügen, chalk; *id. t. c.* p. 61, pl. vi, fig. 4.

Membraniporidæ.

Amphiblestrum bursarium, n. sp., Sorrento; MacGillivray, (4) p. 66, pl. ii, fig. 2. *A. argenteum*, n. sp., = *Lepralia trifolium*, MacG. (*nec Membranipora trifolium*, Woods); *id.* (5) p. 179.

Bactrellaria, n. g.: zoarium erect, compressed, dichotomising above; with a single layer of zoœcia, in (generally) three rows, not clearly separate, the upper part with a marginate area; operculum rarely present; for *B. rugica*, n. sp., Rügen, chalk; Marsson, p. 59, pl. v, fig. 18.

Foveolaria lundgreni, n. sp., Faxö; Pergens & Meunier, p. 242, pl. xi, fig. 3.

Membranipora is not very useful palæontologically, because (1) the opesial, and not the true oral aperture, is preserved; and (2) the appearance of the zoœcia is often modified by the presence of the air-cells; Waters, (2) p. 41. *M. formosa*, Seguenza, and *M. bidens*, Hagenow, referred to *Amphiblestrum* and figured; Pergens & Meunier, p. 240, pl. xiii, figs. 5 & 6. *M. seriata*, p. 56, pl. v, fig. 10, *M. declivis*, *M. monocera*, p. 57, pl. v, figs. 13 & 14. *M. munita*, *M. trigonopora*, p. 58, pl. v, figs. 15 & 16, n. spp., Rügen, chalk; Marsson. *M. radicifera*, Hks., not to be transferred to *Beania*, as by MacGillivray; Hincks, (1) p. 158. *M. pectinata*, n. sp., Port Phillip Heads; MacGillivray, (1) pl. 127, fig. 4. *M. occultata*, n. sp., New Zealand; Waters, (2) p. 48, pl. viii. fig. 40.

Monoporellidæ.

Monoporella capensis, B., var. *dentata*, n. (pl. viii, fig. 39). *M. waipukurensis*, n. sp., pl. vi, fig. 11, New Zealand; Waters, (2) pp. 49 & 50.

Microporidæ.

Micropora jervoisii, Hks., not to be referred to *Thairopora*; Hincks, (1) p. 160. *M. ratoniensis*, n. sp., New Guinea; Waters, (1) p. 185, pl. iv, fig. 5. *M. variperforata*, n. sp., New Zealand; *id.* (2) p. 51, pl. viii, fig. 27.

Vincularia, Bk., probably = *Steganoporella*; Hincks, (1) p. 160.

V. pusilla, n. n., = *Quadricellaria excavata*, d'Orb., *V. ventricosa*, p. 63, pl. vi, fig. 5, *V. speculum*, p. 64, pl. vi, fig. 6, *V. indistincta*, *V. rugica*, *V. microstoma*, *V. chilostoma*, p. 65, pl. vi, figs. 7–10, *V. abscondita*, *V. strumulosa*, *V. auriculata*, p. 66, pl. vi, figs. 11–13, *V. exculpta*, p. 67, pl. vi, fig. 14, n. spp., Rügen, chalk; MARSSON.

STEGANOPORELLIDÆ, n. fam.

HINCKS, (1) p. 162, creates this family and divides it into two chief groups: (1) aboral chamber simple, (2) its inferior portion shut off by a diaphragm. (1) contains the genus *Smittipora*, Jull. (incl. *Onychocella*, Jull.); (2) contains *Steganoporella*, Smitt, and *Thalamoporella*, n. g.

Thalamoporella, n. g.: "Zoœcia with the lower compartment divided; from the centre of the anterior extremity of the lamina a narrow calcareous wall is carried up to a level with the margin of the cell, to which it is united, forming an orifice which is partially closed by the operculum; on each side of it is a large foramen. Operculum small, semicircular. Oœcia external, bilobate." For *T. rozieri* (Aud.); HINCKS, (1) p. 163.

ELEIDÆ.

Melicertites squamata, n. sp., Rügen, chalk; MARSSON, p. 47, pl. iv, fig. 9.

Nodelea propinqua, n. sp., Rügen, chalk; *id. t. c.* p. 47, pl. v, fig. 1.

CRIBRILINIDÆ.

Cribrilina asperula, p. 97, pl. x, fig. 8, *C. collaris*, *C. perforata*, *C. tricepe*, p. 98, pl. x, figs. 10–12, n. spp., Rügen, chalk; MARSSON. *C. acanthoceros*, n. sp., Port Phillip Heads; MACGILLIVRAY, (4) p. 68, pl. ii, fig. 4. *C. clithridiata*, n. sp., Port Jackson; WATERS, (1) p. 187, pls. v, fig. 1, & vi, fig. 2.

MICROPORELLIDÆ.

HINCKS (1) proposes to divide the family *Adeonidæ*, Bk., and to include that portion of it which contains the genus *Adeona* in the *Microporellidæ*, which would thus be divisible into two sections: (*a*) "destitute of gonœcia, but furnished with an external marsupium (type *Microporella*)"; (*b*) "destitute of oœcium, but possess (for the most part) gonœcial and avicularian cells (type *Adeona*)."

Flustramorpha, Busk., founded on insufficient grounds; *id. t. c.* p. 157.

ADEONEÆ.

Adeonella, Busk, founded on insufficient grounds; HINCKS, (1) p. 156.

Adeonellopsis, n. g., for *Eschara mucronata* (MacG.) and *A. foliacea*, *latipuncta*, *A. parvipuncta*, *A. australis*, n. spp., Port Phillip Heads, Western-port; MACGILLIVRAY, (2) pp. 133–135, pl. ii, figs. 1–5.

Reptadeonella, Busk, founded on insufficient grounds; HINCKS, (1) p. 157.

Porinidæ.

Acropora insignis, *A. cornuta*, n. spp., Rügen, chalk; Marsson, p. 83, pl. viii, figs. 3 & 4.

Bathystoma, n. g., for *Eschara cordiformis*, v. Hagenow; *id. t. c.* p. 88, pl. ix, fig. 1.

Columnotheca, n. g.: zoarium erect, cylindrical, branched; zoœcia in rings, forming a column divided by transverse septa; not defined outwardly; apertures slightly proboscidiform; for *C. cribosa*, n. sp., Rügen, chalk; *id. t. c.* p. 82, pl. viii, fig. 1.

Lagenipora nitens, n. sp., Port Phillip Heads; MacGillivray, (5) p. 180, pl. i, fig. 1.

Porina spathulata, p. 85, pl. viii, fig. 7, *P. pustulosa*, *P. salebrosa*, *P gastropora*, *P. seriata*, p. 86, pl. viii, figs. 9–12, *P. pachyderma*, p. 87, pl. viii, fig. 13, n. spp., Rügen, chalk; Marsson. *P. inversa*, n. sp., Port Jackson; Waters, (1) p. 190, pls. iv, fig. 23, & v, fig. 5. *P. grandipora*, n. sp., New Zealand; *id.* (2) p. 59, pl. vii, fig. 23.

Systenostoma, n. g., like *Porina*, but with the zoœcia not clearly marked off externally; apertures not prominent, longish, narrow behind; for *S. asperulum*, n. sp., Rügen, chalk; Marsson, p. 89, pl. ix, fig. 2.

Tæniopora, n. g., for *Eschara arachnoidea*, Goldfuss, and *T. crucifera*, n. sp., Rügen, chalk; *id. t. c.* pp. 87 & 88, pl. viii, fig. 14.

Platygenidea, n. fam.

Near *Porinidæ*, but with the aperture not prominent, and with different margin; ovicells present: for,

Platyglena, n. g., for *P. clava*, *affinis*, *P. ocellata*, n. spp., Rügen, chalk; Marsson, pp. 89 & 90, pl. ix, figs. 3–5.

Nephroporidea, n. fam.

Near *Porinidæ*, but with the zoœcia distinctly separated, with depressed operculum; ovicells different in form and position from those of the other families: for,

Nephropora, n. g., for *N. elegans*, n. sp., Rügen, chalk; Marsson, p. 90, pl. ix, fig. 6.

Lekythoglenidea, n. fam.

Intermediate between *Porinidæ* and *Lepraliidæ*: zoœcia prolonged into a kind of neck, at the end of which the aperture is situated: for,

Lekythoglena, n. g., for *L. ampullacea* and *L. effigurata*, n. spp., Rügen, chalk; Marsson, pp. 90 & 91, pl. ix, figs. 7 & 8.

Reteporidæ.

Retepora worsleyi, n. sp., Gaspar Strait; MacGillivray, (5) p. 185, pl. ii, fig. 2.

Myriozoidæ.

Rhynchopora crenulata, n. sp., Port Jackson ; Waters, (1) p. 195, pl. v, figs. 7 & 8.

Schizoporella lineolifera, Hks., = *S. marsupifera*, Bk.; Hincks, (2) p. 315. *S. zujovici*, n. n., = *Lepralia incisa*, Reuss (*nec* Edwards) ; Pergens, (2) p. xxv. *S. woosteri*, n. sp., Queenscliffe ; MacGillivray, (4) p. 69, pl. ii, fig. 5. *S. rostrata*, *S. pachnoides*, n. spp., Port Phillip Heads ; *id.*, (5) pp. 179 & 180, pl. i, figs. 2 & 3. *S. pulcherrima*, n. sp., Port Phillip Heads ; *id.*, (2) p. 132, pl. i, fig. 6. *S. dædala*, n. n., = *S. insignis*, MacG. (*nec* Hincks) ; *id. t. c.* p. 180. *S. divisopora*, n. sp., Port Jackson; Waters, (1) p. 193, pls. v, fig. 4, & vi, fig. 4. *S. cinctipora*, Hks., var. *personata*, n., *S. tuberosa*, Rss , var. *angustata*, n., New Zealand ; *id.*, (2) p. 67, pl. viii, figs. 28 & 26.

Escharidæ.

Balantiostoma, n. g., for *Cellepora marsupium*, v. Hagenow ; Marsson, p. 95, pl. x, fig. 5.

Bracebridgia, n. g., for *Mucronella pyriformis*, Busk ; MacGillivray, (2) p. 135.

Coscinopleura, n. g., for *Eschara elegans*, v. Hagenow ; Marsson, pp. 71 & 72.

Cryptostoma, n. g. : incrusting ; zoœcia closely set ; convex ; aperture at the end of the cell, broad, semilunar, almost covered by the prominent hinder margin ; for *C. gastroporum*, n. sp., Rügen, chalk ; *id. t. c.* p. 96, pl. x, fig. 6.

Dioptropora, n. g.: incrusting *Eschara*-like bodies ; zoœcia separated by a furrow, with two pores close together, and an avicular pore in the middle ; for *D. devia*, n. sp., Rügen, chalk ; *id. t. c.* p. 96, pl. x, fig. 7.

Eschara crassipes, *E. exarata*, *E. pulvinata*, p. 68, pl. vi, figs. 15–17, *E. congesta*, p. 69, pl. vi, fig. 18, *E. rimosa*, *E. gibbosa*, p. 71, pl. vii, figs. 1 & 2, n. spp., Rügen, chalk ; *id. t. c.*

Homalostega, n. g., for *Cellepora convexa*, v. Hagenow, &c., and *H. vincularioides*, *H. exsculpta*, *H. biforis*, *H. suffulata*, n. spp., Rügen, chalk ; *id. t. c.* pp. 93–95, pls. ix, fig. 16, & x, figs. 1–4.

Kelestoma, n. g., near *Cribrilina*, but with mouth rounded, anterior margin flattened, hinder margin projecting upwards and forwards ; for *K. elongatum*, n. sp., Rügen, chalk ; *id. t. c.* p. 99, pl. x, fig. 13.

Lagodiopsis, n. g., for *Cellepora pinguis*, v. Hagenow, *Multescharipora franquana*, d'Orb. ; *id. t. c.* p. 99.

Lepralia complanata, Norman, figured ; Hincks, (2) p. 304, pl. ix, fig. 4. *L. elimata*, n. sp., Port Jackson ; Waters, (1) p. 194, pls. v, fig. 3, & vi, fig. 22. *L. bistata*, n. sp., New Zealand ; *id.*, (2) p. 62, woodcut.

Mucronella avicularis, n. sp., Port Phillip Heads ; MacGillivray, (3) p. 35, pl. i, fig. 3. *M. ellerii*, MacG., var. *biaciculata*, n., Port Jackson ; Waters, (1) p. 194, pl. v, fig. 9. *M. firmata*, n. sp., New Zealand ; *id.*, (2) p. 58, pl. vii, fig. 20.

Pachydera, n. g. : zoœcia imbricate, the upper part free and narrowing

to the terminal, somewhat quadrangular aperture; for *P. grandis*, n. sp., Rügen, chalk; MARSSON, p. 100, pl. x, fig. 14.

Parmularia, Busk, n. g., for *Eschara obliqua*, MacG.; MACGILLIVRAY, (6) pp. 191 & 211.

Porella formosa, n. sp., Queenscliff; *id.*, (4) p. 69, pl. ii, fig. 6.

Prosoporella, n. g., for *Semieschariporu cornuta*, Beissel; MARSSON, p. 100.

Semieschara labiata, p. 74, pl. vii, fig. 3, *S. impressipora*, p. 75, pl. vii, fig. 4, *S. cochlearis*, *S. torosa*, p. 76, pl. vii, figs. 5 & 7, *S. subclavata*, n. spp., *S. beisselii*, n. n., = *S. arborea*, Beissel (*nec* d'Orb.), Rügen, chalk; MARSSON.

Smittia trispinosa, Johnst., (= *Escharella jacotini*, Smitt), form *spathulata*, Smitt, figured; HINCKS, (2) p. 304, pl. ix, fig. 3. *S. calceolus*, n. sp., Port Phillip Heads; MACGILLIVRAY, (4) p. 69, pl. ii, fig. 3. *S. cribraria*, n. sp., Port Phillip Heads; *id.*, (2) p. 133, pl. i, fig. 7.

Stichocados, n. g.: zoarium free, of a fan-like form, with a single layer of pitcher-shaped zoœcia; aperture terminal; for *S. verruculosus*, n. sp., Rügen, chalk; MARSSON, p. 101, pl. x, fig. 15.

HIPPOTHOIDÆ.

Hippothoa aggregata, n. sp., Rügen, chalk; MARSSON, p. 92, pl. ix, fig. 10.

CELLEPORIDÆ.

Cellepora speciosa, n. sp., Port Phillip Heads; MACGILLIVRAY, (1) pl. cxxviii, fig. 1. *C. glomerata*, *C. vitrea*, *C. tiara*, and *C. benemunita*, n. spp., Port Phillip Heads; *id. t. c.* pl. cxlviii, figs. 8 & 11. *C. decepta*, n. sp., New Zealand; WATERS, (2) p. 69, pl. viii, fig. 33.

Pœcilopora, n. g., zoarium erect, bilaminate, branched; zoœcia indistinct, primary mouth with a sinus, peristome with a small avicularium, finally a tumid ring, oœcia immersed, for *P. anomala*) n. sp.; MACGILLIVRAY, (2) p. 136, pl. i, fig. 9.

SELENARIIDÆ.

Bipora, n. g., for *Lunulites cancellata*, Busk, *Conescharellina depressa*, Haswell, and 5 other forms the structure of which has been hitherto misunderstood; WHITELEGGE.

Lunulites patelliformis, p. 79, pl. vii, fig. 11, *L. beisselii* (= *L. goldfussi*, Beissel, *pars*), *L. sella*, p. 80, pl. vii, figs. 14 & 15, *L. salebrosa*, p. 81, pl. vii, fig. 16, n. spp., Rügen, chalk; MARSSON.

ERRATA IN VOL. XXIII.

Page 9, line 3 from below, *for* "Sendra," *read* "Tendra."

„ „ 7 „ „ *for* "Turgenervi," *read* "Turgenewi."

CRUSTACEA.

BY

G. HERBERT FOWLER, B.A., PH.D.

I.—LIST OF PUBLICATIONS.

ANDERSON, W. Note on the occurrence of a new species of Carboniferous Crustacean at Ardross, near Elie, Fife. J. Edinb. Geol. Soc. v, pp. 280 & 281.

A species of *Acanthocaris*.

AURIVILLIUS, C. W. S. Hafsevertebrata från Nordligaste Tromsö amt och Vestfinmarken. Bih. Sv. Ak. Handl. xi, No. 4. [*Crustacea*, pp. 38–47.]

BAIRD, S. F. (The American Lobster.) Rep. U.S. Fish Comm. 1887, pp. cii–civ.

BARROIS, T. (1) Note sur quelques points de la morphologie des Orchesties, suivie d'une liste succincte des Amphipodes du Boulonnais. Lille: 1887, 8vo, 20 pp., 1 pl.

—. (2) Note sur le *Palæmonetes varians*, Leach, suivie de quelques considérations sur la distribution géographique de ce Crustacé. Bull. Soc. Z. Fr. xi, pp. 691–707, 1 pl.

Author infers that it is a marine species changing its habitat to fresh water; this change has been already achieved in the south, and is in process in the north.

BEDDARD, F. E. Note on a New Type of Compound Eye. Ann. N. H. (5) xx, pp. 233–236, 1 woodcut.

In *Serolidæ* and *Cymothoidæ* the retinulæ surround only the upper part of the rhabdom; the lower part passes between hyaline spherical cells, lying in the centre of the retinulæ. Observations in favour of Grenacher's view of the morphology of the eye.

BIEDERMANN, W. Ueber die Innervation der Krebsschere. Beiträge zur allgemeinen Nerven- und Muskel-physiologie. SB. Ak. Wien, xcv, abth. 2, pp. 7–46, 3 pls.

Physiological investigation, with plates of tracings.

For the papers marked with one asterisk, I am indebted to the Zool. Anz. 1887-8; for those with two, to the Zool. Jahresb. for 1886.

BITTNER, A. Neue Brachyuren des Eocäns von Verona. *Op. cit.* xciv, abth. 1, pp. 44–55, 1 pl.

BONNIER, J. Catalogue des Crustacés malacostracés recueillis dans la baie de Concarneau. Bull. Sci. Nord. (2) x, pp. 193–262, 296–356, & 361–422.

List of species, localities, and synonyms; bibliography, p. 400, and index, p. 417.

BONNIER, J. [*Vide* GIARD, A. (6, 7).]

BOVALLIUS, C. (1) Systematical List of the *Amphipoda Hyperiidea*. Bih. Sv. Ak. Handl. xi, No. 16, 50 pp.

Complete list, with many n. spp. and gg.

——. (2) New or imperfectly-known *Isopoda*: II. *Op. cit.* No. 17, 19 pp., 2 pls.

——. (3) New or imperfectly-known *Isopoda*: III. *Op. cit.* xii, No. 4, 23 pp., 4 pls.

——. (4) *Amphipoda Synopidea*. N. Act. Ups. xiii, 36 pp., 3 pls.

Divides *Amphipoda* into *Tanaidea*, *Gammaridea*, *Synopidea*, *Hyperiidea*, *Caprellidea*. *Synopidea* falls into 3 families: *Synopidæ*, *Trischizostomatidæ*, and *Hyperiopsidæ*. The whole group is treated in detail.

°——. (5) Arctic and Antarctic Hyperids. Vega-Exped. Vetensk. Jakttag, iv, pp. 545–582, 8 pls.

°BRANDT, E. Vergleichend-anatomische Untersuchung des Nervensystems der Isopoden. Hor. Ent. Ross. xx, pp. 245–249.

Title in Russian.

BRANDT, K. Die koloniebildenden Radiolarien (*Sphærozoën*) des Golfes von Neapel. Fauna und Flora des Golfes von Neapel, xiii, pp. 139 & 140.

Hyperidæ parasitic in the colonies.

BROOK, G. Notes on the Reproduction of Lost Parts in the Lobster (*Homarus vulgaris*). P. Phys. Soc. Edinb. ix, pp. 370–385, pl. xvii.

Observations on reproduction of antennæ and chelæ.

DE BUEN, O. Materiales para la Fauna Carcinológica de España. An. Soc. Esp. xvi, pp. 405–434.

List of species; notes on distribution, p. 432.

CAMERON, P. A White Aberration of *Gammarus pulex*. P. N. H. Soc. Glasg. (n.s.) i, p. 301.

CANU, E. Sur les Phyllocarides du Silurien supérieur de la Bohême. Recherches de M. O. NOVAK. Ann. Soc. géol. Nord, xiii, pp. 144–148, 1 woodcut.

Critical summary.

CATTANEO, G. Sulla struttura dell' intestino dei Crostacei decapodi e sulle funzioni delle loro glandule enzimatiche. Prelim. note in Boll. Scient. ix, pp. 60 & 61. Full paper in Atti Soc. Ital. xxx, pp. 238–272, pl. iii.

Histology of the intestine, and experiments on the functions of the so-called liver; author concludes that it is not only amylolytic, tryptic, and peptic, but also truly hepatic. Several genera of *Decapoda* were employed.

CHEVREUX, E. (1) Sur les Crustacés amphipodes de la côte ouest de Bretagne. C.R. civ, pp. 90–93.

——. (2) Description de trois éspèces nouvelles d'Amphipodes du Sud-ouest de Bretagne. Bull. Soc. Z. Fr. xi, (proc. verb.) pp. xl–xlii.

——. (3) Catalogue des Crustacés Amphipodes marins du Sud-ouest de la Bretagne, suivie d'un aperçu de la distribution géographique des Amphipodes sur les côtes de France. *Op. cit.* xii, pp. 288–340, 1 pl.

Figures of the n. spp. in (2) are given.

CHILTON, C. A New Species of *Philougria*. Tr. N. Z. Inst. xviii, pp. 159–161, pl. v.

——. [*Vide* THOMSON, G. M.]

CHIMKEWITCH, —. [See SCHIEMKEWITSCH.]

CHUN, C. Ueber die geographische Verbreitung der pelagisch lebenden Seethiere. Zool. Anz. ix (1886), pp. 55–59 & 71–75.

CLAUS, C. (1) Ueber *Lernæascus nematoxys*, Cls., und die Familie der Philichthyden. Arb. z. Inst. Wien, vii, pp. 281–315, 4 pls.

A description of the male (p. 283), the young forms (p. 291), and the female (p. 293), is followed by a discussion of the females of *Philichthys* and *Sphærifer* (p. 302), and definitions of the genera of *Philichthydæ* (p. 310).

——. (2) Ueber die morphologische Bedeutung der lappenförmiger Anhänge am Embryo der Wasser-assel. Anz. Ak. Wien, xxiv, pp. 21–23

Regards it as homologous with the "Panzerschild" of *Tanais*.

——. (3) Die Platysceliden. Wien: 1887, 4to, 77 pp., 26 pls.

Eight new species.

——. (4) Ueber den Organismus der Apseudiden. Anz. Ak. Wien, 1887, pp. 156–161.

Morphological conclusions from a study of the Trieste sp. *T. latreillei*. The eye is undoubtedly sessile; a rudimentary gland at the base of the second antennæ; the shell-gland is also present.

——. (5) Ueber *Apseudes latreillei*, Edw., und die Tanaiden: II. Arb. z. Inst. Wien, vii, pp. 139–220, 7 pls.

Regards the Anisopods as related to both *Isopoda* and *Cumacea*. A detailed morphological study of *Apseudes* is presented.

[Claus, C.] (6) Ueber *Lernæascus nematorys*, eine seither unbekannt gebliebene Lernæa. Anz. Ak. Wien, 1886, pp. 231–233.

Morphological description ; parasitic under scales of *Solea monochir*.

Cornish, F. Livid Swimming Crab at Penzance. Zool. (3) xi (xi), p. 309.

Link between *Portunus marmoreus* and *holsatus* ; these species probably identical.

Cresswell, A. W. Note on some Fossil Crabs from the Miocene Rocks of Corio Bay. Vict. Nat. iii, pp. 86–91.

New species of *Gonoplax*.

Cunningham, J. T. [*Vide* Vallentin, R.]

Czerniavsky, V. Monographia Mysidarum, imprimis Imperii Rossici. Trudui St. Petersburg Nat. pt. i, vol. xii (1882), 170 pp. ; pt. ii, vol. xiii (1882), 85 pp., pls. i–iv ; pt. iii, vol. xviii (1887), 102 pp., pls. v–xxxii.

Mainly in Latin ; an index to all three parts in the third. As the first two parts have been noticed neither by the Record nor the Zool. Jahrb., the new species and genera will be found below for all three parts. The third part forms a conspectus of all genera and species known.

Delage, Y. Sur une Fonction Nouvelle des Otocystes comme organes d'Orientation Locomotrice. Arch. Z. expér. (2) v. pp. 1–26.

Vide Zool. Rec. xxiii, *Crust.* p. 6. The experiments were made on *Schizopoda* and *Decapoda*.

Dollfus, A. Diagnoses d'espèces nouvelles et Catalogue des espèces françaises de la tribu des Armadilliens (Crustacés isopodes terrestres). Bull. Soc. Études scient. ix, 7 pp.

Ebert, T. Beitrag zur Kenntniss der tertiären Dekapoden Deutschlands. JB. Preuss. geol. Landes-Anstalt, 1886, pp. 262–267, pls. viii (figs. 5–11) & ix.

Engelmann, T. W. Ueber die Function der Otolithen. Zool. Anz. x, pp. 439–444.

Discussion and expansion of Delage's view of the function of these organs. [*Cf.* Zool. Rec. xxiii, *Crust.* 6, Delage (49).]

Etheridge, R. (1), Woodward, H., & Jones, T. R. Fourth Report of the Committee on the Fossil *Phyllopoda* of the Palæozoic Rocks. Rep. Brit. Ass. 1886, pp. 229–234.

Ceratiocaris, 11 n. spp. ; *Emmelezoe*, 3 n. spp.

—— (2), ——, & ——. Fifth Report of the Committee on the Fossil *Phyllopoda* of the Palæozoic Rocks. *T. c.* pp. 60–69.

Fickert, —. Ueber das Zusammenvorkommen von *Apus* und *Branchipus*. Naturforscher, xx, pp. 5 & 6.

Fischer, P. Description d'un nouveau genre de Cirrhipedes (*Stephanolepas*) parasite des Tortues marines. Act. Soc. L. Bord. (4) x, pp. 193–196, pl. iv.

On *Chelonia imbricata* ; intermediate between *Platylepas* and *Tubicinella*.

FOWLER, G. H. Bericht über die Leistungen in der Carcinologie während der Jahre 1885 und 1886. Arch. f. Nat. 1887, ii, pp. 320–387.

FREDERICQ, L. L'Autotomie chez les Étoiles de Mer. Rev. Sci. xl, pp. 589–592. [*Cf.* GIARD, *t. c.* p. 629.]

Enumeration of recorded instances, in various groups.

°FRITSCH, A., & KAFKA, J. Die Crustaceen der böhmischen Kreideformation. Prag: 1887, 4to, 53 pp., 10 pls., 72 figs. in text.

16 n. spp.; *Schlüteria*, *Stenocheles*, *Lissopsis*, n. gg.

°GARBINI, A. Contribuzione all' anatomia ed alla istologia delle *Cypridinæ*. Bull. Soc. Ent. Ital. xix, pp. 35–51, 5 pls.

GIARD, A. [*Vide* FREDERICQ, L. (1).]

——. (1) Sur la castration parasitaire chez l'*Eupagurus bernhardus* (Linné) et chez la *Gebia stellata* (Mont.). C.R. civ, pp. 1113–1115.

Effects, similar to those previously recorded as produced by Rhizocephalan parasites, result from the parasitism of *Phryxus* and *Gyge*.

——. (2) La castration parasitaire, et son influence sur les caractères extérieurs du sexe male chez les Crustacés Décapodes. Bull. Sci. Nord. (2) x, pp. 1–28, 7 woodcuts; translated in Ann. N. H. (5) xix, pp. 325–345; also in Naturforscher, xx, pp. 367–369.

A general discussion of the facts which the author has elsewhere described.

——. (3) Sur un Copépode (*Cancerilla tubulata*, Dal.), parasite de l'*Amphiura squamata* (Delle Chi.). C.R. civ, pp. 1189–1192.

——. (4) Fragments biologiques. VIII. Sur les *Danalia*, genre de cryptonisciens parasites des Sacculines. Bull. Sci. Nord. (2) x, pp. 47–53.

——. (5) Sur les parasites Bopyriens et la castration parasitique. C.R. Soc. Biol. (8) iv, p. 371–373.

—— (6) & BONNIER, J. Sur la phylogenie des Bopyriens. C.R. civ, pp. 1309–1311.

The larval forms and phylogeny of *Bopyridæ*, and their relations, biological and phylogenetic, to *Decapoda* and *Rhizocephala*.

—— (7) & ——. Contributions à l'étude des Bopyriens. Tr. Inst. Zool. Lille, v, 272 pp., 10 pls.; abstract in Boll. scient. ix, pp. 122–124.

This monograph deals in great detail with the morphology, embryology, and biology of *Cepon* and its allies (pp. 7–78) and the *Entonisci* (pp. 79–247). The interesting conclusions relative to the relation of the parasite to the host and to other parasites, the castration which it produces, the dimorphism and hermaphroditism in some forms parallel to that of *Cirrhipedia*, are too long to be given here.

GILES, G. M. On Six New Amphipods from the Bay of Bengal. J.A.S.B. lvi, pp. 212–229, pls. iii–viii.

GOURRET, P. (1) Sur quelques Crustacés parasites des Phallusies. C.R. civ, pp. 185–187.

——. (2) Sur quelques Décapodes macroures nouveaux du golfe de Marseille. *Op. cit.* cv, pp. 1033–1035.

——. (3) La faune des Crustacés podophthalmes du golfe de Marseille. *T. c.* pp. 1132–1135.

GROBBEN, C. Die grüne Drüse des Flusskrebses. Arch. mikr. Anat. xxx, pp. 323–326.

Author defends himself against RAWITZ.

GROSGLIK, S. Schizocöl oder Enterocöl? Zool. Anz. x, pp. 116–118.

An appeal to Nusbaum to reconcile conflicting statements as to the mesoderm of *Oniscus*.

DE GUERNE, J. (1) Sur quelques Amphipodes marins du Nord de la France. Bull. Soc. Z. Fr. xi (proc. verb.), pp. xlii–xliv.

List of species.

——. (2) Sur les genres *Ectinosoma*, Boeck, et *Podon*, Lilljeborg, à propos de deux Entomostracés (*Ectinosoma atlanticum*, G. S. Brady et Robertson, et *Podon minutus*, G. O. Sars), trouvés à la Corogne dans l'estomac des Sardines. *Op. cit.* xii, pp. 341–367, 1 pl.

Figures and full descriptions of these two species, with a discussion as to the distribution and migration of *Polyphemidæ*.

GUNDLACH, J. Apuntes para la Fauna Puerto-Riqueña. VI. Crustáceos. An. Soc. Esp. xvi, pp. 115–136.

A list of the species; none are new to science.

HAMANN, O. Die Urkeimzellen (Ureier) im Tierreich und ihre Bedeutung. Jen. Z. Nat. xxi, pp. 517–538. [*Crustacea*, p. 524.]

HENDERSON, J. R. The Decapod and Schizopod *Crustacea* of the Firth of Clyde. P. N. H. Soc. Glasg. (n.s.) i, pp. 315–353.

List of species and localities; one n. subg. under *Spiropagurus*.

HENSEN, V. Ueber die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thieren. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 1–109, pls. i–vi.

Crustacea, pp. 45–57; observations on comparative numbers, weight, &c., in known quantity of water; on breeding-seasons, &c.

HERRICK, C. L. (1) The Metamorphosis and Morphology of certain Phyllopod *Crustacea*. Bull. Denison Univ. i (1885), pls. v–viii & x.

——. (2) Mud-inhabiting *Crustacea*. *T. c.* pp. 37–42, pl. ix (1885).

——. (3) Contribution to the Fauna of the Gulf of Mexico and the South.—List of the Freshwater and Marine *Crustacea* of Alabama. Mem. Denison Ass. i, 56 pp., 7 pls.

HOEK, P. P. C. (1) On *Dichelaspis pellucida*, Darw., from the Scales of an Hydrophid obtained at Mergui. J. L. S. xxi, pp. 154 & 155 pl. xiii.

Slight variations from the type specimen.

[Hoek, P. P. C.] (2) *Crustacea* Neerlandica. Nieuwe lijst van tot de fauna van Nederland behoorende schaaldieren. Tijdschr. Ned. Dierk. Ver. (2) i, pp. 93–105, pl. vii.

With figures of *Mysis kervillei*.

Howes, G. B. An abnormal *Palinurus*. P. Z. S. 1887, pp. 468–470, 1 woodcut.

Description and drawing of the antenniform ophthalmite originally described by A. Milne-Edwards.

Hughes, T. Mc K. On Bilobites. Rep. Brit. Ass. 1886, p. 653.

Regards them as tracks of burrowing *Crustacea*.

Imhof, O. E. (1) On the Microscopic Fauna of Elevated Alpine Lakes (600–2780 metres above the sea). Ann. N. H. (5) xix, pp. 276–286; and Zool. Anz. x, pp. 13–17 & 33–42.

General conclusions on the distribution of *Crustacea*, pp. 285 & 286.

——. (2) Studien über die Fauna hochalpiner Seen, insbesondere des Kantons Graubünden. JB. Ges. Graub. xxx, pp. 45–164.

Crustacea, p. 130; remarks on the "blassen Kolben" of *Calanidæ*, p. 138 *et seqq.*

——. (3) Notizen über die pelagische Fauna der Süsswasserbecken. Zool. Anz. x, pp. 577–582.

General conclusions, and observations on the ephippia of *Phyllopoda*, &c.

Ischikawa, C. [*Vide* Weismann, A.]

Jones, T. R. (1) [illegible] on the Palæozoic Bivalved *Entomostraca*. xxiii. On some [illegible]rian Genera and Species (contd.). Ann. N. H. (5) xix, pp. 177–195, pls. iv–vii.

New species of *Macrocypris* (6), *Pontocypris* (2), *Bythocypris* (10), *Cythere* (3), *Cytherella* (1), *Primitia* (1); in all, 23 n. spp.

——. (2) Notes on the Palæozoic Bivalved *Entomostraca*. xxiv. On some Silurian Genera and Species (contd.). *T. c.* pp. 400–416, pls. xii & xiii.

New species of *Thlipsura* (2), *Octonaria* (3), *Bollia* (2), *Primitia* (1), *Moorea* (1), *Aechmina* (3); in all, 12 n. spp.

——. (3). Notes on some Silurian *Ostracoda* from Gotland. Stockholm: 1887, 8vo, 8 pp.

——, (4) & Sherborn, C. D. Tertiary *Entomostraca*. Geol. Mag. (3) iv, pp. 385–392, pl. xi, & pp. 450–460.

With 22 new species.

Jones, T. R. [*Vide* Etheridge, R. (1, 2).]

Kellicot, D. S. A note on *Argulus catostomi*. P. Am. Micr. Soc. ix, p. 144.

Kingsley, J. S. (1) The development of *Crangon vulgaris*. Bull. Ess. Inst. xviii, pp. 99–153, pls. i & ii.

Full details of the stages up to hatching.

[KINGSLEY, J. S.] (2) The development of the Compound Eyes of *Crangon*. Journ. Morph. i, pp. 49–66, 1 pl.

Preliminary notice and main facts recorded last year, *Crust.* p. 11.

KINNEAR, W. T. Note on the occurrence of a new Carboniferous Crustacean at Ardross Castle, Fife. J. Edinb. Geol. Soc. v, p. 467.

Species of MS. genus *Rostrocaris*.

KIRK, T. W. On a new species of *Alpheus*. Tr. N. Z. Inst. xix, pp. 194–196, pl. viii.

KOEHLER, R. (1) Sur la structure des fibres musculaires chez les Crustacés édriophthalmes. C.R. civ, pp. 592–595; the full paper in J. de l'Anat. Phys. xxiii, pp. 113–123, pl. xi.

Deals with a few *Amphipoda* and *Isopoda*.

——. (2) Recherches sur la structure du cerveau du *Gammarus pulex*. Month. Int. J. Anat. Hist. iv, pp. 21–36, pl. 1.

——. (3) Recherches sur la structure du cerveau de la *Mysis flexuosa*. Ann. Sci. Nat. iii, pp. 159–188, 2 pls.

KRAUSE, A. (1) Einige Crustaceen und Würmer aus der Ost-see, die der Herr O. Reinhardt bei Lohme an der Nordostküste von Rügen gesammelt hatte. SB. nat. Fr. 1887, pp. 34–36.

——. (2) Ueber *Harpides*-reste aus märkischen Silurgeschieben. *T. c.* pp. 55–59.

LAHILLE, F. Les Crustacés Branchiopodes de Toulouse. Bull. Soc. Toulouse (proc. verb.), xlvii & xlviii.

°LANDOIS, H. Lebende blaue und rothe Flusskrebse, *Astacus fluviatilis*. JB. westf. Ver. xv, pp. 16 & 17.

LÉGER, M. Observation sur une pince monstrueuse d'*Astacus fluviatilis*. Bull. Soc. Philom (7) xi, pp. 112–116.

LEICHMANN, G. Ueber Bildung von Richtungskörpern bei Isopoden. Zool. Anz. x, pp. 533 & 534.

A nucleus is present throughout, and two polar bodies are extruded from the ovum of *Asellus aquaticus*.

LOVETT, E. Notes and observations on British Stalk-Eyed *Crustacea*. Zool. (3) xlv (xi), pp. 145–151.

Notes on habits, distribution, &c.

°LUCAS, H. (1) Sur le *Cecrops latreillei*. Ann. Soc. Ent. Fr. (6) vii, (Bull.), pp. xxxi & xxxii.

°——. (2) Sur le *Sphærifer cornutus*, Rich. *T. c.* p. li.

LUCAS, A. S. H. Note on the Habits of Hermit Crabs. Tr. R. Soc. Vict. xxii, pp. 61–63.

Clibanarius ejecting *Fasciolaria* and occupying his shell.

LÜTKEN, C. F. Tillaeg til "Bidrag til Kundskab om Arterne af Slaegten *Cyamus*, Latr., eller Hvallusene." Dan. Selsk. Skr. (6) iv, pp. 316–322, 1 pl.

Description and figures of *C. scammoni*; with a general *résumé* in French.

MACKAY, W. J. The intercoxal lobe of certain Crayfishes. P. Linn. Soc. N.S.W. (2) ii, pp. 966 & 967.

DE MAN, J. G. (1) Report on the Podophthalmous *Crustacea* of the Mergui Archipelago, collected for the Trustees of the Indian Museum by Dr. John Anderson. J. L. S. xxii, pp. 1–128, pls. i–viii. (Parts 1 & 2 only.)

The commencement of the Report, containing part of the *Brachyura*; many new species are described; descriptions and figures of many old species are also given. A list of the *Podophthalma* caught will be found on p. 5; one of species previously recorded from the Bay of Bengal, but not obtained on this occasion, on p. 7.

——. (2) Uebersicht der indo-pacifischen Arten der Gattung *Sesarma*, Say, nebst einer kritik der von W. Hess und E. Nauck in den Jahren 1865 und 1880 beschriebenen Decapoden. Zool. Jahrb. ii, pp. 639–722, pl. xvii.

11 new species of *Sesarma*, and 1 of *Eupagurus* are described. Of the two older papers on *Decapoda*, 13 species erected by Hess, and 4 by Nauck, prove to be identical with older species.

——. (3) Bericht über die von Herrn Dr. J. Brock im Indischen Archipel gesammelten Decapoden und Stomatopoden. Arch. f. Nat. 1887, i, pp. 215–285, pls. vii–x.

The first part of this report, dealing with the *Cancridæ*. The new species only are recorded below.

MARCHAL, P. Sur l'excrétion chez les Crustacès décapodes brachyoures. C.R. cv, pp. 1130–1132.

The excretory gland of *Maia squinado*.

MARSHALL, C. F. Observations on the Structure and Distribution of Striped and Unstriped Muscle in the Animal Kingdom, and a Theory of Muscular Contraction. Q. J. Micr. Sci. xxviii, pp. 75–107, pl. vi. [*Crustacea*, p. 89.]

MATTHEWS, J. D. *Aega crenulata*, Lütken. Ann. N. H. (5) xx, p. 445.

New to British seas; from a Shark, off Stonehaven.

°MAY, K. Ueber das Geruchsvermögen der Krebse nebst einer Hypothese über die analytische Thätigkeit der Riechhärchen. Kiel: 1887, 8vo, 39 pp., 1 pl.

°MERCANTI, F. Sur le développement postembryonnaire de la *Telphusa fluviatilis*. Arch. Ital. Biol. viii, pp. 58–65.

MEYER, O. Beitrag zur Kenntnis der Fauna des Alttertiärs von Mississippi und Alabama. Ber. Senck. Ges. 1887 (Abh.), pp. 1–22, pls. i & ii. [*Crustacea*, p. 13.]

MIANI, I. Di alcuni Crostacei Isopodi terrestri osservati nel Veneto. Atti Soc. Ven.-Trent. xi, pp. 11–16.

MIERS, E. J. *Crustacea* from the Channel Islands. Zool. (3) xi, pp. 443 & 434.

List of species presented to Brit. N. H. Museum.

MILNE-EDWARDS, A. Observations sur les Crabes des Eaux Douces de l'Afrique. Ann. Sci. nat. (7) iv, pp. 121–149, pls. vii–ix; reprinted in Bibl. haut.,études, xxxiii, 29 pp., 3 pls.

On various *Thelphusidæ*.

M'INTOSH, W. C. The Pelagic Fauna of our shores in relation to the Nourishment of Young Food-Fishes. Ann. N. H. (5) xix, pp. 137–145. [*Crustacea*, pp. 144 & 145.]

MÖBIUS, K. Systematische Darstellung der Thiere des Plankton gewonnen in der westlichen Ostsee und auf einer Fahrt von Kiel in den Atlantischen Ocean. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 109–126, pls. vii & viii.

Crustacea, pp. 113–116, with figures of *Amphion*-larvæ of *Decapoda*.

MONIEZ, R. (1) Sur des parasites nouveaux des Daphnies. CR. civ, pp. 183–185.

Amœbidium and several Psorosperms.

——. (2) Liste des Copépodes, Ostracodes, Cladocères et de quelques autres Crustacés recueillis à Lille en 1886. Bull. Soc. Z. Fr. xii, pp. 508–518.

List of species only.

MÜLLER, F. Zur Crustaceen-fauna von Trincomali. Verh. Ges. Basel, viii, pp. 470–485, pls. iv & v.

With new species of *Decapoda Brachyura*, and *Stomatopoda*.

°NASSONOW, N. B. Zur Entwicklungsgeschichte der Krebsformen *Balanus* und *Artemia*. Isvest. Mosc. Univ. lii, pp. 1–14.

In Russian.

NEVILL, H. *Macrophthalmus serratus*, the Fossil Crab of Trincomali. Taprobanian, ii, p. 107.

NORDQUIST, O. (1) Die pelagische und Tiefsee-Fauna der grösseren finnischen Seen. Zool. Anz. x, pp. 339–345 & 358–362.

With remarks on the distribution and origin of the fauna.

NORMAN, A. M. On some *Crustacea* new to or rare in the British seas. Ann. N. H. (5) xix, pp. 89–103; also in the °Fourth Annual Rep. of the Fishery Board of Scotland.

Mainly *Schizopoda* and *Cumacea*; 1 n. sp. of *Siriella*.

NÓVAK, O. (1) Note sur *Phasganocaris*, nouveau Phyllocaride de l'étage F-f², en Bohême. SB. böhm. Ges. 1886, pp. 498–501, pl. i.

——. (2) Zur Kenntniss der Fauna der Etage F-f², in der palæozoischen Schichten-gruppe Böhmens. *T. c.* pp. 660–685.

1 Phyllocarid is described.

——. [*Vide* CANU, E.]

NUSBAUM, J. L'Embryologie de *Mysis chameleo*. Arch. Z. expér. (2) v, pp. 122–202, pls. v–xii ; also in Zapiski Novoross. Obsch. Estestv. xii, pp. 149–236, 8 pls. ; in Kosmos Lemberg, xii, pp. 267–334, 8 pls. ; preliminary note in Biol. Centralbl. vi, pp. 663–667, 2 woodcuts.

Segmentation meroblastic ; hypoblast formed by delamination ; dorsal organ regarded as homologue of Insectan embryonic membranes ; nervous system developed as in *Astacus* ; the heart not formed from a part of the cavity between splanchnopleure and somatopleure, but from part of the cavity between epiblast and somatopleure.

NUSSBAUM, M. Ueber die Lebenszähigkeit eingekapselten Organismen. Zool. Anz. x, pp. 173 & 174.

The resistance of *Daphnia* embryos to the nematocysts and digestive fluid of *Hydra*.

OSBORNE, H. L. Elementary Histological Studies of the Crayfish. Am. Micr. J. viii, pp. 81–87, 101–105, 121–125, 149–152, 167–169, 181–185, & 201–203.

OZORIO, B. Liste des Crustacés des possessions Portugaises d'Afrique occidentale, dans les collections du Muséum d'Histoire Naturelle de Lisbonne. J. Sci. Lisb. xi, pp. 220–231.

A list of the specimens, with descriptions of 5 n. spp. of *Brachyura*. The latter only will be found in the Systematic.

PACKARD, A. S. (1) The Cave Fauna of North America, with remarks on the Anatomy and Origin of Blind Forms. Am. Nat. xxi, pp. 82 & 83.

Abstract of paper read before Nat. Ac. Sci.

°——. (2) On the Structure of the Brain of the Sessile-eyed *Crustacea*. Mem. Nat. Ac. Sci. iii, pp. 99–110, 5 pls.

°——. (3) On the *Anthracaridæ*, a Family of Carboniferous Macrurous *Crustacea*. *T. c.* pp. 135–139, 2 pls.

°——. (4) On the *Gampsonychidæ*, an undescribed Family of Fossil Schizopod *Crustacea*. *T. c.* pp. 129–133, 2 pls.

°——. (5) On the *Syncarida*, a hitherto undescribed Synthetic Group of Extinct Malacostracous *Crustacea*. *T. c.* pp. 123–128, 2 pls.

PARIZE, P. L'Amputation réflexe des pattes des crustacés. Rev. Sci. xxxviii, p. 379 ; °Bull. Sci. Nord. (2) ix, pp. 306–308.

PARKER, F. J. Remarks on *Palinurus lalandii*, M.-Edw., and *P. edwardsii*, Hutton. Tr. N. Z. Inst. xix, pp. 150–155.

PERON, A. Notes pour servir à l'Histoire du Terrain de craie dans le Sud-Est du bassin Anglo-Parisien. Bull. Soc. Yonne, xli (sci. nat.), pp. 145–366, pls. i–iii.

Cirrhipedia, pp. 265–272.

PFEFFER, G. (1) Beiträge zur Morphologie der Dekapoden und Isopoden Abh. Ges. Hamb. x, 10 pp.

[Pfeffer, G.] (2) Zoologische Kleinigkeitem. xvii. Ueber die Bedeutung des Wortes "Krabbe." Verh. Ver. Hamb. vi, pp. 126–128.

Pocock, R. I. Report on the *Crustacea* collected by the Officers of H.M.S. 'Flying-Fish' on Christmas Island. Proc. Zool. Soc. 1887, p. 520.

°Pohlman, J. Fossils from the Water-lime Group near Buffalo, N. Y. Bull. Buffalo Soc. v, pp. 23–32, 1 pl.

Poppe, S. A. [*Vide* Zacharias (1).]

°Rank, O. F. Der Flusskrebs, seine Beschreibung und Zucht. Bibliothek für Naturfreunde, No. 3, 1887, 19 pp.

Rathbun, R. Descriptions of Parasitic Copepoda belonging to the Genera *Pandarus* and *Chondracanthus*. P. U. S. Nat. Mus. ix, pp. 310–324, pls. v–xi.

Four new species.

Rawitz, B. Ueber die grüne Drüse des Flusskrebses. Arch. mikr. Anat. xxix, pp. 471–494, pls. xxviii, xxix ; also *ibid.* xxxi, pp. 98 & 99.

A histological study, and controversy with Gronben.

Reinhard, W. Sur le développement de *Porcellio scaber*. Trudui Kharkoff Univ. xx, pp. 91–96 ; note in Zool. Anz. x, pp. 9–13.

The products of segmentation are amœboid, and pass to the periphery of the ovum to form the epiblast ; the mesenteron is formed by the hypoblast as an independent structure : these observations are opposed to those of Nusbaum and Bobretsky on *Oniscus*.

Report (First) on the Marine Fauna of the South-West of Ireland. P. R. Irish Ac. (2) iv, pp. 599–638.

Crustacea, pp. 632–638.

Richard, J. (1) Sur la faune pelagique de quelques lacs d'Auvergne. C.R. cv, pp. 951–953.

°——. (2) De la récolte et la conservation des Entomostracés d'eau douce, Cladocères et Copépodes. Feuill. Nat. xvii.

——. (3) Liste des Cladocères et des Copépodes d'eau douce observés en France. Bull. Soc. Zool. Fr. xii, pp. 156–164.

With two new varr. of *Cyclops*.

Ristori, G. I crostacei brachiuri e anomuri del pliocene italiano. Boll. Soc. Geol. Ital. v, pp. 93–129, pls. ii & iii.

A very large number of new species of *Brachyura*.

Roemer, F. (1) *Graptocarcinus texanus*, ein Brachyure aus der oberen Kreide von Texas. JB. Mineral. 1887, bd. i, pp. 173–176, 1 woodcut.

——. (2) Notiz über ein als Diluvial-geschiebe vorkommendes Bilobiten-ähnliches Fossil. Z. geol. Ges. xxxix, pp. 137–140, 1 woodcut.

Ruijs, J. M. Zoologische Bijdragen tot de Kennis der Karazee. I. Inleiding en algemeene mededeelingen. Bijdr. Dierk. xiii, pp. 1–38.

List of *Crustacea*, p. 28.

SARS, G. O. (1) Nye Bidrag til Kundskaben om Middelhavets Invertebratfauna. Arch. Math. Nat. xii, pp. 173–324, pls. i–xx.

Many new and old Mediterranean species.

——. (2) On *Cyclestheria hislopi* (Baird), a new Generic Type of Bivalve *Phyllopoda*, raised from dried Australian Mud. Forh. Selsk. Chr. 1887, 65 pp., 8 pls.

Detailed morphological and physiological study.

SENESCHALL, R. LE. Contributions a l'Étude de la faune Normandie. Bull. Soc. L. Norm. 37, x, pp. 219–221.

SCHEDEL, J. Die Schutzfärbung der Thiere (mit Berücksichtigung der Fauna der Ost-See). Zool. Gart. 1887, pp. 140–145.

Crustacea, p. 143.

SCHIEMKEWITSCH, W. Des caractères spécifiques et de la distribution geographique de genre *Astacus*. °Isv. ob. lioub. iest., T.L. fasc. i, p. 9 ; abstract in French in Arch. Slav. Biol. iii, pp. 268–272.

Recognizes three good species, characterising three regions, with varieties and subregions.

SCHNEIDER, R. Ein bleicher *Asellus* in den Gruben von Freiberg im Erzgebirge. SB. Ak. Berlin, 1887, pp. 723–742, pl. xiii.

Asellus aquaticus, var. *freibergensis*, intermediate in various points between the type species and *A. cavaticus* ; table of the differences, &c., p. 741 ; eye much reduced ; iron oxide in the calcareous concretions.

SCHNEIDER, A. Ueber den Darmcanal der Arthropoden. Zool. Beitr. ii, pp. 82–96, pls. viii–x.

Deals mainly with *Insecta*, but with references to *Crustacea*.

SCOTT, T. Natural History Notes from Tarbert. P. N. H. Soc. Glasg. (n. s.) i, pp. 369–378.

List of *Crustacea*, with a provisional n. sp.

°SELYS-LONGCHAMPS, E. DE. Note sur deux Crustacés Entomostracés de Belgique. C.R. ent. Belg. (3) 1887, pp. liv & lv.

SHERBORN, C. D. [*Vide* JONES, T. R.]

°SIMON, E. Étude sur les Crustacés du sous-ordre des Phyllopodes (fin.). Ann. Soc. Ent. Fr. (6) vi, pp. 433–460, 1 pl.

Six new species.

STEBBING, T. R. R. On some New Exotic *Amphipoda* from Singapore and New Zealand. Tr. Zool. Soc. xii, pp. 199–210, pls. xxxviii & xxxix.

The three species described as new in a preliminary note of last year. [Zool. Rec. xxiii, *Crustacea*, STEBBING (202).]

°SYE, C. G. Beiträge zur Anatomie und Histologie von *Jæra marina*. Inaug. Diss. Univ. Kiel, 37 pp., 3 pl. Kiel : 1887, 8vo.

°TERFVE, O. Recherches sur la spermatogénèse chez *Asellus aquaticus*. Bruxelles : 1887, 8vo, 27 pp., 3 pls.

THOMSON, G. M., & CHILTON, C. Critical List of the *Crustacea* Malacostraca of New Zealand. Tr. N. Z. Inst, xviii, pp. 141–159.

THOMPSON, I. C. On some *Copepoda* new to Britain found in Liverpool Bay. Rep. Brit. Ass. 1887, pp. 734 & 735.

UNDERWOOD, L. M. List of the Described Species of Freshwater *Crustacea* from America, North of Mexico. Bull. Illin. Lab. N. H. ii, pp. 323–386.

VALLENTIN, R., & CUNNINGHAM, J. T. The Photospheria of *Nyctiphanes norvegica*, G. O. Sars. Q. J. Micr. Sci. xxviii, pp. 319–341, pl. xxiii.

The authors differ from Sars as to the light-emitting part of the luminous organs of the *Schizopoda*.

DE VARIGNY, H. Recherches expérimentales sur les fonctions du cœur chez le *Carcinus mœnas*. J. de l'Anat. Phys. xxiii, pp. 660–672, with 8 woodcuts of tracings; and note in C.R. Soc. Biol. (8) iv, pp. 34–36.

VERWORN, M. Zur Entwicklungsgeschichte der Beyrichien. Z. geol. Ges. xxxix, pp. 27–31, pl. iii.

Beyrichia primitiva, n. sp. Derives all the forms from one with smooth valves.

VIALLANES, H. (1) Etudes histologiques et organologiques sur les centres nerveux et les organes des sens des animaux articulés: v. Ann. Sci. Nat. (7) iv, pp. 1–120, pls. i–vi.

The second section of the memoir deals with a "comparison du cerveau des Insectes et des Crustacés" (pp. 98–109); the third with the brain and the morphology of the cephalic skeleton (pp. 111–118).

——. (2) Sur la morphologie comparée du cerveau des Insectes et des Crustacés. C.R. civ, pp. 444–447.

The supra-œsophageal ganglia in both are divisible into three regions, supplying eyes, antennules, and antennæ, among *Crustacea*; eyes, antennæ and labrum, among *Insecta*. Author regards them as homologous.

——. (3) La morphologie du squelette céphalique des Insectes. Bull. Soc. Philom. (7) x, pp. 84–86 (1886).

WALKER, A. O. Notes on a Collection of *Crustacea* from Singapore. J. L. S. xx, pp. 107–117, pls. vi–ix.

List of the *Crustacea* obtained; description and figures of 6 n. spp. Figures of a few former species are also given.

WALTER, A. Vorläufige Diagnose und Beschreibung zweier neuer Branchiopoden aus Transkaspien. Bull. Mosc. 1887, pp. 924–927.

WEISMANN, A., & ISCHIKAWA, C. Ueber die Bildung der Richtungskörper bei thierischen Eiern. Ber. Freib. Ges. iii, pp. 1–44, pls. i–iv.

The detailed observations upon which a preliminary note was recorded last year, relating to the presence of polar bodies in the parthenogenetic ova of *Phyllopoda* and *Ostracoda*.

WEITHOFER, A. Bemerkungen über eine fossile *Scalpellum*-art aus dem Schlier von Ottnang und Kremsmünster, sowie über Cirrhipedien im Allgemeinen. JB. geol. Reichsanst. xxxvii, pp. 371–386, pl. xv.

With remarks on the phylogenetic and stratigraphical relations of the various Cirrhiped genera.

WELTNER, W. Die von Dr. Sander, 1883–1885, gesammelten Cirrhipedien (*Acasta scuticosta*, n. sp.). Arch. f. Nat. 1887, bd. i, pp. 98–117, pls. iii & iv.

Key to the species of *Acasta*, pp. 114 & 115.

WIERZEJSKY, A. Krajowych Skorupiakach z rodziny Calanidae (die einheimischen *Calanidæ*). Rozpraw Wydz. matem.-przyr. Akad. Umiej. xvi, 13 pp., 1 pl.

WINTLE, S. H. Fossil Crabs from Pleistocene Estuarine Deposit, Mouth of the Yarra Yarra River. Vict. Nat. iii, pp. 110 & 111.

WOOD-MASON, J. Description of a new species of *Crustacea* belonging to the Brachyurous family *Raninidæ*. J. A. S. B. lvi, pp. 206–209, pl. i.

WOODWARD, H. [*Vide* ETHERIDGE, R. (1), (2).].

WRIGHT, J. M'N. Fiddler-crabs. Am. Nat. xxi, pp. 415–418.

Habits, &c., of *Gelasimus*.

ZACHARIAS, O. (1) Zur Kenntniss der pelagischen und littoralen Fauna Norddeutscher Seen. Z. wiss. Zool. xlv, pp. 255–281, pl. xv.

Crustacea, pp. 257–266. Appendix by S. A. POPPE, dealing with a new species, and two new varieties, pp. 278–281. Figures of sections and of some older types are given.

——. (2) Zur Kenntniss der Fauna des Süssen und Salzigen Sees bei Halle a/S. *Op. cit.* xlvi, pp. 217–232. [*Crustacea*, pp. 225–227.]

——. (3) Faunistische Studien in westpreussischen Seen. Schr. Ges. Danz. (2) vi, pt. iv, pp. 43–72, pl. i.

Entomostraca, pp. 46–56 ; notices and figures of new varieties of *Hyalodaphnia* and *Bosmina*.

——. (4) Zur Entomostraken-fauna der Umgebung von Berlin. Biol. Centralbl. vii, pp. 137–139.

——. (5) Zur Kenntnis des Entomostraken-fauna holsteinischer und mecklenburgischer Seen. Zool. Anz. x, pp. 189–193.

II.—SUBJECT-INDEX

TO LIST OF PAPERS.

DISTRIBUTION.

Specific range of *Astacus*, WELTNER ; of *Palæmonetes*, BARROIS (2).
"Prinz Adalbert" coll., SCHIEMKEWITSCH.
Arctic and Antarctic *Hyperidæ*, BOVALLIUS (5).

EUROPE.

Firth of Clyde, HENDERSON.
Britain, NORMAN.
Tarbert (Scotld.), SCOTT.
Liverpool Bay, THOMPSON.
Ireland, S.W., Report on Fauna.
Channel Is., MIERS.
Tromsö, AURIVILLIUS.
Baltic, HENSEN, KRAUSE (1), MÖBIUS, SCHEDEL.
Finland, NORDQUIST (1).
Kara Sea, RUIJS.
Russia (*Mysid.*), CZERNIAVSKY.
Poland (*Copep.*), WIERZEJSKY.
Germany, ZACHARIAS (1, 3, 4, 5), IMHOF (3).
Halle, ZACHARIAS (2).
Netherlands, HOEK (2).
Belgium (*Entom.*), DE SELYS LONGCHAMPS.
Alpine Lakes, IMHOF (1, 2).
France, MONIEZ (2), RICHARD (3); (*Armadill.*), DOLLFUSS (*Amphip.*), DE GUERNE.
Brittany (*Amphip.*), CHEVREUX (1, 2, 3).
Concarneau, BONNIER.
Marseilles, GOURRET.
Boulogne (*Amphip.*), BARROIS (1).
Lille, MONIEZ (2).
Auvergne, RICHARD (1).
Spain, DE BUEN.
Puerto Riqueña, GUNDLACH.
Venetia (*Isop.*), MIANI.
Mediterranean, SARS (1).

INDO-PACIFIC REGION.

Decapoda, DE MAN (2, 3).
Mergui Archip., DE MAN (1).
Trincomali, MÜLLER.
Singapore, WALKER, STEBBING.
Bengal Bay, GILES.
N. Zealand, PARKER, STEBBING, THOMSON.

AFRICA.

(*Decapoda*) MILNE-EDWARDS.
OZORIO.

AMERICA.

UNDERWOOD.
HANSEN (Greenland).

MORPHOLOGY.

GENERAL.

Apseudes, CLAUS (4, 5).
Lernæascus, CLAUS (6).
Bopyridæ, GIARD (7).
Jaera, SYE.
Cyclestheria, SARS (2).

NERVOUS SYSTEM AND SENSE ORGANS.

VIALLANES (1, 2).
BEDDARD.
KOEHLER (2, 3).
BRANDT.
MAY.
PACKARD (2).

EMBRYOLOGY, METAMORPHOSIS, AND LARVAL FORMS.

Spermatogenesis, TERFVE.
Polar bodies, WEISMANN, LEICHMANN.
Origin, &c., of generative elements, HAMANN.
Mysis, NUSBAUM.
Asellus, CLAUS (2).
Phyllopoda, HERRICK (1).
Crangon, KINGSLEY (1, 2).
Decapoda, MÖBIUS.
Porcellio, REINHARD.
Telphusa, MERCANTI.
Balanus and *Artemia*,

PHYSIOLOGY.

Function of otocysts, DELAGE, EN[illegible] N.
Hea[illegible] - *Carcinus*, DE VARIGNY (1, 2).
Nerve (*Isop.*), BRANDT, E.
Intestine and appendages, CATTANEO.
Excretion, MARCHAL.
Sense of smell, MAY.
Nerve-muscle, BIEDERMANN.

HISTOLOGY.

Green gland, GROBBEN, RAWITZ.
Muscle-fibre, KOEHLER (1), MARSHALL.
Intestine and appendages, SCHNEIDER, CATTANEO.
Nervous system, VIALLANES (1, 2).
General, of *Astacus*, OSBORNE.

MISCELLANEA.

REPRODUCTION OF LOST PARTS.—BROOK.
ALBINISM.—CAMERON.
BILOBITES. — HUGHES, ROEMER (2).
ABNORMALITY.—LÉGER, HOWES.
PHOSPHORESCENCE.—VALLENTIN.
AUTOTOMY. — FREDERICQ (1), PARIZE.
CASTRATION.—GIARD (1, 2).
CAVE FORMS. — PACKARD (1), SCHNEIDER.
PROTECTIVE COLOURING.—SCHEDEL.

III.—SYSTEMATIC.

Po
Por
Por
*Petr*al forms, MÖBIUS.

DECAPODA.

BRACHYURA.

Gor
*Cay*siology of heart, DE VARIGNY (1, 2).
Ne
soni,
T

CANCRIDÆ.

Xantho scaberrimus, n. sp., WALKER, p. 115.
Atergatis integerrimus and *floridus*, from Mergui ; DE MAN, (1) p. 24.
Carpilodes stimpsoni, *id.* p. 25.
Actæa areolata, *id.* p. 25, *rufo-punctata*, p. 26, *parvula*, p. 27, *sp. indet.* p. 29.
Euxanthus mamillatus, *id.* p. 30.
Xantho impressus, *id.* p. 30.
[illegible]us distinguendus, *id.* p. 31.
[illegible]s niger and *sculptus*, *id.* p. 32.
exaratus, *nudipes*, *id.* p. 33 ; *cavipes* and *sp. indet.*, *id.* 34.
Typhlocarcis pilumnoides, *id.* p. 35.

Cymo andreossyi, *id.* p. 35.
Menippe rumphii, *id.* p. 36.
Myomenippe granulosa (M.-Edw.) = *duplicidens* (Hilg.) ; *id.* p. 40.
Eurycarcinus (= *Pilumnopæus*, M.-Edw.), *maculatus*, *id.* p. 43.
Ozius tuberculosus, *id.* p. 45.
Epixanthus, *id.* p. 45 ; *frontalis*, *dentatus*, *id.* p. 46.
Actumnus setifer (de H.) and *elegans*, n. sp., *id.* p. 47, *nudus*, p. 49.
Heteropanope, *id.* p. 52, *indica*, n. sp., p. 53, *eucratoides*, p. 56.
Pilumnus vespertilio, *id.* p. 58, *andersoni*, n. sp., p. 59, *seminudus*, p. 65, *lævis*, p. 66.
Eriphia lævimana, *id.* p. 68.
Trapezia cymodoce, *id.* p. 69.
Ozius corrugatus, n. sp., OZORIO.
Carpilodes striatus, n. sp., DE MAN, (3) p. 232.
Liomera guttata, and *semigranosa*, p. 239, both n. spp.
Lophactæa maculata, n. sp., *id.* p. 250.
Actæodes sundaicus, n. sp., *id.* p. 253 ; *modestus*, n. sp., *id.* p. 257.
Panopæus latifrons, n. sp., *id.* p. 265.
Lophozozymus simplex, n. sp., *id.* p. 271.
Cyclodius granulosus, n. sp., *id.* p. 283.

CORYSTIDÆ.

Kraussia rastripes, n. sp., MÜLLER, p. 480.

GRAPSIDÆ.

Sesarma, the Indo-Pacific species, DE MAN (2) ; with n. spp. *ne* and pp. 643 & 661, *meinerti*, pp. 648 & 668, *minuta*, p. 650, *brockii*, *krausii*, p. 652, *polita*, p. 654, *melissa*, p. 656, *andersoni* and *edc* p. 657, *haswelli*, p. 658. Several older species are described at len
Sarmatium, subg. of *Sesarma*, *id.* p. 659, with n. sp. *inerme*, pp. 66

INACHIDÆ.

Doclea hybrida (Fabr.), described from Mergui, p. 9 ; *andersoni*, p. 11 ; *sp. indet.*, p. 13 ; DE MAN (1) : *tetraptera*, n. sp., WALKER, p.
Hyastenus hilgendorfi, n. sp., *id.* p. 14 ; *pleione* (Herbst), *id.* p. 18.
Naxia (*Naxioides*) *petersii* (Hilg.), *id.* p. 19.
Schizophrys aspera, *id.* p. 20.
Micippa haanii, *id. ibid.*

LEUCOSIIDÆ.

Onychomorpha lamelligera figured ; WALKER.
Nursia rubifera, n. sp., MÜLLER, p. 480.

MAJADÆ.

Maia miersii, n. sp., WALKER, p. 113.

Micropisa bocagei, n. sp., OZORIO.
Hyastenus brockii, n. sp., DE MAN, (3) p. 221.

OCYPODIDÆ.

Ocypoda ceratophthalma, DE MAN, (1) p. 107, *cordimana*, p. 108.
Gelasimus dussumieri, *id.* p. 108, *acutus*, p. 113, *annulipes*, p. 118, *triangularis*, p. 119.
Eucrate, DE MAN, (1) p. 88, *affinis*, p. 89.
Carcinoplax setosus and *integer*, *id.* p. 93.
Macrophthalmus tomentosus, *id.* p. 122 ; *depressus*, *id.* p. 124 ; *erato*, n. sp. *id.* p. 125.

PARTHENOPIDÆ.

Lambrus longimanus, DE MAN, (1) p. 21.
Harrovia elegans, n. sp., *id. ibid.*

PINNOTHERIDÆ.

Pinnotheres edwardsi, n. sp., DE MAN, (1) p. 103, *parvulus*, p. 105.
Xanthasia murigera, *id*, p. 106 ; *sp. indet.*, *id.* p. 106.
Pinnotheres marioni, n. sp., GOURRET, (1) p. 186.

PORCELLANIDÆ.

Polyonyx cometes, n. sp., WALKER, p. 116.
Porcellanella picta figured ; *id.*
Porcellana mattosi and *bella*, n. spp., OZORIO, p. 229.
Petrochirus caritarius, n. sp., *id.*

PORTUNIDÆ.

Goniosoma inequale, n. sp., WALKER, p. 116.
Caphyra archeri, n. sp., *id. ibid.*
Neptunus pelagicus, *gladiator*, DE MAN, (1) p. 69 ; *N.* (*Hellenus*) *andersoni*, n. sp., *id.* p. 70.
Thalamita savignyi, *id.* p. 73, *integra*, p. 74, *sima*, *prymna*, p. 75, *spinimana*, p. 76, *danæ*, p. 78, *crenata*, p. 79.
Goniosoma cruciferum, *id.* p. 79, *affine*, p. 80, *merguiense*, p. 82.
Lissocarcinus pulchellus, n. sp. ?, MÜLLER, p. 482.

RANINIDÆ.

Lyreidus channeri, n. sp., WOOD-MASON.

RHIZOPIDÆ.

Typhlocarcinus villosus figured ; WALKER.

Telphusidæ.

Telphusa stoliczkana, de Man, (1) p. 94, *callianira*, n. sp., p. 96, *carinifera*, n. sp., p. 100 ; *aubryi*, Milne-Edwards, p. 122 ; *africana*, *id.* p. 124, fig. 8 ; *decazei*, *id.* p. 127, fig. 7 ; *madagascariensis*, *id.* p. 131, fig. 5 ; *ballayi*, *id.* p. 132, fig. 2 ; many other species recorded from Africa in this paper. *T.* (*Oziotelphusa*) *hippocastanum*, n. sp., Müller, p. 482 ; *fluviatilis*, development, Mercanti.

Hydrotelphusa agilis, Milne-Edwards, p. 139, fig. 9.

Paratelphusa nilotica, *id.* p. 141 ; *brazzæ* figured, *id.* p. 142 ; *pœcili* figured, *id.* p. 143 ; *chaperi* figured, *id.* p. 144 ; *chavanesi*, *id.* p. 145.

Platytelphusa, n. g., with sole n. sp. *armata*, from Tanganyika ; *id.* p. 146.

Deckenia imitatrix, *id.* p. 149.

MACRURA.

Anapagurus, n. subg., under *Spiropagurus* ; Henderson.

Eupagurus filholi, n. sp., de Man (2).

Clibanarius, habits ; Lucas, A. S. H.

Full paper on the *Anthracaridæ* ; Packard (3).

Callianassa subterranea, n. var. *minor* ; Gourret, (2) p. 1034.

Homarus : reproduction of lost parts, Brook ; lobster industry, Baird.

Astacus : green gland, Grobben ; abnormal chela, Léger ; general histology, Osborne ; specific distribution, Schiemkewitsch ; general account, Rank ; see also Landois.

Crangon, development ; Kingsley (1, 2).

Alpheus halesii, n. sp., Kirk.

Palinurus lalandii to be confined to the species from the C. of Good Hope ; *P. Edwardsii* the only N. Zealand species ; Parker : abnormal eye-stalk, Howes.

Pagurus squamosus, n. sp., Ristori, p. 125.

Tribolocephalus, n. g., and sole n. sp. *lævis* ; *id.* p. 127.

Galathea parroceli, n. sp., Gourret, (2) p. 1034 ; discussion of several species, Bonnier.

Gnathophyllum elegans, n. var. *brevirostris* ; Gourret, (2) p. 1034.

Crangon (*Cheraphilus*) *neglectus* (Sars), and *C. fasciatus* (Risso), Britain, Norman, p. 90 ; *C. lacazei*, n. sp., Gourret, (2) p. 1033.

Alpheus gabrieli, n. sp., *id. ibid.*

Hippolyte marioni, n. sp., *id. ibid.*

Pontonia phallusiæ (Marion), *id.*, (1) p. 187.

Palæmonetes varians, distribution ; Barrois (2).

Palæontology.

Dromia veronensis, n. sp., Bittner, p. 46.

Calappilia incisor, n. sp., *id.* p. 48.

Graptocarcinus texanus, n. sp., Roemer (1).

Chlinocephalus, n. g., with sole n. sp. *demissifrons* ; Ristori, p. 100.

Pilumnus spinosus, n. sp., *id.* p. 104.
Eriphia cocchii, *id.* p. 105 ; *punctulata*, *id.* p. 109 : both n. spp.
Cœloma sabatium, *id.* p. 117 ; *isseli*, *id.* p. 119 : both new to science.
Heptatulina, n. g., with n. sp. *seguentiæ* ; *id.* p. 121.
Gonoplax formosa, *id.* p. 111 ; *meneghinii*, *id.* p. 114 : both n. spp.
Ranina bavarica, n. sp., EVERT, p. 264.
Scylla hassiaca, n. sp., *id.* p. 268.

SCHIZOPODA.

Structure, &c., of the photospheria ; VALLENTIN.
On the *Gampsonychidæ*, see PACKARD (4).

EUPHAUSIIDÆ.

Boreophausia raschii (M. Sars), Britain, NORMAN, p. 91.
Nyctiphanes norvegica (M. Sars), Britain, *id.* p. 92.

MYSIDÆ.

Erythrops pygmæa (Sars), new to Britain ; NORMAN, p. 93.
Mysidopsis gibbosa (Sars), *angusta*, (Sars), in Britain ; *id. ibid.*
Leptomysis lingvura (Sars), British ; *id. ibid.*
Mysis inermis, *arenosa*, *lamorнæ*, in Britain, *id.* pp. 94 & 95.
Siriella clausii, *norvegica*, *crassipes*, *brooki* (n. sp.), *armata*, recorded from Britain, with description ; *id.* pp. 95–100.
Mysis chameleo, embryology, NUSBAUM ; nervous system, KOEHLER (3).
Archæomysis, n. g., with sole n. sp. *grebnitzkii*, CZERNIAVSKY, Pt. i, p. 73.
Pontomysis, n. g., *id. t. c.* p. 77, with n. spp. *caucasica*, p. 79, *widhalmi*, p. 83.
Leptomysis pontica, n. sp., *id. t. c.* p. 91.
Rhinomysis, subg. of *Siriella*, *id. t. c.* p. 96 ; *diversa*, p. 98, and *sarsii*, p. 99, both n. spp.
Siriellides, subg. of *Siriella*, *id. t. c.* p. 100 ; with n. spp. *indica*, p. 103, *paulsoni*, p. 104.
Protosiriella jaltensis and varr., *id. t. c.* pp. 109–116.
Hemimysis pontica, n. sp., *id. t. c.* p. 117.
Limnomysis, n. g., with n. spp. *brandti*, *id. t. c.* p. 121, *benedeni*, p. 124, *schmankewiczi*, p. 128.
Potamomysis, n. g., *id. t. c.* p. 129, with n. sp. *pengoi*, p. 130.
Euxinomysis, n. g., *id. t. c.* p. 132, with n. sp. *mecznikowi*, p. 133.
Acanthomysis, n. g., *id. t. c.* p. 134, with n. sp. *spinosissima*, p. 133.
Onychomysis, n. g., *id. t. c.* p. 138, with n. sp. *mingrelica*, p. 141.
Parapodopsis cornuta, n. sp., *id. t. c.* p. 149.
Mysis baltica, n. sp., CZERNIAVSKY, Pt. ii, p. 6 ; *mertensi*, n. sp., p. 19, *schrenckii*, p. 20.
Neomysis, n. g., *id. t. c.* p. 23.

Synmysis, n. g., *id. t. c.* p. 26; *benedeni*, n. sp., p. 31, *mecznikowi*, n. sp., p. 32.

Heteromysis, n. g., with n. sp. *mirabilis*, *id. t. c.* p. 33; *intermedia*, n. sp., p. 35.

Kesslerella, n. g., *id. t. c.* p. 36, with n. sp. *similis*, p. 38.

Mesomysis, n. g., *id. t. c.* p. 41, with n. spp. *lacustris*, p. 42, *kröyeri*, p. 46, *kowalewskii*, p. 50, *intermedia*, p. 52, *aberrans*, p. 54.

Paramysis, n. g., *id. t. c.* p. 55, with n. spp. *baeri*, p. 56, *armata*, p. 63, *ullskyi*, p. 65.

Arctomysis, n. g., CZERNIAVSKY, Pt. iii, p. 6.

Heterosiriella, n. g., *id. t. c.* p. 38.

Austromysis, n. g., *id. t. c.* p. 66.

SYNCARIDA.

For the full paper on this group, founded 1885, PACKARD (5).

STOMATOPODA.

Protosquilla ectypa, n. sp., MÜLLER, p. 476; *stoliura*, n. sp., p. 477.

Lysiosquilla sarasinorum, n. sp., *id.* p. 478.

AMPHIPODA.

General arrangement of the group; BOVALLIUS (4).

SYNOPIDÆ.

Synopia caraibica, n. sp., BOVALLIUS (4); *schéeleana*, n. sp., *id.* p. 16.

Trischizostoma, *id.* p. 22, *et seqq.*

Hyperiopsis, *id.* p. 31.

HYPERIDÆ.

Arctic and Antarctic *Hyperidea*; BOVALLIUS (5).

Tyro pacifica, n. sp., *id.*, (1) p. 4.

Vibilia macropis, *gibbosa*, *robusta*, p. 7, *kröyeri*, *longipes*, p. 8, *viatrix*, *gracilis*, *gracilenta*, p. 9, *armata*, *pyripes*, p. 10, all n. spp., *id. t. c.*

Cyllopus armatus, p. 11, *levis*, p. 12, *id. t. c.*

Cyllias, n. g., with sp. *tricuspidatus* (Streets), *id.* p. 12.

Paraphronima pectinata, n. sp, *id. t. c.* p. 13.

Iulopis n. g., with n. spp. *lovéni* and *mirabilis*; *id.* pp. 17 & 18.

Hyperoche, n. g., with 4 old spp. and 1 n. sp., *lütkeni*; *id.* p. 18.

Hyperiella, n. g., *H. antarctica*, n. sp.; *id.* p. 19.

Parathemisto japonica, n. sp., *id.* p. 21.

Euthemisto nordenskiöldi, n. sp., *id.* p. 22.

Themistella, n. g., with sole n. sp. *steenstrupi*; *id.* pp. 22 & 23.

Phronimopsis sarsi, n. sp., *id.* p. 23.
Dairella, n. g., and *D. latissima*, n. sp. ; *id.* p. 24.
Phronima spinosa and *colletti*, n. spp., *id.* p. 25.
Phronimella filiformis, n. sp., *id.* p. 26.
Phorcus lovéni, n. sp., *id.* p. 29.
Lycæopsis lindbergi, n. sp., *id. ibid.*
Tryphæna nordenskiöldi, n. sp., *id.* p. 30.
Thamyris elegans, n. sp., *id.* p. 31.
Thamnæus, n. g., and *rostratus*, n. sp. ; *id. ibid.*
Lycæa stebbingi, n. sp., *id.* p. 33.
Paralycæa newtoniana, n. sp., *id. ibid.*
Simorhyncus lilljeborgi, n. sp., *id.* p. 34.
Glossocephalus, n. g., with n. spp. *milne-edwardsi* and *spiniger*, *id.* p. 35.
Oxycephalus clausi, p. 35, *pectinatus*, p. 36, *pronoides*, *steenstrupi*, p. 37, all n. spp., *id.*
Leptocotis lindströmi, n. sp., *id.* p. 38.
Tullbergella, n. g., and sole n. sp. *cuspidata* ; *id. ibid.*
Rhabdonectes, for *Rhabdosoma* preoccupied ; *id.* p. 39.
Eupronoë macrocephala, n. sp., *id.* p. 41.
Parapronoë agilis, *atlantica*, n. spp., *id.* p. 42.
Thyropus atlanticus, n. sp., *id.* p. 43.
Parascelus nasutus, n. sp., *id.* p. 44.
Eutyphes forfex, n. sp., *id.* p. 46.
Dithyrus stellatus, n. sp., *id. ibid.*
Paratyphes théeli, n. sp., *id.* p. 47.
Tetrathyrus rectangularis, n. sp., *id. ibid.*, *inscriptus*, n. sp., *id.* p. 48.
Amphithyrus inermis, n. sp., *id.* p. 48.
Hyperidæ in *Radiolaria* ; Brandt, K.
For 8 n. spp. of *Platyscelidæ* ; Claus (3).

Aliarum Familiarum.

Phronima bucephala, n. sp., Giles, p. 215.
Phronimella hippocephala, n. sp., *id.* p. 217.
Rhabdosoma investigatoris, n. sp., *id.* p. 219.
Amphipronoë longicornuta, n. sp , *id.* p. 220.
Lestrigonus bengalensis, n. sp., *id.* p. 224.
Eurystheus hirsutus, n. sp., *id.* p. 227.
Gammarus (*Gammarella* ?) *dubius*, n. sp., Herrick, (3) p. 41 ; *pulex*, a, albinism of, Cameron.
Byblis kallarthrus, *Talorchestia tumida*, *Pherusa cærulea*, all n. spp. of 1886, now fully described ; Stebbing.
Orchestiidæ, notes on ; Barrois (1).
Ptilocheirus tricristatus, n. sp., Chevreux, (2) p. xl.
Microprotopus longimanus, n. sp., *id.* p. xli.
Microdeutopus armatus, n. sp., *id. ibid.*

ISOPODA.

Histology of compound eye in some genera ; Beddard.
Polar bodies; Leichmann.
Nervous system; Brandt, E.
Nerocila philippensis, n. sp., Bovallius, (3) p. 1 ; *lovéni*, n. sp., *id.* p. 6 ; *laticeps*, n. sp., *id.* p. 10.
Anilocra leptosoma, n. var. *caudata*, *id.* p. 13 ; *hedenborgi*, n. sp., *id.* p. 15; *guinensis*, n. sp., *id.* p. 17.
Jaera marina, anatomy and histology ; Sye.
Æga lovéni, n. sp., p. 1, *ventrosa* (Schiödte & Meinert), p. 6, *ventrosus* (M. Sars), Bovallius (2) ; *crenulata*, in British Seas, Matthews.
Rocinela dumerillii discussed ; Bovallius, (2) p. 9.
Slabberina gracilis, n. sp., *id.* p. 12.
Syscenus lilljeborgii discussed ; *id.* p. 17.
Anceus normani, (?) n. sp., Scott.
Sphæroma bolivarii, n. sp., de Buen, p. 415.
Asellus, embryonic appendages, Claus (2) ; white variety, *aquaticus*, var. *freibergensis*, Schneider ; spermatogenesis, Terfve.
Porcellio, development ; Reinhard.
Apseudes latreillei and the *Tanaidæ* ; Claus (4, 5).
Armadillinæ of France ; Dollfus.
Cryptoniscus sp., Gourret, (1) p. 187.
Danalia, n. g., for *Cryptoniscus* parasitic on *Sacculina* ; Giard (4).
Leponiscus, n. g., with n. spp. *anatifæ* and *pollicipedis* ; *id.* p. 52.
Grapsicepon, n. g., for (*C.*) *messoris* (Kossm.) and *fritzii*, n. sp., Giard, (7) pp. 69 & 70.
Cancricepon, n. g., for (*C.*) *elegans* and *pilula* auct., *id.* p. 72.
Portunicepon, n. g., for (*C.*) *portuni* (Kossm.), *id.* p. 73.
Entoniscus mülleri (n. sp., Giard & Bonnier, 1886), *id.* p. 234 ; *braziliensis*, *id.* p. 235 ; *creplinii*, p. 236 : all n. spp.
Entione achæi, n. sp., p. 237.
Grapsion (n. g., Giard & Bonnier, 1886), with sole sp. *cavolinii* (Giard), p. 237.
Cancrion (n. g., 1886), for *cancrorum* (F. Müller), *miser* (G. & B.) and *floridus* (G. & B.), *id.* p. 239.
Portunion (n. g., 1886), *id.* p. 243, to include some species previously recorded and *salvatoris* and *moniezii* (n. spp. 1886), p. 245.
Sphærifer cornutus ; Lucas, H. (2).

PHYLLOPODA.

For 6 n. spp., Simon.
Metamorphosis, &c. ; Herrick (1).
Remarks on ephippia ; Imhof (3).
Relations between *Artemia* and *Branchipus* ; Brauer.
Moinodaphnia, n. g., with sole n. sp. *alabamensis* ; Herrick, (3) p. 35.

Apus hæckelii, n. sp., Walter, p. 924.
Artemia asiatica, n. sp., *id.* p. 926 : development, Nassonow.
Hyalodaphnia and *Bosmina*, n. varr ; Zacharias (3).
Phyllocarida, critical summary of researches ; Canu.
Ceratiocaris and *Emmelezöe*, several n. spp., Etheridge (1, 2).
Rostrocaris (MS. gen.), Kinnear.
Phasganocaris, n. g. (= *Eurypterus pugio*, Barr.); Novák (1).
Aristozöe solitaria, *id.* (2) p. 674.
Ectinosoma atlanticum, described and figured ; de Guerne (2).
Podon minutus, *id. ibid.*
Cyclestheria, n. g., with sp. (*Estheria*, Baird) *hislopi* ; Sars (2).
Ceriodaphnia echinata, n. sp., Moniez (2).

OSTRACODA.

For many new Palæozoic species of various genera, see Jones (1, 2, 3).
From Silurian of Gotland, Jones (4).
Beyrichia primitiva, n. sp., Verworn, with remarks on the phylogeny of the group.
Cypridina angulata, n. sp., Sars, (1) p. 215.
Conchœcia pellucida, n. sp., *id.* p. 252 ; *tetragona*, n. sp., *id.* p. 254 ; *striolata*, n. sp., *id.* p. 256.
Candona neglecta, n. sp., *id.* p. 279.
Cythere amnicola, n. sp., *id.* p. 305.
Cypris dugesii, Herrick, (3) p. 26 ; *perelegans*, *id.* p. 27 ; *minnesotensis* and *modesta*, *id.* p. 28 : all n. spp.
Cypridopsis hystrix, n. sp., *id.* p. 30.
Anatomy, &c., of *Cypridinæ* : Garbini.

COPEPODA.

Remarks on the "blassen Kolben" ; Imhof (2).
Calanus americanus, n. sp., Herrick, (3) p. 6.
Acartia gracilis, n. sp., *id.* p. 7.
Temora and *Temorella*, *id.* pp. 7 & 8 ; *affinis*, p. 9.
Temorella lacustris, n. sp., Zacharias (1).
Calanidæ of Poland ; Wierzejsky.
Corycæus subulatus, n. sp., Herrick, (3) p. 48.
Laophonte mississipiensis, n. sp., *id.* p. 20.
Amyone intermedia, n. sp., *id.* p. 22.
Canthocamptus mobiliensis, n. sp., *id. ibid.*
Argulus catostomi, Kellicot.
Cyclops (*Notopterophorus*) *papilio* (Hess.), var. *massiliensis*, Gourret & Roeper, p. 185 ; *D. elongatus*, var. *maculatus*, *id.* p. 186.
Lancerilla tubulata, Giard (3).
Lernæascus nematoxys, n. sp., and anatomy ; Claus (6).

Pandarus sinuatus, described and figured, RATHBUN, p. 110 ; *smithii*, n. sp., *id.* p. 315.

Chondracanthus galeritus, n. sp., *id.* p. 317 ; *phycidis*, n. sp., *id.* p. 320 ; *cottunculi*, n. sp., *id.* p. 322.

Cecrops latreillei, LUCAS, H. (1).

CUMACEA.

Lamprops fasciata, British ; NORMAN, p. 100.

Hemilamprops rosea and *cristata*, British ; *id.* pp. 100 & 101.

Diastylis rugosa, British ; *id.* p. 102.

Pseudocuma cercaria (van Bened.), new to Britain ; *id. ibid.*

CIRRHIPEDIA.

Phylogeny and distribution in time ; WEITHOFER.

Stephanolepas, n. g., with n. sp. *muricata* ; FISCHER.

Dichelaspis pellucida, HOEK (1).

Scalpellum pfeifferi, n. sp., WEITHOFER.

Acasta scuticosta, n. sp., and key to the species of this gen. ; WELTNER.

Balanus, development ; NASSONOW.

ARACHNIDA.

BY

R. INNES POCOCK.

ANATOMY, EMBRYOLOGY, PHYSIOLOGY, &c.

GENERAL.

PLATEAU, F. De l'absence de mouvements respiratoires perceptibles chez p[illegible] les Arachnides. Arch. Biol. vii, pp. 331–348.

After elaborate experiments, M. Plateau has demonstrated the entire [illegible]ence of all perceptible external respiratory movements in the *Scorpion-*[illegible] the *Araneidea*, and the *Phalangiidea*.

[illegible] Recherches expérimentales sur la vision chez les Arthropodes. Pt. 2. Vision chez les Arachnides. Bull. Ac. Belg. xiv, pp. 545–595, 1 pl.

Of the *Araneidæ*, the *Attoidæ* and *Lycosoidæ* are probably the only forms that see the movements of small bodies. The distance at which these movements are seen varies from 2–12 centimetres, but even at a distance of 1–2 centimetres vision is not exact. The non-hunting Spiders have very poor vision. They perceive their prey by vibrations of the web-filaments. In Scorpions, the sense of touch is much more important than that of sight, which is weak, the lateral eyes perceiving clearly at a distance not greater than 2½ centimetres. In the *Phalangidæ*, the vision is weak, being on an equality with that of the web-making *Araneidæ*.

WEISSENBORN, B. Beiträge zur Phylogenie der Arachniden. Jen. Z. Nat. xx, pp. 33–119.

The author treats of the nervous and skeletal systems, and of the appendages and respiratory organs in the various divisions which compose the class *Arachnida*. The general conclusions arrived at are: (1) [illegible] the *Tardigrada* appear to have become separated from the *Articulata* [illegible]he *Arachnida* branched off; (2) that the *Pycnogonida*, which in [illegible] characters are exceedingly aberrant, resemble the ancestral form [illegible] WEED [illegible] *verrucosum* of respiratory organs; (3) that the *Scorpionidea* and *Sol-*[illegible] by Dr. We[illegible]f the true *Arachnida*, the most primitive.

Scorpionidea.

Houssay, F. Sur la lacune sanguine périnerveuse, dite artère spinale chez les Scorpions, et sur l'organe glandulaire annexe. C.R. etc. pp. 520–522.

The so called spinal artery of the Scorpion is, in reality, a lacuna, of which the annular and appendicular arteries are dilatations. Along the nerve chain there is a glandular organ, which, judging from its close connection with the blood system, may have a depuratory function.

Parker, G. H. Eyes in Scorpions. Bull. Mus. Comp. Zool. xiii, pp. 173–208.

The median and lateral eyes are hypodermal in origin. The median eye is triplostichous, and is formed by an involution of the hypodermis and an inversion of the second layer. The first layer secretes the lens; the second layer is the retina; the third layer becomes fused with the second. The lateral eyes are monostichous, and arise from simple thickening and depression of the hypodermis. The lens is secreted from a ring of cells around the margin of the depression. The retina, unlike that of the median eye, has no phaospheres.

Bourne, A. G. The reputed Suicide of the Scorpion. P. R. Soc. xlii, pp. 17–22.

The poison of the Scorpion is harmless, both to its possessor and another individual of the same, or even of an allied, species. When pres from the sting, it is a whitish, milky fluid, resembling formic acid smell.

——. Scorpion virus. Nature, xxxvi, p. 53.

In connection with the discussion concerning the poison and the puted suicide of the Scorpions, it is stated that exposure to the rays the sun has been known to cause death to these animals.

Morgan, C. Ll. Scorpion virus. *Op. cit.* xxxv, p. 535.

From experiments upon S. African Scorpions, the author is able to corroborate the assertions of Prof. Bourne with reference to the harmlessness of the poison of these animals, both to the individual possessing it and to another of the same or of a closely allied species.

Fayrer, J. Scorpion virus. *T. c.* p. 488.

The author refers to the experiments of Prof. Bourne upon Scorpion virus, being especially interested himself in the poisonous effects of snake-bites.

Saint-Remy, M. G. Sur la structure des centres nerveux chez le scorpion. Bull. Soc Nancy, viii, p. xix.

The œsophageal commissures are formed by the ganglia, from which arise the nerves for the cheliceræ and a median unpaired nerve, wh runs towards the optic region. The sub-œsophageal mass abdominal ganglia present cells only upon their inferior and There is an external neurilemma, and an internal neuri separates the medullary substance from the cellular cortex.

Araneidea.

Schimkewitch, W. Etude sur le développement des Araignées. Arch. Biol. vi, pp. 515–584.

The author has succeeded in detaching the embryo from the vitellus, a feat which has never been done before. The egg envelopes, the constitution of the ripe ovum, segmentation and the method of formation of the dermal layers are described with the utmost minuteness, and the conclusions of previous observers with reference to these facts are criticised. The second part of the paper treats of the development of the external form. It is asserted that Balfour was wrong in saying that the cheliceræ of the embryo of *Agalena* are in the form of pincers, and that the organ which that author regarded as being the mandibular ganglion is in reality the proximal segment of the cheliceræ. The third part of the paper treats of the organs derived from the mesoderm and ectoderm. From the somatic layer arise the body-muscles, the sub-cutaneous connective tissue, and the lining membrane of all the organs which are formed by invagination from the ectoderm. From the splanchnic layer arise the membrane of the mid-gut, the genital organs, the pericardium, and the pulmonary veins. From the dorsal mesenteron is developed the heart, with its lateral arteries; the pericardiac cavity is part of the ...elomic cavity. The ectoderm gives rise to the chitinous layer of the ...tegumen..., to the epithelium of the glands, œsophagus, rectum, stercoral ...uch, malpighian tubes, tracheæ, and lungs, and to the nervous system ...d eyes. The central nervous system is exclusively ectodermal in origin, ... is derived from two thickenings of the cephalic lobes, from two longi...inal thickenings of the ventral surface of the embryo, and from a ...dian ventral rudiment.

Morin, J. Zur Entwicklungsgeschichte der Spinnen. Biol. Centralbl. vi, pp. 658–663.

Observations principally upon the embryology of *Theridion*. After being laid, the ovum exhibits two egg-envelopes. The nucleus, which is situated in the centre and surrounded by yolk, divides into two, four, ...nd eight segments. The yolk then divides into eight pyramidal por...ions; the segments divide regularly, and each possesses a nucleus. The ...uclei approach the surface, and ultimately the outer nucleated portions become separated from the inner non-nucleated yolk-portions, which then coalesce. An ectoderm, endoderm, and mesoderm become differentiated. In *Pholcus* and *Drassus* a "primitive cumulus" is formed. This is an aggregation of mesoderm cells, which ultimately are converted into blood-corpuscles. In *Theridion* no such aggregation was observed. The cephalothorax and abdomen are marked off as an anterior and posterior lobe on the germinal disk. Segments appear, and the appendages are seen to ...ise as bud-like outgrowths of ectoderm and mesoderm. The ganglia ...med from thickenings of the ectoderm. The stomadæum and ... are formed in the usual manner The pulmonary sacs are ...invaginations of the ectoderm. The first pair of abdominal ... become the external coverings of the pulmonary apertures;

Weed ... *verrucosum*, by Dr. Wo...

the second pair abort; the third and fourth become the spinning mamillæ. The spinning glands are formed by ectodermic invaginations. The malphigian tubes are developed by evagination from the proctodæum.

SCHNEIDER, A. Système stomato-gastrique des Aranéides. Tabl. Zool. ii, pp. 1–7 (2 pls).

The stomato-gastric nervous system of *Tegenaria* is described in detail, and that of certain other Spiders compared with it.

WAGNER, V. La regénération des organes perdus chez les Araignées. Bull. Mosc. 1887, pt. iv, pp. 871–900, pl. xi.

The author describes minutely the formation of the chitinous bud, the atrophy of the old tissues of the segment in which the new organ arises, and the process of the formation of the new organ. The paper is illustrated with excellent figures.

LOMAN, J. C. C. Ueber die morphologische Bedeutung der sogenannten Malpighischen Gefässe der echten Spinnen. Tijdschr. Nederl. Dierk. Ver. 1887, pp. 109–113.

Examination of the malpighian tubules of a species of *Clubiona* shows, as has been before demonstrated in the case of *Epeira*, *Tegenaria*, and *Mygale*, that these organs are offshoots from the mid-gut. Moreover, the character of their contents shows that these ducts have not a renal function. In these two particulars the *Arachnida* differ from the *Insecta* and approach the *Crustacea*.

WAGNER, VON W. Copulationsorgane des Männchens als Criterium für die Systematik der Spinnen. Hor. Ent. Ross. xxii, pp. 3–132.

The first part of the paper treats of the various features and organs which have been used by authors to divide the *Araneidea* into larger and smaller groups. Names are attached to the various parts which constitute the copulatory organ of the males. The infinite variety of modifications which are presented by this copulatory organ can be reduced to four principal types, which are used as bases for the classification of the various families. The last five pages are devoted to various species of the genus *Epeira*.

LENDL, A. Ueber die begattung und copulationsorgane von *Trochosa infernalis* (Motsch.). Term. füzetek, xi, p. 51, pls. i & ii.

An elaborate account, with excellent illustrations, of the structure of the epigyne and of the terminal segment of the maxillary palp of the male is given, and the process of fertilization is described and figured.

For observations upon the method of procedure adopted during copulation by certain Japanese Spiders, see DÖNITZ, SB. nat. Fr. 1887, p. 8.

The same author, *t. c.* p. 97, has some new and interesting observations concerning *mimicry*, as exhibited by certain Spiders.

LYSTER, C. D., Nature, xxxvi, p. 366, has observed a Spider capturing its prey, allowing for the force of gravity.

McCook, H. C. Notes on the age and habits of the American *Tarantula*. P. Ac. Philad. 1887, pl. iii, p. 369.

Observations on the mode of life and behaviour of a specimen of *Mygale hentzii*, which lived in captivity seven years. The paper is illustrated with several woodcuts.

An account of the habits of *Moggridgea dyeri*, Camb., the Tree Trapdoor Spider of Graham's Town, is given by the Rev. N. Abraham, P. Z. S. 1887, p. 41.

Peckham, G. W. & E. G. Some Observations on the Mental Powers of Spiders. Journ. Morph. i, No. 2, pp. 383–419.

With three exceptions, all the Spiders experimented upon gave certain signs of the ability to perceive various strong-smelling substances. The removal of the palpi did not appear to affect this faculty. Of all the specimens upon which experiments were made, the *Epeiridæ* alone seemed capable of hearing the vibrations of a tuning-fork. With regard to the sense of sight, it is certain that some of the *Attidæ* see well at a distance of not less than ten inches ; it seems certain also that Forel was wrong in concluding, on account of their inability to find a cocoon unless actually in contact with it, that the *Lycosidæ* are short-sighted. The explanation offered is that on account of the method of its formation, the female does not ever seen her cocoon, and consequently can of necessity only recognise it by touch, though she pass within one inch of it during her search. Experiments upon the colour-sense showed conclusively that this is possessed in a highly-developed condition, and that a red environment is preferred to that of any other colour. With regard to memory, it is shown that no *Lycosidæ* remember their eggs for so long a time as forty-eight hours, and that several species of *Thomisidæ* and *Attidæ* did not remember them for twenty-four hours. A specimen of *Theridium globosum*, however, recognised her eggs after being separated from them for fifty-one hours. The habit of lying motionless when alarmed is seen in its greatest development in such Spiders as the sluggish *Epeiridæ* ; it is badly developed or entirely absent in the jumping and swift-running species. When deprived of the cocoon, spiders will readily take instead a pith ball of the same size and shape, and fasten it beneath the abdomen. And, further, if the contents of the cocoon be replaced by a leaden pellet, the spider will not hesitate to seize and attempt to drag it about, as if unconscious of the increase of weight. This shows that the muscular sense is poorly developed.

Solpugidea.

Croneberg, A. Ueber ein Entwicklungsstadium von *Galeodes*. Zool. Anz. x, pp. 163 & 164 (2 woodcuts).

[illegible]med æts of the egg are composed principally of the abdomen, with [illegible] side of which the cephalothorax and legs are in contact. When [illegible]ed, the embryo is, except for the presence of a row of setæ on [illegible] surface, naked. There are no abdominal appendages, and

Weed [illegible] *verrucosum*, by Dr. Wood

those of the thorax are not segmented. Between the first and second pair of feet, but more dorsally, is situated on each side a wing-like process, which is not present in the adult.

Pseudoscorpionidea.

CronebERG, A. Vorläufige Mittheilung über den Bau der Pseudoscorpione. Zool. Anz. x, pp. 147–151 ; trans. in Ann. Nat. Hist. xix, pp. 316–320.

The nervous system resembles that of certain *Acarina*, e. g., *Trombidium*. The rostrum is provided with a lamella, which posteriorly divides and passes into the pharynx. The wall of the pharynx is strongly chitinised and furnished with muscles, which by contraction dilate the cavity. The stomach is very small, the chief mass of the viscera consisting of the hepatic organs. The four pairs of apertures in the heart are confined to its hinder portion. The duct of the ovary, which is a long unpaired tube, opens at the base of the abdomen. There appears to be in the cephalothorax a spinning organ, which opens in the basal segment of the chelicera.

For additional remarks upon the mouth of the *Chernetidæ*, see Bertkau, Verh. Ver. Rheinl. xliv, p. 112.

Acaridea.

Hubbard, H. G. Insects affecting the Orange. Bull. Dep. Agric. En 1885. [Omitted from Zool. Rec. xxii.]

The so-called "rust" of the orange-plant is due to the presence ; mite, *Typhlodromus oleivorus* (Ashm.). The preservation of cert mites which destroy the scale-insects is recommended.

Hagen, H. A. (Ent. Am. iii, No. 7, p. 124), comments upon the vita powers of a species of *Ixodes*, which lived for not less than four months in the ear of a man.

For observations upon the structure and mode of life of *Tydeus foliorum*, *Gamasus cepallidus*, and *Cepheus tegeocranus*, forms which are found upon the leaves of *Tilia*, see Aurivillius, N. Act. Ups. xi pp. 1–16. It does not appear that these mites obtain their nutriment sucking the juices of the plant upon which they dwell ; but, from t structure of the mouth-parts, it seems probable that they feed upon small solid particles, such as fungoid spores.

Lucas, H. (Bull. Soc. Ent. Fr. vii, pp. lxi & lxii), in a short note, comments upon the appearance of the eggs and upon the habitat of *Trombidium lapidum* (Herm.).

For an account of the galls formed upon certain plants by various kinds of apparently unknown *Phytoptidæ*, see the two following papers :—

Kieffer, J. J. Dritte Beitrag zur Kenntniss der [illegible] verkommenden Phytoptocecidien. Z. Naturw. lix, pp. 40–

Löw, F. Neue Beiträge zur Kenntniss der Phytoptocecidien Wien, xxxvii, pp. 23–38.

NATHUSIUS, W. Note on *Symbiotes*. P. Z. S. 1887, iv, p. 559.

The presence of Acarids of this genus is the cause of 'grease'—a disease affecting the feet of horses.

TITLES OF FAUNISTIC AND SYSTEMATIC PAPERS.

°BALZAN, ALOYS. *Chernetidæ* nonnullæ sud-americanæ. Pts. I & II. Berlin, R. Friedländer & Sohn : 1887.

BERLESE, A. *Acari, Myriopoda* et [*Pseudo*] *Scorpiones* hucusque in Italia reperta. Fratr. Salmin. Padova : 1882–1887.

CAMBRIDGE, O. P. On some New and Rare British Spiders. P. Dorset Field Club, vi, pp. 1–17.

DÖNITZ, —. Ueber die Lebensweise zweier Vogelspinnen aus Japan. SB. nat. Fr. 1887, p. 8.

GÖLDI, E. A. Araneologisches aus Brasilien. Zool. Anz. x, p. 224.

GOYEN, P. Descriptions of New Spiders. Tr. N. Z. Inst. (2) xix, pp. 201–212.

HASSELT, A. W. M. VAN. (1) Aranеæ exoticæ quas collegit pro Museo Lugdunensi, J. R. H. Neervoort van de Poll, insulis Curaçao, Bonaire et Aruba. Tijdschr. Ent. xxx, pp. 227–244.

——. (2) Études sur le genre *Nops*. *T. c.* pp. 67–86, 1 pl.

HUBBARD, H. G. Insects affecting the Orange. Bull. Dep. Agric. Ent. 1885. [Omitted from Zool. Rec. xxii.]

KEYSERLING, E. (1) Die Arachniden Australiens. II. Nürnberg : Bauer & Raspe, 1887.

——. (2) Neue Spinnen aus Amerika. Verh. z.-b. Wien, xxxvii, pp. 421–488.

KARPELLES, L. Eine interessante Milbe (*Tarsonemus intectus*, n. sp.). Math. Nat. Ber. Ung. iv, pp. 45–61.

A mite occurring on barley ; the cause of skin irritation. The sexually mature forms, which have never been seen in the genus, were discovered.

KIRK, T. W. On *Ixodes maskelli* [n. sp.], a Parasite of the Albatross (*Diomedea exulans*). Tr. N. Z. Inst. (2) xix, pp. 65–67.

KRAMER, P. Ueber Milben. Arch. f. Nat. lii, pp. 241–267. [Omitted from Zool. Rec. xxiii.]

LENDL, A. Ueber die *Tetragnatha*-arten Ungarns. Math. Nat. Ber. Ung. v, p. 88.

MCCOOK, H. C. Note on *Cyrtophora bifurca* [n. sp.] and her Cocoons; a new orb-weaving Spider. P. Ac. Philad. 1887, iii, p. 342.

MINA', PALUMBO. Contribuzioni alla Fauna entomologica Sicula. Affinità degli Aracnidi siciliani con gli africani. Nat. Sicil. vi, pp. 92–94.

WEED st[illegible]A. Étude zoologique du Sarcopte lisse (*Sarcoptes lævis*, Rail.) le form acarienne parasite des oiseaux de Basse-Cour. Bull. Fr. xii, pp. 127–136, pl. ii.

verrucosum, by Dr. Wood,

Riley, —. [See Hubbard, H. G.]

Schimkewitch, W. (1) Sur les Pantopodes de l'expedition du 'Vettor Pisani.' (Note preliminaire.) Zool. Anz. x, p. 271.

——. (2) Ueber eine von Dr. Korotnew auf den Sunda-Inseln gefundene Pantopoden-Form. Zool. Jahrb. iii, pt. 1, p. 127, with 1 pl.

Simon, E. (1) Arachnides recueillis à Assinie (Afrique occidentale) par MM. M. Chaper et C. Allaud. Ann. Soc. Ent. Fr. vii, pp. 261–276.

——. (2) Arachnides recueillis à Obock en 1886 par M. le Dr. L. Faurot. Bull. Soc. Z. Fr. xii, pp. 452–455.

——. (3) Espèces et genres nouveaux de la famille des *Sparassidæ*. *T. c.* pp. 466–474.

——. (4) Liste des Arachnides recueillis en 1881, 1884, et 1885, par MM. J. Guerne et C. Rabot, en Laponie (Norvège, Finlande et Russie). *T. c.* pp. 456–465.

——. (5) Quelques observations sur les Arachnides. Bull. Soc. Ent. Fr. vii, pt. 3, pp. clviii & clix.

——. (6) Mission Scientifique du Cap Horn, 1882-1883. vi. Arachnides. Paris: Gauthier-Villars, 1887.

——. (7) [Descriptions of Two New Species of Spiders from Nassau.] Bull. Soc. Ent. Fr. vii, pt. 3, pp. cxlii & cxliii.

——. (8) Étude sur les Arachnides de l'Asie méridionale faisant partie des collections de l'Indian Museum (Calcutta). i. Arachnides recueillis à Tavoy (Tenasserim) par Moti Ram. J. A. S. B. lvi, pt. ii, pp. 101–117.

Stoll, Otto. *Acaridea* in Biologia Centrali-Americana. London, Godman & Salvin: 1886.

Thorell, T. Viaggio di L. Fea in Birmania e regioni vicine. ii. Primo Saggio sui Ragni Birmani. Ann. Mus. Genov. (2) v, pp. 5–417.

Treat, Mary. *Argiope riparia* var. *multiconcha* [n. var.]. Am. Nat. xxi, p. 1122.

Trouessart, E. L. (1) Diagnoses d'espèces nouvelles de *Sarcoptides* plumicoles. Bull. Soc. Angers, 1886, pp. 85–156. (Also separate, Paris: 1887.)

——. (2) Sur la présence du genre des Sarcoptides psoriques *Chorioptes* ou *Symbiotes* chez les Oiseaux. C.R. civ, pp. 921–923.

Underwood, L. M. The Progress of Arachnology in America. Am. Nat. xxi, pp. 963–975.

Urquhart, A. T. On New Species of *Araneidea*. Tr. N. Z. Inst. (2) xix, pp. 72–118.

Weed, C. M. The Genera of North American *Phalangiinæ*. [illegible] N[illegible] xxi, p. 935.

Zacharias, O. Zur geographischen Verbreitung der Hy[illegible] Biol. Centralbl. vii, pp. 631 & 632.

DISTRIBUTION.

Old World.

Britain. CAMBRIDGE : *Araneidea* only.
Lapland. SIMON (4) : *Araneidea* only.
Italy. BERLESE: *Acaridea* and *Pseudoscorpionidea.*
Sicily. MINA', PALUMBO : on affinities between the *Araneidea* of Sicily and those of Africa.
Obock (*Abyssinia*). SIMON (2) : *Araneidea.*
Assinie (*W. Africa*). SIMON (1) : *Araneidea.*
Burmah. THORELL : *Araneidea.*
Tenasserim. SIMON (8).
Australia. KEYSERLING (1): principally *Epeiridæ.*
New Zealand. URQUHART : principally *Epeiridæ.* GOYEN.

New World.

America. KEYSERLING (2) : *Araneidea* from various parts of N. and S. America and from the W. Indies.
N. America. WEED : *Phalangiidea* only. RILEY : new *Acaridea* affecting the orange plant.
Leeward Is. v. HASSELT (1).
Cape Horn. SIMON (6).
Central America. STOLL : *Acaridea* only.
S. America. SCHIMKEWITCH : *Pycnogonida* only.

SYSTEMATIC.

ARANEIDEA.

EPEIRIDÆ.

Epeira mamillana, n. sp., p. 154, pl. xii, fig. 8, Sydney, *sydneyica*, n. sp., p. 155, pl. xiii, figs. 1 & 2, Sydney, *lancearia*, n. sp., p. 157, pl. xiii, fig. 3, Sydney, *lodicula*, n. sp., p. 159, pl. xiii, fig. 4, Sydney, *urbana*, n. sp., p. 160, pl. xiii, fig. 5, Sydney, *brisbanæ* (L. Koch), p. 161, pl. xiii, figs. 6 & 7, Sydney, Peak Downs, *rubicundula*, n. sp., p. 164, pl. xiv, fig. 1, Sydney, *bradleyi*, n. sp., p. 165, pl. xiv, fig. 2, N. S. Wales, *viridipes* (Dol.), p. 167, pl. xiv, fig. 3, Peak Downs, *talipedata*, n. sp., p. 169, pl. xiv, fig. 4, *tabida* (L. Koch), p. 170, pl. xiv, fig. 5, *phthisica* (L. Koch), p. 171, pl. xiv, fig. 6, Peak Downs, *psittacina*, n. sp., p. 173, pl. xiv, fig. 7, Sydney, *anseripes* (Walck.), p. 174, pl. xv, figs. 1 & 2, N. S. Wales, *anatipes*, n. sp., p. 175, pl. xv, figs. 3 & 4, Peak Downs and Rockhampton, *idonea*, n. sp., p. 177, pl. xv, fig. 5, Peak Downs, *rotundula*, n. sp., p. 178, pl. xv, figs. 6 & 7, Rockhampton, *cyrtarachnoides*, n. sp., p. 181, pl. xv, figs. 8 & 9, Sydney, *fastidiosa*, n. sp., p. 183, pl. xvi, fig. 1, Rockhampton, Cape York, [illegible]*ematica* (Dol.), p. 184, pl. xvi, fig. 2, Rockhampton, Cape York, WEED sp., p. 186, pl. xvi, fig. 3, Sydney, *albotriangula*, n. sp., p. 187, *verrucosum*, [illegible] & 5, Sydney, Peak Downs, Cape York, *inquieta*, n. sp., by Dr. Wood, [illegible]i, fig. 6, Sydney, *circulissparsa*, n. sp., p. 190, pl. xvi, fig. 7,

Sydney, *quieta*, n. sp., p. 192, pl. xvii, fig. 1, Sydney, *rara*, n. sp., p. 193, pl. xvii, fig. 2, Cape York, *rabiosula*, n. sp., p. 194, pl. xvii, fig. 3, Middle Harbour, Sydney, *queribunda*, n. sp., p. 195, pl. xvii, figs. 4 & 5, *quaesita*, n. sp., p. 197, pl. xvii, fig. 6, Australia, *necopina*, n. sp., p. 198, pl. xvii, fig. 7, King George's Sound, *mulieraria*, n. sp., p. 200, pl. xviii, fig. 1, Cape York, *usualis*, n. sp., p. 201, pl. xviii, figs. 2 & 3, Cape York, Sydney, *ramulosa*, n. sp., p. 203, pl. xviii, fig. 4, Australia, *nigropunctata* (L. Koch), p. 204, pl. xviii, fig. 5, Peak Downs ; KEYSERLING (1).

Epeira flariventris (Nic.), Beagle Channel, p. 10, pl ii, fig. 2, *hyadesi* (Simon), Orange Bay, p. 11, fig. 3 ; SIMON (6).

Epeira masoni, n. sp., Tavoy, p. 105, *submucronata*, n. sp., Tavoy, Egaya, p. 106 ; *id.* (8).

Epeira dehaanii (Dol.), syn. *spectabilis* (Dol.), *kindarensis* (Thor.), Shwegoo-myo, p. 178; *hispida* (Dol), syn. *decens*, *rumpfi* (Thor.), *rufofemorata* (Sim.), Bhamo, p. 179; *punctigera* (Dol), syn. *catia*, *ephippiata* (Thor.), Bhamo, p. 181 ; *albertsii*, n. sp., Mulmein, p. 182, *sponsa*, n. sp., Egatpur, p. 186 (in foot-note), *mitifica* (Sim.), Mulmein, p. 187, *papulata*, n. sp., Bhamo, p. 188, *trigonophora*, n. sp., Bhamo, p. 191, *acrocephala*, n. sp., Bhamo, p. 195, *laglaizei* (Sim.), Shwegoo-myo, p. 198, *pauxilla*, n. sp., Bhamo, p. 199, *phyllonota*, n. sp., Bhamo, p. 201, *metalis*, n. sp., Bhamo, p. 204, *raphanus*, n. sp., Bhamo, p. 206, *centrodes* (Thor.), Bhamo, p. 209, *melanocrania*, n. sp., Bhamo, p. 209, *psylla*, n. sp., Bhamo, p. 214, *hypophora*, n. sp., Bhamo, p. 217, *mulmeinensis*, n. sp., Mulmein, p. 221 ; THORELL.

Epeira corrugata, n. sp., Auckland, Otago, p. 72, pl. vii, fig. 1, *pocillator*, n. sp., Auckland, p. 74, *oblitera*, n. sp., Whangerai Harbour, p. 77, *tri-tuberculata*, n. sp., Te Karaka, p. 78, pls. vii, fig. 2, & viii, fig. 1, *orientalis*, n. sp., Te Karaka, Auckland, p. 79, pl. vii, fig. 3, *bi-albimacula*, n. sp., Te Karaka, p. 81, *saxitalis*, n. sp., Waiwera, p. 82, *sub-compta*, n. sp., Whangerai Harbour, p. 83, pl. vii, fig. 4, *viriditas*, n. sp., Te Karaka, p. 85, *discolora*, n. sp., Te Karaka, p. 86, *verutum*, n. sp., p. 87, var. *veruina*, n. var., p. 88, var. *hastatum*, n. var., p. 89, pl. viii, fig. 2, var. *lineola*, n. var., p. 89, Canterbury, Dunedin, *linea-acuta*, n. sp., Canterbury, p. 90, *purpura*, Te Karaka, p. 91 ; URQUHART.

Nephila insularis, n. sp., p. 215, pl. xix, fig. 5, Loyalty I , *relicina*, n. sp., p. 216, pl. xix, fig. 6, Solomon Is., KEYSERLING (1); *argentata*, n. sp., Tairoa, Waiwera, p. 92, pl. viii, fig. 3, URQUHART ; *kuhlii* (Dol.), Bhamo, p. 150, THORELL ; *lucasi* (Simon), syn. *Epeira chrysogaster* (Lucas) and *Nephila maculata* (Karsch), Assinie, p. 270, SIMON (1).

Nephilengys cruentata (Fabr.), syn. *diadela*, *brasiliensis*, *azzara* (Walck.), *genualis* (Gerst.), *borbonica* (Karsch), p. 271, *id. t. c.*

Argiope undulata, n. sp., Shwegoo-myo, p. 154, *pulchella* (Thor.), Bhamo, p. 158, *annula* (Walck.), Bhamo, p. 164, THORELL ; *riparia*, var. *multiconcha* [n. var.], p. 1122, TREAT.

Meta graeffei, (Keys.), p. 205, pl. xviii, fig. 6, Sydney, *melania* (L. Koch p. 207, pl. xviii, fig. 7, Peak Downs, *coccinea* (Dol.), p. 208, pl. xviii, fig. 8 Solomon Is., New Ireland, Fiji, *zelivira*, n. sp , p. 210, pl. xix, figs. Peak Downs, *turbatrix*, n. sp., p. 212, pl. xix, fig. 3, Sydney, n. sp., p. 213, pl. xix, fig. 4, Sydney, KEYSERLING (1).

Cyrtophora bifurca, n. sp., Florida, p. 342, MCCOOK.

Callinethis elegans (Thor.), Shwegoo-myo, p. 134, *tessellata*, n. sp., Shwegoo-myo, p. 135, THORELL.

Argyroepeira ventralis (Thor.), Bhamo, p. 138, *bigibba*, n. sp., Bhamo, p. 140, *ditissima*, n. sp., Bhamo, p. 143, *id.*

Lipocrea diluta, n. sp., Bhamo, p. 146, *id.*

Herennia mollis, n. sp., Bhamo, p. 166, *id.*

Gea noctic olor, n. sp., Bhamo, p. 170, *id.*

Euetria fœx, Bhamo, p. 173, *id.*

Gastracantha diadesmia, n. sp., Bhamo, p. 225, *karschii*, n. sp., New Britain, p. 230 (in foot-note), *leucomelæna* (Dol.), syn. *annamita* (Sim.), Shwegoo-myo, p. 231, THORELL; *chaperi*, n. sp., Assinie, p. 266, SIMON (1).

Actinacantha propinqua (Cambr.), Tavoy, p. 104, *id.* (8).

Isoxia semiflava, n. sp., Assinie, p. 268, pl. vi, fig. 2, *galeata*, n. sp., Assinie, p. 269, fig. 3, *penizoides*, n. sp., Assinie, p. 269, fig. 4, *id.* (1).

E. A. GOLDI has notes upon the males of certain *Epeiridæ* from Brazil.

Tetragnatha valida, n. sp., p. 218, pl. xx, fig. 1, Sydney, Peak Downs, *bituberculata* (L. Koch), p. 220, pl xx, fig. 2, Sydney, Peak Downs, *demissa* (L. Koch), p. 221, pl. xx, fig. 3, Sydney, Rockhampton, *protensa* (Walck.), p. 222, pl. xx, fig. 4, KEYSERLING (1); *clavigera*, n. sp., Assinie, p. 272, SIMON (1).

Eugnatha cylindracea, n. sp., p. 224, pl. xx, fig. 5, Sydney, Peak Downs, p. KEYSERLING (1).

Eucta caudifera, n. sp., p. 226, pl. xx, fig. 5, Sydney, *anguilla* (Thor.), p. 227, pl. xx, fig. 7, Rockhampton, *id. t. c.*

For remarks upon the Hungarian species of *Tetragnatha*, see LENDL.

ULOBORIDÆ.

Uloborus variabilis, n. sp., p. 229, pl. xx, fig. 8, Rockhampton, Sydney, *spinitarsis*, n. sp., p. 231, pl. xx, fig. 9, Middle Harbour, Sydney, KEYSERLING (1).

Philoponus, n. g., near Uloborus, p. 27, *pteropus*, n. sp., Bhamo, p. 128, THORELL.

MIAGRAMMOPIDÆ.

Miogrammopes cambridgei, n. sp., Bhamo, p. 122, THORELL.

THERIDIIDÆ.

Thlaosoma pennum, n. sp., Waiwera, p. 94, pl. viii, fig. 4, *olivaceum*, n. sp., Te Karaka, p. 95, URQUHART.

Ariamnes coniferus, n. sp., Waiwera, p. 96, pl. viii, fig. 5, *triangulatus*, n. sp., Te Karaka, p. 97, fig. 6, *attenuatus*, n. sp., Te Karaka, p. 98, *id.*; *triangulus*, n. sp., Mulmein, p. 91, THORELL.

Argyrodes xiphias, n. sp., Bhamo, p. 95, *id.*

WEED st[illegible] *birmanica*, n. sp., Mulmein, p. 99, *id.*; *blattifer*, n. sp., *verrucosum*, [illegible]. 99, pl. viii, fig. 7, *melanopygia* (Cambr.), Auckland, p. 101, by Dr. Wood[illegible],

[illegible]OL.

Erigone atriventer, n. sp., Te Karaka, p. 102, *id.* ; *antarctica* (Simon), Orange Bay, p. 11, pl. i, fig. 2, Simon (6).

Floronia, n. g., for *Frontina*, nom. preocc., *id.* (5).

Theridium melanoxanthum, n. sp., Waiwera, p. 102, pl. viii, fig. 8, *vulgare*, n. sp., Auckland, p. 104, *maculipes*, n. sp., Canterbury, p. 105, *viridanum*, n. sp., Waiwera, p. 106, *flabelliferum*, n. sp., Waiwera, p. 106, *venustulum*, n. sp., Waiwera, p. 107, *albo-guttatum*, n. sp., Te Karaka, p. 108, pl. viii, fig. 11, Urquhart ; *workmanni*, n. sp., Bassein, p. 101, *saropus*, n. sp., Mulmein, p. 104, *thalia* (Workman), Bhamo, p. 107, *inquinatum* (Thor.), Bhamo, p. 110, *cænosum*, n. sp., Bhamo, p. 110, *baccula*, n. sp., Bhamo, p. 114, *oleatum*, n. sp., Bhamo, p. 116, *brachypus*, n. sp., Rangoon, p. 119, Thorell.

Neriene reproba (Cambr.), figured, pl. i, fig. 5, *inerrans*, n. sp., Falmouth, p. 11, fig. 3, *festinans*, n. sp., Dorset, p. 13, fig. 2, *decora* (Cambr.), figured, pl. i, fig. 4, Cambridge.

Pholcidæ.

Pholcus cornutus, n. sp., Washington, p. 475, pl. vi, fig. 47, Keyserling (2); *fauroti*, n. sp., Obock, p. 454, Simon (2) ; *v-notatus* (Thor.), Bhamo, p. 90, Thorell ; *globosus* (Tacz.) = *gibbosus* (Keys.), p. 231, van Hasselt (1).

Scytodidæ.

Loxosceles unicolor, n. sp., New Mexico, p. 474, pl. vi, fig. 46, Keyserling (2).

Scytodes univittata (Sim.), var. *unilineata*, n. var., Mandalay, p. 81 Thorell.

Dictis gilva, n. sp., Bassein, p. 83, *lugubris*, n. sp., Me-tan-jà, Minhla, p. 86, *id.*

Oxyopidæ.

Peucetia procera, n. sp., Bhamo, p. 321, Thorell.

Oxyopes birmanicus, n. sp., Bhamo, p. 325, *javanus* (Thor.), syn. *lineatipes* (Sim.), Bhamo, p. 329, *versicolor*, n. sp., Bhamo, p. 330, *hieroglyphicus*, n. sp., Bhamo, p. 332, *superbus*, n. sp., Bhamo, p. 335, Thorell.

Zodariidæ.

Storena (*Habronestes*) *spirafera* (L. Koch) ♂, Curaçao, p. 227, *pollii* (Simon), n. sp., Bonaire, p. 229, van Hasselt (1).

Storena fronto, n. sp., Shwegoo-myo, p. 65, *exornata*, n. sp., Bhamo, p. 69, *irrorata*, n. sp., Rangoon, p. 72, Thorell.

Ascena, n. g., near *Storena*, p. 75, *elegans*, n. sp., Bhamo, p. 76, *id.*

Hersiliidæ.

Hersilia savignyi (Lucas), syn. *indica* (Walck.), Bhamo, p. 80 *albicornis*, n. sp., Assinie, p. 273, Simon (1).

ARCHÆIDÆ.

*Mecysmaucheniu*s (Simon), p. 12, *segmentatus* (Simon), Hermit I., p. 13, pl. ii, fig. 4, SIMON (6).

THOMISIDÆ.

SIMON (3) divides the family *Sparassidæ* into the following sections :— *Selenopini*, for genus *Selenops* ; *Cebrennini*, for genus *Cebrenninus*, n. g. ; *Clastini*, for genera *Clastes* (Walck.), *Pandercetes* (L. Koch), *Spariolenus* (Simon), *Adrastis* (Simon), and *Parhedrus*, n. g. ; *Sparassini*, for genera *Sparassus* (Walck.), *Olbus* (Simon), *Nonianus* (Simon), *Nisueta* (Simon), *Olios* (Walck.), *Midamus* (Simon), *Vindullus* (Simon), *Sarotes* (Sund.), *Sadala* (Simon), and *Macrinus*, n.g. ; *Sparianthidi*, for genera *Sparianthis* (Simon), *Stasina* (Simon), and *Pseudosparianthis*, n. g.

Selenops atomaria, n. sp., Port Elizabeth, p. 466, *pusilla*, n. sp., Nossi-Bé, p. 467, *legrasi*, n. sp., Nossi-Bé, p. 468, SIMON (3).

Cebrenninus, n. g., p. 468, *rugosus*, n. sp., Sumatra, p. 468, *id.*

Parhedrus, n. g., p. 469, *ocyalinus*, n. sp., Java, p. 469, *id. t. c.*

Macrinus, n. g., p. 470, *succineus*, n. sp., S. Paulo de Olivença (Upper Amazons), p. 470, *atomarius*, n. sp., Tijuca (Brazil), p. 471, *longipes*, n. sp., [illegible] (Upper Amazons), p. 471, *id. t. c.*

Liparot[illegible]losparianthis, n. g., p. 472, *fusca*, n. sp., River Tocantins, p. 473 *arianum* p. 35, [illegible], n. sp., S. Paulo de Olivença (Upper Amazons), *id. t. c.*

Stasina americana, n. sp., Tijuca (Brazil), p. 474, *id. t. c.*

Holconia armillata, n. sp., Shwegoo-myo, p. 233, THORELL.

Heteropoda plebeia, n. sp., Rangoon, p. 237, *id.*

Heteropoda languida, n. sp., *ferina*, n. sp., Tavoy, p. 102, SIMON (8).

Palystes kochi (Sim.), Meta, Tavoy, p. 103, *id. t. c.*

Thelictopis canescens, n. sp., between Burmah and Siam, p. 103, *id. t. c.*

Sarotes impudicus, n. sp., Me-tau-jà, p. 241, *puncticeps* (Sim.), Minhla, p. 244, *venustus*, n. sp., Bhamo, p. 248, *callipygus*, n. sp., Mulmein, p. 250, THORELL.

Seramba, n. g., near *Thelictopis*, p. 253; *picta*, Shwegoo-myo, p. 254; *id.*

Olios guatemalensis, n. sp., Guatemala, p. 471, pl. vi, fig. 37, KEYSERLING (2) ; *allaudi*, n. sp., Assinie, p. 264, SIMON (1).

Isopeda occidentalis, n. sp., Assinie, p. 264, *id. t. c.*

Uduba (generic name for *Olios madagascariensis*, Vinson) = *Uliodon*, p. clviii, *id.* (5).

Stiphropus ocellatus, n. sp., Bhamo, p. 258, THORELL.

Carnaricus, n. g., near *Xysticus*, p. 261, *formosus*, Bhamo, p. 262, *id.*

Synæma opulentum (Sim.), var. *birmanicum*, n. var., Shwegoo-myo, p. 266, *id.*

Ocyllus, n. g., near *Xysticus*, p. 267, *binotatus*, Shwegoo-myo, p. 268, *id.*

Daradius stoliczkæ, n. sp., Bhamo, p. 271, *dentiger*, n. sp., S. Burmah, p. 274, *id.*

Massuria, n. g., near *Misumena*, p. 277 ; *angulata*, n. sp., S. Burmah, *id.*

WEED st[illegible] *timida*, n. sp., Mulmein, p. 281, *id.* ; *diegoi*, n. sp., California, *verrucosum*, n. [illegible] fig. 41, KEYSERLING (2).
by Dr. Wood, n.

[illegible]OL. [illegible]

Rhynchognatha, n. g., near *Monaxes*, p. 284, *cinerascens*, n. sp., Metan-jà, p. 285, THORELL.

Xysticus bicuspis, n. sp., Montana, p. 478, pl. vi, fig. 38, *labradorensis*, n. sp., Labrador, p. 479, *montanensis*, n. sp., Montana, p. 479, pl. vi, fig. 40, KEYSERLING (2).

Stephanopsis ditissima (Nic.), Orange Bay, p. 8, pl. ii, fig. 1, SIMON (6).

Hemiclæa plauta, n. sp., Te Karaka, p. 110, pl. viii, fig. 9, URQUHART.

Philodromus sphæroides, n. sp., Waiwera, p. 111, pl. viii, fig. 10, *anbarus*, n. sp., Waiwera, p. 112, *ovatus*, n. sp., Waiwera, p. 113, *id.*

AGALENIDÆ.

Rubrius, n. g., p. 14, *subfasciatus* (Simon), Hermit I., p. 15, pl. ii, fig. 7, SIMON (6).

Mynthes, n. g., p. 16, *castaneifrons* (Simon), Orange Bay, p. 16, pl. ii, fig. 6, *id. t. c.*

Cybæolus, p. 17, *pusillus* (Simon), Orange Bay, p. 17, *id. t. c.*

Emmenomma, p. 18, *oculatum* (Simon), Hermit I., p. 19, pl. ii, fig. 8, *id. t. c.*

Hamataliwa, n. g., p. 457, *grisea*, n. sp., N. America, p. 458, pl. vi, fig. 24, KEYSERLING (2).

Cicurina arcuata, n. sp., N. America, p. 460, pl. vi, fig. 25, SSELT (1). n. sp., Washington, p. 462, fig. 26, *id. t. c.*

Halinia riparia, n. sp., Utah, p. 463, pl. vi, fig. 27, *magna*, n. Wyoming, p. 464, fig. 28, *agilis*, n. sp., Dacota, p. 465, fig. 29, *id. t. c.*

Calotes urbanus, n. sp., Washington, p. 467, pl. vi, fig. 31, *lamellosus*, n. sp., Lake Superior, p. 469, fig. 30, *calcaratus*, n. sp., Colorado, p. 470, fig. 32, *id. t. c.*

Cryphœca mœrens (Cambr.) figured, pl. 1, fig. 1, CAMBRIDGE.

DICTYNIDÆ.

Dictyna pallida, n. sp., Washington, p. 472, pl. vi, fig. 33, *borealis*, n. sp., loc. ?, p. 473, fig. 34, KEYSERLING (2).

Amaurobius fuegianus (Simon), Orange Bay, p. 20, pl. ii, fig. 5, SIMON (6).

DRASSIDÆ.

Drassus chætognathus, n. sp., Bhamo, p. 32, THORELL; *formicarius*, n. sp., Waiwera, p. 109, URQUHART; *buddebergi*, n. sp., Nassau, p. cxlii, SIMON (7); *neglectus*, n. sp., United States, p. 434, pl. vi, fig. 10, KEYSERLING (2).

Agræca flavo-pilosa, n. sp., Nassau, p. cxliii, SIMON (7); *tristis*, n. sp., Maryland, p. 436, pl. vi, fig. 11, KEYSERLING.

Clubiona distincta, n. sp., Bhamo, p. 48, *concinna*, n. sp., Rangoon, p. 55, THORELL; *rubra*, n. sp., Massachusetts, p. 436, pl. vi, fig. 12, *crassipalpis*, n. sp., Massachusetts, p. 438, fig. 13, KEYSERLING (2).

Gnaphosa gigantea, n. sp., New York, p. 424, pl. vi, fig. 3, *frontalis*, n. sp., Kentucky, p. 426, fig. 4, KEYSERLING (2); *lapponum* [illegible] Vadsoe (Norway), p. 460, SIMON (4).

Aracus, n. g., near *Drassus*, p. 35, *captator*, n. sp., Minhla, [illegible]

Phantoptilus, n. g., near *Liocranum*, p. 40, *sericeus*, n. sp., Bhamo, p. 41, *id.*

Corinnomma harmandii (Sim.), Bhamo, p. 45, *id.*

Ataina, n. g., near *Liocranum*, p. 54; *concinna*, n. sp., Rangoon, p. 55, *id.*

Eutittha caudata, n. sp., Rangoon, p. 58, *spectabilis*, n. sp., Shwegoomyo, p. 61, *id.*

Molycria, n. n. for *Mutusca* (Cambr.), nom. preocc., p. clix, SIMON (5).

Myandra, n. g., near *Molycria*, p. clix, *cambridgei*, n. sp., Victoria, p. clix, *id. t. c.*

Philisca, p. 21, *hahni* (Simon), Orange Bay, p. 21, pl. i, fig. 2, SIMON (6).

Axyracus, p. 22, *elegans* (Simon), Hermit I., p. 23, pl. i, fig. 10, *id. t. c.*

Coptoprepes, p. 24, *flavopilosus* (Simon), Orange Bay, p. 25, pl. i, fig. 9, *id. t. c.*

Gayenna, p. 26, *coccinea* (Simon), Orange Bay, p. 26, pl. i, fig. 6, *stellata* (Simon), Beagle Channel, p. 27, pl. i, fig. 7, *id. t. c.*

Tomopisthes, p. 28, *immanis* (Simon), Orange Bay, p. 28, pl. i, fig. 2, *varius* (Simon), Orange Bay, p. 30, fig. 5, *vittatus* (Simon), Beagle Channel, p. 31, fig. 3, *magellanicus*, n. sp., Magellan, p. 32, *id. t. c.*

Liparotoma, p. 33, *hyadesi* (Simon), Orange Bay, p. 34, pl. i, fig. 8, *atrocinctum* (Simon), Cape Horn, p. 34, *nigropictum* (Simon), Orange Bay, p. 35, *id. t. c.*

Teminius, n. g., p. 421, *insularis*, n. sp., Hayti, p. 422, pl. vi, fig. 1, *continentalis*, n. sp., Utah, p. 423, fig. 2, KEYSERLING (2).

Pythonissa imbecilla, n. sp., Kentucky, p. 427, pl. vi, fig. 5, *clava*, n. sp., Utah, p. 429, fig. 6, *id. t. c.*

Prosthesima propinqua, n. sp., California, p. 430, fig. 7, *funesta*, n. sp., California, p. 431, fig. 8, *bimaculata*, n. sp., Massachusetts, p. 433, fig. 9, *id. t. c.*

Trachelas ruber, n. sp., Massachusetts, p. 439, pl. vi, fig. 14, *bicolor*, n. sp., Hayti, p. 440, fig. 15, *id. t. c.*

Castaneira bivittata, n. sp., Massachusetts, p. 442, pl. vi, fig. 16, *id. t. c.*

Hilke, n. g., p. 444, *trivittata*, n. sp., California, p. 444, pl. vi, fig. 17, *id. t. c.*

Hypsinotus humilis, n. sp., St. Kitts, p. 446, pl. vi, fig. 18, *gracilipes*, n. sp., Hayti, p. 448, fig. 19, *spinifer*, n. sp., Nicaragua, p. 449, fig. 20, *id. t. c.*

Anyphæna ignota, n. sp., Magellan, p. 450, pl. vi, fig. 21, *incerta*, n. sp., Massachusetts, p. 452, fig. 22, *conspersa*, n. sp., Kentucky, p. 453, fig. 23, *id. t. c.*

Odo, n. g., p. 454, *lenis*, n. sp., Nicaragua, p. 455, pl. vi, fig. 36, *id. t. c.*

Leptoctenus tumidulus, n. sp., Tavoy, p. 108, SIMON (8).

PALPIMANIDÆ.

WEED sts *crocatus* (Simon), Bhamo, p. 31, described, THORELL.

verrucosum, n. g., allied to *Palpimanus*, p. 274; *chaperi*, n. sp., Assinie, by Dr. Wood, n. sp., Congo, p. 275 (in note), SIMON (1).

Otiothops amazonicus, n. sp., Brazil, p. 274, *gounellei*, n. sp., Brazil, p. 275 (in note), *id. t. c.*

Hapalopus africanus, n. sp., Assinie, p. 275, *id. t. c.* [an recte hujus familiæ ?].

Lycosidæ.

Lycosa australis (Simon), Beagle Channel, p. 6, pl. i, fig. 1, Simon (6); *maculatipes*, n. sp., Chili, p. 482, pl. vi, fig. 43, Keyserling (2); *virgata*, n. sp., Otago, p. 201, *canescens*, Otago, p. 204, *taylori*, n. sp., Dunedin, p. 204, *œrescens*, n. sp., Waitaki, p. 206, Goyen; *psammodes*, n. sp., Rangoon, p. 312, *tristicula*, n. sp., Bhamo, p. 315, Thorell; *adumbrata*, n. sp., Te Karaka, p. 114, Urquhart.

Pardosa californica, n. sp., California, p. 483, pl. vi, fig. 44, *tristis*, n. sp., Saskatchewan River, p. 485, fig. 45, Keyserling (2); *guernei*, n. sp., Vadsoe (Norway), p. 457, *raboti*, n. sp., Imanda (Russia), p. 458, Simon (4).

Tetragonophthalma undulata, n. sp., Florida, p. 486, pl. vi, fig. 42, Keyserling (2).

Acanthoctenus (Keys.) is more nearly allied to *Zoropsis* than to *Ctenus*; Simon, (5) p. clviii.

Microctenus humilis, n. sp., Nicaragua, p. 456, pl. vi, fig. 35, Keyserling (2).

Ctenus trabifer, n. sp., Bhamo, p. 288, *ramosus*, n. sp., Bhamo, p. 291, *obscurus*, n. sp., Rangoon, p. 294, Thorell.

Diapontia olivacea, n. sp., Rangoon, p. 297, *agalenoides* (Sim.), Minhla, p. 300, *simonis*, Bhamo, p. 301, *id.*

Tarentula nigro-tibialis (Sim.), Minhla, p. 305, *comotti*, n. sp., Bhamo, p. 307, *orophila*, n. sp., Me-tan-jà, p. 310, *id.*

Zantheres, n. g., p. 317, *gracillimus*, n. sp., Bhamo, p. 318, *id.*

Attidæ.

Synemosyna lætu, n. sp, Bhamo, p. 339, *prognatha*, n. sp., Minhla, p. 343, Thorell.

Toxeus procerus (Thor.), Me-tan-jà, p. 346, *id.*

Homalattus rubriger, n. sp., Bhamo. p. 347, *analis*, n. sp., Bhamo, p. 350, *id.*; *biscutellatus*, n. sp., Assinie, p. 263, Simon (1).

Linus labiatus, n. sp., Bhamo, p. 354, Thorell.

Thiania bhamoensis, n. sp., Bhamo, p. 357, *id.*

Tapinattus melanognathus (Luc.), syn. *convergens* (Dol.), *foliatus* (L. Koch), *nigrolimbatus* (Cambr.), *vittatus* (Sim.), Bhamo, p. 362, *brachygnathus*, n. sp., Minhla, p. 364, *id.*

Plexippus culicivores (Dol.), Bhamo, p. 373, *id.*

Stasippus, n. g., near *Maevia*, p. 374, *inornatus*, n. sp., Bhamo, p. 375, *id.*

Epocilla pratextata (Thor.), Minhla, p. 378, *id.*

Chrysilla lauta, n. sp., Bhamo, p. 378, *id.*

Mævia psittacina, n. sp., Bhamo, p. 382, *id.*

Telamonia, n. g., near *Mævia*, p. 385, *festiva*, n. sp., Bhamo

Viciria elegans, n. sp., Bhamo, p. 390, *hasseltii* (Thor.), Bhamo, p. 392, *cristata*, n. sp., Bhamo, p. 393, *albo-guttata*, Rangoon, p. 397, *id.*

Hyllus decoratus, n. sp., Shwegoo-myo, p. 400, *id.*; *leucomelas* (Lucas), Assinie, p. 262, *deyrollei* (Lucas), Assinie, p. 263, SIMON (1).

Hasarius coronatus (Sim.), Bhamo, p. 404, *rusticus*, n. sp., Modha, p. 409, THORELL.

Attus aquilus, n. sp., Waiwera, p. 115, *bimaculosus*, n. sp., Whangarei Harbour, p. 116, *sub-fuscus*, n. sp., Waiwera, p. 117, URQUHART; *bonairensis*, n. sp., Bonaire, p. 243, VAN HASSELT (1).

Salticus hesperius, n. sp., Assinie, p. 261, SIMON (1).

Heliophanus eucharis, n. sp., Assinie, p. 261, *id. t. c.*

DYSDERIDÆ.

Nops glauca, n. sp., Bonaire, Centr. Amer., p. 77, pl. vi, figs. 1–4 & 10; *branickii* (Taez.), *guanacaboæ* (MacLeay), *variabilis* (Keys.), figured, pl. vi, figs. 5–9; VAN HASSELT (2).

Xestaspis inclusa, n. sp., Bhamo, p. 29, THORELL.

THERAPHOSIDÆ.

Phrictus sorianus, n. sp., Bhamo, p. 15, THORELL.

Conothele birmanica, n. sp., Shwegoo-myo, p. 19, *id.*

Camptotarsus, n. g., near *Calommata* and *Atypus*, p. 23, *truculentus*, n. sp., Bhamo, p. 24, *id.*

Hexathele petrei, n. sp., Otago, p. 207, GOYEN.

Migus distinctus, n. sp., Dunedin, p. 210, *id.*

Atypus karschii, n. sp., Japan, p. 8, DÖNITZ (1).

Pachylomerus fragaria, n. sp., Japan, p. 9, *id. t. c.*

Atmetochilus, n. g., near *Cyrtauchenius*, *fossor*, n. sp., Tavoy, p. 109, SIMON (8).

Cyriopagopus, n. g., near *Selenocosmia* and *Phrictus*, p. 110, *paganus*, n. sp., Tavoy, Egaya, p. 111, *id. t. c.*

THELYPHONIDEA.

Phryniscus deflersi, n. sp., Obock, Aden, p. 454, SIMON (2).

List of African species of *Phrynus*, p. 455, *id. t. c.*

Thelyphonus formosus (Butl.), from Tavoy, described and compared with *Th. assamensis* (Stol.), p. 111; *id.* (8).

SCORPIONIDEA.

Scorpiops anthracinus, n. sp., Tavoy, p. 113, SIMON (8).

PHALANGIDEA.

WEED states that the species *P. dorsatum*, *vittatum*, *nigropalpi*, and *verrucosum*, probably also *bicolor* and *ventricosum*, which were described by Dr. Wood, and regarded as belonging to the genus *Phalangium*, are

referable to the genus *Leiobunum*, as dep. 274, *gounellei*, n. sp., Brazil, *cinereum* falls into the restricted genus *Ph.* to *Oligolophus*, p. 935 ; WEED. 75, *id. t. c.* [an recte hujus

Pachylus planiceps (Guér.), Beagle Channel, p. 37, pl. ii, fig.

Thrasychirus (Simon), p. 38, *dentichelis* (Simon), Host I., p. 39, pl. ii, fig. 10, *gulosus* (Simon), Host I., p. 40, *id. t. c.*

Maracandus reticulatus, n. sp., Tavoy, p. 113, *id.* (8).

Gagrella cervina, n. sp., *binotata*, n. sp., p. 115, *quadrivittata*, n. sp., p. 116, from Tavoy, *id. t. c.*

PSEUDOSCORPIONIDEA.

Chelifer characterised, pt. vii, No. 1 ; *degeeri* (C. Koch), No. 2 ; *romanus*, No. 3 ; *meridianus* (L. Koch), No. 4 ; *lampropsalis* (L. Koch), No. 5 ; *cancroides* (Linn.), No. 6 ; *cimicoides* (Fabr.), No. 7 ; *nodosus* (Schr.), No. 8 ; *cyrneus* (L. Koch), pt. xix, No. 1 ; *phaleratus* (Simon), No. 2 ; *montigenus*, n. sp., No. 3, figured and described from various parts of Italy : BERLESE. *C. cancroides* (Linn.), Orange Bay (Cape Horn), described, p. 36 ; SIMON (6).

Acis, n. g., pt. vii, No. 9 ; *brevimanus*, n. sp., No. 10 : Sicily. BERLESE.

Atemnus politus (Simon), Rome, pt. x, No. 1 ; *id.*

Roncus, pt. x, No. 2 ; *alpinus* (L. Koch), No. 3 ; *lubricus* (L. Koch), No. 4 : Italy. *Id.*

Chthonius, pt. x, No. 6 ; *rayi* (L. Koch), No. 5 ; *orthodactylus* (Leach), pt. xix, No. 8 ; *tetrachelatus* (Preyss.), No. 9 : Italy. *Id.*

Cheiridium muscorum (Leach), pt. x, No. 7 : Italy. *Id.*

Garypus, pt. xix, No. 6 ; *meridionalis*, n. sp., No. 7 ; *minor* (L. Koch), pt. x, No. 3 : Italy. *Id.*

Olpium, pt. xix, No. 10 ; *pallipes* (Lucas), Sardinia, Sicily, pt. x, No. 9 ; *muscorum* (Leach), Italy, No. 10. *Id.*

Obisium, pt. xix, No. 4 ; *dolichodactylum* (Canestr.), No. 5 : Italy. *Id.*

ACARIDEA.

CANESTRINI, G. Prospetto dell' Acarofauna Italiana ; Pt. II. pp. 159–310. Famiglie *Erythræini*, *Cheyletini*, *Bdellini*, *Eupodini* e *Analgesini*. Padova : 1886. (Not seen by Recorder in 1886.)

Erythræini.

Erythræus, p. 161, *ruricola* (Dug.), p. 162, pl. x, fig. 1, *parietinus* (Herm.), p. 163, *ignipes* (Dug.), p. 164, pl. x, fig. 2, *venustissimus* (Berl.), p. 164, *hercules* (Berl.), p. 165.

Actineda, p. 161, *vitis* (Schr.), p. 166, pl. x, fig. 3.

Geckobia, p. 162, *latasti* (Mégn.), on the *Gecko*, p. 167.

Cheyletini.

Cheyletus, p. 169, *eruditus* (Schr.), p. 171, pl. xii, fig. 1, *venustissimus* (C. Koch), p. 172, pl. xii, fig. 2, *ornatus* (Canest. & Fanz.), p. 173, pl. & xii, fig. 3.

Cheyletiella, n. g., p. 170, *parasitivorax* (Mégn.), p. 175, pl. xi, fig. 3.
Myobia, p. 170, *musculi* (Schr.), p. 176, pl. xi, fig. 1.
Harpicephalus, n. g., p. 170, *nidulans* (Nitz.), p. 177, pl. xi, fig. 2.

Bdellini.

Bdella, p. 181, *vulgaris* (Herm.), p. 183, pl. xiii, fig. 1, *lignicola*, n. sp., p. 184, pl. xv, fig. 1, *longirostris* (Herm.), p. 185, pl. xv, fig. 2, *virgulata* (Canestr. & Fanz.), p. 186, pl. xiv, fig. 2, *capillata* (Kram.), p. 188, pl. xv, fig. 3, *nigerrima* (Canestr. & Fanz.), p. 189, pl. xiv, fig. 1.
Ammonia, p. 181, *latirostris* (Herm.), p. 190, pl. xiii, fig. 2.
Eupalus, p. 181, *croceus* (C. Koch), p. 191, pl. xv, fig. 5, *brevirostris*, n. sp., p. 192, pl. xv, fig. 6.
Ealopsis, n. g. p. 182, *maseriensis* (Canestr. & Fanz), p. 194.
Cryptognathus, p. 182, *lagena* (Kram.), p. 194.

Eupodini.

Linopodes, p. 203, *motatorius* (Linn.), p. 205, pl. xvi, fig. 4, *eupodioides*, n. sp., p. 207, *globosus* (Cn.), p. 208, pl. xvi, fig. 5.
Notophallus, n. g., p. 203, *hæmatopus* (Koch), p. 210, pl. xvii, fig. 8, *minor*, n. sp., p. 211, pl. xviii, fig. 16, *longipilis*, n. sp., p. 212, pl. xvii, fig. 9.
Nörneria, n. g., p. 203, pl. xviii, figs. 17–21, *gigas*, n. sp., p. 214, *clavifrons*, n. sp., p. 216.
Eupodes, p. 204, *variegatus* (C. Koch), p. 218, pl. xvi, fig. 1, *fusifer*, n. sp., p. 220, *iconicus* (C. Koch), p. 221, *clavifrons*, n. sp., p. 222, *pseudoclavifrons*, n. sp., p. 223.
Penthaleus, p. 204, *ovatus* (C. Koch), p. 225, pl. xvii, fig. 6, *anauniensis*, n. sp., p. 226, fig. 7.
Pronematus, n. g., p. 204, *bonatii*, n. sp., p. 227, pl. xviii, fig. 15.
Ereynetes, p. 204, *polymitus* (C. Koch), p. 229, *limacum* (Schr.), p. 231, pl. xviii, fig. 13.
Tydeus, p. 204, *foliorum* (Schr.), p. 232, pl. xvii, fig. 10, *olivaceus* (C. Koch), p. 233, *velox* (C. Koch), p. 234, *granulosus*, n. sp., p. 235, pl. xviii, fig. 14, *similis*, n. sp., p. 236, pl. xvii, fig. 11, *fenilis*, n. sp., p. 237.

Analgesini.

Falciger, p. 245, *rostratus* (Buchh.), p. 249.
Freyana, p. 245, *anatina* (C. Koch), p. 250.
Pterolichus, p. 246, *lunulatus* (Hall.), p. 251, *lyra* (Cn.), p. 252, *squatvolæ* (Cn.), p. 253, *charadrii* (Cn.), p. 253, pl. xix, fig. 2, *ardeæ* (Cn.), p. 254, *nisi* (Cn.), p. 255, pl. xx, fig. 5, *delibatus* (Rob.), p. 256, *ciconiæ* (Cn. & Berl.), p. 256, *ninnii* (Cn.), p. 258, *limosæ* (Buchh.), p. 259, *totani* (Cn.), p. 260, pl. xx, fig. 3, *numenii* (Cn.), p. 261, *porzanæ* (Cn.), p. 261, pl. xix, fig. 4, *proctagamus* (Tr.), p. 262, pl. xix, fig. 3, *rehbergi* (Cn.), p. 263, *buchholzi* (Cn.), p. 264, *colymbi* (Cn.), p. 264, *vanellii* (Cn.), p. 265, pl. xix, fig. 1, *securiger* (Rob.), p. 266, pl. xx, fig. 8, *cultrifer* (Rob.), p. 267, pl. xx, fig. 7.
Xoloptes, p. 246, *claudicans* (Rob.), p. 268.
Petronyssus, p. 247, *gracilis* (Nitz), p. 269, *brevipes* (Berl.), p. 270,

striatus (Rob.), p. 271, *truncatus* (Tr.), p. 272, *nantiæveris* (Berl.), p 27' *pallens* (Berl.), p. 273, *puffini* (Buchh.), p. 274, pl. xxi, figs. 1 & 3, *parim* (C. Koch), p. 275, *obscurus* (Berl.), p. 276.

Protalges, p. 247, *attenuatus* (Buchh.), p. 277.

Megninia, p. 247, *cubitalis* (Rob.), p. 278, *picimajoris* (Buchh.), p. 278, pls. xxi, fig. 2, & xxii, fig. 1, *strigisoti* (Buchh.), p. 279, *gallinulæ* (Buchh.), p. 280, pl. xxii, fig. 2, *columbæ* (Buchh.), p. 282, *æstivalis* (Berl.), p. 282, *velata* (Mégn.), p. 283.

Analges, p. 247, *passerinus* (Linn.), p. 283, *corvinus* (Mégn.), p. 285, *mucronatus* (Buchh.), p. 285, *chelopus* (Herm.), p. 286, pl. xx, fig. 2, *unidentatus* (Berl.), p. 287, *tridentulatus* (Hall.), p. 288, *pachycnemis* (Gieb.), p. 289, *clavipes*, p. 289, *nitzchii* (Hall.), p. 290.

Alloptes, p. 248, *microphyllus*, p. 290, pl. xxii, fig. 3, *hemiphyllus* (Rob.), p. 292, *crassipes* (Cn.), p. 293, *quadrisetatus* (Berl.), p. 294, *cypseli* (Cn.), p. 294.

Pterocolus, p. 248, *ortygometræ* (Cn.), p. 295, *bilobatus* (Rob.), p. 296, *edwardsii* (Tr.), p. 297, *appendiculatus* (Berl.), p. 298, *corvinus* (C. Koch), p. 299, *minutipes* (Berl.), p. 299, *actitidis* (Cn.), p. 300.

Proctophyllodes, p. 248, *glandarinus* (C. Koch), p. 301, pl. xxii, fig. 5, *picæ* (C. Koch), p. 302, *stylifer* (Buchh.), p. 303.

Pterodectes, p. 248, *cylindricus* (Rob.), p. 304, *bilobatus* (Rob.), p. 304, pl. xxi, fig. 5, *rutilus* (Rob.), p. 305.

Pterophagus, p. 248, *strictus* (Mégn.), p. 306.

Tyroglyphidæ.

Coleopterophagus megninii (Berl.), on *Cetonia*, pt. i, No. 9 ; *carabicolus*, n. sp., on *Carabus*, No. 10 : Italy. Berlese.

Glyciphagus plumiger (C. Koch), in hay, pt. xiv, No. 1 ; *spinipes* (C. Koch), in hay, No. 2 ; *domesticus* (De Geer), in houses, No. 3 ; *ornatus* (Kram.), in moss, pt. xxix, No. 3 : Italy. *Id.*

Chortoglyphus, n. g., *nudus*, n. sp., in stables, pt. xiv, No. 4 : Italy. *Id.*

Histiogaster carpis (Kram.), in dead wood, pt. xiv, No. 5 : Italy. *Id.*

Tyroglyphus infestans, n. sp., in cheese, pt. xiv, No. 6 ; *megninii* (Hall.), dead trees, No. 7 ; *siro* (Linn.), in houses, No. 8 ; *farinæ* (De Geer), in flour, No. 9 : Italy : *id.* *T. gloverii* (Ashm.), on orange, p. 82, pl. vi, fig. 5, N America ; *mali* (Riley), figured, p. 84 : Hubbard.

Trichodactylus anonymus (Hall.), in flour, pt. xiv, No. 10; *xylocopæ* (Donn.), nests of *Xylocopa*, pt. xviii, No. 1 : Italy. Berlese.

Hypopus iulorum (C. Koch), in rotting substances, pt. xxix, No. 4 ; *muscarum*, on *Cyrtoneura stabulans*, pt. xxxix, No. 9 : Italy. *Id.*

Gamasidæ.

Lælaps, pt. xl, No. 8 ; *claviger*, n. sp., pt. iv, No. 6; *meridionalis* (Can.), in moss, pt. xxxii, No. 8 ; *stabularis* (C. Koch), in stables, pt. xxxviii, No. 6; *vepallidus* (C. Koch) = protonymph of *stabularis*, on *Mus fanalis*, n. sp., = deutonymph of *stabularis*, on *Mus decumanus cularis*, n. sp., = tritonymph of *stabularis*, on *Mus decumanus domesticus*, n. sp., = deutonymph of *marginatus*, in flour ; *cas*

= tritonymph of *marginatus*, in houses, No. 8; *agilis* (C. Koch) (deutonymph), on walls; *echidninus*, n. sp., = tritonymph of *agilis*, on *Mus decumanus*, pt. xxxix, No. 1; *hermaphrodita*, n. sp., in fields, pt. xl, No. 6; *campestris*, n. sp., = deutonymph of *rusticola*, n. sp., on *Melolontha fullo*, No. 7; *placentula*, n. sp., in moss, pt. xliv, No. 3: Italy. Berlese. *L. pteroptoides* (Mégn.), p. 251, pl. xii, figs. 5–11: Kramer.

Gamasus meridionalis, n. sp., in moss, pt. i, No. 6; *coleoptratorum* (Linn.), on dung-heaps, pt. iv, No. 3; *exilis*, in conservatories, No. 4; *canestrinii*, n. sp., in moss, pt. xiii, Nos. 3 & 4; *magnus* (Kram.) (? = adult of *G. canestrinii*), under stones, Nos. 5 & 6; *crassipes* (Linn.), Nos. 7–10; *calcaratus* (C. Koch), in moss, pt. xxxix, No. 5; *pulchellus*, n. sp., = nymph of *calcaratus*, on the ground, No. 4: Italy. Berlese.

Podocinum sagax (Berl.), in conservatories, pt. i, No. 1: Italy. *Id.*

Iphis drepanogaster, n. sp., in moss, pt. i, No. 3; *mirabilis*, n. sp., on *Iulus varius*, No. 4; *pterophilus* (Berl.), on *Copris lunaris*, pt. xxviii, No. 9; *crinitus* (Berl.), on *Ateucus variolosus*, No. 10: Italy. *Id.*

Polyaspis patavinus (Berl.), on *Dorcus paralellepipedus*, pt. iv, No. 1, and pt. xi, No. 1: Italy. *Id.*

Discopoma romana (Can. & Berl.), on Insects, pt. xi, No. 2; *splendida* (Kram.), in moss, No. 3; *venusta*, n. sp., in moss, No. 5; *cassidea* (Herm.), in moss, pt. xxxii, No. 9; var. *minor*, n. var., No. 10: Italy. *Id.*

Uropoda, pt. xi, No. 4; *cristiceps* (Can.), No. 6; *krameri* (Can.), in moss, No. 7; *obscura* (C. Koch), in dung-heaps, No. 8; *paradoxa* (Can. & Berl.), under bark, No. 9; *obovata* (Can. & Berl.), No. 10; *laminosa* (Can. & Berl.), in moss, pt. xiii, No. 1; *berlesiana*, n. sp., in moss, pt. xxxviii, No. 4; *patavini* (Can.), in stables, No. 5; *ovalis* (C. Koch), in woods, pt. xli, No. 9; *tecta* (Kram.), in moss, No. 10; *campomolendina*, n. sp., in moss: Italy. *Id.*

Celænopsis, n. g., pt. xxxi, No. 5; *cuspidata* (Kram.), in moss, No. 6: Italy. *Id.* *C. cuspidata* (Kram.), p. 247, pl. xii, fig. 4: Kramer.

Celæno ægrota (C. Koch), in moss, pt. xxxviii, No. 10; *infirma*, n. sp., in moss, pt. xl, No. 5: Italy. Berlese.

Epicrius mollis (Kram.), in moss, pt. xl, No. 9; *lælaptoides*, n. sp., in conservatories, No. 10; *geometricus* (Can. & Fanz.), pt. xxx, No. 8; *glaber*, n. sp., in moss, No. 9: Italy. *Id.*

Seius, pt. xli, No. 1; *hirsutus* (C. Koch), in moss, No. 2; *hirsutigenus*, n. sp., = protonymph of *hirsutus*, on plants, No. 3; *unguiculatus*, n. sp., in moss, No. 4; *muricatus* (C. Koch), in moss, No. 6; *cornutus*, n. sp., p. 257, pl. xii, figs. 16 & 17: Italy. *Id.*

Zercon, pt. xli, No. 5; *triangularis*, No. 7; *bicornis* (Can. & Fanz.), in moss, No. 8: Italy. Berlese.

Cyrtolælaps mucronatus (G. & R. Can.), dung-heaps, pt. xliv, No. 5: Italy. *Id.*

Holostaspis, pt. xliv, No. 2; *tridentinus* (G. & R. Can.), pt. xliii, Nos. 7 & 8; *longulus*, n. sp., in moss, No. 9; *alpinus*, n. sp., = nymph of *longispinosus*, No. 10; *longispinosus* (Kram.), pt. xliv, No. 1; *montivagus*, n. sp., = nymph of *tridentinus*, in moss, No. 4; *pisentii* (Berl.), on *Ateucus semipunctatus*, var. *vernalis*, n. var., pt. xlv, No. 1: Italy. *Id.*

Seiodes, n. g., *ursinus*, n. sp., in moss, pt. xxxviii, No. 9: Italy. *Id.*

Antennophorus scolopendrarum, n. sp., on *Scolopendra*, pt. xxxi, No. 10 : Italy. *Id.*

Dinychus, n. g., *perforatus*, n. sp., p. 255, pl. xii, figs. 12–15 ; KRAMER.

Hypoaspis minimus (Kram.), syn. *Gam. minimus* (Kram.), p. 243, pl. xii, fig. 13 ; *horridus* (Kram.), syn. *Gam. horridus* (Kram.) and *Lælaps horridus* (Can.), p. 245 : *id.*

TROMBIDIIDÆ.

Erythræus, pt. xxix, No. 5 ; *hercules*, n. sp., pt. ii, No. 2 ; *venustissimus*, n. sp., No. 3 ; *parietinus* (Herm.), No. 4, on stones ; *ruricola* (Dug.), in moss, pt. xxxv, No. 2 ; *comes*, n. sp., in houses, pt. xxix, No. 6 ; *sabulosus*, n. sp., in sandy spots, No. 7 : Italy. BERLESE.

Rhyncholophus phalangioides (De Geer), pt. ii, No. 9 ; n. var. *acis*, No. 10 ; *squamatus* (Herm.), pt. iv, No. 4 ; *trimaculatus* (Herm.), No. 5, in moss ; *miniatus* (Herm.), in moss, pt. xvi, No. 4 ; *quisquiliarum* (Herm.), in grass, No. 5 ; *nemorum* (C. Koch), in fields, pt. xviii, No. 5 ; *cavannæ* (Berl.), in moss, pt. xviii, No. 6 ; *globiger* (Berl.), in moss, No. 7 : Italy. *Id.* *R. vertex*, n. sp., p. 263, pl. xii, figs. 23–26 ; KRAMER [see BERLESE, pt. xl, No. 3, var. of *R. nemorum*].

Rhyncholophus erinaceus, n. sp., p. 6, pl. iv, fig. 2, Antigua ; STOLL.

Actineda vitis (Schr.), in grass, pt. v, No. 6, Italy ; BERLESE.

Actineda flaveola, n. sp., p. 7, pl. v, fig. 1, *antiguensis*, n. sp., p. 7, pl. v, fig. 2, Antigua, *retalteca*, n. sp., p. 7, pl. v, fig. 3, Retalhuleu ; STOLL.

Ereynetes, n. g., allied to *Tydeus*, pt. v, No. 1 ; *limacum* (Schr.), on slugs, No. 2 : Italy. BERLESE.

Tydeus foliorum (Schr.), on leaves, pt. v, No. 3 : Italy. *Id.*

Trombidium pusillum (Herm.), on trees, pt. xvi, No. 1 ; *bicolor* (Herm.), in grass, No. 2 ; *gymnopterorum* (Linn.), in grass, pt. xviii, No. 5, *erythrællum* (C. Koch), in moss, pt. xlv, No. 3 ; *holosericeum* (Linn.), damp spots, pt. xviii, No. 9 ; *setulosum* (Berl.), No. 10 ; *nemoricola*, n. pt. xxix, No. 8 ; *spinosum* (Can.), No. 9, in moss ; *ferox*, n. sp., pt., No. 1 ; *sanguineum* (C. Koch), pt. xlii, No. 1 ; *longipalpe*, n. sp., No. 2, in moss : Italy. *Id.*

Trombidium mexicanum, n. sp., p. 1, pl. i, fig. 1, Presidio (Mexico), *hispidum*, n. sp., p. 2, pl. ii, fig. 1, Retalhuleu (Guatemala), *nasutum*, n. sp., p. 2, pl. iii, fig. 1, Retalhuleu, *quinque-maculatum*, n. sp., p. 3, pl. iv, fig. 1, Guatemala, *guayavicola*, n. sp., p. 4, pl. ii, fig. 2, Retalhuleu, *trilineatum*, n. sp., p. 4, pl. i, fig. 2, Antigua, *albicolle*, n. sp., p. 5, pl. i, fig. 3, Antigua, *muricola*, n. sp., p. 5, pl. ii, fig. 3, Antigua ; STOLL.

Smaridia papillosa (Herm.), pt. xvi, No. 3 ; *ampulligera*, n. sp., pt. xxxix, No. 10, in moss : Italy. BERLESE.

Smaris, pt. xxxix, No. 3 ; *expalpis* (Herm.), in meadows, No. 2 ; *lynceæ*, n. sp., in decaying leaves, No. 6 : Italy. *Id.*

Bryobia pretiosa (C. Koch), pt. xxxiii, No. 3 : Italy. *Id.*

Trombella, n. g., *glandulosa*, n. sp., in the ground, pt. xl, No. 1 : Italy. *Id.*

Raphignathus, pt. xxii, No. 8 ; *piger* (Schr.), No. 1 ; *clavatus* (Can. & Fanz.), No. 2 ; *patrius*, n. sp., No. 4, in moss ; *siculus*, n. sp., in rubbish, No. 3 : Italy. *Id.*

Limnochares holosericeus (Geoffr.), in ditches, pt. xxiii, No. 2: Italy. *Id.*

Caligonus, pt. xxx, No. 5; *humilis* (C. Koch), pt. xxii, No. 5; *robustus*, n. sp., No. 6; *cerasinus* (C. Koch), No. 7; *scapularis* (C. Koch), pt. xxx, No. 6, in moss; *longimanus* (C. Koch), in rubbish, pt. xxxiv, No. 8: Italy. *Id.*

Cheyletus, pt. xxviii, No. 7; *ornatus* (Can. & Fanz.), on trees, No. 6; *venustissimus* (C. Koch), in stables, No. 5; *eruditus* (Schr.), in moss, No. 4, *doctus*, n. sp., in houses, pt. xxxiii, No. 1; *saccardianus*, n. sp., on trees, No. 2: Italy. *Id.*

Cheyletiella heteropalpa (Mégn.), on the Swift, pt. xxviii, No. 2; *parasitivorax* (Mégn.), on rabbit, No. 3: Italy. *Id.*

Cryptognathus, pt. xxii, No. 10; *lagena* (Kram.), in moss, No. 9: Italy. *Id.*

Stigmæus elongatus, n. sp., pt. xxx, No. 7; *kermesinus* (C. Koch), pt. xxxiv, No. 6, in moss; *longirostris*, n. sp., in rubbish, No. 7: Italy. *Id.*

Tetranychus, pt. xxxvi, No. 6; *horridus* (Can. & Fanz.), on trees, No. 9; *telarius* (Linn.), var. *russeolus* (C. Koch), plane trees, No. 10: Italy. *Id.*

Tetranychus guatemala-novæ, n. sp., p. 8, pl. vi, fig. 1, Guatemala; STOLL.

Listrophorus gibbus (Pag.), on the Rabbit, pt. xlv, No. 10: Italy. BERLESE.

Bdella, pt. xlv, No. 8; *nigerrima* (Can. & Fanz.), pt. xl, No. 4: *longirostris* (Herm.), pt. xlv, No. 6; *vulgaris* (Herm.), No. 7, in moss: Italy. *Id.*

Bdella splendida, n. sp., p. 15, pl. iii, fig. 2, Guatemala; STOLL.

Geckobia latasti (Mégn.), on *Platydactylus geki*, pt. ii, No. 1: Sicily. BERLESE.

Scirula impressa, n. sp., pt. xlv, No. 4, in moss: Italy. *Id.*

Alycus roseus (C. Koch), pt. xlv, No. 5, in moss: Italy. *Id.*

Nicoletiella lutea (Kram.), in moss, pt. xxxvi, No. 7; *cornuta* (Can. & Fanz.), in damp spots, No. 8: Italy. *Id.*

Michaelia angustana, n. sp., in moss, pt. xvi, No. 6: Italy. *Id.*

Tenuipalpus glaber (Donn.), on blackberry, pt. xxxiv, No. 1; *coronatus* (Can. & Fanz.), fir-trees, No. 3; *palmatus* (Donn.), on trees, No. 4; *cuneatus* (Can. & Fanz.), pt. xxxv, No. 1: Italy. *Id.*

Neophyllobius (Berl.), pt. xxxiv, No. 2; *elegans* (Berl.), on shrubs No. 5: Italy. *Id.*

Penthalodes mytilaspidis, n. sp., pp. 83 & 216, on the orange plant; RILEY.

ORIBATIDÆ.

Liodes, pt. xvii, No. 10; *theleproctus* (Herm.), on trees, pt. iii, No. 1; *doderleinii*, n. sp., in moss, No. 2: Italy. BERLESE.

Oribates nicoletii (Berl.), pt. iii, No. 3; *humeralis* (Herm.), No. 4; *orbicularis* (C. Koch), pt. ix, No. 1; *calcaratus* (C. Koch), No. 2; *dentatus*, n. sp., No. 3; *longipes*, n. sp., pt. xxxv, No. 5; *depauperatus*, n. sp., No. 6; *elimatus* (C. Koch), pt. xxx, No. 1; *punctum* (C. Koch), No. 2; *latipes* (C. Koch), No. 3; *setosus* (C. Koch), pt. xliii, No. 4; *edwarsii* (Nic.), No. 5; *globulus* (Nic.), No. 6, in moss: Italy. *Id.*

Tritia, n. g., allied to *Hoplophora*, pt. vi, No. 1; *decumana* (C. Koch),

No. 2; *nuda*, n. sp., pt. xxxv, No. 9; *lentula* (C. Koch), pt. xxxvi, No. 3, in moss: Italy. *Id.*

Hoplophora globosa (C. Koch), pt. vi, No. 3; *dasypus* (Dug.), No. 4; *anomala*, n. sp., No. 5; *carinata* (C. Koch), pt. xxxvi, No. 1; var. *pulcherrima*, n. var., pt. xxxv, No. 10, in moss: Italy. *Id.*

Pelops, pt. xv, No. 5; *acromios* (Herm.), fir-trees, No. 6; *ureaceus* (C. Koch), No. 7; *auritus* (C. Koch), No. 8; *phœnotus* (C. Koch), pt. xxxv, No. 3; *occultus* (C. Koch), No. 4, in moss: Italy. *Id.*

Eremæus hepaticus (C. Koch), pt. xv, No. 9; *oblongus* (C. Koch), No. 10, in moss; *cymba* (Nic.), on trees, pt. xxxiii, No. 10; *ovalis* (C. Koch), pt. xxxv, No. 7: Italy: var. *siculus*, n. var., No. 8: Sicily. *Id.*

Nothrus and subg. *Angelia*, pt. xvii, No. 6; *horridus* (Herm.), No. 1; *segnis* (Herm.), No. 2; *spinifer* (C. Koch), No. 3; *bicarinatus*, No. 4; *angulatus* (C. Koch), No. 5; *anauniensis* (Can. & Fanz.), No. 7; *targionii*, n. sp., No. 8; *bistriatus* (Nic.), No. 9; *palustris* (C. Koch), pt. xxx, No. 4; *piceus* (C. Koch), pt. xxxiii, No. 6, in moss: Italy: *id.* *N. ovivorus* (Packard), figured, p. 85; RILEY.

Leiosoma, pt. xx, No. 1; *nitens* (Gerv.), No. 2; *coracinum* (C. Koch), No. 3; *globosum* (C. Koch), No. 4, in moss: Italy. BERLESE.

Neozetes, n. g., pt. xx, No. 5; *fusifer* (C. Koch), No. 6; *bicornis*, n. sp., No. 7, in moss: Italy. *Id.*

Oppia, pt. xx, No. 10; *bipilis* (Herm.), No. 8; *microptera*, n. sp., No. 9, in moss: Italy. *Id.*

Belba geniculata (Linn.), pt. xxxvi, No. 4; *aurita* (C. Koch), No. 5; *concolor* (C. Koch), pt. xliii, No. 1; *nodipes* (C. Koch), No. 2; *globipes* (Can. & Berl.), pt. xxxiii, No. 4; *troisii*, n. sp., pt. iii, No. 5, in moss: Italy. *Id.*

Cepheus tegeocranus (Herm.), pt. xxxvi, No. 2, in moss: Italy. *Id.*

Damæus dugesii (Can. & Fanz.), pt. iii, No. 6; *setosus* (Berl.), pt. xliii, No. 3; *bicostatus* (C. Koch.), pt. xxxiii, No. 5, in moss: Italy. *Id.*

Tegeocranus cepheiformis (Nic.), pt. xxxiii, No. 7, in moss: Italy. *Id.*

Carabodes coriaceus (C. Koch), pt. xxxiii, No. 8; *femoralis* (Nic.), No. 9, in moss: Italy. *Id.*

Hermannia granulata (Nic.), pt. ix, No. 4, in moss, Sicily; *id.* *H. trinebulosa*, n. sp., pp. 83 & 216, on the orange, W. America; RILEY.

Tarsonemus intectus, n. sp., on barley; the cause of skin irritation. The sexually mature forms, which have never been observed in this genus are described. KARPELLES.

IXODIDÆ.

Ixodes maskelli [n. sp.], on the Albatross (*Diomedea exulans*), p. 65; KIRK.

HYDRACHNIDÆ.

Nesæa coccinea (C. Koch), pt. i, No. 2, Italy; BERLESE.

Nesæa guatemalensis, n. sp., p. 11, pl. x, fig. 2, Guatemala, *numulus*, n. sp., p. 12, pl. xi, fig. 2, Guatemala; STOLL.

Arrhenurus globator (Müll.), pt. ii, No. 6; *maculator* (Müll.), pt. v,

No. 7; *tricuspidator* (Müll.), pt. xxiii, No. 8; *sinuator* (Müll.), No. 9: Italy. BERLESE.

Diplodontus filipes (Dugès), pt. iii, No. 7: Italy. *Id.*

Atax, pt. xxxi, No. 7. *limosus*, No. 8; *crassipes* (Müll.), pt. iv, No. 7: Italy. *Id.*

Atax alticola, n. sp., p. 9, pl. vii, fig. 1, Guatemala, *septem-maculatus*, n. sp., p. 9, pl. viii, fig. 1, Guatemala, var. *ypsilon*, p. 10, pl. ix, fig. 1, Guatemala, *dentipalpis*, n. sp., p. 10, pl. x, fig. 1, Guatemala; STOLL.

Hydrachna globosa (De Geer), pt. v, No. 8; *impressa* (Müll.), pt. xlv, No. 9: Italy. BERLESE.

Eylais extendens (Müll.), pt. ix, No. 5: Italy. *Id.*

Pseudomarica longiseta, n. sp., pt. xxiii, No. 10: Italy. *Id.*

Limnesia fulgida (C. Koch), pt. xxviii, No. 8: Italy. *Id.*

Limnesia guatemalteca, n. sp., p. 13, pl. vii, fig. 2, Guatemala, *longipalpis*, n. sp., p. 13, pl. ix, fig. 2, Guatemala, *puteorum*, n. sp., p. 14, pl. vii, fig. 3, *lata*, n. sp., p. 14, pl. viii, fig. 2, Guatemala; STOLL.

Lebertia insignis (Neum.), pt. xxix, No. 10: Italy. BERLESE.

Hydrodroma punicea (C. Koch), pt. xxx, No. 10: Italy. *Id.*

ZACHARIAS records the occurrence in the Azores of *Spherchon glandulosum*, at an elevation of 800 metres above the sea. The species has hitherto been found in Germany only, in the little Iser.

SARCOPTIDÆ.

Sarcoptes lævis, n. sp., var. *columbæ*, upon Pigeons; var. *gallinæ*, upon Fowls: RAILLIET, pp. 127–136, pl. ii.

BERLESE, from Italy, figures and describes:—*Megninia cubitalis* (Rob. & Mégn.), upon Fowls, pt. iv, No. 5; *pici-majoris* (Buchh.), on *Picus major*, pt. xxv, No. 7; *strigisoti* (Buchh.), on *Strix*, No. 9; *æstivalis*, n. sp., on *Cypselus apus*, No. 10; var. *subintegra*, n. var., on Swallows, pt. xxvi, No. 1; *gallinulæ* (Buchh.), on Rails, No. 6; var. *major*, n. var., on *Ortygometra porzana*, No. 8; *velata* (Mégn.), on Rails, No. 7; *columbæ* (Buchh.), on *Columba domestica*, pt. xxvii, No. 4; *rallorum* (Trouess.), on *Rallus aquaticus*, pt. xxxvii, No. 4; *ibidis* (Trouess.), on *Ibis falcinellus*, No. 5.

Pteronyssus parinus (C. Koch), on *Parus cæruleus*, pt. iv, No. 6; *obscurus* (Berl.), on *Hirundo rustica*, pt. xviii, No. 3; *brevipes* (Berl.), on *Picus medius*, No. 4; *striatus* (Rob.), on *Fringilla cælebs*, pt. xxiv, No. 2; *picinus* (C. Koch), on *Picus*, No. 5; *pullens*, n. sp., on *Acrocephalus arundinaceus*, No. 8; *quadratus* (Hall.), var. *truncatus* (Trouess.), on the Starling, pt. xxvi, No. 3; *nuntiaveris*, n. sp., on *Cotyle riparia*, No. 5; *puffini* (Buchh.), on Terns, Gulls, &c., pt. xxxviii, No. 3.

Alloptes palmatus (Can.), on *Fringilla cælebs*, pt. xvi, No. 7; *hastatus*, n. sp., on *Fr. montifringilla*, No. 8; *cypseli* (Can. & Berl.), on *Cypselus apus*, pt. xxv, No. 1; *quadrisetatus*, n. sp., on *Ortygometra*, No. 2; *crassipes* (Can.), var. *curtipes* (Trouess.), on the Oyster-catcher, pt. xxxvii, No. 8.

Pterolichus charadrii (Can.), on Water-birds, pt. xxxii, No. 6; *rehbergi* (Can.), var. *gracilis* (Trouess.), on *Himantopus*, pt. xxxii, No. 7; *deli-*

batus (Rob.), on Crows and Vultures, pt. xxvii, No. 8; *lunulatus* (?), var. *major* (Hall.), on Owls, pt. xxvi, No. 9; var. *lyra* (Can.), No. 10; *cuculi* (Trouess.), on the Cuckoo, pt. xxxvii, No. 1; *totani* (Can.), on *Totanus calidris*, *Machetes*, &c., pt. xxxviii, No. 2.

Analges passerinus (Linn.), on *Fringilla*, pt. xv, No. 1; *mucronatus* (Buchh.), on *Parus caeruleus*, No. 2; *claripes*, n. sp., on *Motacilla ficedula*, No. 3; *incertus*, n. sp., No. 4; *tridentulatus* (Hall.), on *Alauda arvensis* pt. xxiv, No. 3; *corvinus* (Mégn.), on Crows, No. 4; *bidentatus* (Giebel), on *Accentor modularius*, No. 9; *pachycnemius* (Giebel), No. 10; *nitzschii* (Hall.), on *Emberiza citrinella*, pt. xxvii, No. 3; *unidentatus*, n. sp., on *Pterocyclus cyaneus*, No. 5.

Xoloptes claudicans (Rob. & Mégn.), on *Coturnix communis*, pt. xviii, No. 2.

Freyana anatina (C. Koch), *on Anas boscas*, pt. xxiv, No. 1.

Pterocolus corvinus (C. Koch), on Crows, pt. xxiv, No. 6; var. *rosterii*, n. var., on the Starling, pt. xxvi, No. 2; *appendiculatus*, n. sp., on *Hirundo*, pt. xxiv, No. 7; var. *minutipes*, n. var., on *Chelidon urbica*, pt. xxvi, No. 4; *edwardsii* (Tr.), on *Sylvia rubiginosa*, pt. xxv, No. 4; *ortygometra* (Can.), on *Ortygometra porzana*, pt. xxvii, No. 1; *canelli* (Can.), on *Vanellus cristatus*, No. 2.

Protalges attenuatus (Buchh.), on birds of prey, pt. xxv, No. 3; *accipitrinus* (Trouess.), on *Falco tinnunculus*, pt. xxvii, No. 2.

Pterodectes rutilus, on *Hirundo*, pt. xxv, No. 5; *cylindricus* (Rob.), on *Corcus pica*, pt. xxvii, No. 9; *bilobatus* (Rob.), on *Alauda arvensis*, No. 10.

Pterophagus strictus (Mégn.), on *Columba domestica*, pt. xxv, No. 6.

Falciger rostratus (Buchh.), on *Columba domestica*, pt. xxvii, No. 6.

Proctophyllodes stylifer (Buchh.), on *Parus*, pt. xxv, No. 8; *ampelidis* (Buchh.), on *Passeres*, pt. xxvii, No. 7.

Bdellorhynchus polymorphus (Trouess.), on Ducks, pt. xxviii, No. 1.

Canestrinia blaptis (Can. & Berl.), on *Blaps*, pt. xxix, No. 1; *dorcicola* (Berl.), on *Dorcus parallelepipedus*, pt. xxx, No. 10.

Analloptes megnini (Trouess.), on *Rallus aquaticus*, pt. xxvii, No. 6; var. *falcinelli* (Trouess.), on *Ibis falcinellus*, No. 7; *stellaris* (Buchh.), on *Botaurus stellaris*, pt. xxxviii, No. 1.

Syringophilus (Nörner), pt. xxxvii, No. 9, *bipectinatus* (Nörner), on Passerine and Raptorial Birds, No. 10.

Linocoptes, pt. xxxix, No. 8, *coccinellæ* (Scop.), on *Lina populi*, No. 7.

Trouessart (1) describes the following:—*Freyana pectinata*, n. sp, upon *Scopus umbretta*, Congo, p. 95; *marginata*, n. sp., upon *Rhynchops flavirostris*, Congo, p. 96; *anserina* (Trt. & Mégn.), upon *Chen hyperborea*, N. America, p. 97; *leclerci*, n. sp, upon *Lobiranellus senegalus*, Senegal, and *L. indicus*, Cochin China, p. 98.

Halleria ceratorhina, n. sp., upon *Tantalus ibis*, Somali-land, p. 99.

Michaelichus caput-medusæ, n. sp., upon species of *Sula*, Europe, Philippines, Seychelles, Magellan, N. America, Australia, p. 101.

Pterolichus marginatus, n. sp., upon *Ibis hagedash*, Congo, p. 104; *simplex*, n. sp., upon *Hydrocheliden fissipes*, Europe, p. 105; *tritilobus*,

n. sp., upon *Megapodius jobiensis*, New Guinea, p. 106; *parallelilobus*, n. sp., upon *Corythaix purpurea*, Congo, p. 106; *marinus*, n. sp., upon *Larus argentatus*, Europe, p. 107; *serrativentris*, n. sp., upon *Leptoptilos argaleifer*, Senegal, Congo, p. 108; *dermicola*, n. sp, upon *Passer domesticus*, Europe, p. 109; *musophagi*, n. sp., upon *Schizorhis africana*, *Corythaix purpurea*, Congo, p. 109; *rubidus*, n. sp., upon *Diomedea chlororhyncha*, South Seas, p. 110; *semaphorus*, n. sp., upon *Sterna hirundo*, Europe, p. 111.

Pseudalloptes pyriventris, n. sp., upon *Scopus umbretta*, Congo, p. 113; *tridentiger*, n. sp., upon *Megapodius jobiensis*, New Guinea, p. 114; *curtus*, n. sp., upon *Dasyptilus pecqueti*, New Guinea, p. 115; *microdiscus*, n. sp., upon *Tetrao urogallus*, Europe, p. 115; *palmiger*, n. sp., upon *Talegallus cuvieri*, *Æpipodius bruijini*, New Guinea, p. 116; *quadratus*, n. sp., upon *Talegallus cuvieri*, New Guinea, p. 117; *gracilis*, n. sp., upon *Megapodius jobiensis*, New Guinea, p. 118.

Bdellorhynchus psalidurus, n. sp., upon *Chenalopex ægyptiaca*, Congo, p. 118.

Paralges petronyssoides, n. sp., upon *Gallinago nigripennis*, E. Africa, and *Aulacops cæruleicinctis*, New Grenada, p. 119; *major*, n. sp., upon *Eutoxeres aquila*, and *Phætornis longirostris*, New Guinea, p. 120.

Petronyssus hipposathes, n. sp., p. 121; *latior*, n. sp., p. 122, upon *Artamia nigra*, New Guinea; *conurus*, n. sp., p. 122, *conurus*, n. var. *dislocatus*, p. 123, upon *Pogonorhynchus bidentatus* and *Barbatula leucolæma*, Congo; *circiniger*, n. sp., upon *Sula fiber* and *S. fusca*, Philippines, p. 124; *bicalcaratus*, n. sp., upon *Plotus levaillanti*, &c., Congo, p. 125.

Megninia androgyna, n. sp., *elongata*, n. sp., upon *Ocydromus australis*, New Zealand, p. 126; *laglaizea*, n. sp., upon *Epimachus maximus*, *Podager papuensis*, New Guinea, p. 127; *harpipodus*, n. sp., upon *Podager papuensis*, p. 128.

Analges clavipes (Berl.), heteromorphous male, = *A. incertus* (Berl.), homœomorphous male, upon *Ficedula trochilus*; *A. nitzchii* (Hall.), heteromorphous male, = *A. fringillarum* (Koch), homœomorphous male, upon *Passer domesticus*, and *A. coleopteroides* (Hall.), homœomorphous male, upon *Emberiza citrinella*, pp. 128–130; *bidentatus*, n. var. *calcaratus*, upon *Eutoxeres aquila*, New Guinea, p. 130.

Protalges affinis, n. sp., upon *Pterophanes temmincki* and *Aglæactis cupripennis*, New Grenada, p. 131; *circiniger*, n. sp., upon *Corythaix purpurea*, Congo, p. 131.

Nealges, n. g., p. 132, *poppei*, n. sp., upon *Sula piscatrix*, New Zealand, p. 133.

Analloptes pterocolurus, n. sp., p. 134; *pterocolurus*, n. var. *relatus*, upon *Trachypetes aquila*, Seychelles.

Xolalges analginus, n. sp., upon *Aulacops cæruleicinctis*, New Guinea, p. 136.

Allanalges, n. subg. of *Proctophyllodes*, p. 137; *podagricus*, n. sp., upon *Chrysococcyx smaragdinus*, Senegal, p. 137.

viculocaulis, n. sp., upon *Eutoxeres aquila*, *Phætornis longi-*
Grenada, p. 139; *megamerus*, n. sp., upon *Dasyptilus pecqueti*,
p. 140; *scissus*, n. sp., upon *Eutoxeres aquila*, New Grenada,

For concerning thoracic se Stock. Förh.

p. 141 ; *discosurus*, n. sp., upon *Podoa senegalensis*, W. Africa, p. 142 ; *petozophorus*, n. sp., upon *Aramus scolopaceus*, New Grenada, p. 143 ; *coniventris*, n. sp., upon *Tachypetes aquila*, Seychelles, p. 144 ; *gynurus*, n. sp., upon *Chenalopex ægyptiaca*, Congo, p. 145.

Pterocolus elegans, n. sp., upon *Barbatula leucolæma*, Congo, p. 106.

Proctophyllodes caulifer, n. sp., upon *Cyanecula suecica*, France, p. 147 ; *arcuaticaulis*, n. sp., upon species of *Linota*, *Acanthis*, &c., Europe, p. 148.

Pterodectes alloptinus, n. sp., upon *Aglaeactis cupripennis*, Central America, p. 149 ; *phylloproctus*, n. sp., upon *Podargus papuensis*, New Guinea, p. 150 ; *gracillimus*, n. sp., upon *Gryphus nævius*, Brazil, p. 152.

Cheylabis fuscina, n. sp., upon *Megapodius jobiensis*, New Guinea, p. 152.

Dermoglyphus varians, n. sp., upon *Numida meleagris*, France (?), p. 154 ; *minor* (Nörner), n. var. *similis*, upon *Numida meleagris*, France (?), p. 155.

Trouessart, (2) p. 922, describes *Chorioptes avus*, n. sp., from the Sparrow, and on account of the peculiarities of this new form thinks it desirable to abolish the two subfamilies of the *Sarcoptidæ*.

Trouessart, E. L. Note sur la classification des Analgésiens et Diagnoses d'Espèces et de Genres Nouveaux. Bull. Soc. Angers, xiv, pp. 46–91.

[This paper was omitted from Zool. Rec. xxii.]

Pteronyssus chiasma on *Pteroglossus aracari*, S. America, p. 47 ; var. *mucronatus* on *Rhamphastos dicolorus*, Brazil ; *bifidus* on *Capito cayennensis*, Guiana ; *spatuliger* on *Celeus elegans*, Guiana ; *infuscatus* = *obscurus* (Berl.), on *Chelidon urbica* and *Cotile riparia*, Europe, p. 48 ; *truncatus* on *Sternus vulgaris*, Europe, and *Lamprotornis*, sp., Senegal ; var. *subtruncatus* on *Eulabes javanensis*, Philippine Is., p. 49 ; *phyllophorus* on *Musophaga violacea*, Senegambia, p. 50.

Megninia ibidis on *Ibis falcinellus*, var. *major* on *Platalea leucorodia*, p. 51 ; *rallorum* on *Rallus aquaticus*, Europe ; *inflata* on *Caica leucogastra*, Brazil, p. 52 ; *megalixus* on *Cissa thalassina*, Java ; *psoroptus* on *Buceros bicornis*, Cochin China, p. 53.

Analges lobatus on *Celeus elegans*, Guiana, p. 54.

Protalges, n. g., p. 54, *robini* on *Pteroglossus sulcatus*, Brazil, p. 55 ; *australis* on *Glyciphila fasciata*, Australia, var. *antipodum* on *Anthornis melanura*, N. Zealand, p. 55 ; *curtus* on *Platycircus pennantii*, Australia ; *accipitrinus* on *Falco tinnunculus*, Europe, p. 56 ; *psittacinus* on *Strigops habroptilus*, N. Zealand, *lorinus* on *Lorius garrulus* and *domicella*, N. Zealand and Moluccas ; larva on *Ara macro* and *Amazona melanacephala*, Central America, p. 57 ; var. *integrifolia* on *Ara severus* and *conurus* sp., Central America, var. *brevis* on *Psittacula lunulata*, Philippines ; *palmata* on *Anorhinus leucolophus*, Malaysia, p. 58.

Analloptes, n. g., *megninii* on *Rallus aquaticus*, p. 59 ; var. *falcinelli* on *Ibis falcinellus* and *Platalea leucorodia*, Europe, *bipartitus* on *Anthracoceros convexus*, Sumatra, p. 60 ; *corrugatus* on *Arorhinus leucolophus* Malaysia, *elythrura* on *Buceros* n. sp. ?, p. 61. [illegible]

Xolalges, n. g., p. 61, *scaurus* on *Cuculus canorus*, Europe, p. [illegible]

Alloptes norneri on *Cynanthus mocox*, Centr. America, p. 63 p. 104 ; on *Strobilophaga enuchator*, [illegible] Europe, p. 64 ; *lobulatus* on *tritilobus*,

sericea, Australia; *securiger* on *Microchelidon hirundinacea*, Australia; *pteronyssoides* on *Pipra aureola*, &c., Centr. America, p. 65; *dielytra* on *Pipra erythrocephala*, &c., Centr. America; *microphaeton*, p. 66, var. *phaetontis minor*, var. *simplex*, p. 67, on *Phaeton aethereus*, S. Seas; *crassipes* (Can.), var. *conurus* on *Tringidæ*, Europe, p. 68, var. *myosarus* on *Dromas ardeola*, Western India, var. *curtipes* on *Hæmatopus* and *Totanus*, Europe; *albreviatus* on *Ibis rubra*; *euryurus* on *Platalea ajaja*, Centr. America, p. 69.

Pterocolus trachelurus on *Platalea ajaja*, p. 70; *claviger* on *Ibis rubra*, Centr. America, p. 71; *lambda* on *Nettapus auritus*, Madagascar; *edwardsii* on *Sylvia turdoides* and *S. rubiginosa*, Europe, p. 72; *bilaniatus* on *Miniotilta citrea*, W. Indies; *ortygometræ* (Can.), var. *furcifer* on *Cursorius bicinctus*, E. Africa, p. 73; *flagellifer*, = *Pt. actitidis* (Can.), on *Tringidæ*, var. *discurus* on *Grus cinerea*, p. 74; *bifurcatus* = var. *appendiculatus* (Berl.), on *Calamodyta aquatica*, Europe, and *Centropus viridis*, Philippines, p. 75; *analgoides* on *Merops apiaster*; *gracilipes* on *Lanius excubitor*, Europe, and *Psarisomus dalhousiæ*, *Cymbirhynchus macrorhynchus*, Malacca, p. 76.

Proctophyllodes megaphyllus on *Accentor modularius*, Europe; *fenestralis* on *Helianthea bonapartei*, N. Grenada, p. 77; *intermedius* on *Eurylaimus ochromelas*, Malacca, p. 78.

Pterodectes major on *Menura superba*, Australia, p. 78; *gracilis* on *Sarocolius utrius*, &c., N. Grenada, p. 79; *paradisiacus* on *Paradisea minor*, N. Guinea; *megacaulus* on *Nectarinia afra*, Senegal; *gracilior* on *Trochilidæ*, Centr. America, p. 80; *mainati* on *Eulabes javanica*, Malaysia; *manicatus* on *Glyciphila fasciata*, Australia, p. 81; *trochilidarum* on *Trochilidæ*, Centr. America; *xiphiurus* on *Psarisomus dalhousiæ*, Malacca; *gladiger* on *Trochilidæ*, Centr. America, p. 82.

Pterodectes trogonis on *Trogonidæ*, Centr. America and Malaysia, p. 83; *selenurus* on *Cynanthus mocox*, Centr. America, p. 84.

Cheylabis, n. g., *latus* on *Elanus melanopterus*, S. Europe and Africa; *præcox* on *Asturina nitida*, Centr. America, p. 85.

PYCNOGONIDA.

Genus *Nymphopsis* characterised; SCHIMKEWITCH, (1) p. 272, and (2) p. 128, *korotnewi*, n. sp., Sunda Is., pl. v; *id. ibid.*

Ammothea wilsoni, n. sp., S. America, p. 271; *id.* (1).

Tanystylum calycirostre, n. sp., *dohrnii*, n. sp., *cherchice*, n. sp., p. 271, S. America, *hoekianum*, n. sp., loc.?, p. 272, briefly characterised; *id. t. c.*

PENTASTOMIDA.

°CSOKOR, J. Ueber Pentastomen und *P. denticulatum* aus der Leber des Pferdes. Z. f. veterinärkunde, i, 1887. (Notice of this paper by Th. Kitt, in CB. Bact. Parasit. Jena, i, pp. 151–154.)

Fo[illegible]arks upon the hosts of *P. denticulatum* and *P. tænioides*, and upon concernin[illegible]e of these two species. A complete list is also given of the thoracic segm[illegible]pecies of the genus, the host and the organs affected being Stock. Förh. [illegible] each case.

1887. [v[illegible]

GIGANTOSTRACA.

FOERSTE, A. F. The Clinton Group of Ohio. Part II. Bull. Denison Univ. ii, *Trilobites*, pp. 90–103.

Acidaspis ortoni, n. sp., p. 90, pl. viii, fig. 1.

Proetus determinatus, n. sp., p. 91, figs. 2 & 3; sp. innom., p. 92, fig. 5.

Illænus daytonensis (Hall & Whit.), p. 93, figs. 6 & 7, *madisonianus* (Whit.), p. 93, figs. 8–10, *ambiguus* (Foerste), p. 94.

Calymene vogdesi, n. sp., syn. *C. clintoni* (Vogdes), p. 95, figs. 12–16.

Ceraurus sp. innom., p. 98, fig. 17.

Lichas breviceps (Hall), p. 98, figs. 18 & 19.

Phacops pulchellus, n. sp., p. 99, figs. 4, 20, & 21.

Dalmanites werthneri (Foerste), figs. 22–25.

Encrinurus thresheri, n. sp., p. 101, fig. 26.

HERRICK, C. L. A Sketch of the Geological History of Licking Co., Ohio. Appendix I: Notes on Carboniferous *Trilobites*, pp. 51–64, pl. vi. Appendix II: A Waverley *Trilobite*, pp. 69 & 70, pl. vii. Bull. Denison Univ. ii, pts. 1 & 2.

The four genera *Phillipsia*, *Griffithides*, *Brachymetopus*, and *Proetus*, which constitute the family *Proetidæ*, are characterised; a complete list, with annotations, of the Carboniferous species of *Trilobites*, is drawn up, and figures are given of the following forms:—

Dalmanites cuyahogæ (Claypole), pl. ii, fig. 33.

Phillipsia gemmulifera (Phil.), pl. vi, fig. 6, *truncatula* (Phil.), fig. 7, *eichwaldi* (Fisch.), var. *mucronata* (McCoy), fig. 8, *derbiensis* (Martin), fig. 12, *colei* (McCoy), fig. 11.

Griffithides acanthiceps (Woodw.), fig. 10, *calcarata* (McCoy), fig. 16.

Brachymetopus mccoyi (Portl.), fig. 16, *ouralicus* (McCoy), fig. 14, *lodiensis* (Meek), pl. iii, fig. 4.

The following are described:—

Philippsia swallovi (Shum.), *shumardi* (Herr.), p. 58, *meramecensis* (Shum.), *missouriensis* (Shum.), p. 59, *major* (Shum.), p. 60, *cliftonensis* (Shum.), p. 61, *sangamonis* (M. & W.), pl. v, fig. 13, p. 61, *scitula* (M. & W.), *doris* (Hall), p. 62, *vindobensis* (Hartt.), p. 63, *trinucleata*, n. sp., p. 64, *schumardi* (Herr.), syn. *Proetus missouriensis* (Shum.), p. 69, pl. vii, fig. 14.

MATTHEW, G. F. Illustrations of the Fauna of the St. John Group. No. 4: On the smaller eyed *Trilobites* of Division 1, with a few remarks on the species of the higher divisions of the Group. (Abstract) Can. Rec. ii, pp. 357–363.

The changes during growth in *Liostracus* and *Ptychoparia* are described, and the two genera are compared with *Ellipsocephalus*, *Agraulus*, and *Solenopleura*, of which the latter presents the widest departure from the primitive type. The second part of the paper consists of a preliminary note on the higher Cambrian fauna of the Acadian Region.

——. The great Acadian *Paradoxides*. Am. J. Sci. xxxiii, pp. 63, 104; figured and described, p. 389.

Paradoxides regina, n. sp., from the Cambrian basin of

[MATTHEW, G. F.] On the Kin of *Paradoxides* (*Olenellus*?) *kjerulfi*. *T. c.* pp. 390–392.

Observations upon the structure and the distribution in time of certain species of *Paradoxides*, intended as a contribution to the discussion of the comparative age of the Paradoxides beds in Europe and America, and the probable position of *Olenellus* in relation thereto.

PACKARD, A. S. On the class *Podostomata*, a group embracing the *Merostomata* and *Trilobites*. Ann. N. H. xix, p. 164.

The name *Podostomata* is intended to supplant the names *Pœcilopoda* and *Gigantostraca*, which have been applied in such different senses that neither can be retained for a group comprising the *Merostomata* and *Trilobita*. The class is defined and compared with the *Arachnida* and *Crustacea*.

RATTE, F. Notes on Australian Fossils. (1) Note on some *Trilobites* new to Australia. P. Linn. Soc. N.S.W. i, pt. 4, p. 1065–1069.

Lichas sinuata, n. sp., p. 1065, pl. xv, fig. 15.
Proetus ascanius (Cord.), p. 1066, pl. xv, figs. 1–4.
Acidaspis verneuili (Barr.), or *A. vesiculosa* (Beyr.), p. 1066, pl. xv, figs. 5–14, and p. 1068, pl. xv, fig. 10.
Three other forms are figured on pl. xv, figs. 11–14, but they are not identified.

ROSENBERG, E. N. S. A Trilobite track illustrating one mode of progression of the *Trilobites*. P. Am. Ass. for 1886 (1887), p. 228.

The character of the tracks shows that the *Trilobite* progressed by means of a series of leaps, using the ten strong thoracic limbs.

ROMINGER, C. Description of primordial fossils from Mount Stephens, N. W. Territory of Canada. P. Ac. Philad. 1887, pp. 12–19.

Ogygia klotzi, n. sp., p. 12, pl. i, fig. 1, *serrata*, n. sp., p. 13, pl. i, fig. 2. *Embolimus*, n. g., p. 15, *spinosus*, n. sp., p. 15, pl. i, fig. 3, *rotundatus*, n. sp., p. 16, pl. i, figs. 4 & 5.
Monocephalus salteri? (Billings), p. 16, pl. i, fig. 6.
Conocephalites cordilleræ, n. sp., p. 17, pl. i, fig. 7.
Bathyurus, sp. innom., p. 18, pl. i, fig. 8.
Agnostus, sp. innom., p. 18, pl. i, fig. 9.

TSCHERNYSCHEW, TH. Die Fauna des Mittleren und Oberen Devon am West-Abhange des Urals. Mém. du comité Géol. iii, No. 3. [*Trilobites*, pp. 12–15.]

Dechenella romanovski, n. sp., p. 12, pl. i, figs. 4–8, *verneuili* (Kays.), p. 14, fig. 10, *haldemanni* (Hall).
Bronteus granulatus (Goldfuss), p. 15, pl. i. figs. 2 & 3.

For a description of *Paradoxides tessini* (Brongn), with a discussion concerning the views of different authors respecting the number of thoracic segments present in this form, see GERHARD HOLM, Geol. Foren. Stock. Förh. ix (1887) pp. 408–411.

For remarks upon certain species of the genus *Harpides*, see AUREL KRAUSE, SB. nat. Fr. 1887, pp. 55–59.

WOODWARD, HENRY. On a new Species of *Eurypterus* from the Lower Carboniferous Shales of Glencartholm, Eskdale, Scotland. Geol. Mag., dec. iii, vol. iv, pp. 481–484.

Eurypterus scabrosus, n. sp., pl. xiii.

°OEHLERT, D. Études sur quelques Trilobites du groupe des *Proetidæ*. Angers: 1887, 8vo. [Extr. Bull. Soc. Angers, 1885; see Zool. Rec. xxiii.]

°STAINER, XAVIER. Note sur un trilobite nouveau et sur les *Pentamerus* des Calcaires d'Humérée. Ann. Soc. géol. Belg. 1887, pp. 75–85.

NOTE.—It is with great pleasure that I take this opportunity of expressing my thanks to Dr. HENRY WOODWARD, and particularly to Mr. C. D. SHERBORN, for much kind help in the preparation of this report upon the *Gigantostraca*.—R. I. P.

MYRIOPODA.

BY

R. INNES POCOCK.

TITLES.

BACHELIER, L. Le Scolopendre et sa piqûre. Des accidents qu'elle détermine chez l'homme. Paris : 1887 (*cf.* Zool. Anz. x).

BERLESE, A. *Acari, Myriopoda* et *Scorpiones* hucusque in Italia reperta. Padova : Fratr. Salmin, 1882–1887.

A work published from time to time in separate parts, consisting of figures and descriptions of various species, which are figured and described as they come to hand. Commendable prominence is given to the plates, each of which contains a coloured figure of a specimen of the species described, together with outline drawings of its principal systematic features.

BOLLMAN, C. H. (1) Notes on North American *Julidæ*. Ann. N. York Ac. iv, pp. 25–44.

——. (2) Notes on the North American *Lithobiidæ* and *Scutigeridæ*. P. U. S. Nat. Mus. x, pp. 254–266.

——. (3) Descriptions of new genera and species of North American *Myriopoda*. Ent. Am. ii, pp. 225–229.

——. (4) New Genus and Species of *Polydesmidæ*. *Op. cit.* iii, pp. 45 & 46.

——. (5) New North American Myriopods. *T. c.* pp. 81–83.

These papers are purely descriptive.

DUGÈS, A. Sur les mœurs d'une grande espèce de Scolopendre mexicaine. C.R. ent. Belg. No. 93, pp. ci–civ.

Observations on the behaviour of a captive specimen of *Scolopendra azteca*. Special mention is made of the entire absence of all respiratory movement.

DUBOIS, M. R. Note sur les Myriopodes lumineux (Réponse à M. Macé). C.R. Soc. Biol. iv, pp. 6 & 7.

GADEAU DE KERVILLE, H. Addenda à la faune des Myriopodes de la Normandie. Bull. Soc. Rouen, xviii, p. 14.

GESTRO, R. [See LATZEL.]

GROULT, P. Acariens, Crustacés, Myriopodes. Histoire Naturelle de la France. Paris: Emile Deyrolle, 1887.

A work of a more or less popular character.

HAASE, E. (1) Schlesiens Diplopoden. Pt. II. Z. ent. Bresl. xii, pp. 1–46.

——. (2) Die Stigmen den Scolopendriden. Zool. Anz. x, pp. 140–142.

——. (3) Die Indisch-Australischen Myriopoden. Pt. I. Chilopoden. Abh. Ber. zool. anthropol. Mus. Dresden (1887), No. 5, pp. 1–118 (6 pls.).

Introductory remarks upon anatomical features. Families, genera, species, and varieties characterised. New species of *Scutigera* 5, *Lithobius* 1, *Henicops* 1, *Scolopendra* 2, *Cormocephalus* 2, *Otostigma* 5, *Cryptops* 2, *Branchiostoma* 1, *Heterostoma* 1, *Mecistocephalus* 3, *Geophilus* 2. New genus, *Otocryptops*.

HEATHCOTE, F. G. The Post-embryonic Development of *Julus terrestris*. P. R. Soc. xliii, pp. 243–245.

LATZEL, R. Res Ligusticæ. *Myriopoda* in Appendix to paper by R. Gestro on *Anophthalmus*. Ann. Mus. Genov. xxv, pp. 507 & 508.

LUCAS, M. H. Note sur le *Blaniulus guttulatus* (Bosc). Bull. Soc. Ent. Fr. vii, p. clviii.

MACÉ, —. Les glandes préanales et la phosphorescence des Géophiles. C.R. Soc. Biol. iv, p. 37.

MCNEILL, J. (1) List of the Myriopods found in Escambia County, Florida, with descriptions of six new species. P. U. S. Nat. Mus. x, pp. 323–327, 1 pl.

——. (2) Descriptions of twelve new species of *Myriopoda*, chiefly from Indiana. *T. c.* pp. 328–334, 1 pl.

PLATEAU, F. (1) Observations sur une Scolopendre vivante. C.R. ent. Belg. No. 89, pp. lxx–lxxiv.

——. (2) Recherches expérimentales sur la vision chez les Arthropodes (1 partie). A. Résumé des travaux effectués jusqu'en 1887 sur la structure et la fonctionnement des yeux simples. B. Vision chez les Myriopodes. Bull. Ac. Belg. xiv, pp. 407–448.

——. (3) Observations sur les mœurs du *Blaniulus guttulatus* (Bosc) et expériences sur la perception de la lumière par ce Myriopode aveugle. C.R. ent. Belg. No. 91, pp. lxxxi–lxxxv.

POCOCK, R. I. (1) On a New Genus and Species of *Polyzoniidæ*. Ann. N. H. xx, p. 222.

——. (2) On the Classification of the *Diplopoda*. *T. c.* p. 283.

PORATH, C. O. VON. Om norska myriopoder. Ent. Tidskr. viii, p. 39.

UNDERWOOD, L. M. The *Scolopendridæ* of the United States. Ent. Am. iii, pp. 61–65.

WOODWARD, H. (1) On some Spined Myriopods from the Carboniferous Series of England. Geol. Mag. iv, pp. 1–10.

——. (2) Supplementary Note on *Euphoberia ferox* (Salter). *T. c.* pp. 116 & 117.

EMBRYOLOGY.

HEATHCOTE, in a short paper, has published the main results obtained from investigating the development of *Julus terrestris*. The somites divide into two parts from the cavities in which the cœlom is formed. One of these parts, projecting into the legs, breaks up into muscles; the other part remains in the body and gives rise to the generative tube, from the walls of which the generative products are proliferated. The body-part of the third somite gives rise to the salivary glands, that of the antennal and mandibular somites breaks up and disappears. The nervous system consists at first of two separate chords, which soon fuse. There are two pairs of ganglia in each double body-segment. The tracheæ are formed as epiblastic invaginations behind the legs; from each invagination two vesicles—one dorsal and one ventral—are given off, and from the vesicles the tracheal tubes arise. Foramina repugnatoria are also formed as epiblastic invaginations. There are two pairs of tracheal apertures and one pair of foramina repugnatoria in each double body-segment. The heart, which has two pairs of arteries and two pairs of ostia in each double body-segment, is developed from a network of mesoblastic cells. The body cavity is a pseudocœle. The formation of the eyes is also described. Mr. HEATHCOTE is of opinion that each somite of the adult is formed by the fusion of the dorsal plates of two embryonic somites. The most remarkable thing in the young animal is the reduction of the ventral and increase of the dorsal part of the body. At one stage the relations of dorsal and ventral regions corresponds exactly with the relations of these parts in *Euphoberia*, as described by Mr. SCUDDER.

ANATOMY.

HAASE (2) has examined the structure of the stigmata in the *Chilopoda*. In *Lithobius*, *Henicops*, *Cryptops*, and in young specimens of *Scolopendra* and *Heterostoma*, the stigma is characterised by a feeble margin, a shortish cone, no closing apparatus, and by the separate apertures of the tracheæ. This is the simplest form, and all other forms presented can be derived from it. In *Scolopendra* the cavity into which the stigma leads becomes divided into an outer vestibule and the true cone. The stigma of *Cormocephalus* is somewhat intermediate between that of *Scolopendra* and the simplest form of, *e.g.*, *Lithobius*. In *Otostigma* and *Branchiostoma* the orifice of the ear-shaped stigma is round and finely-toothed; the cone assumes an oblique form, and the bases of the stigmata are furnished with irregular patches beset with spines. The sieve-shaped

stigma of *Heterostoma* may be derived from the ear-shaped stigma by the widening of the floor of the cone, by the multiplication of the tracheæ, and by the approximation of the floor of the cone to the edge of the stigma.

The same author (3) discusses and gives excellent figures of the morphology of the skeletal system of the *Chilopoda*.

Physiology.

Plateau (3), after elaborate experiments, concludes that *Blaniulus guttulatus* (Bosc), a species devoid of eyes, possesses undoubted "dermato-optic perceptions"; but these perceptions are more feeble than those of the eyeless *Chilopoda*. The food of the species appears to consist mainly of decaying animal matter. Lucas states that it feeds upon various kinds of vegetables, and upon earth-worms.

Plateau (1) has observations upon the behaviour of a captive specimen of *Scolopendra subspinipes*. The arthrodial membrane appears to be far more sensitive to touch than other regions of the body. The total absence of all external respiratory movements is asserted. Much the same conclusions have been arrived at by Dugès with reference to *Scolopendra azteca*. This centipede refuses as food wood-lice and earth-worms but is partial to flies. The prey, the hard parts of which are rejected, firmly held to the mouth by the poison jaws whilst the maxillæ tear it to pieces.

Plateau (2) gives a clear and concise summary of the results of the researches on the structure and function of simple eyes, and states the conclusions obtained by himself from experiments on the visual powers of various kinds of *Myriopoda*. Light can be distinguished from darkness, whether eyes be present or not; the visual power, being poor, is supplemented by the sense of touch, which is situated in the antennæ. An object in motion can be perceived, especially when it reflects much white light; but the form of an object cannot be distinguished.

Dubois has experimented upon the light-giving properties of *Scolioplanes crassipes*. The phosphorescence is due to a substance formed of very fine granules, which is excreted from the ventral surface of the posterior portion of the body; but no glands for the emission of this substance could be observed. The application of warmth, or a touch from the finger, will cause the appearance of the light.

Macé, on the other hand, is of opinion that the light-giving substance is a liquid which has the property of drying with rapidity. In *Geophilus simplex* and *G. longicornis*, the species experimented upon, the luminous matter appeared to be secreted from certain "preanal glands" lodged in the two posterior segments of the body, between the dorsal and ventral plates. According to Tömösvary, the glutinous substance secreted by these glands causes the spermatophores to adhere to the genital orifice of the female; but Dr. Macé is of opinion that, owing to the distance of these glands from the genital orifice, they can have no connection with the genital apparatus.

Classification.

Pocock (2) believes:—(1) That the relationship between the *Chilopoda* and *Hexapoda* is greater than the relationship between the *Chilopoda* and *Diplopoda*: therefore the *Chilopoda* and *Diplopoda* should not be associated to form the class *Myriopoda*, equal in value to the class *Hexapoda*. (2) That the relationship between the *Polyzonidæ* and the *Julidæ* is greater than the relationship between the *Glomeridæ* and *Julidæ*: therefore the association of the *Julidæ* and the *Glomeridæ* in a group equivalent to a group containing the *Polyzonidæ*, is not justifiable; but, on the contrary, the *Glomeridæ* should constitute a division equal in value to a division composed of the rest of the *Chilognatha*.

Distribution.

Normandy. Gadeau de Kerville: *Polyxenus lagurus* and n. var. of *Julus* (see under *Julidæ*).

Scandinavia. Poratii: 4 species new to the country.

Silesia. Haase: *Julidæ* and *Polyzonidæ* only.

Italy and Sicily. Berlese.

Liguria. Latzel & Gestro.

N. America. Underwood: *Scolopendridæ* only. Bollman (1–5); McNeill (1 & 2). Florida and Indiana.

Indo-Australia. Haase: *Chilopoda* only.

SYSTEMATIC.

CHILOPODA.

Scutigeridæ.

Family characterised; Haase, (3) p. 15.

Synoptical table of Indo-Australian species; *id. t. c.* p. 16.

Sc. longicornis (Fabr.), syn. *nobilis* (Templeton), *downesii*, *hardwickii* (Newport), *serratipes* (Gerv.), *templetoni* (Humb.), *serratipes*, *castanea* (Mein.), p. 17, pls. i, fig. 27, & ii, fig. 33, India and East Indies, *clunifera* (Wood), syn. *truculenta* (L. Koch), *sinensis* (Mein.), p. 19, pl. i, fig. 28, China, Japan, *hispida*, n. sp., New Guinea, Caroline Is., p. 20, pl. ii, fig. 34, *lesueurii* (Lucas), syn. *straba* (Wood), Australia, Oahu, p. 21, pl. ii, fig. 35, *latreillei* (Newp.), syn. *violacea* (L. Koch), Australia, p. 22, *sinuata*, n. sp., China, p. 22, pl. i, fig. 31, *maculata* (Newp.), syn. *australiana* (Newp.), *maculata* (Mein.), *smithii* (Haacke), Australia, p. 23, pl. ii, fig. 36, *smithii* (Newp.), New Zealand, p. 24, *tuberculata* (Wood), syn. *cæruleo-fasciata* (L. Koch), China, Japan, p. 25, pl. ii, fig. 37, *simplex*, n. sp., Australia, p. 26, pl. i, fig. 29, *melanostoma*, n. sp., Manilla, p. 27, pl. i, fig. 30, *rubrolineata* (Newp.), ? syn. *microstoma* (Mein.), East Indies, p. 27, *complanata*, n. sp., China, p. 28, pl. i, fig. 32,

id. t. c. *S. forceps* (Raf.), Eastern United States, p. 264, BOLLMAN (2). *S. coleoptrata* (Linn.), Italy, pt. xlvi, No. 10, figured and described, BERLESE.

CERMATOBIIDÆ.

Family characterised ; HAASE, (3) p. 29.

Cermatobius martensii (Haase), Adenara I., *id. t. c.* p. 30, pl. ii, fig. 38.

LITHOBIIDÆ.

Family characterised ; HAASE, (3) p. 31.

Lithobius characterised ; *id. ibid.*

Synoptical table of N. American species, p. 254, list of N. America of species, p. 265, BOLLMAN (2).

Synoptical table of Indo-Australian species ; HAASE, (3) p. 33.

Lithobius asperatus (L. Koch), syn. *thetidis* (Karsch), China, p. 33, pl. iii, fig. 39, *rugosus* (Mein.), Oahu, p. 34, *semperi*, n. sp., pines, pl. iii, fig. 40, *hardwickii* (Newp.), Singapore, p. (Newp.), Nicobar, p. 35, *argus* (Newp.), New Zealand, p. *Lithobius* (*Archilithobius*) *minnesotæ*, n. sp., Minnesota, *Scolobiatus* (Wood), Michigan, p. 256, *tuber*, n. sp., Bloomington, p. *providens*, n. sp., Bloomington, p. 257, *pullus*, n. sp., Bloomington, p. 25 *trilobus*, n. sp., Bloomington, p. 258, *cardinalis*, n. sp., Bloomington, p. 258, (*Lithobius* [sensu stricto]) *howei*, n. sp., Minnesota, p. 259, *aztecus* (Sauss.), California, p. 259, *forficatus* (Linn.), East. United States, p. 260, *xanti* (Wood), Oregon, p. 261, *politus* (McNeill), Indiana, Michigan, p. 261, (*Neolithobius*) *mordax* (Koch), Kansas, &c., p. 262, *clarus* (McNeill), Pensacola, p. 262, *juventus*, n. sp., Bloomington, p. 263, (*Eulithobius*) *multidentatus* (Newp.), Eastern United States, p. 263, BOLLMANN (2). *L.* (*Archilithobius*) *habzingeri*, n. sp., Minnesota, p. 83, *id.* (5), *mutabilis* (Koch), Italy, pt. xlii, No. 45, *tylopus* (Latz.), Italy, pt. xliv, No. 6, (*Eulithobius*) *grossipes* (Koch), Italy, pt. xlii, No. 4, figured and described, BERLESE. *L. clarus*, n. sp. Pensacola, p. 326, *aureus*, n. sp., Pensacola, p. 327, MCNEILL (1).

Lithobius scotophilus, n. sp., Liguria, in caves, p. 507 ; LATZEL.

Henicops characterised ; HAASE, (3) p. 35.

Henicops maculata (Newp.), Tasmania, p. 36, *emarginata* (Newp.), New Zealand, p. 36, *insularis*, n. sp., Auckland, p. 36, pl. iii, fig. 41, HAASE (3).

SCOLOPENDRIDÆ.

Family characterised ; HAASE, (3) p. 38.

Synoptical table of Indo-Australian genera ; *id. t. c.* p. 40.

Scolopendra characterised ; *id. t. c.* p. 41.

Synoptical table of Indo-Australian species ; *id. t. c.* p. 42.

Scolopendra hardwickii (Newp.), syn. *histrionica* (C. Koch) (Humbert), India or., p. 42, pl. iii, fig. 42, *subspinipes* (L

de haanii (Brandt), Tropical Climes, except Australia, p. 44, pl. iii, figs. 43–45, var. *concolor* (Newp.), p. 45, var. *fissispina* (L. Koch), p. 46, pl. iii, fig. 43, *multidens* (Newp.), syn. *rugosa* (Mein.), China, Japan, p. 46, pl. iii, fig. 46, *mutilans* (L. Koch), syn. *tigrina* (Tömösv.), China, Japan, p. 47, pl. iii, fig. 47, *japonica* (L. Koch), Japan, p. 48, pl. iii, fig. 48, *flavicornis* (Tömösv.), Borneo, p. 49, pl. iii, fig. 49, *meyeri*, n. sp., New Guinea, p. 49, pl. iii, fig. 50, *repens* (Wood), Oahu, p. 50, *cingulata* (Latr.), Temperate Asia, p. 50, pl. iii, fig. 55, *calcarata* (v. Porath), China, p. 51, *læta*, n. sp., Australia, p. 51, pl. iii, fig. 51, *morsitans* (Linn.), Tropical Climes, p. 52, pl. iii, figs. 52–54, var. *procera*, n. var., p. 53, pl. iii, fig. 53, var. *sulcipes*, n. var., p. 54, pl. iii, fig. 54, *latro* (Mein.), Serampore, p. 55, pl. iv, fig. 82, *indica* (Mein.), India, p. 55, *id. t. c.* *S. cingulata* (Latr.), Italy, pt. xlvi, No. 10, figured and described, BERLESE.

Cormocephalus characterised; HAASE, (3) p. 55.

Synoptical table of Indo-Australian species; *id. t. c.* p. 56.

Cormocephalus rubriceps (Newp.), Australia, New Zealand, p. 57, pl. iii, fig. 57, *aurantiipes* (Newp.), syn. *puncticeps* (Gervais), *gracilis* (Kohl.), Australia, p. 57, pl. iii, fig. 56, var. *obscurus* (Newp.), syn. *marginatus* (Porath), p. 58, pl. iii, figs. 56 *e* & *f*, var. *spinosus*, n. var., p. 58, pl. iii, fig. 56 *d*, *hygomelas* (Kohl.), aberrant form, p. 58, *violaceus* (Newp.), Australia, New Zealand, p. 59, pl. iii, fig. 58, *subminiatus* (Newp.), syn. *exiguus* (Mein.), Australia, p. 60, pl. iv, fig. 59, *fœcundus* (Newp.), syn. *nanilicornis* (Porath), Australia, p. 60, pl. iv, fig. 60, *distinguendus*, n. sp., Australia, p. 61, pl. iv, fig. 61, *westwoodii* (Newp.), syn. *pallipes* (Newp.), ? *miniatus* (Newp.), ? *rugulosus* (Porath), Australia, p. 62, pl. iv, fig. 62, var. *lanatipes* (Kohl.), p. 63, pl. iv, fig. 63, *sarasinorum*, n. sp., Ceylon, p. 63, pl. iv, fig. 64, *id. t. c.*

Cupipes characterised, p. 64, *amphicurys* (Kohl.), syn. *quadrisulcatus* (Mein.), Caroline Is., p. 64, pl. v, fig. 65, *id. t. c.*

Remarks on *Rhombocephalus politus* (Newp.) and *R. brevis* (Newp.), W. Australia, p. 65, and on *Asanada brevicornis* (Mein.), Kooloo, p. 66, *id. t. c.*

Otostigma characterised, p. 66; *id. t. c.*

Synoptical table of Indo-Australian species, pp. 67 & 68; *id. t. c.*

Otostigma carinatum (Porath), Ceylon, Java, China, p. 68, pl. iv, fig. 66, *scabrum* (Porath), China, p. 69, *ceylonicum*, n. sp., Ceylon, p. 68, pl. iv, fig. 67, *metallicum*, n. sp., Sangir, p. 70, pl. iv, fig. 68, *aculeatum*, n. sp., Java, p. 71, pl. iv, fig. 69, *spinosum* (Porath), syn. *nitidulum* (Tömösv.), Java, Borneo, p. 71, pl. iv, fig. 70, *punctiventre* (Tömösv.), Borneo, p. 72, pl. iv, fig. 73, *orientale* (Porath), syn. *astenon*, *luzonicum*, *calcitrans* (Kohl.), Tropical Countries, p. 73, pl. iv, fig. 72, var. *acutidens*, n. var., p. 74, pl. iv, fig. 74, var. *asperum*, n. var., p. 74, pl. iv, fig. 78, *longicorne* (Tömösv.), Borneo, p. 74, pl. iv, fig. 75, *politum* (Karsch), China, p. 75, pl. iv, fig. 76, *multidens*, n. sp., Celebes, p. 75, pl. iv, fig. 77, No. [illegible]*latum* (Kohl.), Australia, p. 76, pl. iv, fig. 79, var. *sumatranum*, parts of Sumatra, p. 77, pl. iv, fig. 80, *geophilinum*, n. sp., Java, p. 77, Pensacola, [illegible]1, *id. t. c.* figs. 1 & 2,

Observations on *Monops niger* (Gerv.), E. Indies, p. 78 ; *id. t. c.*

Opisthemega characterised, p. 78, *insulare* (Mein.), Sandwich Is. p. 79, *id. t. c.*

Plutonium (Cavanna), pt. xvi, No. 9, *zwierleinei* (Cavanna), No. 10, Sicily, figured and described ; BERLESE.

Cryptops characterised ; HAASE, (3) p. 79.

Synoptical table of Indo-Australian species ; *id. ibid.*

Cryptops sulcatus, n. sp., Australia, p. 80, pl. v, fig. 83, *megaloporus* n. sp., Auckland, p. 80, pl. v, fig. 84, *australis* (Newp.), non syn. *australis* (Kohl.), N. Zealand, p. 81, *id. t. c.* *C. hortensis* (Leach), Italy, pt. xlii, No. 6, *punctatus* (Koch), Italy, No. 7, figured and described, BERLESE.

Branchiostoma characterised ; HAASE, (3) p. 82.

Synoptical table of Indo-Australian species ; *id. t. c.* p. 82.

Branchiostoma carinulatum, n. sp., New Guinea, Australia, p. 82, pl. v, fig. 85, *longipes* (Newp.), syn. *obsoletum* (Porath), *gracile*, *affine* (Kohl.), Tropical Countries, p. 83, pl. v, fig. 86, *lithobioides* (Newp.), China, p. 84, *nudum* (Newp.), syn. *subinerme* (Mein.), Australia, p. 84, pl. v, fig. 88, *immarginatum* (Porath), syn. *indicum* (Kohl.), *subspinosum* (Tömösv.), Sunda Is., p. 85, pl. v, fig. 89, var. *celebense*, n. var., Celebes, p. 86, pl. v, fig. 90, *gymnopus* (Kohl.), Banda, Ceylon, p. 86, pl. v, ng. 91, var. *ceylonicum*, n. var., Ceylon, p. 86, pl. v, fig. 92, *id. t. c.*

Heterostoma characterised, p. 87 ; *id. t. c.*

Synoptical table of Indo-Australian species ; *id. t. c.* p. 88.

Heterostoma rubripes (Newp.), syn. *sulcidens*, *flava*, *megacephala*, *fasciata* (Newp.), Australia, p. 89, pl. v, fig. 93, *spinosum* (Newp.), Ceylon, p. 90, pl. v, fig. 94, var. *paucispinosum*, n. var., Ceylon, p. 90, pl. v, fig. 95, *rugosum*, n. sp., Halmahera, p. 91, pl. v, fig. 96, *rapax* (Gerv.), syn. *pygomega* (Kohl.), var. *triste* (Mein.), China, p. 91, pl. v, fig. 97, *bisulcatum* (Tömösv.), Borneo, p. 92, pl. v, fig. 98 ; *platycephalum* (Newp.), Australia, p. 92, pl. v, fig. 99, var. *lugubre*, n. var, p. 93, *cribriferum* (Gerv.), Australia, p. 93, pl. v, figs. 100 & 101, *brownii* (Butl.), New Britain, p. 94, pl. v, fig. 102, *id. t. c.*

Anodontostoma characterised, p. 95, *octosulcatum* (Tömösv.), Borneo, p. 95, pl. vi, fig. 104, *id. t. c.*

Otocryptops, n. g., for *Scolopocryptops rubiginosus* (L. Koch) *id. t. c.* p. 96, *O. rubiginosus* (L. Koch), syn. *confucii* (Karsch), China, Japan, p. 97, pl. vi, fig. 105, *id. t. c.*

Scolopocryptops luzonicus (Kohl.), syn. *boholensis* (Kohl.), *geophilinus* (Tömösv.), vars. *celebensis*, *australis*, n. vars., Philippine Is., Celebes, New Guinea, p. 98, pl. vi, fig. 106, *id. t. c.* *S. nigridius*, n. sp., Bloomington, p. 333, MCNEILL (2).

GEOPHILIDÆ.

Family characterised ; HAASE, (3) p. 99.

Synoptical table of Indo-Australian genera ; *id. t. c.* p. 100. ...fice of

Mecistocephalus spissus (Wood), Oahu, p. 101, *tahitiensis* ...stance of

Australia, Fiji, p. 101, pl. vi, fig. 108, *castaneiceps*, n. sp., ...ction with

(Java), p. 102, pl. vi, fig. 109, *tenuiculus* (L. Koch), Japan, p. 103, *punctifrons* (Newp.), syn. *guildingii* (Newp.), *rubriceps*, ? *pilosus* (Wood), *heteropus* (Humbert), ? *cephalotes* (Mein.), Tropical Asia, p. 104, pl. vi, figs. 107 & 110, *gigas*, n. sp.?, New Guinea, p. 105, pl. vi, fig. 111, *japonicus* (Mein.), Japan, p. 105, pl. vi, fig. 112, *microporus*, n. sp., Luzon, p. 106, pl. vi, fig. 115, *id. t. c.* *M. umbraticus*, n. sp., p. 332, *strigosus*, n. sp., p. 332, *foveatus*, n. sp., p. 333, Bloomington, McNeill (2).

Geophilus characterised ; Haase, (3) p. 107 : Berlese, pt. iv, No. 8.

Synoptical table of Indo-Australian species ; Haase, (3) p. 107.

Geophilus opinatus (Newp.), Australia, p. 108, *concolor* (Gerv.), Australia, p. 108, pl. vi, fig. 113, *procerus* (L. Koch), Japan, p. 109, *curtipes*, n. sp., Australia, p. 109, pl. vi, fig. 114, *polyporus*, n. sp., Urville I., p. 110, pl. vi, fig. 116, *id. t. c.* *G. brunneus*, n. sp., Bloomington, p. 331, *indianæ*, n. sp., La Fayette, p. 331, *varians*, n. sp., Bloomington, p. 332, McNeill (2). *G. glaber*, n. sp., California, p. 229, Bollman (3). *G. salemensis*, n. sp., Indiana, *setiger*, n. sp., Indiana, p. 82, *id.* (5). *G. flavidus* (Koch), pt. iv, No. 9, *simplex* (Gerv.), syn. *G. linearis* (auct.), No. 10, *ferrugineus* (Koch), pt. v, No. 9, *bonensis* (Mein.), No. 10, *longicornis* (Leach), pt. xliv, No. 7, from Italy, figured and described, Berlese.

Orphnæus characterised; Haase, (3) p. 111.

Orphnæus brevilabiatus (Newp.), (sub *Geophilus*), syn. *lividus* (Mein.), Tropical Countries, p. 111, pl. vi, fig. 117 ; *id. t. c.*

Himantarium characterised, p. 112, *insigne* (Mein.), Kooloo, *indicum* (Mein.), Kooloo, p. 113, *id. t. c.*

Gonibregmatus characterised, p. 113, *cumingii* (Newp.), Philippine Is., p. 113, pl. vi, fig. 118, *id. t. c.*

Scolioplanes acuminatus (Leach), Italy, pt. xliv, No. 8, figured and described ; Berlese.

Schendyla perforatus, n. sp., Pensacola, p. 325, pl. xi, figs. 6 & 7, McNeill (1).

DIPLOPODA.

Glomeridæ.

Glomeris pustulata (Oliv.), Italy, pt. xxxii, No. 1, *tridentina* (Latz.), Italy, Nos. 2 & 3, *distichella*, n. sp., Sicily, No. 4, figured and described, Berlese.

Gervaisia costata (Waga), Italy, pt. xxiii, No. 7, *id.*

Polydesmidæ.

Polydesmus, pt. ix, No. 6, *complanatus* (Linn.), pt. iii, No. 8, *collaris* (Koch), No 9, *macilentus* (Koch), No. 10, *pennsylvanicus* (Koch), pt. xii, No. 7, *edentulus* (Koch), No. 8, *testaceus* (Koch), No. 9, from various parts of Italy, figured and described, Berlese. *P. bimaculatus*, n. sp., Pensacola, p. 323, pl. xi, figs. 3–5, *varius*, n. sp., Pensacola, p. 323, pl. xi, figs. 1 & 2, McNeill (1). *P. castaneus*, n. sp., Indiana, p. 329, pl. xii,

erythropygus var., p. 329, pl. xii: *id.* (2). *P. nitidus*, n. sp., Florida, p. 45, BOLLMAN (4).

Chætaspis, n. g., p. 45, *albus*, n. sp., Indiana, p. 46, *id. t. c.*

Scytonotus cavernarus, n. sp., Mayfields Cave, Indiana, p. 46, *id.* No. 1.

Paradesmus evides, n. sp., Minnesota, p. 229, *id.* (3).

Strongylosoma poeyi, n. sp., Havana, p. 81, *id.* (5). *S. pallipes* (Oliv.), Italy, pt. ix, No. 10, figured and described, BERLESE.

Brachydesmus superbus (Latz.), Italy, pt. xxiii, No. 6, *id.*

LYSIOPETALIDÆ.

Lysiopetalum carinatum (Brandt), Apulia, pt. ii, No. 5, *fœtidissimum* (Savi), Apulia, No. 7; *seriale* (Koch), Tarvisino, No. 8, *sicanum*, n. sp., Sicily, pt. vi, No. 7, figured and described, BERLESE. *L. eudasyn*, n. sp., Bloomington, p. 330, MCNEILL (2).

Trichopetalum bollmani, n. sp., Bloomington, p. 330, pl. xii, *id. t. c.*

Cryptotrichus cæsioannulatus (Wood), Indiana, p. 333, pl. xii, *id. t. c.*

CHORDEUMIDÆ.

Chordeuma silvestre (Koch), Italy, pt. i, No. 5, BERLESE.

Prionosoma (Berl.), for *Megalosoma* (Fedr.), nom. preocc., *canestrinii* (Fedr.), Italy, pt. i, No. 7, *id.*

Atractosoma terreum (Fanz.), syn. *Atractosoma meridionale* (auct.), Italy, pt. ix, No. 9, *id.* *A. angustum*, n. sp., p. 507, figs. 1 & 2, n. vars. *hebescens*, *cæcum*, p. 508, Liguria in caves; LATZEL.

JULIDÆ.

Julus characterised, pt. viii, No. 1, *rufifrons* (Koch), Italy, pt. vi, No. 6, *sabulosus* (Linn.), Italy, No. 8, *sabulosus* (Linn.) var. *rubripes* (Koch), Italy, pt. xii, No. 10, *terrestris* (Koch), Italy, pt. vi, No. 9, *unilineatus* (Koch), Italy, No. 10, *varius* (Fabr.), syn. *nigripes* (auct.), Italy, pt. viii, No. 2, *varius* (Fabr.) var. *flavipes* (Koch), Sicily, Italy, No. 3, *oxypygus* (Brandt), Sicily, Italy, No. 4, *nemorensis* (Koch), syn. *colubrinus* (Fedr.), Italy, No. 5, *dalmaticus* (Koch), Italy, Sicily, Sardinia, No. 6, *ferreus* (Koch), syn. *serpentinus* (auct.), S. Italy, No. 7, *piceus* (Risso), syn. *albipes* (auct.), Italy, Sicily, No. 8, *margaritatus* (Fanz.), Sicily, No. 9, *stuxbergi* (Fanz.), Sicily, No. 10, *cavannæ* (Berl.), Etruria, pt. xxxii, No. 5, *lysiopetalinus* (Berl.), Veneto, pt. xlii, No. 10, *mediterraneus* (Latz.), Italy, pt. xxi, No. 3, *brandti* (Berl.), Sicily, No. 4, *aurozonatus* (Berl.), Etruria, No. 5, *decipiens* (Berl.), Italy, No. 6, *dicentrus* (Latz.), Italy, No. 7, *latzelii* (Berl.), Italy, No. 8, *œnolgus* (Berl.), Italy, pt xxiii, No. 3, *montivagus* (Latz.), Italy, pt. xxxi, No. 3, *chilopogon* (Latz.), Italy, pt. xxxi, No. 4, (*Mesoiulus*) (Berl.), pt. xxxi, No. 1, *paradoxus* (Berl.), Italy, pt. xxxi, No. 2, (*Typhloiulus*) *tobias* (Berl.), Veneto, pt. xlii, No. 9, figured and described, BERLESE. *J.* (*Allaiulus*) *nanus*, p. 14, (*Ommatoiulus*) *fœtidus*, p. 16, *londinensis* (Leach), p. 18, *luscus* (Mein.), p. 20, *pusillus* (Leach), p. 21, *luridus* (C. Koch), p. 23, *nemorensis* (C. Koch),

p. 25, *sabulosus* (Linn.), p. 27, *fasciatus* (C. Koch), p. 29, *unilineatus* (C. Koch), p. 31, *montivagus* (Latz.), p. 34, *terrestris* (Linn.), p. 38, from Silesia, described, HAASE (1). *J. multiannulatus*, n. sp., Iowa, p. 331, MCNEILL (2). *J. lineatus*, n. sp., Pensacola, p. 324, *id.* (1). *J. owenii*, n. sp., Indiana, BOLLMAN, (1) p. 25, and *id.* (3) p. 228. *J. virgatus* (Wood), Indiana, p. 26, *id.* (1). *J. minutus* (Brandt), syn. *pusillus* (Say), Virginia, Florida, p. 27, *id. t. c.* *J. stigmatosus* (Brandt), syn. *punctatus* (Say), Indiana, p. 28, *id. t. c.*

Blaniulus characterised, HAASE, (1) p. 5. *B. pulchellus* (C. Koch), Silesia, p. 6, described, *id. t. c.*; described and figured from Italy, BERLESE, pt. xxi, No. 2. *B. guttulatus* (Bosc), Silesia, HAASE, (1) p. 8.

Isobates characterised; HAASE, (1) p. 3. *I. varicornis* (C. Koch), Silesia, described, p. 6, *id. t. c.*; described and figured, Italy, BERLESE, pt. xxi, No. 10.

Paraiulus rugosus, n. sp., Pennsylvania, p. 81, BOLLMAN (5); *castaneus*, n. sp., Minnesota, p. 226, *id.* (3), and p. 35, *id.* (1); *pennsylvanicus* (Brandt), Pennsylvania, p. 36, *id. t. c.*; *canadensis* (Newp.), Canada, p. 37, *id. t. c.*; (*Pseudoiulus*, n. subg., p. 38) *obtectus*, n. sp, Indiana, Florida, p. 38, *id. t. c.* and *id.* (3) p. 227; *varius*, n. sp., California, *id. t. c.* p. 227, and p. 38, *id.* (1).

Nannolene, n. g., p. 39, *burkei*, n. sp., California, p. 40, *id.* (1), and p. 225, *id.* (3).

Spirobolus (*Rhinocricus*) *marginatus*, n. sp., Eastern United States, p. 28, *pensacolæ*, n. sp., Pensacola, p. 29, *id.* (1), and p. 227, *id.* (3); *uncigerus* (Wood), California, p. 30, *hebes*, n. sp., California, p. 31, *id.* (1), and p. 228, *id.* (3); *californicus* (Sauss.), California, p. 31, *spinigerus* (Wood), Florida, p. 32, *id.* (1).

Cambala (Gray), p. 40, BOLLMAN (1); *annulata* (Say), Indiana, p. 41, *id. t. c.*

POLYZONIDÆ.

Polyzonium characterised, pt. xlii, No. 8, BERLESE, and p. 42, HAASE (1); *pallidum* (Fanz.), Apulia, pt. xlii, No. 3, described and figured, BERLESE; *germanicum* (Brandt), Silesia, p. 43, HAASE (1).

Dolystenus (Fanz.), characterised and figured, BERLESE, pt. xiii, No. 2; *savii* (Fanz.), Apulia, figured and described, *id.* pt. i, No. 2.

Hexaglena, n. g., *cryptocephala*, n. sp., Indiana, p. 328, pl. xii, MCNEILL (2).

Pseudodesmus, n. g., p. 222, *verrucosus*, n. sp., Perak (Malay Peninsula), p. 223, POCOCK (1).

PAUROPODA.

Pauropus huxleyi (Lubb.), Italy, pt. xxi, No. 1, *pedunculatus* (Lubb.) Patavino, pt. xxiii, No. 1, figured and described, BERLESE.

SYMPHYLA.

Scolopendrella immaculata (Newp.), Patavino, pt. xxi, No. 9, *nivea* (Scop.), Italy, pt. xxiii, No. 4. *notacantha* (Gerv.), Italy, pt. xxiii, No. 5, figured and described, BERLESE.

ARCHYPOLYPODA.

WOODWARD (1) gives an historical review of the progress of our knowledge of extinct *Myriopoda*, and draws up a complete list of the genera and species hitherto described, stating the deposits in which they have been found. *Euphoberia ferox* (Salter) is described in detail, the description being illustrated with one plate and two woodcuts. A figure also is given on page 2 of *Acantherpestes major* (Meek & Worthen).

In a supplementary note to the above paper, the same author (2), by means of an accurate drawing taken from the original specimen, shows that Mr. Scudder was wrong in assigning *Euphoberia ferox* (Salter) to the genus *Acantherpestes*, since the features which were regarded as a third pair of tergal spines are in reality merely depressions.

PROTRACHEATA.

FLETCHER, J. J. Note on the discovery of *Peripatus* in Gippsland. P. Linn. Soc. N.S.W. (2) ii, p. 450.

On the reappearance of *Peripatus leuckartii* (Sänger) in Australia, and its ascertained range throughout the Continent.

BELL, F. J. Habitat of *Peripatus leuckartii*. Ann. N. H. xx, p. 252.

Specimens taken in Queensland Scrubs, near Wide Bay.

SCLATER, W. L. *Peripatus* of British Guiana. P. Z. S. 1887, pp. 130–137.

Notice of a species of *Peripatus* from British Guiana, which appears to be unlike any specimen yet named.

SHELDON, L. On the Development of *Peripatus novæ-zealandiæ*. Q. J. Micr. Sci. xxviii, pp. 205–237, 4 pls.

The egg is large, and provided with a thick shell. After segmentation, the nuclei of the blastoderm are irregularly arranged, and there appears to be no relation between the nuclei and the yolk. The embryo obtains its nourishment from the yolk contained in its body, and also from a peripheral layer of the same substance. Segmentation is centro-lecithal. At a later stage of development the embryo has the form of a double sac, the anterior ventral portion being opposed to the posterior ventral portion. It subsequently straightens itself, and the somites are represented by a series of definite cavities at the sides of the body. The appendages bud out along a lateral ridge, and the antennæ arise from the preoral lobes.

SEDGWICK, A. The Development of the Cape Species of *Peripatus*. *Op. cit.* xxvii, pp. 467–550.

The nervous system is developed from ventro-lateral thickenings of the ectoderm : beginning in front of the mouth, it extends backwards on each side. The eyes and antennal nerves are formed from the preoral ganglia. A distinction is drawn between the enterocœle and the pseudocœle : from the latter the body-cavity of the adult, the heart, and pericardium, are developed ; from the former, the nephridia and gonads ; the nephridia open into a vesicle in each appendage, and not into the pseudocœle. A cœlom is defined as a cavity, developed from the enteron or from mesoblastic spaces ; from its walls the gonads are formed ; it has no communication with the vascular system, but is connected with the exterior by means of nephridia. In *Arthropoda*, the cœlom persists as the gonads, but for the most part disappears, while the body cavity and vascular system originate from the pseudocœle ; this is not the case, as a rule, with other animals. It appears as a series of cavities, one in each mesoblastic somite. The dorsal portions of these cavities disappear in the anterior portion of the body ; but in the posterior portion they unite on each side to form the generative tube. The ventral portions which pass into the appendages persist, and give rise to the nephridia. *Peripatus capensis* is remarkable for the large size of the egg, combined with the absence of yolk. The paper also contains speculations as to the character of the ancestral Metazoon.

c
b
n

P(

some ve
vations are giv

A large, and s
the Russian langu

INSECTA.

By D. Sharp.

The number of memoirs published on Entomology during 1887 is large, but the year has not seen the introduction of any extensive systematic work. Bolivar (78), on one of the groups of *Orthoptera*, and Pictet & Saussure (563), commencement of a Catalogue of *Acridiidæ*, are perhaps the most important.

The larger part of the year's work has been devoted to the Faunistic department. The great work on Central America by Godman & Salvin (263) has made much progress, and the Grand Duke N. M. Romanoff has issued the third of his series of beautiful volumes on the *Lepidoptera* of Central Asia; Grandidier (274) has given an illustrated volume on the same order, and Trimen & Bowker (754) the larger part of a well executed work on S. African Butterflies. Moore's (515) work on the *Lepidoptera* of Ceylon has been completed. Sémènow commences (701) a series of papers descriptive of the results obtained during Potanin's journey in almost unknown parts of the Chinese empire. In *Diptera*, Williston's work (803) on the *Syrphidæ* is recorded; though it bears date 1886, it appears not to have reached the libraries in this country before the latter part of 1887.

Viallanes (771, 773) has given an extensive addition to our knowledge of the brain of Insects, and Rath (602) a brief note of an interesting nature relating to his observations on the histology of the sensitive parts of the antennæ and trophi.

Patten, too (557), has continued his observations on the structure and development of the eyes of Insects (and other invertebrata).

Marchal (468) has made a very interesting study, after the manner of Fabre, of the actions of a Hymenopterous Insect, and thinks it will be possible to harmonise these actions with the theory of their development by a process of evolution.

We are indebted to Osten-Sacken (543) for an abstract in English of Portschinsky's Russian papers on the biology of *Diptera*, which contain some very interesting facts and suggestions. Interesting biological observations are given in Poulton's (574–579) papers.

A large, and apparently increasing, number of papers is published in the Russian language, and other languages that are unknown to the great

majority of scientific workers over the world, such as Polish, Hungarian, and even Czech. The Recorder regrets that he can give little or no account of such papers, and may possibly have altogether omitted some from even the list of titles.

I.—TITLES.

ABEILLE. [See HEYDEN (304).]

1. ADLERZ, G. Myrmecologiska Studier. II. Svenska Myror och deras lefnadsförhållanden. Bih. Sv. Ak. Handl. xi, No. 18, 329 pp., 7 pls. [*Hymenoptera.*]

The paper is in Swedish, but pp. 321–329 give an abstract, in German, of its more important points. These relate to the nervous system, and development of the ganglia ; the alimentary canal and its metamorphoses ; division of labour ; the formation of new nests ; and a systematic description of the genera and species of Swedish Ants.

2. ——. Myrmecologiska Notiser. Ent. Tidskr. viii, pp. 41–50 & 155–165. [*Hymenoptera.*]

Relates chiefly to *Tomognathus sublævis.*

3. ALEMAN, J. *Frey-suila dugesii.* La Naturaleza (2) i, pp. 21–2[illegible] pl. iii. [*Rhynchota.*]

4. ALLARD, E. Description de six nouvelles espèces de *Coleoptères Hétéromères.* Janvier, 1886.

It is doubtful if this should be treated as a really published work ; it bears no name of publisher or place of publication, and is not even paged.

5. ——. Diagnoses de quelques espèces nouvelles de *Coléoptères Phytophages.* Bull. Soc. Ent. Fr. (6) vii, pp. cc & cci.

6. ——, & DODERO, A. Due nuovi *Coleotteri* italiani raccolti in Sardegna da U. L. de S. Sofia. Bull. Ent. Ital. xix, pp. 333 & 334.

ALOI. [See GRASSI, G. B. (277).]

7. ALPHERAKY, S. Diagnosen einiger neuer centralasiatischer *Lepidopteren.* S. E. Z. xlviii, pp. 167–171.

Published in anticipation of descriptions to appear in "Memoires sur les Lepidoptères."

——. [See also ROMANOFF (659).]

ALWOOD, W. B. [See RILEY (637).]

8. AMELANG, G. Ueber Käferkultus. B. E. Z. xxxi, pp. 79–88.

An account of some popular ideas and rhymes about beetles.

9. ——. Die Schmetterlings-fauna der Mosigkauer (Dessauer) H[illegible]. *T. c.* pp. 243–286, map. [*Lepidoptera.*]

The locality (near Leipsig) is described in detail, and a list is given of its *Macro-Lepidoptera* given.

10. [Amelang, G.] *Sesia spheciformis.* Biologisches. Ent. Nachr. xiii, pp. 193–198. [*Lepidoptera.*]

11. André, Ernest. Description de quelques fourmis nouvelles ou imparfaitement connues. Rev. d'Ent. vi, pp. 280–298. [*Hymenoptera.*]

The species are from various regions.

12. Argod, A. Description d'une nouvelle espèce française de *Carabique.* Bull. Soc. Ent. Fr. (6) vii, p. clxix. [*Coleoptera.*]

13. Arkle, J. Climatic experiment on pupæ of *Lepidoptera.* Ent. xx, p. 270.

Some pupæ were taken to a warmer climate.

14. Ashmead, W. H. On the cynipidous galls of Florida, with descriptions of new species and synopses of the described species of North America. Tr. Am. Ent. Soc. xiv, pp. 125–158. [*Hymenoptera.*]

Many n. spp. and some new genera of the Insects are described, and the galls tabulated in accordance with their appearance; the plants they occur on are mentioned.

15. ——. Studies on the North American *Chalcididæ*, with descriptions of new species, chiefly from Florida. *T. c.* pp. 183–203. [*Hymenoptera.*]

16. ——. Studies on the North-American *Proctotrupidæ*, with descriptions of new species from Florida. Pt. i. Ent. Am. iii, pp. 73–76, 97–100, & 117–119.

17. ——. Description of a new *Proctotrupid.* *T. c.* p. 128. [*Hymenoptera.*]

18. ——. Studies of the North-American *Proctotrupidæ*, with descriptions of new species from Florida. Canad. Ent. xix, pp. 125 & 192.

19. ——. *Hemipterological* contributions. No. i. Ent. Am. iii, pp. 155 & 156.

——. [See also Riley (637).]

20. Atkinson, E. T. Notes on Indian *Rhynchota*: *Heteroptera.* No. 1: J. A. S. B. pp. 22–61. No. 2: pp. 145–205.

Consists of redescriptions, or transcriptions, of known species inhabiting India.

21. Atkinson, G. F. Observations on the female form of *Phengodes laticollis.* Am. Nat. xxi, pp. 853–856, woodcut. [*Coleoptera.*].

22. °Aubert, L. Étude sur les Insectes Vésicants en général, et Essai sur quelques espèces exotiques en particulier. Montpellier: 1887, 80 pp. [*Cf.* Zool. Anz. xi, p. 9.]

23. Aurivillius, C. *Lepidoptera* insamlade i nordligaste Asien under Vega-Expeditionen. In Vega-Expeditionens Vetenskapliga iakttagelser, utgifna af A. E. Nordenskiöld. iv. pp. 73–80.

8 species, 3 unnamed: three *Rhopalocera.*

24. [Aurivillius, C.] Revisio monographica *Microceridarum* et *Protomantinarum*. Sv. Ak. Handl. xxi, No. 15, pp. 1–87, pls. i–x. [*Coleoptera.*]

In this monograph all the species are figured, and two or three are described as new.

25. ——. Förteckning öfver en samling *Coleoptera* och *Lepidoptera* från Kongoflodens område, skänkt till Riksmuseum af Loztnant M. Juhlin-Dannfelt. Œfv. Ak. Förh. 1887, pp. 305–314.

26. ——. Ytterligare om Lycænidernas larver och Myrorna. Ent. Tidskr. viii, pp. 63–65.

27. ——. Nya *Coleoptera Longicornia*. II. *T. c.* pp. 191–197.

28. ——. Entomologiska anteckningar från norra Roslagen. *T. c.* pp. 179–185 & 204. [*Lepidoptera.*]

29. Baker, G. F. Description of a New Species of the *Lepidopterous* Genus *Carama*, together with a few Notes on the Genus. Tr. E. Soc. 1887, pp. 133–136, pl. vi.

30. ——. Description of a New Genus of *Rhopalocera* allied to *Anteros*, Hew. *T. c.* pp. 175 & 176.

31. Balfour, E. The Agricultural Pests of India, and of Eastern and Southern Asia, vegetable and animal, injurious to Man and his products. London: 1887, pp. 127.

Definitions for popular use arranged alphabetically. Reviewed Ann. N. H. (5) xx, pp. 74–76.

32. Ballion, E. Kurze notizen über einige russische *Blaps*-Arten. Bull. Mosc. (n.s.) i, pp. 900–923. [*Coleoptera.*]

33. Baly, J. S. Notes on *Galerucinæ*, and Descriptions of Two New Species of *Hispidæ*. Ent. M. M. xxiii, pp. 268–270. [*Coleoptera.*]

34. ——. Description of a New Species of Phytophagous *Coleoptera*, alleged to be Destructive to the Dhan Crops in the Chittagong District. J. A. S. B. lv, p. 412.

35. Barbiche, —. Faune synoptique des *Odonates* de la Lorraine. Bull. Soc. Metz (2), xvi, pp. 11–16, and xvii, pp. 85–163.

A great deal of pains has evidently been expended on this local work.

36. Bargagli, P. Rassegna biologica di Rincofori europei. Bull. Ent. Ital. xix, pp. 3–34. [*Coleoptera.*]

This completes the work commenced four years back.

37. Bates, H. W. On a New Species of *Brachyonychus* from the Mergui Archipelago. J. L. S. xxi, p. 135. [*Coleoptera.*]

38. ——. Three New *Longicorn Coleoptera* from S. America. P[illegible] xxiv, pp. 62 & 63. [illegible] of its *Macro-*[illegible]

[See also Godman & Salvin (263), and Jacoby (339).]

39. Baudi, F. *Mylabridum* seu *Bruchidum* europeæ et . ·itimarum regionum faunæ recensitio. Deutsche e. Z. xxxi, pp. 33, 80, & 449–494. [*Coleoptera.*]

Conclusion of the paper recorded in Zool. Rec. xxiii.

40. Beauregard, H. Note sur la spermatogenèse chez la *Cantharide*. C.R. Soc. Biol. (8) iv, pp. 331 & 332.

The formation of the spermatoblast is by division, not budding.

41. ——. Récherches sur les Insectes Vésicants (Suite). J. de l'Anat. Phys. xxiii, pp. 124–163, pls. xii–xvii. [*Coleoptera.*]

Relates to spermatozoa, spermatogenesis, and the male and female internal and external sexual organs. [Summary, J. R. Micr. Soc. 1887, pp. 581 & 582.]

42. Becker, T. Beiträge zur Kenntniss der *Dipteren*-Fauna von St. Moritz. B. E. Z. xxxi, pp. 93–141.

Describes several n. spp. and 1 n. g., and redescribes and notices many others.

43. Bedel, L. Faune des *Coléoptères* du bassin de la Seine, &c. Vol. vi.

Pp. 313–444 have been published, completing this volume devoted to the *Rhyncophora*.

44. ——. Recherches sur les *Coléoptères* du nord de l'Afrique. Recherches synonymiques. Ann. Soc. Ent. Fr. (6) vii, pp. 195–202.

45. ——. Description d'un *Curculionide* nouveau. Bull. Soc. Ent. Fr. (6) vii, p. clxx. [*Coleoptera.*]

46. Behrens, J. A New Variety of *Papilio* and a New *Catocala* from the Pacific coast. Canad. Ent. xix, p. 198. [*Lepidoptera.*]

47. Behrens, W. Materialen zu einer Monographie der Curculionengruppe *Pachyrrhynchidæ*. S. E. Z. xlviii, pp. 211–257. [*Coleoptera.*]

48. Behrens, W. J. Zwei neue *Pythiden*. *T. c.* pp. 18–22, pl. unnumbered. [*Coleoptera.*]

Two new genera from S. Georgia islands.

49. Beling, T. Kleiner Beitrag zur Naturgeschichte der der Land- und Gartenwirthschaft schädlichen Insecten. Wien. ent. Z. vi, pp. 61–63.

Includes description of a doubtfully new *Sminthurus*.

50. Bellevoye, A. Contributions à la tératologie entomologique. Bull. Soc. Metz. (2) xvii, pp. 181–188. [*Coleoptera.*]

51. Bellonci, G. Intorno al ganglio ottico degli artropodi superiori.

23. At Month. Int. J. Anat. Hist. iii, pp. 195–203, pl. vii.

Vega- lines about the common Fly is all there is relating to Insects.

gelser, L. F. M.-J. *Lathridiens* nouveaux ou peu connus. Rev. d'Ent.

8 species, 3 unn. 29. [*Coleoptera.*]

53. Bergé, A. Des couleurs metalliques chez les insectes et spécialement chez les *Coléoptères*. Ann. Ent. Belg. xxxi, pp. 315–325.

The experiments have not thrown complete light on the question discussed; but he considers that the metallic colours are probably due to a layer of pigment on the cuticle and a dark colour beneath this. The *Cassididæ* are, however, an exception.

54. Bergroth, E. Notes sur quelques *Aradides* nouveaux ou peu connus. Rev. d'Ent. vi, pp. 244–247. [*Rhynchota.*]

55. ——. Entomologische Parenthesen. Ent. Nachr. xiii, pp. 147–152.

Discusses some general and special questions of nomenclature relating to *Diptera* and *Rhynchota*.

Berthoud, P. [See Forel, A. (236).]

56. Bertkau, P. Bericht über die wissenschaftlichen Leistungen im Gebiete der Entomologie während des Jahres, 1886. Arch. f. Nat. liii, Band 2, Heft 2, pp. 1–58 & 113–233.

57. Bertolini, S. Contribuzione alla fauna Trentina dei *Coleotteri*. Bull. Ent. Ital. xix, pp. 84–135.

A list of names and localities.

58. Beutenmuller, W. Descriptions of new species of North American *Tineidæ*. Ent. Am. iii, pp. 139 & 140. [*Lepidoptera.*]

59. Beuthin, H. Erster Beitrag zur Kentniss der *Dipteren* der Umgegend von Hamburg. Verh. Ver. Hamb. vi, pp. 46–86.

Noticed by Mik, Wien. ent. Z. vi, p. 200.

60. ——. Verzeichniss der bisher um Hamburg beobachteten *Rhynchota*. Verh. Ver. Hamb. vi, pp. 87–91.

61. Beyerinck, M. W. Over het Cecidium van *Nematus capreæ* aan *Salix amygdalina*. Versl. Ak. Amst. (3) iii, pp. 11–21.

62. ——. De la Cecidie produite par le *Nematus capreæ* sur le *Salix amygdalina*. Arch. Neerl. xxi, pp. 475–492.

A translation of the preceding. [Summary, J. R. Micr. Soc. 1887, p. 746.]

63. °Bielz, E. A. Siebenbürgens Käferfauna nach ihrer Erforschung bis zum Schlusse des Jahres, 1886. Hermannstadt: 1887. *Cf.* Wien. ent. Z. vi, p. 247. [*Coleoptera.*]

64. Bigot, J.-M.-F. *Diptères* nouveaux ou peu connus. 30e partie. xxxviii. Liste synoptique des espèces appartenant au genre *Loxocera* (Meigen, Illig. Magaz., ii, p. 275, 1803] = *Syrphus* et *Mulio* pt. Fabr., = *Nemotelus*, pt. Schrank. Fam. des *Agromyzidæ*, stirps 24e, *Chilizinæ* (v. Rondani, Prodr., vol. i, 1856), *Psilinæ* (Schiner). Ann. Soc. Ent. Fr. (6) vii, pp. 17–19.

65. ——. *Diptères* nouveaux ou peu connus. 31e partie. xxxix. Descriptions de nouvelles espèces de *Stratiomydi* et de *Conopsidi*. T[illegible] of pp. 20–46.

Describes species from most regions, many from North [illegible] principally of the genus *Conops*.

66. [Bigot, J.-M.-F.] *Diptères* nouveaux ou peu connus. 32e partie. Descriptions de nouvelles espèces de *Myopidi*. xl. *T. c.* pp. 203–208.

67. ——. *Diptères* nouveaux ou peu connus. Bull. Soc. Z. Fr. xii, pp. 97–118.

Devoted to *Leptides*.

68. ——. *Diptères* nouveaux ou peu connus. *T. c.* pp. 581–617.

Devoted to *Muscidæ*, and contains some proposals about the classification of the family.

69. ——. *Diptera* from Japan and Ecuador. Bull. Soc. Ent. Fr. (6) vii, pp. lxxvi–lxxx.

70. ——. Diagnoses de quelques espèces nouvelles de *Diptères*. *T. c.* pp. cxxxix–cxlii.

22 species from North America and Mexico.

71. ——. *Diptères* nouveaux provenant de l'Amérique du Nord. *T. c.* pp. clxxx–clxxxii.

72. Blachier, C. Notice sur les *Lepidoptères* diurnes de l'île de Ténériffe. Feuill. Nat. xvii, pp. 100–103.

Includes description of a new *Boarmia!*

73. Blochmann, F. Ueber die Richtungskörper bei Insekteneiern. Morph. JB. xii, pp. 544–574, pls. xxvi & xxvii.

He considers these bodies must be present in all Insects, and figures those in *Aphis aceris*, *Blatta germanica*, *Musca vomitoria*. [Summary, J. R. Micr. Soc. 1887, p. 743.]

74. ——. Ueber die Richtungskörper bei Insekteneiern. Biol. Centralbl. vii, pp. 108–111.

Relates more particularly to the eggs of *Musca vomitoria* and the winter eggs of *Aphis aceris*. [Summary, see J. R. Micr. Soc. 1887, p. 576.]

75. ——. Ueber die Geschlechtsgeneration von *Chermes abietis*, L. *T. c.* pp. 416–420. [*Rhynchota.*]

Summary, J. R. Micr. Soc. 1887, p. 948. Translation, Ann. N. H. (5) xx, pp. 390–392.

76. Bohatsch, O. Die *Eupithecien* Oesterreich-Ungarns. Wien. ent. Z. vi, pp. 117–129. [*Lepidoptera.*]

Includes 72 species, and observations on the food-plants, &c., of several.

77. Boise, P. Le cardia chez les *Apiaires*. Feuil. Nat. xvii, pp. 111–114, woodcut.

78. Bolivar, J. Essai sur les *Acridiens* de la tribu des *Tettigidæ*. Ann. Ent. Belg. xxxi, pp. 175–313, pls. iv & v. [*Orthoptera.*]

An important and carefully-executed work. He divides the tribe into 7 sections, with 49 genera and 220 species. Walker's species described in the Brit. Mus. Catalogue are not included, as he considers them not properly characterised.

79. [Bolivar, J.] Especies nuevas ó críticas de *Ortópteros*. An. Soc. Esp. xvi, pp. 89–114, pl. iv.

Besides n. spp., this describes more fully species of which he has previously published only diagnoses.

80. Bos, H. Iets over de nederlandsche *Mierenfauna*. Tijdschr. Ent. xxx. pp. 181–198. [*Hymenoptera.*]

A list with localities and remarks ; includes 20 spp. *Formicidæ*, 12 of *Myrmicidæ*.

81. Bos, R. Futteränderung bei Insekten. Biol. Centralbl. vii, pp. 320–331.

The first part contains some facts about carnivorous species becoming herbivorous, and so on ; the second consists of observations on the sheep-fly disease. There is a brief additional note on the latter point, p. 632, *t. c.*

82. Bourgeois, J. Faune gallorhenane. Vol. iv, pp. 133–156. [*Coleoptera.*]

Pp. 133–156, dealing with *Telephoridæ*, have been published this year in connection with Rev. d'Ent.

83. ——. *Lycides* from Brazil. Bull. Soc. Ent. Fr. pp. liii & lxvi. [*Coleoptera.*]

84. ——. Deux nouvelles espèces de *Malacodermes* du Brésil. *T.* p. cxxxi. [*Coleoptera.*]

85. Bower, F. O. On *Humboldtia laurifolia* as a *Myrmekophilous* plant. P. Phil. Soc. Glasg. xviii, pp. 320–326, pl. x. [*Hymenoptera.*]

Bowker, J. H. [See Trimen (754).]

86. Brauer, F. Beziehungen der Descendenzlehre zur Systematik. Ein Vortrag gehalten im Vereine zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien am 23 März, 1887. Vienna : 1887, 38 pp.

Variety in views as to species and higher groups is mentioned. He considers that the groups of Insects are frequently of higher value systematically than the groups of *Vertebrata* nominally corresponding with them.

87. ——. Ein veraltetes Insectensystem Newman's. Ent. Nachr. xiii, pp. 329–332. [*Cf.* Karsch (357).]

88. ——. Ueber die Verwandlung der *Meloiden*. Verh. z.-b. Wien, xxxvii, pp. 633–642. [*Coleoptera.*]

The larvæ of *Meloe* have the same number of moults as other *Coleoptera* : they are classified under four types.

89. ——. Nachträge zur Monographie der *Oestriden*. Wien. ent. Z. vi. ii. Zur Charakteristik und Verwandtschaft der Oestridengruppen im Larven- und vollkommenen Zustande, pp. 4–16. iii. Zusätze und Verbesserungen zur Literatur der Oestriden, pp. 71–76. iv. [illegible] of *Cobboldia elephantis*, pp. 217–223, pl. iii. [*Diptera.*]

90. ——. Beitrag zur Kenntniss der Verwandlung der [illegible]ection with Gattung *Symphrasis*. Zool. Anz. x, pp. 212–218. [illegible]

91. Brendel, E. Some Corrections in the Family *Pselaphidæ*. Tr. Am. Ent. Soc. xiv, pp. 204–208. [*Coleoptera.*]

92. Bridgman, J. B. Further Additions to the Rev. T. A. Marshall's Catalogue of British *Ichneumonidæ*. Tr. E. Soc. 1887, pp. 361–379. [*Hymenoptera.*]

Includes several n. spp.

93. ——. Concerning *Anomalon tenuicorne*, Gr., &c. Ent. M. M. xxiv, pp. 149 & 150. [*Hymenoptera.*]

94. Brischke, C. G. A. Ueber Parthenogenesis bei den Blattwespen. Schr. Ges. Danz. (2) vi, pp. 168–172. [*Hymenoptera.*]

95. Brisout de Barneville, Ch. Description d'un *Coléoptère* nouveau de l'Algerie. Bull. Soc. Ent. Fr. (6) vii, p. cxcii.

96. Brown, S. Report on the Locust Campaign of 1885–6. Presented to both Houses of Parliament by command of Her Majesty, February, 1887. Blue-book, C.—4960.

It appears from this book that the estimated number of egg-cases deposited in Cyprus has decreased from 5,076,000,000 in 1883–1884, to 249,300,000 in 1885–1886.

97. Browne, E. T. Notes on a Species of *Orthezia* found in Kew Gardens. J. Quek. Club (2) iii, pp. 169–172, pls. xvi & xvii. [*Rhynchota.*]

Supposed to be a n. sp.

Bruner, L. [See Riley (637).]

98. Buckler, W. The Larvæ of the British Butterflies and Moths. Edited by H. T. Stainton. Vol. II. The *Sphinges*, or Hawk-moths, and part of the *Bombyces*, pp. xi & 172, pls. xviii–xxxv. London: Ray Society.

Noticed in Ann. N. H. (5) xix, p. 464.

99. Bugnion, E. Récherches sur la ponte du *Phlœosinus thujæ*, suivies de quelques observations sur la structure de l'ovaire. Rev. d'Ent. vi, pp. 129–138, pl. iii. [*Coleoptera.*]

100. Butler, A. G. Report on a Zoological Collection made by the Officers of H.M.S. 'Flying Fish' at Christmas Island, Indian Ocean. VII. *Lepidoptera*. P. Z. S. 1887, pp. 522 & 523.

101. ——. On Two Small Collections of African *Lepidoptera* recently received from Mr. H. H. Johnston. *T. c.* pp. 567–574.

102. ——. A New Genus of *Pierinæ* allied to *Appias*. Ent. M. M. xxiii, p. 248. [*Lepidoptera.*]

103. ——. Description of a New Butterfly allied to *Vanessa antiopa*. *T. c.* p. 103. [*Lepidoptera.*]

104. ——. Descriptions of New Species of *Heterocerous Lepidoptera* An[illegible] (*Pyralites*) from the Solomon Islands. Ann. N. H. (5) xx, pp. 114–124.

7 sections, [illegible]. Description of a New Genus of *Chalcosiid* Moths allied to the Brit. Mus[illegible] *T. c.* pp. 180 & 181. [*Lepidoptera.*]

properly charact[illegible]

106. [Butler, A. G.] Descriptions of New Species of *Bombycid Lepidoptera* from the Solomon Islands. Ann. N. H. (5) xix, pp. 214–225.

107. ——. Descriptions of New Species of *Lepidoptera* from the Solomon Islands, collected by C. M. Woodford, Esq. *Op. cit.* xx, pp. 240–247.

108. ——. Descriptions of New Species of Moths (*Noctuites*) from the Solomon Islands. *Op. cit.* xix, pp. 432–439. [*Lepidoptera.*]

109. Buysson, H. du. Revision des *Silesis* du bassin de la Méditerranée. Rev. d'Ent. vi, pp. 140–145. [*Coleoptera.*]

110. Buysson, R. du. *Chrysidides* inédites. *T. c.* pp. 6–8. [*Hymenoptera.*]

111. ——. Descriptions de *Chrysidides* nouvelles. *T. c.* pp. 167–201. [*Hymenoptera.*]

This contains also descriptions of 3 new *Aculeata* by Perez.

112. °Calandruccio, S. Insetti parassiti del uomo. Gazzetta degli Ospitali No. 84 et 85. Milan: 1885. [Summary, Bull. Ent. Ital. xix, p. 137.]

113. Calberla, H. Die *Macrolepidopteren*-fauna der römischen Campagna und der angrenzenden provinzen Mittel-Italiens. CB. Iris, i, pp. 119–158.

List of names, localities, and dates, with remarks. A few varieties are described, for which names indicating the locality are used.

114. Cameron, P. *Hymenopterological* Notes. Ent. M. M. xxii pp. 193–195.

115. ——. On a New Species of *Strumigenys* from Japan. P. Manch. Soc. xxv, pp. 229–232. [*Hymenoptera.*]

[See also Godman & Salvin (263).]

116. Campbell, F. Maule. The Hessian Fly. Tr. Hertf. Soc. iv pp. 180–192.

117. Camus, G. La *Bucculatrix turatii*, Standfuss, parassita della Marruca. Atti. Soc. Mod. Rend, (3) iii, pp. 112–114 & 126 [*Lepidoptera.*]

The description of this species was made by Standfuss and is translated by Camus.

118. Candèze, E. Description d'un Élatéride nouveau de l'Amerique méridionale. Notes Leyd. Mus. ix, pp. 187 & 188. [*Coleoptera.*]

119. ——. Description d'Élatérides nouveaux provenant de Normantown, baie de Carpentaria. *T. c.* pp. 285–290. [*Coleoptera.*]

120. Carlini, A. de. Rincoti del Sottoceneri. Bull. Ent. Ital. xix, pp. 258–277. [*Rhynchota.*]

A list of 125 species, 1 being new; this Ferrari describes.

121. Casagrande, D. Sulle trasformazioni che subisce il sistema digerente dei *Lepidotteri* passando dallo stato larvale a quello d'insetto perfetto. Bull. Ent. Ital. xix, pp. 323–332, pls. viii*a*, ix*a*, & x*a*.

The species used was *Bombyx mori*, L.

122. Casey, T. L. On a new genus of S. African *Pselaphidæ*. Tr. E. Soc. 1887, pp. 381–383. [*Coleoptera.*]

230 ——. On some new N. American *Pselaphidæ*. Bull. Cal. Ac. Sci. ii, pp. 455–482, pl. xvi. [*Coleoptera.*]

The plate is executed by a new process of photography from drawings, and is remarkably successful.

124. Caulfield, F. B. Canadian *Orthoptera*. Canad. Rec. ii, pp. 378–383 & 393–404.

Remarks on habits and localities, and list of the species of Canada.

125. Champion, G. C. On the priority of various generic names in use in *Coleoptera*. Ent. M. M. xxiii, pp. 227–230.

——. [See also Godman & Salvin (263).]

126. Chapman, T. A. On the moulting of the larva of *Orgyia antiqua*. Ent. M. M. xxiii, pp. 224–227. [*Lepidoptera.*] [*Cf.* also Riley, *l. c.* p. 274.]

127. Chatin, J. Terminaisons antennaires chez le *Tinea tapezella*. Bull. Soc. Philom. xi, pp. 145 & 146.

Brief note on the antennary nerve.

128. ——. Recherches morphologiques sur les pièces mandibulaires, maxillaires et labiales des *Hymenoptères*. Paris: 1887, 4to, 41 pp., avec 2 pl. [*Cf.* Zool. Anz. xi, p. 102.]

129. °Cheshire, F. R. Bees and Beekeeping: scientific and practical. Vol. 2: Practical. London: 1887, 650 pp.

130. Cholodkovsky, N. Sur la morphologie de l'appareil urinaire des *Lepidoptères*. Arch. Biol. vi, pp. 497–514, pl. xvii.

Particulars as to and figures of the chief types of Malpighian vessels in the order, and a discussion of their signification. [Summary, J. R. Micr. Soc. 1887, pp. 381 & 382.]

131. ——. Ueber die Prothoracalanhänge bei *Lepidopteren*. Zool. Anz. x, pp. 102 & 103.

He still considers these organs represent rudimentary prothoracic wings. [Summary, J. R. Micr. Soc. 1887, p. 381.]

132. Christoph, H. Diagnosen neuer *Lepidopteren* aus Tekke. S. E. Z. xlviii, pp. 162–167.

To secure priority for certain species to be published in "Memoires sur les Lepidoptères."

——. [See also Romanoff (659).]

133. Claypole, —. The destruction of Insect life by the electric lamps. Rep. E. Soc. Ont. xvii, p. 12.

The lamps in the city of Akron destroyed more than one million individuals of *Crambus mutabilis* in three months.

134. °Cobelli, R. Gli *Ortotteri* genuini del Trentino. x, pubbl. fatt per cura del Museo Civico di Rovereto. Rovereto : 1886 (con. ta [*Cf.* Bull. Ent. Ital. xix, pp. 141 & 142].

This is said to contain chapters on the stridulating and tympan organs.

135. Colenso, W. Description of a large and new species of *Orthopterous* Insect, of the genus *Hemideina*, Walk. Tr. N. Z. Inst. xix, pp. 145–147.

136. Comstock, J. H. On the homologies of the wing-veins of Insects. Am. Nat. xxi, pp. 932–934.

Relates to the views of Adolph and Redtenbacher.

137. ——. Note on respiration of aquatic Bugs. *T. c.* pp. 577 & 578. [*Rhynchota.*]

138. Coquillett, D. W. Monograph of the species belonging to the genus *Anthrax* from America, north of Mexico. Tr. Am. Ent. Soc. xiv, pp. 159–182. [*Diptera.*]

139. ——. Synopsis of the North American species of *Lordotus*. Ent. Am. iii, pp. 115 & 116. [*Diptera.*]

140. ——. Notes on the genus *Ecoprosopa*. Canad. Ent. xix, pp. 12–14. [*Diptera.*]

141. Costa, A. Miscellanea entomologica. Memoria prima. Rer Acc. Nap. (2) i, pp. 242–244.

Descriptions of a few new *Hymenoptera*, 1 *Crambus*, and 1 *Hemipteron* mostly from Sicily.

142. ——. Fauna del regno di Napoli. Fasc. 119. *Pompilidei*, pp. 41 (pls. viii & viii*bis*?). [*Hymenoptera.*]

Pp. 41–48 are dated 30 Giugno, 1886; pp. 49–56, 8 Agosto, 1 pp. 57–66, 31 Agosto, 1886; and pp. 66–69, 10 Ottobre, 1886.

143. °——. Prospetto degli *Imenotteri* italiani, da servire di Pr di Imenotterologia italiana. P. 2. *Pompilidei, Scoliidei, S Tifiidei*, e *Mutillidei*. Naples : 1887, 4to, 171 pp, 3 pl. col. Anz. xi, p. 102].

144. Cotes, E. C., & Swinhoe, C. A catalogue of the Moth compiled by. Pt. I : *Sphinges*. Pt. II : *Bombyces*. Calc 254 pp.

The area is not defined, but includes British Burmah, Cey Andaman and Mergui Islands. The total number of specie 1623, of which 187 are *Sphinges*.

145. Cresson, E. T. Synopsis of the *Hymenoptera* of of Mexico, together with a catalogue of the descri bibliography. Part I : Families and Genera. Tr. supplementary Vol., 1887, pp. iv & 1–154.

Apparently intended to serve as an introductory work t the study of the systematic arrangement and nomenclature of N. A rican *Hymenoptera*.

146. Croissandeau, J. Description d'un *Neuraphes* nouveau de France Rev. d'Ent. vi, p. 122. [*Coleoptera.*]

23[illegible]. Crowley, P. Description of a new species of *Synchloë* from Kilimanjaro. Tr. E. Soc. 1887, p. 35, pl. iii. [*Lepidoptera.*]

148. °Cuccati, G. Sulla struttura del ganglio sopraesofageo di alcuni ortotteri. Bologna : 1887.

148a. ——. Intorno alla struttura del cervello della *Somomya erythrocephala*. Nota preventiva. Bull. Ent. Ital. xix, pp. 286–288.

149. Czwalina, G. Zwei neue Arten der Gattung *Byrrhus*, L. Deutsche e. Z. xxxi, pp. 495 & 496. [*Coleoptera.*]

150. Dalla Torre, K. W. v. Die Zoologische Literatur von Tirol und Vorarlberg. Z. Ferdinand, xxx, pp. 323–407.

151. °Damanti, P. Rapporti tra i nettari estranuziali della Silene fuscata Lam. e le Formiche. Giorn. Soc. Acc. e Agr. Sic. (n.s.) xxv. [*Cf.* Bull. Ent. Ital. xix, p. 142.]

152. Davis, W. T. Notes on the *Locustidæ*, with description of a new species. Canad. Ent. xix, pp. 56 & 57. [*Orthoptera.*]

153. Decroix, E. Les sauterelles en Algerie. Bull. Soc. Acclim. (4) iv, pp. 678–683. [*Orthoptera.*]

12 An account of enormous quantities of locusts in Algeria, and some odes of destroying them. In the early part of 1886, 7,250,000,000 eggs were collected in the sous-préfecture of Sétif.

154. Deichmüller, J. V. Ueber zwei Blattinen-Reste aus den unteren Lebacher Schichten der Rheinprovinz. Ber. Senck. Ges. 1887, pp. 89–94, pl. iii.

130. , Desbrochers des Loges. Description d'une nouvelle espèce Part française de *Curculionide*. Bull. Soc. Ent. Fr. (6) vii, p. clxi. in the *Coleoptera.*]

Micr. So—. *Sitones faillæ*. Nat. Sicil. vi, p. 160. [*Coleoptera.*]

131. ——witz, J. Ueber Gesetzmässigkeit in der Ortsveränderung der x, pp. matozoen und in der Vereinigung derselben mit dem Ei. r. He still ges. Phys. xxxviii, pp. 358–385, pl. iv.

wings. [Suto *Periplaneta orientalis*. [Summary, J. R. Micr. Soc. (2) vi,

132. Christ z, H. Westafrikanische Tagschmetterlinge. Nov. Act. Ac. xlviii, pp. t. cur. l, pp. 365–372, pl. xvii. [*Lepidoptera.*]

To secure p mes, accompanied by a coloured plate.

sur les Lepidop

——. [Sec n neuer centralafrikanischer *Nymphalide*. Ent. Nachr. & 146, woodcuts. [*Lepidoptera.*]

133. Claypole, Aufbewahrung der Jugendstadien von Mikro-lepidoptern 160. R und anderer kleiner Insekten. Deutsche e. Z. xxxi, pp. 189–191.

The specimens are to be cooked in hot alcohol and preserved in glass-tubes.

161. Distant, W. L. Contributions to a Knowledge of Oriental *Rhynchota*. Part i. Fam. *Pentatomidæ*. Tr. E. Soc. 1887, pp. 341–3[illegible] pl. xii.

162. ——. Enumeration of the Van Volxem collection of *Rhynchota* contained in the Brussels Museum. Part i. C.R. ent. Belg. 1887, pp. lvi–lxvi.

Includes a new genus and several n. spp. from S. America.

163. ——. Descriptions of new species of *Cicadidæ*. Ann. N. H. (5) xx, pp. 226–231. [*Rhynchota.*]

164. ——. Notes on *Sphingidæ* from the Malay Peninsula, and description of a new species of *Ambulyx* from North Borneo. *T. c.* pp. 270–272. [*Lepidoptera.*]

165. ——. Descriptions of two new species of *Cicadidæ*. *T. c.* pp. 415 & 416. [*Rhynchota.*]

——. [See also Godman & Salvin (263).]

166. ——, & Pryer, W. B. On the *Rhopalocera* of Northern Borneo. Ann. N. H. (5) xix, pt. 1, pp. 41–56, pt. 2, pp. 264–275. [*Lepidoptera.*]

A list of 196 species, several of them new.

167. Dobrée, N. F. On melanism. Ent. xx, pp. 25–28. [*Lepidoptera.*]

Cf. also Cockerell, *t. c.* pp. 58 & 59, and Weir, *t. c.* pp. 85–87.

168. Dodero, A. Déscription d'une nouvelle espèce de *Cephennium*. Rev. d'Ent. vi. p. 63. [*Coleoptera.*]

——. [See also Allard, E. (6).]

169. Dohrn, H. Zwei neue *Blattiden*-Gattungen. S. E. Z. xlviii, pp. 408–411. [*Orthoptera.*]

170. ——. *Gromphadorhina hildebrandti*, n. sp. *T. c.* p. 412. [*Orthoptera.*]

171. Dokhtouroff, W. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. viii. *Cantharides* nouveaux du Thibet. Hor. Ent. Ross. xxi, pp. 341–344. [*Coleoptera.*]

172. ——. Description de deux *Coléoptères* nouveaux de la faune Aralo-Caspienne. *T. c.* pp. 344 & 345.

173. ——. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. x. *Cicindelidæ*. *T. c.* pp. 437–440. [*Coleoptera.*]

174. ——. Matériaux pour servir à l'étude des *Cicindélides*. iv. Note complémentaire à la "liste des *Cicindélides* décrits postérieurement au Catalogue de Munich." Ann. Ent. Belg. xxxi, pp. 149–158. [*Coleoptera.*]

175. Dönitz, W. Ein singender Schmetterling. B. E. Z. xxxi, pp. 9 & 10. [*Lepidoptera.*]

Relates to *Dionychopus niveus*, Men.

176. [Dönitz, W.] Neue und auffallende Beispiele von Anpassung und Nachahmung bei Arthropoden bez. bei Schmetterlingen und Spinnen. SB. nat. Fr. 1887, pp. 97–102.

230.

Report of a verbal communication about Japanese species.

177. Donnadieu, —. Les véritables origines de la question phylloxérique. J. Microgr. xi, pp. 282–287.

Account of a personal matter. Attributes the discovery of *Phylloxera* in the French vineyards to M. Sahut. [*Cf.* Ent. Nachr. xiii, pp. 285 & 286.]

178. Douglas, J. W. Note on some British *Coccidæ*. No. 6, Ent. M. M. xxiii, pp. 239–243; No. 7, *op. cit.* xxiv, pp. 21–28; No. 8, *t. c.* pp. 95–101 & 165–171.

Besides numerous descriptions and biological notes, this contains (xxiv, pp. 25–27) an account of Moniez' views as to rudimentary males contained in a portion of the ovary of the female.

179. Druce, H. Descriptions of some New Species of *Lepidoptera Heterocera*, mostly from Tropical Africa. P. Z. S. 1887, pp. 668–686, pl. lv.

——. [See also Godman & Salvin (263).]

180. Druce, H. H. Descriptions of four New Species of *Lycænidæ*. Ent. M. M. xxiii, pp. 203–205. [*Lepidoptera.*]

From W. Africa and the Fiji Islands.

181. Drummond, H. On the Termite as the Tropical Analogue of the Earth-worm. P. R. Soc. Edinb. xiii, pp. 137–146. [*Neuroptera.*]

The Termite is considered as being, "along with the Earth-worm, the leading organic agricultural and geological agent in nature."

182. Dubois, R. Récherches sur la fonction photogénique. C.R. civ, pp. 1456–1458.

Remarks in connection with his memoir recorded last year.

183. ——. De la fonction photogénique dans les œufs du Lampyre. Bull. Soc. Z. Fr. xii, pp. 137–144.

From the examination of a large number of eggs of *Lampyris*, he states that they are certainly luminous, and gives particulars. [Summary, J. R. Micr. Soc. 1887, p. 576.]

184. Dugès, A. *Ornitomyia villadæ*. La Naturaleza (2) i, p. 21. [*Diptera.*]

185. Dugès, E. Métamorphoses de quelques *Coléoptères* du Mexique. Ann. Ent. Belg. xxxi, pp. 137–148, pls. 1 & 2.

186. Duvivier, A. Description de trois *Galérucides* nouvelles. C.R. ent. Belg. 1887, pp. xlvii–l. [*Coleoptera.*]

187. Dziedzicki, H. Dem Herrn Professor Josef Mik zur Antwort. Warsaw: 11 pp. [*Diptera.*]

Mik replies, Wien. ent. Z. vi, p. 158; the discussion relates to *Mycetophilidæ*.

188. Eaton, O. E. A Revisional Monograph of recent *Ephemeridæ*, or Mayflies. Part v. Tr. L. S. (2) pp. 281–319, pls. 64 & 65 [*Neuroptera.*]

This part completes the descriptions of Ecdyurus, gives descriptions on list of *Ephemeridæ* of uncertain genera, some species that have been published during the course of the work, descriptions of 3 new species, a summary of the range of the genera of recent *Ephemeridæ*, and an analytical table of the classification.

189. Edwards, H. W. The Butterflies of North America. Third Series. Boston & London. [*Lepidoptera.*]

Parts i–iii have been issued in 1887; the pages of the work are not numbered.

190. Edwards, H. Descriptions of New Species of North American *Heterocera*, with Notes. Canad. Ent. xix, pp. 145 & 146. [*Lepidoptera.*]

191. ——. Apparently New Species of Mexican *Heterocera*. Ent. Am. iii, pp. 89–92. [*Lepidoptera.*]

Thirteen species of *Macro-Lepidoptera*.

192. ——. Early Stages of some North American *Lepidoptera*. *T. c.* pp. 161–171.

Rhopalocera, and *Heterocera* of the earlier groups.

193. Elwes, H. J. On the Butterflies of the French Pyrenees. Tr. E. Soc. 1887, pp. 385–403. [*Lepidoptera.*]

The total number is at present 127 spp., but this may be increased, he thinks, to 150; only one is considered to be peculiar to the range.

194. ——. Description of some New *Lepidoptera* from Sikkim. P. Z. S. 1887, pp. 444–447.

195. Elwes, H. J., & de Nicéville, L. List of the Lepidopterous Insects collected in Tavoy and in Siam during 1884–1885 by the Indian Museum Collector, under C. E. Pitman, Esq. J. A. S. B. lv, pp. 413–442, plate xx.

196. Emery, C. Catologo delle *Formiche* esistenti nelle collezioni del Museo Civico di Genova. Parte terza, Formiche della regione Indo-Malese e dell' Australia. Ann. Mus. Genov. (2) iv, pp. 209–258, pls. iii & iv; and *op. cit.* v, pp. 427–473 & 528–534, pls. i, ii, & ix.

197. ——. Le tre forme sessuali del *Dorylus helvolus*, L., e degli altri *Dorilidi*. Bull. Ent. Ital. xix, pp. 344–351, pl. xl. [*Hymenoptera.*]

The forms are so different that they have been described as 3 genera.

198. ——. Formiche della provincia di Rio Grande do Sul nel Brasile, raccolte dal dott. Hermann von Jhering. *T. c.* pp. 352–366. [*Hymenoptera.*]

70 species and races, several of them new.

199. Eppelsheim, —. Neue *Staphylinen* vom Amur. Deutsche e. Z. xxxi, pp. 417–430. [*Coleoptera.*]

200. [Eppelsheim, —.] Drei neue österreichische *Staphylinen*. Wien. ent. Z. vi, pp. 229–232. [*Coleoptera.*]

230. —. Anthobium *bivittatum*, n. sp. Nat. Sicil. vii, p. 45. [*Coleoptera.*]

—. [See also Heyden (304).]

202. Everts, J. E. Nieuwe naamlijst van Nederlandsche Schildvlengelige Insecten. [*Coleoptera.*] Nat. Verh. Haarlem. Separate publication, pp. 1–237.

Besides the names, this Catalogue gives localities and habits. Noticed by Lameere, C.R. ent. Belg. 1887, p. li.

Failla-Tedaldi. [See Minà-Palumbo (506).]

203. Fairmaire, L. Notes sur les *Coléoptères* des environs de Pékin. Rev. d'Ent. vi, pp. 312–335.

Descriptions of new species of various families and names of others previously known.

204. —. *Coléoptères* de l'intérieur de la Chine. Ann. Ent. Belg. xxxi, pp. 87–136.

He considers Yunnan to be faunistically of great interest, as these species prove it to be a meeting-place for European, Japanese, and North Indian forms.

205. —. *Coléoptères* des voyages de M. G. Revoil chez les Somâlis et dans l'intérieur du Zanguebar. Ann. Soc. Ent. Fr. (6) vii, pp. 69–186 & 277–367, pls. i–iii.

Describes a large number of new species belonging to many families.

206. —. Deux nouvelles espèces de *Coléoptères*. Bull. Soc. ent. Fr. (6) vii, pp. cxcii & cxciii.

207. —. Sur deux *Curculionides*. *T. c.* pp. clxxix & clxxx. [*Coleoptera.*]

208. —. Description d'une espèce nouvelle du genre *Casnonidea*. Notes Leyd. Mus. ix, p. 192. [*Coleoptera.*]

209. —. *Coléoptères* nouveaux ou peu connus du Musée de Leyde. *T. c.* pp. 145–162.

210. —. Description de cinq espèces nouvelles de la famille des *Cantharides*. *T. c.* pp. 193–196. [*Coleoptera.*]

211. —. Description d'un genre nouveau de la famille des *Clérides*. *T. c.* p. 197. [*Coleoptera.*]

212. Fallou, J. Étude sur la production artificielle des *Lépidoptères* anormaux. Bull. Soc. Acclim. (4) iv, pp. 499–503.

Remarks on the cause of deformities in bred specimens.

28[illegible]. [illegible]nnet, L. Une *Coléoptère* fossile de l'Ambre. Mem. Soc. [illegible], pp. [illegible] pp. 142–1422.

The specie[illegible] *crocara*.

214. Faussek, F. Zur Histologie des Darmcanals der Insecten. Zool. Anz. x, pp. 322 & 323.

Relates to *Eremobia muricata*, and to larva of *Libellula* and *Æ[illegible]on* [Summary, J. R. Micr. Soc. 1887, p. 580.]

215. ——. Beiträge zur Histologie des Darmkanals der Insekten. Z. wiss. Zool. xlv, pp. 694–712, pl. xxxvi.

The observations relate to *Eremobia* (*Trinchus*) *muricata*, Pall., and to larva of *Æschna*. He confirms Frenzel's observations in reference to the middle tract; but in the rectum he has observed peculiarities that he considers new. [Summary, J. R. Micr. Soc. 1887, p. 945.]

216. Faust, J. Verzeichniss der von Herrn Herz in Peking, auf der Insel Hainan und auf der Halbinsel Korea gesammelten Rüsselkäfer. Hor. Ent. Ross. xxi, pp. 26–40. [*Coleoptera.*]

About 40 species, 10 being new.

217. ——. *Curculioniden* aus dem Amur-Gebiet. Deutsche e. Z. xxxi, pp. 161–180. [*Coleoptera.*]

218. ——. Neue Rüsselkäfer aus Syrien und Turkmenien. Wien. ent. Z. vi, pp. 30–32. [*Coleoptera.*]

219. ——. Neue Rüsselkäfer. *T. c.* pp. 65–70 & 81–86. [*Coleoptera.*]

220. ——. Rüsselkäfer aus Algier und Syrien. *T. c.* pp. 207–21[illegible]. [*Coleoptera.*]

221. ——. Neue Rüsselkäfer vom Kyndyr-Tau (Turkestan). S. E. Z. xlviii, pp. 177–186. [*Coleoptera.*]

222. ——. Zur Gattung *Echinocnemus*, Sch. *T. c.* pp. 187–192. [*Coleoptera.*]

223. ——. Verzeichniss der von Herrn L. Conradt im östlichen Turkestan gesammelten Rüsselkäfer, nebst Beschreibung neuer Arten. *T. c.* pp. 291–304. [*Coleoptera.*]

224. ——. Zwei neue Rüsselkäfer aus Turkestan. *T. c.* pp. 304–306. [*Coleoptera.*]

——. [See also Heyden (304).]

225. Fernald, C. H. North American *Pyralidæ*. Ent. Am. iii, pp. 37 & 38. [*Lepidoptera.*]

5 new species.

226. ——. North American *Pyralidæ*. *T. c.* pp. 127 & 128. [*Lepidoptera.*]

3 new species.

Ferrari, P. M. [See Carlini (120)].

227. Finot, —. Nouvelle espèce française d'*Orthoptères*. Bull. Soc. ent. Fr. (6) vii, p. clxxxix.

228. Fischer, H. Beiträge zur Kenntnis der *Makrolepidop*[illegible] der Grafschaft Wernigerode. Schr. Ver. Harzes. i, pp[illegible]eutsche e. Z.

Fixsen, C. [See Romanoff (659).]

229. Flach, C. Beiträge zur Kenntniss der Haarflügler (*Trichopterygier, Coleoptera*). Wien. ent. Z. vi, pp. 177–183, pl. ii.

230. ——. Ein neuer Prachtkäfer. S. E. Z. xlviii, pp. 321 & 322. [*Coleoptera.*]

231. Fleischer, A. Ueber *Buprestis rustica*, L., and *hæmorrhoidalis*, Hbst. Wien. ent. Z. vi, pp. 233–237. [*Coleoptera.*]

232. Fleutiaux, Ed. Déscriptions de *Coléoptères* nouveaux de l'Annam. Ann. Soc. Ent. Fr. (6) vii, pp. 59–68.

About 20 species, belonging to 12 families.

233. Flohr, J. Beschreibung einer neuer Art der *Carabiden*-Gattung *Pasimachus* Bon. aus Mexico. Deutsche e. Z. xxxi, p. 128. [*Coleoptera.*]

234. °Forbes, A. S. Contribution to a Knowledge of the Hessian Fly. Bulletin No. 3 : Office of the State Entomologist of Illinois, 1887, pp. 45–61. [*Cf.* Wien. ent. Z. vi, p. 316.] [*Diptera.*]

235. Forel, A. Fourmis récoltées à Madagascar, par le Dr. Conrad Keller. MT. schw. ent. Ges. vii, pp. 381–389. [*Hymenoptera.*]

236. ——. Lettre de M. Paul Berthoud missionaire à Valdézia au Nord de la République de Transvaal, sur les mœurs des *Termites*. *T. c.* pp. 297–300. [*Neuroptera.*]

237. Fowler, W. W. The *Coleoptera* of the British Islands. Parts v–xiii. London.

The first vol. is completed, and the second extends at present to the end of *Aleocharinæ*, at p. 160 and pl. 48.

238. ——. A new genus and new species of *Languriidæ* from the collection of the Leyden Museum. Notes Leyd. Mus. ix, pp. 121–125. [*Coleoptera.*]

239. French, G. H. A new *Homohadena*. Canad. Ent. xix, p. 5. [*Lepidoptera.*]

240. Frey-Gessner, E. *Hymenoptera* Helvetiæ analytisch bearbeitet als Grundlage einer Hymenopteren-Fauna der Schweiz. Schaffhausen : 1887, pp. 88, pls. i–iii.

Introductory remarks, tabulation of the characters of the families of *Hymenoptera*, and of the genera and species of *Chrysididæ*. Published in connection with MT. schw. ent. Ges. vii, but as a separate and complete work.

241. Friese, H. Kurzer Ueberblick einer *Apiden*-ausbeute in Ungarn. Ent. Nachr. xiii, pp. 214–220. [*Hymenoptera.*]

242. ——. Species aliquot novæ generis *Andrenæ*, Fab. Term füzetek, xi, pp. 21–26. [*Hymenoptera.*]

The species are from Hungary.

243. Fromholz, C. Verzeichniss der von Herrn Dr. Richard Büttner in West-Afrika gesammelten *Rhopaloceren*. B. E. Z. xxxi, pp. 89–[illegible] [*Lepidoptera.*]

A list of names.

244. Gadeau de Kerville, H. Les Insectes phosphorescents, Notes complémentaires et bibliographie générale. (Anatomie, physiologie, et biologie.) Rouen: 1887, 133 pp.

Almost entirely devoted to bibliographical lists, of which several are given, in order to facilitate reference. The first part of the work to which this is a supplement was published in 1881.

245. Galton, F. Pedigree Moth-breeding, as a means of verifying certain important Constants in the General Theory of Heredity. Tr. E. Soc. 1887, pp. 19–28.

The writer wishes data for the extension of his theory of simple heredity, points out how suitable moths are for the purpose, and indicates his method of dealing with the observations and measurements he asks for. [Summary, J. R. Micr. Soc. 1887, p. 579.]

246. Ganglbauer, L. Zur Kenntniss der *Leptoderinen*-Gattungen. Deutsche e. Z. xxxi, pp. 95 & 96. [*Coleoptera.*]

247. ——. Die Arten der *Sphodristocarabus*-Gruppe. *T. c.* pp. 129–143. [*Coleoptera.*]

248. ——. *Phytœcia stellata*, n. sp. *T. c.* p. 296. [*Coleoptera.*]

249. ——. Bemerkungen zu einer Arbeit von August Morawitz. Soc. Ent. ii, pp. 1 & 2. [*Coleoptera.*]

Synonymical observations with informal characters of one or two doubtful n. spp.

250. ——. Neue *Cerambyciden* von Peking. Hor. Ent. Ross. xxi, pp. 21–24. [*Coleoptera.*]

251. ——. Ein neuer *Liopus* aus dem Kaukasus. *T. c.* p. 25. [*Coleoptera.*]

252. ——. Ein neuer *Omphreus*. S. E. Z. xlviii, pp. 344–346. [*Coleoptera.*]

253. Gercke, G. Einige Beobachtungen über die Eigenart der *Canace ranula*, Loew. Wien. ent. Z. vi, pp. 1–4, woodcut. [*Diptera.*]

The mouth is furnished with a fishing apparatus, for catching *Infusoria*.

254. Gestro, R. Res ligusticæ. III. Gli *Anophthalmus* trovati finora in Liguria. Ann. Mus. Genov. (2) v, pp. 487–506. [*Coleoptera.*]

Includes a list of the species found in Liguria, one being new, and a full account of the caverns explored.

255. ——. Descrizione di un nuovo genere di *Lamellicorni*. *T. c.* Z. 623–628. [*Coleoptera.*]

256. Ghiliani, V. Elenco delle specie di Coleotteri trovate in Piemonte di Vittore Ghiliani. Opera postuma pubblicata per cura del Dottor L. Camerano. Turin: 1887, 189 pp. [Extract from Ann. Acc. Agric. Tor. vol. xxix, 1886.]

257. Girard, M. Les Abeilles organes et fonctions éducation et produits miel et cire. Deuxième edition, pp. viii & 280, 1 pl.

Intended for the use of beekeepers.

258. Gierschner, E. Einiges über die Färbung der *Dipterenaugen*. B. E. Z. xxxi, pp. 155–162, pl. iii.

He considers the colour of the eyes in *Diptera* has a relation to the habits of the species, and where the sense of sight is highly developed the eyes are unicolorous. He also gives a systematic sketch of the occurrence of variegate and plain eyes throughout the family.

259. ——. Die europäischen Arten der Dipterengattung *Alophora*. Z. Naturw. lx, pp. 375–426, pl. ii. [*Diptera*]

A very elaborate paper, with long descriptions of sexes and synonymy.

260. Glaser, L. Die Ueberwinterung der *Chermesläuse* [illegible] d die Lebensart der Lärchenlaus insbesondre. Ent. Nachr. x [illegible] pp. 152–156. [*Rhynchota*.]

261. ——. Catalogus etymologicus Coleopterorum [illegible] dopterorum. Berlin: 1887, 395 pp.

262. Gobert, E. Catalogue des *Diptères* de France. Caen: 88 pp.

Includes 413 genera, 3,026 species. Published in connection with Rev. d'Ent., but with separate pagination. This is noticed by Mik, Wien. ent. Z. vi, p. 244; and Gobert replies, Rev. d'Ent. vi, p. 277.

263. Godman & Salvin. Biologia Centrali-Americana. Parts liv–lxiv. London.

The progress made with the *Insecta* during the year has been as follows:—

Lepidoptera Rhopalocera, by Godman & Salvin, vol. ii, pp. 1–112, pls. xlviii–lvi. *Lycænidæ*, including note by Scudder on *Eumæidi*.

Lepidoptera Heterocera, by H. Druce, vol. i, pp. 201–256, pls. xxi–xxv: *Lasiocampidæ* to *Notodontidæ*.

Coleoptera, vol. i, pt 2, by D. Sharp, pp. 673–824 & xvi, pls. xvii–xix: *Staphylinidæ* completing the volume.

Coleoptera, vol. ii, pt. 1, *Pselaphidæ* and *Scydmænidæ*, by D. Sharp, pp. 1–71, pls. i & ii; *Silphidæ*, by A. Matthews, pp. 72–96.

Coleoptera, vol. ii, pt. 2, by H. W. Bates: *Lamellicornia*, pp. 25–160, pls. ii–viii.

Coleoptera, vol. iii, pt. 1: *Buprestidæ*, by Waterhouse, pp. 33–48, pl. iii.

Coleoptera, vol. iv, pt. 1: *Tenebrionidæ*, by G. C. Champion, pp. 265–352, pls. xi–xiv, as far as *Strongylium* part.

Coleoptera, vol. vi, pt. 1 : *Phytophaga*, by M. Jacoby, pp. 497–581, pls. xxviii–xxxii, including *Gallerucidæ*.

Coleoptera, vol. vii : *Erotylidæ*, by H. S. Gorham, pp. 1–48, pls. i & ii.

Hymenoptera, by P. Cameron, pp. 329–432, pls. xiv–xvii : *Braconidæ*, *Stephanidæ*, and *Evaniidæ* part.

Diptera, by C. R. Osten-Sacken, pp. 129–216, pl. iii : from *Anthrax* to *Empidæ*.

Rhynchota Homoptera, by W. L. Distant, pp. 25–40, pls. iv & v.

264. °Goethe, H. Die *Phylloxera* und ihre Bekämpfung. Eine Abhandlung über den gegenwärtigen Stand der ganzen Phylloxera-frage. Vienna : 1887, 66 pp. [*Cf.* Zool. Anz. x, p. 397, and Ent. Nachr. xiii, p. 284].

265. Gogorza, J. Crisídidos de los alrededores de Madrid. An. Soc. Esp. xvi, pp. 17–88. [*Hymenoptera.*]

266. Göldi, E. A. Biologische Miscellen aus Brasilien. v. Die Metamorphose von *Alurnus marginatus*, einem Schädling der Fächerpalme (*Latania borbonica*). Zool. Jahrb. ii, pp. 584–587, woodcuts. [*Coleoptera.*]

267. Goossens, Th. Les pattes des Chenilles. Ann. Soc. Ent. Fr. (6) vii, pp. 385–404, pl. vii. [*Lepidoptera.*]

Brief descriptions of the structure and number of legs of caterpillars of various genera and species throughout the order; the legs of 42 species are figured.

268. Gorham, H. S. On the classification of the *Coleoptera* of the subfamily *Languriides*. P. Z. S. 1887, pp. 358–362.

A new classification is proposed, based on the clothing of the tarsi and other characters, some of which are new. A considerable number of new genera are described in tabular form.

269. ——. Revision of the Japanese species of the *Coleopterous* family *Endomychidæ*. *T. c.* pp. 642–653, pl. liii.

Includes 32 species ; 4 new genera.

——. [See also Godman & Salvin (263).]

270. Graber, V. Thermische Experimente an der Küchenschabe (*Periplaneta orientalis*). Arch. ges. Phys. xli, pp. 240–256.

To determine the vital maxima and minima and the behaviour of the Insects at different temperatures, &c. [Summary, J. R. Micr. Soc. 1888, p. 30.]

271. ——. Zu Dr. Breithaupt's Dissertation-Schrift über die Bienenzunge. Zool. Anz. x, pp. 166–168.

Directed only to a question of plagiarism.

272. Graef, E. L. Some new *Bombycidæ*. Ent. Am. iii, pp. 4[illegible] Z. [*Lepidoptera.*]

273. Graells, D. M. P. Teorías, suposiciones, discordancias, misterios, comprobaciones e ignorancia sobre cuestiones biológico-ontogénicas y fisiológicas de los *Afidios*. Mem. Acc. Madrid, xiii, pp. 1–45, pl. [*Rhynchota*.].

Relates to *Aphis* sp. living on carrots underground.

274. Grandidier, A. Histoire physique, naturelle et politique de Madagascar. Vol. xviii. Histoire naturelle des *Lépidoptères*, par M. P. Mabille. Tome I. Texte, 1re Partie. [For corresponding Atlas, *cf.* Zool. Rec. 1886, *Ins.* (255).]

This part includes the *Rhopalocera* only; all the species known to occur in Madagascar are figured from nature, and all the species are described; in our systematic part the Recorder has, therefore, specially mentioned only the novelties. The number of species of *Rhopalocera* is 253, having been 75 in 1833, and 88 in 1865.

275. Grassi, B. Nuove ricerche sulle *Termiti*. Nota preliminare. Bull. Ent. Ital. xix, pp. 75–80. [*Neuroptera*.]

276. ——. I progenitori dei Miriapodi e degli insetti. Altre ricerche sui *Tisanuri*. *T. c.* pp. 52–74. [*Neuroptera*.]

A forgotten note of Meinert is called attention to. Some new species described. The systematic characters of the *Lepismidæ* revised; the anatomy of *Lepisma* and *Lepismina* sketched; special attention is given to the muscular system, with a view of deciding whether the *Thysanuridæ* formerly possessed wings. [Summary, J. R. Micr. Soc. 1888, p. 29.]

277. °Grassi, G. B., & Aloi, —. Relazione sui danni che arrecano le *Termiti* ai vignetti di Catania. Bull. not. agr., n. 51. Rome: 1885 [*cf.* Bull. Ent. Ital. xix, p. 148].

278. °Griffiths, A. On some points in the physiology of certain organs of the alimentary canal of *Blatta periplaneta*. Chemical News, lii, p. 195 [*cf.* Arch. Z. expér. v, p. xxix].

279. Grote, A. R. North American *Lepidoptera*. The Hawk Moths of North America, 63 pp. Bremen: 1886.

Gives his views on the classification of *Sphingidæ*, and other matters, and brief definitions of genera and species. The work is noticed in Ent. Am. iii, p. 39, and reviewed by Fernald, Canad. Ent. xix, pp. 98–100.

280. ——. Notes on species of *Lepidoptera*. Canad. Ent. xix, pp. 50–55.

281. ——. The classification of the *Bombycidæ*. *T. c.* pp. 156–159. [*Lepidoptera*.]

232. ——. On so-called representative species. *T. c.* pp. 176 & 177. [*Lepidoptera*.]

285. Grouvelle, A. Diagnose d'un *Coléoptère* nouveau. Bull. Soc. Ent. Fr. (6) vii, p. clxxix.

Gumm-Geshimaïlo. [See Romanoff (659).]

284. Guest, E. A classified list of *Geometrina* found round Balhannah with notes on species. Tr. R. Soc. S. Austr. ix, pp. 126–141. [*Lepidoptera.*]

Includes descriptions of the perfect Insects and some larvæ, and some notes on habits. No indication is given as to what is original in the paper.

285. Gumppenberg, C. v. Systema *Geometrarum* zonæ temperatioris septentrionalis. Erster Theil. Nova Acta Ac. L.-C. Nat. cur. xlix, pp. 229–400, pls. viii–x. [*Lepidoptera.*]

This first portion consists in larger part of the Introduction, which is arranged under the following heads :—1, Geographische Verbreitung ; 2, Veränderungen der Urfauna ; 3, Gattung System ; 4, das System Herrich-Schäffer-Lederer ; 5, Natürliches System ; 6, Der Flugelumriss ; 7, die Zeichnung ; 8, Nomenclatur, Diagnose ; 9, der Spanner Catalog ; 10, Synopsis Generum et Subgenerum. Page 345 commences the systematic descriptions. The work is noticed at length in Ent. Nachr. xiii, pp. 54–60, and reviewed by Hulst, Ent. Am. iii, pp. 57–59.

286. Gundlach, J. Apuntes para la fauna Puerto-riquena. viii. Insectos. An. Soc. Esp. xvi, pp. 137–199. [*Orthoptera, Hymenoptera, Diptera.*]

287. Haase, E. Holopneustie bei Käfern. Biol. Centralbl. vi, pp. 50–54.

Relates to the number and position of the stigmata in larvæ, considers them from a phylogenetic point of view, and proposes the terms "menotrem" and "metatrem" for two series, the first to include those *Coleoptera* in which, like the *Hemimetabola*, the number and position of the stigmata are the same in larva and imago. [Summary, J. R. Micr. Soc. 1887, p. 380].

288. ——. Duftapparate indo-australischer Schmetterlinge. 2, *Heterocera*. CB. Iris, i, pp. 159–178. [*Lepidoptera.*]

289. Haconoba, H. B. Morphology of *Lepisma*, *Campodea*, and *Lipura*. Isvest. Mosc. Univ. lii, pp. 15–85, 2 pls., and numerous woodcuts. [*Neuroptera.*]

Entirely in the Russian language, but apparently an important paper on the anatomy of *Thysanura* ; and there is also a discussion on the phylogeny of the *Insecta*. I am not even sure about the author's name, its position leaving it uncertain whether the characters are to be treated as Russian or Latin ; in the Zool. Anz. the author's name is given as Nassonoff.

290. Hagen, H. A. Stray notes on *Myrmeleonidæ*. Canad. Ent. xix, pp. 89, 93 & 110–112 ; pt. 2, pp. 133–136 & 147–156 ; pt. 3, pp. 209–216. [*Neuroptera.*]

291. ——. Ueber *Plethus cursitans*. Verh. z.-b. Wien, xxxvii, pp. 643–645. [*Neuroptera.*]

292. ——. Ueber *Neurobasis* und *Vestalis*. *T. c.* pp. 647 & 648. [*Neuroptera.*]

393. [Hagen, H. A.] An unknown or forgotten illustration of North American *Sphingidæ*. Ent. Am. iii, pp. 173–175.

400. list of the species figured by Edwards—but not published—between 1861 and 1866.

294. °Hahn, E. Die geographische Verbreitung der Coprophagen Lamellicornier. Mit 1 Tabelle u. 2 Karten. Lübeck: 1887, 87 pp. [*Cf.* Ent. Nachr. xiii, p. 336.] [*Coleoptera.*]

295. Hallier, E. Die Symbiose zwischen Ameisen und Pflanzen. Humboldt, vi, pp. 453–456.

296. Handlirsch, A. Monographie der mit *Nysson* und *Bembex* verwandten Grabwespen. SB. Ak. Wien, xcv, pp. 246–421, pls. i–v. [*Hymenoptera.*]

This instalment deals only with generalities and the genus *Nysson*; the species are described at great length and also tabulated.

297. Hardy, Jas. The History of *Charæas graminis*, the Grass or Antler Moth, on the Borders. P. Berw. Cl. xi, pp. 195–205. [*Lepidoptera.*]

298. Hart, T. H. Concerning *Brachyscelis munita*, Schrader, an Australian Gall-making Coccid. Ent. M. M. xxiv, pp. 1–3, woodcuts.

With prefatory note by MacLachlan; these galls have been attributed to *Lepidoptera*.

299. Haury, C. *Sphodristus acuticollis*, Motsch., and *Procrustes payafa*, White. S. E. Z. xlviii, pp. 284–290, plate. [*Coleoptera.*]

300. Heilprin, A. The Geographical and Geological Distribution of Animals. London: 1887.

Contains a section, pp. 279–285, on Insects; also pp. 51–53 on the modes of dispersal of Insects.

301. Hennessy, H. Second Note on the Geometrical Construction of the Cell of the Honey Bee. P. R. S. xlii, pp. 176 & 177.

Entirely mathematical.

302. Henshaw, S. The Entomological Writings of Dr. Alpheus Spring Packard. Bull. Dep. Agric. Ent. No. 16, pp. 1–49.

303. Heyden, L. von. Zweiter Beitrag zur Coleopteren-faunen von Pecking in Nord-China. Deutsche e. Z. xxxi, pp. 293–295.

Some corrections of nomenclature, and additions to his previous list.

304. ——. xi Beitrag zur Coleopteren-Fauna von Turkestan unter Mitwirkung der Herren Abeille de Perrin, Eppelsheim, Faust, Weise. *T. c.* pp. 305–336.

Contains some synonymical remarks on varieties and species of *Carabus*, and descriptions of about 30 new *Coleoptera*.

——. Bericht über die von den Herren Prof. Dr. Freiherrn von ...n und Prof. Dr. Rein in Marocco und dem Atlas-Gebirge ...melten Käfer. *T. c.* pp. 433–448. [*Coleoptera.*]

...cludes descriptions of 4 n. spp., one of them by Abeille de Perrin.

306. [Heyden, L. von.] Vierter Beitrag zur Kenntniss der Coleopteren-Fauna der Amurländer. *T. c.* pp. 297–304.

Includes 7 n. spp.

307. ——. Verzeichniss der von Herrn Otto Herz auf der Chinesischen Halbinsel Korea gesammelten Coleopteren. Hor. Ent. Ross. xxi, pp. 243–273.

Several new species are described, one of them by Weise.

308. ——. Beiträge zur Kenntniss der Hymenopteren-Fauna der weiteren Umgegend von Frankfurt A. M. Ber. Senck. Ges. 1887, pp. 65– .

v Teil. *Tenthredinidæ.* Names, localities, dates, and observations on habits; 278 species.

309. Heylaerts, F. J. M. *Psyche helicinella*, H. S., et les *Psychides* à fourreau heliciforme. Tijdschr. Ent. xxx, pp. 3–8, pl. x. [*Lepidoptera*]

310. ——. Trois Psychides nouvelles. C.R. ent. Belg. 1887, pls. lxxxv–lxxxviii. [*Lepidoptera.*]

311. Hofer, B. Untersuchungen über den Bau der Speicheldrüsen und des dazu gehörenden Nervenapparants von *Blatta.* Nova Acta Ac. L.-C. Nat. cur. li, pp. 345–395, pls. xlvii–xlix.

312. Hoffmann, A. Biologische Beobachtungen. S. E. Z. xlviii, pp. 142–148. [*Lepidoptera.*]

Metamorphoses of 2 European Moths.

313. ——. Nachtrag zu den Lepidopteren von den Shetland-Inseln, &c. *T. c.* pp. 259–273.

314. ——. Eine neue *Agonolia*-Art. Deutsche e. Z. xxxi, p. 96. [*Coleoptera.*]

315. °Hofmann, O. Beitrage zur Medicinischen Zoologie. Münchener medicin. Wochenschrift, 1886. [*Diptera.*] [*Cf.* Wien. ent. Z. vi, p. 47.]

Relates to *Diptera* attacking the body of man, living and dead.

316. Holland, W. J. Notes upon a Small Collection of *Rhopalocera* made by the Rev. B. C. Henry in the Island of Hainan, together with Descriptions of some apparently New Species. Tr. Am. Ent. Soc. xiv, pp. 111–124, pls. i & ii. [*Lepidoptera.*]

317. Holmberg, E. L. Sobre Ápidos Nómadas de la República Argentina. An. Soc. Arg. xxiii, pp. 17–33 & 67–82. [*Hymenoptera.*]

Completes the memoir commenced last year.

318. Holmgren, E. Lepidopterologiska iakttagelser i Stockholms omgifningar. Ent. Tidskr. viii, pp. 21–26.

319. Honrath, E. G. *Papilio gundlachianus*, Feld., Lebensweise und Varietäten. Die Raupe im ersten Stadium. B. E. Z. xxx[illegible] 324, pl. v A. [*Lepidoptera.*]

320. ——. Neue *Rhopalocera.* *T. c.* pp. 347–352, pl. vi. [*Lepidopter*

321. Horn, G. H. A Monograph of the *Aphodiini* inhabiting the United States. Tr. Am. Ent. Soc. xiv, pp. 1–110. [*Coleoptera.*]

400. his carefully-executed work contains full descriptions of the genera and species, the latter 137 in number, 25 being new; *Aphodius* has 82 species, and a new subgenus is established in it.

322. ——. Notes on *Lachnosterna.* Ent. Am. iii, pp. 141–145. [*Coleoptera.*]

A synonymical commentary on the N. American list of species, in anticipation of the following.

323. ——. Revision of the Species of *Lachnosterna* North of Mexico. Tr. Am. Ent. Soc. xiv, pp. 209–296, pl. iii. [*Coleoptera.*]

The number of species is 81, 30 being new; all are described at length, arranged in groups and tabulated. The synonymy is given separately, pp. 292–295, and is not here reproduced. The plate represents some structural details and external characters of the male sex.

324. Horvath, G. Notes additionelles sur les *Hémiptères-Héteroptères* des environs de Gorice. Rev. d'Ent. vi, pp. 68–74.

Includes several n. spp.

325. ——. Description de deux *Hémiptères* nouveaux de France. *T. c.* pp. 253 & 254.

326. ——. Die Excremente der gallenbewohnenden *Aphiden.* Wien. ent. Z. vi, pp. 249–254. [*Rhynchota.*]

This substance, the origin of which has been doubtful, has now been chemically analysed.

327. ——. A gubacsképzö leveltetvek mézgás valadékáról. Math. term. ert. v, pp. 130–136.

Apparently relates to the chemical composition of the secretions of *Aphididæ.*

328. ——. A magyarorszagi Psyllidákról. Math. term. köz. xxi, pp. 291–320. [*Rhynchota.*]

A revision of the *Psyllidæ* of Hungary, entirely in the Hungarian language.

329. ——. Note emitterologiche. I. Tavola analitica delle specie paleartiche del genere *Stenocephalus,* Latr. II. Emitteri di Podolia. III. Contributo alla fauna italiana. Bull. Ent. Ital. xix, pp. 278–285. [*Rhynchota.*]

Howard. [See Hubbard (330) and Riley (634).]

330. Hubbard, H. G. Insects affecting the Orange. Washington, U.S. Dep. of Agriculture, division of Entomology, 1885, pp. x & 220, pls. xiv.

This deals with nearly all the orders, and contains a large amount of biological and economic information, as well as descriptions of a few new [illegible] by Howard. In addition to the plates there are a large number

386. ——. Although published two or three years ago, it is only *ridæ*) im[illegible] kindness of Professor Riley that I am even now able to Med. Franz. Ba

331. Hudson, G. V. On New Zealand Glow-worms. Tr. N. Z. In[st.] xix, pp. 62–64, pl. vi A. [*Diptera.*]

The "Glow-worms" are larvæ of a *Dipteron* (*Mycetophilidæ*), accor[ding] to Osten-Sacken.

332. Huguenin, —. Verzeichniss der in den Jahren, 1885, und 1886, in der Weissenburgerschlucht beobachteten *Macrolepidoptern*. MT. schw. ent. Ges. vii, pp. 313–329.

333. Hulst, G. D. Notes on some species of *Geometridæ*. No. 3. Ent. Am. ii, pp. 221–224. [*Lepidoptera.*]

334. ——. Notes upon some of Mr. Walker's species of *Geometridæ*. *Op. cit.* iii, pp. 113–115. [*Lepidoptera.*]

Synonymical observations on N. American species.

335. ——. New species of *Pyralidæ*. *T. c.* pp. 129–138. [*Lepidoptera.*]

38 species from N. America.

336. Jacoby, M. Descriptions of the Phytophagous *Coleoptera* of Ceylon, obtained by Mr. Geo. Lewis during the years 1881–82. P. Z. S. 1887, pp. 65–119, pls. x & xi.

Includes many new genera of *Halticidæ*.

337. ——. Descriptions of some new Genera and Species of Phyt[o]phagous *Coleoptera* contained in the Leyden Museum. Notes Leyd. Mus. ix, pp. 229–244.

338. ——. Description of two new species of *Æsernia*. *T. c.* pp. 300–302. [*Coleoptera.*]

——. [See also Godman & Salvin (263).]

339. Jacoby, M., & Bates, H. W. List of a small collection of *Coleoptera* obtained by Mr. W. L. Sclater in British Guiana. P. Z. S. 1887, p. 490, woodcut.

340. Jacquet, —. Nouvelle espèce française de *Coléoptères*. Bull. Soc. ent. Fr. (6) vii, p. clxxviii.

341. Jakowleff, B. Déscriptions d'espèces nouvelles du genre *Sphenoptera*, Sol. Rev. d'Ent. vi, pp. 110–118. [*Coleoptera.*]

342. ——. Déscriptions d'espèces nouvelles ou peu connus du genre *Sphenoptera*, Sol., des regions paléarctiques. II. Hor. Ent. Ross. xxi, pp. 53–87. [*Coleoptera.*]

343. ——. *Coléoptères* nouveaux de l'Asie centrale. *T. c.* pp. 148–159.

344. ——. *Pentatomides nouveaux* de la faune Russe-Asiatique. *T. c.* pp. 297–311. [*Rhynchota.*]

The paper is in Russian, but there are also brief Latin descriptions. The title I give is in conformity with a translation on the wrapper.

345. Jakowleff, B. E. Insecta in itinere cl. [illegible] centrali novissime lecta. VII. *Coléoptères* pl. vi. [*Lepidopter*] 315–320.

35[illegible]. [Jakowleff, B. E.] Révision des espèces du genre *Prionus* de la faune de Russie. *T. c.* pp. 321–339, pl. ix, pt. [*Coleoptera.*]

400. Jakolew, A. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. iv. *Tenthredinidæ*. *T. c.* pp. 160–164. [*Hymenoptera.*]

Janson, O. E. [See Ormerod (541).]

348. Jatta, G., & Savastano, L. L'*Anomala vitis*, Fabr. Boll. Soc. Nat. Nap. i, pp. 112–117.

An economical paper.

349. Jeffrey, W. R. Further notes on the development of the embryo in eggs of *Botys hyalinalis*. Ent. M. M. xxiii, pp. 173–178.

Having procured eggs laid on glass, he watched them frequently during the twelve days of their development, and records his observations.

350. Jhering, H. v. Generationswechsel bei *Termiten*. Ent. Nachr. xiii, pp. 1–4. [*Neuroptera.*]

Incomplete particulars, published for the sake of priority, about *Eutermes* sp., and informal characters of two new species of *Termes* from Brazil. [*Cf.* Müller (521).]

351. ——. Nochmals der "Generationswechsel" bei *Termiten*. *T. c.* pp. 179–182. [*Neuroptera.*]

In elucidation of the above note. He is now in doubt about *Anoplotermes*, whether it is a form of *Eutermes* or a distinct form resembling it in certain of its stages. He states that the S. American Termites require a complete reconsideration.

352. ——. Ueber eine merkwurdige leuchtende Käferlarve. B. E. Z. xxxi, pp. 11–16.

Gives light of two colours—red from the extremities, green from the stigmata.

353. °Joseph, G. Ueber Vorkommen und Entwicklung von Biesfliegenlarven im subcutanen Bindegewebe des Menschen. Breslau: 1887. [*Cf.* Zool. Ans. x, p. 402.]

354. °——. Ueber Myiasis externa dermatosa (Durch Fliegenlarven verursachte Hauterkrankungen. Hamburg & Leipzig: 1887, 40 pp., 1 pl. [*Cf.* Zool. Anz. xi, p. 38.]

355. °——. Ueber Fliegen als Schädlinge und Parasiten des Menschen. iii. Myiasis interna. iv. Myiasis septica. Berlin: 1887. [*Cf.* Zool. Anz. xi, p. 38.]

356. Karsch, F. Verzeichniss der von Herrn Waldemar Belck 1885 im Damaraland gesammelten *Orthopteren*. Ent. Nachr. xiii, pp. 39–46.

357. ——. Ein älteres System der Insecten nach den Charakteren der Puppe. Ent. Nachr. xiii, pp. 292–294.

386. ——. [illegible]es to Newman's classification published in Entomological [illegible]ridæ) im[illegible] and the discussion is continued by Brauer [*cf.* (87).]

Med. Franz. B[illegible]enerationswechsel bei Insecten. *T. c.* pp. 273–279.

359. [Karsch, F.] Bestimmungstabellen von Insecten-Larven. iv. *Dermestes*. *T. c.* pp. 279–283. [*Coleoptera.*]

360. ——. Altes und neues über *Koleopteren*. I. Schienenspornen Tarsus, ein Beitrag zur Morphologie des Tarsus der *Koleopteren*. II. Die Larve der *Macrotoma edulis*. B. E. Z. xxxi, pp. 1–8, pl. i.

361. ——. Ueber das Auftreten des Coloradokäfers (*Leptinotarsa decemlineata*, Say, in der Feldmark Mahlitzsch bei Dommitzch, Kreis Torgau, im Sommer, 1887. Ent. Nachr. xiii, pp. 323–329. [*Cf.* Will (802).]

Refers to the appearance of the insect in the above locality, and criticises the means adopted for its suppression.

362. ——. Ueber die Schaffliege *Lucilia sericata*, Meigen. Biol. Centralbl. vii, pp. 521–523. [*Diptera.*]

363. ——. *Dipteren* von Pungo-Andongo. Fortsetzung 3, pp. 4–10, F. 4, & Schluss, pp. 97–105, Ent. Nachr. xiii.

Describes n. spp., gives notes on others, and mentions a remarkable case of resemblance between two *Diptera* of different genera.

364. ——. *Dipterologisches* von der Delagoabai. *T. c.* pp. 22–24.

365. ——. Ueber eine *Cecidomyide* aus den Rhizomorphen des Kohlenreviers bei Burgk. *T. c.* pp. 198–200. [*Diptera.*]

366. ——. Bericht über die durch Herrn Lieutenant Dr. Carl Wilhelm Schmidt in Ost-Afrika gesammelten und von der zoologischen Abtheilung des Königlichen Museums für Naturkunde in Berlin erworbenen *Dipteren*. B. E. Z. xxxi, pp. 367–382, pl. iv.

A list of 54 species, many being described as new.

367. ——. *Orthopterologische* Beiträge. II. Ueber die *Hetrodiden*. *T. c.* pp. 43–72, pl. ii.

368. ——. *Orthopterologische* Bemerkungen. Ent. Nachr. xiii, pp. 259–262.

369. ——. Zwei neue ostafrikanische *Phaneropteriden*. *T. c.* pp. 52–54. [*Orthoptera.*]

370. Keller, C. Die Wirkung des Nahrungentzuges auf *Phylloxera vastatrix*. Zool. Anz. x, pp. 583–588.

A note on the external influences producing the winged forms, &c.

371. Kerremans, C. H. Six *Buprestides* nouveaux de l'Amérique du Sud. C.R. ent. Belg. 1887, pp. vi & vii. [*Coleoptera.*]

372. Kessler, H. F. Die Entwickelungs- und Lebensgeschichte von *Chaitopheris aceris*, Koch, *C. testudinatus*, Thornton, und *C. lyropictus*, Kessler. Nov. Acta Ac. L.-C. Nat. cur. li, pp. 149–180, pl. xxxiv. [*Rhynchota.*]

373. Kieffer, J. J. *Aulax hypochœridis*, n. sp. Verh. [illegible] xxxvii, pp. 205 & 206. [*Hymenoptera.*]

Translated in Ann. N. H. (5) xx, p. 250.

[illegible] [*Lepidopter*

399. Kirby, W. F. Descriptions of new species of *Papilionidæ*, *Pieridæ*, and *Lycænidæ*. Ann. N. H. (5) xix, pp. 360–368. [*Lepidoptera.*]

400. ——. Descriptions of new species of *Epitola* from Cameroons, &c., in the collection of Henley Grose Smith. *T. c.* pp. 441–445. [*Lepidoptera.*]

——. [See also Smith, H. G. (712).]

376. Knapp, F. Verzeichniss der Schmetterlinge Thüringens. Zweiter vermehrte und verbesserte Auflage. S. E. Z. xlviii, pp. 363–406. [*Lepidoptera.*]

A list of names and localities.

377. Knatz, L. Zur Entwickelungsgeschichte der *Lepidopteren*. Jugendformen von Eulenraupen. Festschrift. Ver. Nat. Cassel, pp. 195–216.

Some remarks on structure of young larvæ, with phylogenetic considerations.

378. Knüppel, A. Die Speicheldrüsen einiger Insekten. SB. nat. Fr. 1887, pp. 28–30.

Report of a verbal communication.

379. ——. Ueber Speicheldrüsen von Insekten. Tijdschr. Ent. xiii, pp. 67–69.

Some brief general statements.

380. Koenig, E. Neue *Elateriden* und Bemerkungen über bekannte Arten. Hor Ent. Ross. xxi, pp. 353 & 354. [*Coleoptera.*]

3 n. spp.; but there are no remarks.

381. Kolbe, H. J. Beiträge zur Zoogeographie Westafrikas nebst einem Bericht über die während der Loango-Expedition von Herrn Dr. Falkenstein bei Chinchoxo gesammelten *Coleopteren*. Nova Acta Ac. L.-C. Nat. cur. l, pp. 153–364, pls. xiv–xvi.

A list of species, with redescriptions of those previously described by him in B. E. Z. 1883; preceded by generalities relating chiefly to *Carabidæ*.

382. ——. Beziehungen unter den Arten von *Pœcilaspis* (*Cassididæ*), Beschreibung einer von Herrn R. Rohde in Paraguay entdeckten neuen species dieser Gattung. Ent. Nachr. xiii, pp. 10–13. [*Coleoptera.*]

383. ——. Eine von Herrn Dr. Med. Drake in Paraguay entdeckte neue *Canistra*-Art. *T. c.* p. 27. [*Coleoptera.*]

384. ——. Die zoogeographischen Elemente in der Fauna Madagaskars. SB. nat. Fr. 1887, pp. 147–178.

385. ——. Ueber eine neue, von Herrn H. Tetens bei Berlin aufgefundene Art der *Phryganeiden*. Ent. Nachr. pp. 356–359. [*Neuroptera.*]

386. ——. Beobachtungen über Termiten und Leuchtkäfer (*Lampyridæ*) im Caplande, nach brieflichen Mittheilungen des Herrn Dr. Med. Franz. Bachmann. *T. c.* pp. 70–74.

387. [Kolbe, H. J.] Ueber einige exotische *Lepidopteren-* und *Coleopteren*larven. *T. c.* pp. 17–22 & 33–39.

388. Konow, F. W. Description de quelques espèces nouvelles de Tenthrédines, et tableau analytique du genre *Abia*. Rev. d'Ent. vi, pp. 1–5. [*Hymenoptera.*]

389. ——. Neue griechische und einige andere Blattwespen. Wien. ent. Z. vi, pp. 19–28. [*Hymenoptera.*]

390. ——. Nachtrag zu den *Blennocampiden*. *T. c.* pp. 273–283. [*Hymenoptera.*]

391. ——. Eine neue *Macrophya*-Art. Soc. Ent. ii, pp. 112 & 113. [*Hymenoptera.*]

392. ——. Eine neue *Parapsammophila*. *T. c.* p. 137. [*Hymenoptera.*]

393. Korschelt, E. Über einige Interessante Vorgänge bei der Bildung der Insecteneier. Z. wiss. Zool. xlv, pp. 327–397, pls. xviii & xix.

The insects observed belong to *Coleoptera, Lepidoptera, Diptera, Rhynchota*, and *Orthoptera*. The plates are chiefly devoted to sections of portions of the ovaries. The peculiar egg of *Ranatra* is discussed at length. The following are the divisions of the memoir :—I. Eine abweichende Bildungsweise des Chitins bei Entstehung der "Eistrahlen" von *Ranatra linearis*, pp. 327–357. II. Der Austritt der Eier aus dem ovarium und das Schicksal des leeren Eifollikels ; Das Verhaltniss der Eiröhre (des eibildenden Organs), zum Leitungsapparat, pp. 357–388. III. Abnorme Vorgänge bei Entstehung der Insekteneier, pp. 388–390. IV. Eine Oberflächenvergrösserung durch Bildung von Falten an der Innenseite des Follikelepithels von Rhizotrogus solstitialis, pp. 390–393. [Summary, J. R. Micr. Soc. (2) vii, pp. 574–576.]

394. ——. Zur Bildung der Eihüllen, der Mikropylen und Chorionanhänge bei den Insekten. Nov. Acta Ac. L.-C. Nat. cur. li, pp. 181–252, pls. xxxv–xxxix.

Relates to most of the Orders.

395. Kowalevsky, A. Beiträge zur Kenntniss der nachembryonalen Entwicklung der Museiden. I. Theil. Z. wiss. Zool. xlv, pp. 542–594, pls. xxvi–xxx.

A preliminary account of these researches was given in Zool. Anz. viii [*cf.* Zool. Rec. xxii, *Insecta*, Titles (173)]. The changes in muscles, alimentary canal, salivary glands, and larval hypodermis are the points treated in this part. [Summary, J. R. Micr. Soc. 1887, p. 744.]

396. Kowarz, F. Beiträge zu einem Verzeichnisse der *Dipteren* Böhmens. VI. *Conopidæ, Pipunculidæ*. Wien. ent. Z. vi, pp. 146–154.

Includes several new species of *Pipunculus*.

397. Kraatz, G. Ein fraglich neuer *Carabus* aus Ungarn. Deutsch. e.-Z. xxxi, p. 151. [*Coleoptera.*]

398. ——. Ueber die Varietäten des *Carabus scheidleri*, Fabr. *T. c.* pp. 337–344. [*Coleoptera.*]

399. [Kraatz, G.] Drei neue *Lomaptera* von den Aru-Inseln. *T. c.* pp. 153–155. [*Coleoptera.*]

400. °Krassiltschik, J. M. Die Heuschrecke im Donau-Delta. Odessa: 1886, 21 pp. [*cf.* Zool. Anz. x, p. 398].

According to the Zool. Anz. this is a work published in the Russian language by the Odessa Entomological Commission.

401. Krauss, H. Die *Dermapteren* und *Orthopteren* Siciliens. Verh. z.-b. Wien, xxxvii, Abh. 1, pp. 1–22.

Noticed by Rizzio, Nat. Sicil. vi, p. 90.

402. Kriechbaumer, —. Neue *Ichneumoniden*. MT. schw. ent. Ges. vii, pp. 301–309. [*Hymenoptera.*]

403. ——. *Pimpliden* Studien. Ent. Nachr. xiii, pp. 81–87, 113–121, & 245–254. [*Hymenoptera.*]

404. Kühn, H. Instinct oder Ueberlegung? CB. Iris, i, p. 118.

In Celebes *Hesperiidæ* visit the spots of bird-excrement on foliage, deposit on them a drop of liquid, and then imbibe.

405. ——. Zur Kenntniss indischer *Lepidopteren*-larven. *T. c.* pp. 179–183, pl. vi.

406. Künckel d'Herculais. De la valeur de l'appareil trachéen pour la distinction de certaines familles de *Coléoptères* (*Élatérides* et *Buprestides*). C.R. Ass. Sci. Fr. (2) xv, pp. 532–538.

407. ——. Récherches sur les glandes odorifiques des insectes Hémiptères et particulièrement sur celles de la punaise de lit.—Mécanisme de la sécrétion.—Valeur dans la classification. *Op. cit.* 2nde part. pp. 528–532, woodcut.

408. Kuthy, D. *Trachyphlœus frivaldskyi* species *Coleopterorum* nova e familia *Curculionidarum*. Term. füzetek. xi, p. 27.

409. Kuwert, A. Una nuova specie di *Limnebius* di Sicilia. Nat. Sicil. vii, p. 43. [*Coleoptera.*]

410. ——. Vier neue *Helophorus*-Arten. Wien. ent. Z. vi, pp. 165–168. [*Coleoptera.*]

411. ——. Uebersicht der europäischen *Hydrochus*. Deutsche e. Z. xxxi, pp. 289–292. [*Coleoptera.*]

412. ——. Uebersicht der europäischen *Octhebius*-Arten. *T. c.* pp. 369–401, pls. i–iv. [*Coleoptera.*]

He divides the genus into 16 groups, with names; these, in his descriptions of new species, are treated as names of genera. The number of species is now 78.

413. °Laborier, —. Nouvelles études sur le *Phylloxera* son séjour d'hiver à la tête des ceps, moyen de le combattre. Chalon-s.-Saone: 1886, 59 pp. [*Cf.* Zool. Anz. x, p. 83.]

414. Lameere, A. Le genre *Rosalia*. Ann. Ent. Belg. xxxi. pp. 159–173, pl. iii. [*Coleoptera.*]

415. Lampa, S. Om Fluglarvers förekomst i tarmkanalen hos menniskan. Ent. Tidskr. viii, pp. 5–20 & 136–153.

A *resumé* of previously recorded cases, and an account of one observed by himself.

416. Lansberge, J. W. van. Cinq espèces nouvelles de *Coléoptères* appartenant au Musée de Leyde. Notes Leyd. Mus. ix, pp. 107–112.

417. ——. Description d'une espèce nouvelle de *Buprestide* de l'Afrique. *T. c.* p. 141. [*Coleoptera.*]

418. ——. Description d'une espèce nouvelle de *Cerambycide* de Sumatra. *T. c.* p. 143. [*Coleoptera.*]

419. ——. Description d'un genre nouveau et de six espèces nouvelles de *Scarabæides* des Indes orientales. *T. c.* pp. 163–170. [*Coleoptera.*]

420. ——. *Trogides* nouveaux. *T. c.* pp. 199–211. [*Coleoptera.*]

421. Leech, J. H. On the *Lepidoptera* of Japan and Corea. Part i. *Rhopalocera*. P. Z. S. 1887, pp. 398–431, pls. xxxv & xxxvi.

He gives an account of his journey in the localities, and tabulates the distribution in the Japanese Archipelago of 153 species of butterflies, enumerates them seriatim, with remarks, and describes novelties.

422. Lefèvre, E. *Clytride* et *Eumolpides* nouveaux de l'Afrique tropicale occidentale, et des iles de Sumatra et de Banka. Notes Leyd. Mus. ix, pp. 259–266. [*Coleoptera.*]

423. ——. Quatre nouvelles espèces d'*Eumolpides*. Bull. Soc. Ent. Fr. (6) vii, pp. clxxiv & clxxv. [*Coleoptera.*]

424. ——. Diagnoses de quatre nouvelles espèces d'*Eumolpides*. *T. c.* pp. clv & clvi. [*Coleoptera.*]

425. ——. New *Eumolpides*. *T. c.* pp. lv–lvii. [*Coleoptera.*]

426. Lemoine, V. Sur le *Phylloxera punctata*. i. Développement des œufs, pp. 85–87. ii. Système nerveux. J. Microgr. xi, pp. 155–157.

427. ——. Sur l'organisation et les métamorphoses de l'*Aspidiotus* du Laurier-rose. *T. c.* pp. 191 & 192. [*Rhynchota.*]

428. Lendl, A. A virágok és a rovarok. Termes Közlöny, 1887, pp. 273–283 & 313–327.

Relates to insects and flowers.

Lethierry, L. [See Puton, A. (586).]

429. Lett, H. W. The Races of the Honey-bee. Rep. Belf. N. H. Club (2) ii, pp. 451–455, and Ann. N. H. (5) xx, pp. 143–146.

430. Lewis, G. On a New Species of *Hetærius* from Tangier. Ent. M. M. xxiv, p. 164. [*Coleoptera.*]

431. ——. On the *Pyrochroidæ* of Japan. Ann. N. H. (5) xx, pp. 165–175. [*Coleoptera.*]

Deals with 12 species, more than are known of the family either in Europe or N. America. Some observations on Kolbe's recent paper (1886) on Korean *Coleoptera* are made.

432. [Lewis, G.] A list of the Japanese *Silphidæ*. *T. c.* pp. 338–342. [*Coleoptera.*]

Records 23 species, and gives some remarks on the process of "feigning of death."

433. ——. On a New Species of *Diaperis* from Japan. Ent. xx, p. 217. [*Coleoptera.*]

434. ——. On a New Species of *Phellopsis* found in Japan and Siberia. *T. c.* p. 218. [*Coleoptera.*]

435. ——. On a Japanese Species of *Sandalus*. *T. c.* p. 315. [*Coleoptera.*]

436. ——. On a New Genus of *Erotylidæ*. Ent. M. M. xxiv, p. 3. [*Coleoptera.*]

437. ——. A list of Fifty *Erotylidæ* from Japan, including Thirty-five New Species and Four New Genera. Ann. N. H. (5) xx, pp. 53–73. [*Coleoptera.*]

438. ——. On the *Cetoniidæ* of Japan, with Notes of New Species, Synonymy, and Localities. *Op. cit.* xix, pp. 196–202. [*Coleoptera.*]

Recognizes 24 spp.; he comments on the confused synonymy, increased as it is by the publication of "probable synonyms."

439. ——. Note on a New Species of *Osmoderma* and a *Trichius* from Japan. Wien. ent. Z. vi, pp. 49 & 50. [*Coleoptera.*]

440. ——. New Species of *Polyphylla* from Japan. Ent. M. M. xxiii, p. 231. [*Coleoptera.*]

441. Liebermann, L. Thierisches Dextran, ein neuer gummiartiger Stoff in den Excrementen einer Blattlaus. Arch. ges. Phys. xl, pp. 454–458.

The species from which the Dextran was obtained is *Schizoneura lanuginosa*.

442. Lindeman, K. Die am Getreide lebenden *Thrips*-Arten Mittelrusslands. Bull. Mosc. lxii, pp. 296–337. [*Neuroptera.*]

Information of a descriptive and biological nature, as well as an account of the injuries caused by the *Thrips*; relates to 5 spp., 2 being new.

443. ——. Die *Pteromalinen* der Hessenfliege. Bull. Mosc. (n. s.) i, pp. 178–192. [*Hymenoptera.*]

Seven species are parasitic on the Hessian-fly in Russia, and he describes six of them as new. None of the species are the same as those parasitic on this fly in America. [Abstract Ann. N. H. (5) xix, pp. 393 & 394.]

444. ——. Entomologische Beiträge. *T. c.* pp. 193–205.

Relates to 3 species of Insects injurious in Russia.

445. ——. Die Hessenfliege (*Cecidomyia destructor*, Say) in Russland. *T. c.* pp. 378–441 & 588–626.

The following are the divisions :—I. Geschichtliches. II. Die von der Hessenfliege bewohnten Pflanzen, und die durch sie Verursachten Beschädigungen. III. Ueber die Lebensweise der Hessenfliege. IV. Ueber

die Zahl der jahrlichen Generationen und ihre Flugzeit. v. Ueber die Einflüsse, welche einer Vermehrung der Hessenfliege entgegentreten. vi. Ueber die Vermehrung der Hessenfliege begünstigenden Einflüsse. vii. Ueber die Maasregeln gegen die Hessenfliege.

446. [Lindeman, K.] *Opatrum verrucosum* und *Pedinus femoralis* als Schädiger des Tabak in Bessarabien. Ent. Nachr. xiii, pp. 241–244. [*Coleoptera.*]

447. List, J. H. *Orthezia cataphracta*, Shaw. Eine Monographie. Arb. z. Inst. Graz. i, No. 5, vi pls.

A reprint of the memoir recorded last year.

448. Loew, Fr. Espèce nouvelle de *Psyllide*. Rev. d'Ent. vi, p. 278. [*Rhynchota.*]

449. Loman, J. C. C. Freies jod als drüsensecret. Tijdschr. Nederl. Dierk. Ver. (2) i, pp. 105–108. [*Coleoptera.*].

Free iodine in the matter coming from the explosions of *Cerapterus quadrimaculatus*, Westw. [Summary, J. R. Micr. Soc. 1887, p. 581.]

450. Lostia, U. di S. S. Dell' ubicazione di alcune specie di *Coleotteri* nell' Isola di Sardegna. Bull. Ent. Ital. xix, pp. 335–343.

451. Lowne, B. T. On the Structure of the Head of the Blowfly Larva, and its relations to that of the Perfect Insect. J. Quek. Club. (2) iii, pp. 120–124. [*Diptera.*]

[Summary, J. R. Micr. Soc. 1887, p. 948.]

452. ——. On the Histology of the Muscles of the Fly and their relation to the Muscles of Vertebrates. *T. c.* pp. 182–187.

The Blowfly exhibits 3 distinct types of striated muscle.

453. Lucas, A. H. S. On the Sound Organs of the Green *Cicada*. Tr. R. Soc. Vict. xxiii, pp. 173–178, plate.

[Summary, J. R. Micr. Soc. 1887, p. 947.]

454. Lyman, H. H. The North American *Callimorphas*. Canad. Ent. xix, pp. 181–191. [*Lepidoptera.*]

Mabille, P. [See Grandidier (274).]

455. McCook, H. C. Modification of Habit in Ants through fear of enemies. P. Ac. Philad. 1887, pp. 27–30.

[Summary, J. R. Micr. Soc. 1887, p. 581.]

456. ——. Note on the Sense of Direction in . . . *Formica rufa*. *T. c.* pp. 335–338. [Summary, J. R. Micr. Soc. 1888, p. 212.]

457. MacLachlan, R. Description de plusieurs nouvelles espèces de *Panorpides* provenant du Japon et de la Sibérie orientale. MT. schw. ent. Ges. vii, pp. 400–406. [*Neuroptera.*]

458. ——. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. xii. *Neuroptera*, ii. Hor. Ent. Ross. xxi, pp. 448–457.

459. ——. A marine Caddis-fly in New South Wales. Ent. M. M. xxiv, pp. 154 & 155. [*Neuroptera.*]

460. [MacLachlan, R.] *Psychopsis meyricki*, n. sp. *T. c.* p. 30. [*Neuroptera.*]

461. ——. *Notholestes elwesi*, a New Genus and Species of *Calopterygina*. *T. c.* p. 31. [*Neuroptera.*]

462. ——. A New Species of *Æschna* from South America. *T. c.* p. 76. [*Neuroptera.*]

MacLain, N. W. [See Riley (637).]

463. MacLaren, J. D. The Occidental Ant in Kansas. Bull. Washb. Coll. ii, pp. 7–10. [*Hymenoptera.*]

464. Macleay, W. Miscellanea Entomologica. No. iii. The *Scaritidæ* of New Holland. P. Linn. Soc. N.S.W. (2) ii, pp. 115–134.

A revision of the classification of the group, with some new genera and species; the total number of the latter is now 180.

465. ——. The Insects of the Cairns District, Northern Queensland. Pts. i & ii. *T. c.* pp. 213–238 & 307–328. [*Coleoptera.*]

Descriptions of 95 new species of *Geodephaga*, *Lamellicornes*, *Malacodermes*, and *Heteromera*.

466. ——. Miscellanea Entomologica. No. iv. "The *Helæides*." *T. c.* pp. 513–550. [*Coleoptera.*]

Includes descriptions of all the species of *Encara* and *Pterohelæus* that have not previously been described in the pages of this serial. The other genera stand over.

467. Magretti, P. Sugli *Imenotteri* della Lombardia. Memoria iii. *Pompilidei*. Bull. Ent. Ital. xix, pp. 189–257 & 289–322, pls. vi & vii.

Includes a chapter about structure, habits, &c., and a bibliographical list, and descriptions and synonymy of all the species. The plates represent wings and a few structural details.

468. Marchal, P. Étude sur l'instinct du *Cerceris ornata*. Arch. z. expér. (2) v, pp. 27–60, woodcuts.

A series of observations and experiments on the mode in which this *Hymenopteron* paralyses its victims. The instinct is found to be less perfect than in *Sphex*, and he considers the stinging the victim to be less important than the process of malaxation. He thinks the origin of the instinct may be traced to its having been a process profitable to the individual.

469. Mark, E. L. Simple eyes in Arthropods. Bull. Mus. C. Z. xiii, pp. 49–105.

Pp. 63–66 refer to *Insecta*, and discuss the source and relations of the retina, chiefly from the descriptions and figures of other naturalists.

470. Marseul, S. de. L'Abeille Journal d'Entomologie. Paris: 1887, Nos. 313–324. [*Coleoptera.*]

These parts complete vol. xxiv, and contain:—1. Reprints of Nos. 26', 27', 28' of Nouvelles et faits divers. 2. Les entomologistes et leurs écrits, pp. 157–192. 3. Catalogue des Coleoptères, pp. 265–384, extending from

the end of *Elateridæ* to *Curculionidæ* part. 4. Monographie des Chrysomélides, pp. 157–298. 5. Synopse des *Œdémérides* de l'Ancien-Monde, 36 pp., this being a translation of Ganglbauer's 1881 synopsis.

471. [Marseul, S. de.] Descriptions de trois nouvelles espèces d'*Histerides*. Bull. Soc. Ent. Fr. (6) vii, pp. cxlvii & cxlviii. [*Coleoptera.*]

472. ——. Nouvelles espèces d'*Histérides* propres au Brésil. *T. c.* pp. cxviii & cxxv. [*Coleoptera.*]

473. Marshall, T. A. Monograph of British *Braconidæ*. Part II. Tr. E. Soc. 1887, pp. 51–129, pl. v. [*Hymenoptera.*]

The first part was published in 1885 [*cf.* Zool. Rec. xxii, *Ins.* p. 25]; this instalment deals with the *Euphorides* and *Meteorides*.

474. Maskell, W. M. Further notes on New Zealand *Coccidæ*. ierk. N. Z. Inst. xix. pp. 45–49, pl. ii. [*Rhynchota.*]

A new genus, and description of *Icerya purchasi* ♂. *apterus*

475. ——. On the "Honeydew" of *Coccidæ*, and the Fungu[81.] panying these Insects. *T. c.* pp. 41–45, pl. i. *Coleotteri*

Points out an organ for excreting the honey; the sooty f encouraged in its growth by this honey, and when it is preser fly Larva, viewed, therefore, rather as an indication of the p. ence of *Coccidæ* as a primary disease. [Summary, J. R. Micr. Soc. 1887, p. 746.]

476. °——. An account of New Zealand Scale Insects. Wellingto c. 1887. [*Cf.* Nature xxxvii, p. 124.]

477. Masters, G. Catalogue of the described *Coleoptera* of Australia. Part VI, P. Linn. Soc. N.S.W. (2) i, pp. 979–1036; Part VII, *op. cit.* ii, pp. 13–94.

Completing the Catalogue, which extends to 7201 species.

478. Mathew, G. F. Descriptions of some new species of *Rhopalocera* from the Solomon Islands. Tr. E. Soc. 1887, pp. 37–49, pl. iv. [*Lepidoptera.*]

479. Matthews, A. New genera and species of *Corylophidæ*, in the collection of the British Museum. Ann. N. H. (5) xix, pp. 105–116. [*Coleoptera.*]

[See also Godman & Salvin (263).]

480. Mayet, V. Nouvelles espèces de *Coleoptères* de Tunisie. Bull. Soc. Ent. Fr. (6) vii, pp. lxxxix & xciv.

481. Mayr, G. Südamerikanische *Formiciden*. Verh. z.-b. Wien, xxxvii, pp. 511–632. [*Hymenoptera.*]

482. Meade, H. H. Supplement to annotated list of British *Anthomyiidæ*. Ent. M. M. xxiii, pp. 179–250; xxiv, pp. 54 & 73. [*Diptera.*]

483. Mégnin, P. La faune des tombeaux. C.R. Soc. Biol. (8) iv, pp. 655–658.

Brief statements as to some Insects found about ex[med] human bodies. [Summary, J. R. Micr. Soc. 1888, p. 32.]

484. Meinert, F. Die Unterlippe der Käfer-Gattung *Stenus*. Zool. Anz. x, pp. 136–139. [*Coleoptera.*]

Relates to the views of Thion & Erichson on this subject. [Summary, J. R. Micr. Soc. 1887, p. 380.]

485. ——. Catalogus *Orthopterorum danicorum*. Ent. Med. i, pp. 1–21.

Includes synonymy, and some observations on localities, &c.

486. ——. Catalogus *Coleopterorum* (*Eleutheratorum*) *danicorum*. Addidamentum tertium. *T. c.* pp. 33–80.

487. ——. Vandloberne *Hydrometridæ*, deres Færden og Leven. *T. c.* pp. 81–100. [*Rhynchota.*]

488. Merrifield, F. Practical suggestions and enquiries as to the method of breeding *Selenia illustraria*, for the purpose of obtaining data for Mr. Galton. Tr. E. Soc. 1887, pp. 29–34. [*Cf.* Galton, F.]

489. Meves, J. Skogsinsekters härjningar. Ent. Tidskr. viii, pp. 27–34.

490. Meyrick, E. On *Pyralidina* from Australia and the South Pacific. Tr. E. Soc. 1887, pp. 185–268. [*Lepidoptera.*]

Besides descriptions of many new species and genera, this contains many synonymic references and changes of generic position of previously described species.

491. ——. Descriptions of some exotic *Micro-Lepidoptera*. *T. c.* pp. 269–280.

492. ——. Monograph of New Zealand *Noctuina*. Tr. N. Z. Inst. xix, pp. 3–40. [*Lepidoptera.*]

Includes 63 species, 20 of them new, with 2 new genera. Known species are referred to fresh genera, previous writers having been in error, he says. The specimens are chiefly from Fereday's limited collection, and it is thought that the alpine regions will produce others. They are possibly nearer to the Insects of Chili than to those of any other country.

493. ——. Descriptions of new *Lepidoptera*. P. Linn. Soc. N.S.W. (2) i, pp. 1037–1048.

From Australia; 1 sp. of *Noctuidæ*, the rest *Micro-Lepidoptera*. The *Thalpochares* feeds on a species of *Coccus*.

494. Michard, A. *Pœcilopeplus tardifi*, n. sp. Rev. d'Ent. vi, p. 139. [*Coleoptera.*]

495. Mik, J. Ueber *Dipteren*. I. Drei neue österreichische Dipteren. II. Bemerkungen zu einigen schon bekannten Dipteren Arten. Verh. z.-b. Wien, xxxvii, pp. 173–188, pl. iv.

496. ——. *Dipterologische* Miscellen. IV–VII. Wien. ent. Z. vi, pp. 33, 187, 238, & 264.

497. ——. Diagnosen neuer *Dipteren*. I. Zwei neue Arten aus dem alten Genus *Clinocera*, Meig. II. Vier neue Caucasische Arten. *T. c.* pp. 161–164.

498. [Mik, J.] Ueber einige *Empiden* aus Kärnten. *T. c.* pp. 99–103. [*Diptera.*]

Includes 2 new species.

499. ——. Ueber eine schon beschriebene, aber noch nicht benannte österreichische *Dipteren* Art. *T. c.* pp. 261–263.

500. ——. Zur Biologie von *Zonosema meigenii*, Lw., und einer neuen *Anthomyinen*-Art. *T. c.* pp. 293–302, pl. v.

501. ——. Ueber Herrn Dr. Joseph's Beobachtungen parasitisch-lebender Hypodermenlarven am Menschen. Deutsche Medizinal-Zeitung, 1887, No. 70. [*Diptera.*]

It appears from this note that Dr. Joseph has published in the same journal a note on the subject to which Mik here replies. So far as I can judge from this note, they contain only what has appeared in periodicals more accessible to entomologists.

502. ——. Einige Worte zu meinem Referate über Dr. G. Joseph's Artikel: "Ueber Fliegen als Schädlinge und Parasiten des Menschen." Wien. ent. Z. vi. pp. 87–98. [*Diptera.*]

Chiefly personal, but contains some remarks in reference to *Sarcophaga carnaria*, *wohlfarti*, and *Hypoderma bovis*, *diana*.

503. ——. Einige Worte zu Dr. J. Schnabl's "Contributions à la faune *dipterologique*." Ent. Nachr. xiii, pp. 234–237. [*Cf.* Schnabl (679).]

504. Millière, P. *Lépidoptères* nouveaux ou peu connus. Chenilles nouvelles. Ann. Soc. Ent. Fr. (6) vii, pp. 215–221, pl. v, pt.

505. ——. Notes entomologiques. Des résultats variés que donnent chez les *Lepidoptères* les accouplements consanguins. Nat. Sicil. vi, pp. 125–130.

506. Minà-Palumbo, F., & Failla-Tedaldi, L. Materiali per la fauna *Lepidotterlogica* della Sicilia. Nat. Sicil. vi, pp. 229–236, and vii, pp. 10–21, 46–53, & 65–72.

Introduction, bibliography, and list of species, with remarks, localities, and dates.

507. Mische, A. Beitrag zur Ueberwinterung der *Lepidopteren*. Soc. Ent. ii, pp. 4, 11, & 21.

Brief notes on some species that hibernate in the imago-state in Germany.

508. Mocsáry, A. Eine neue Goldwespen-Art und- Varietät aus Deutschland. Ent. Nachr. xiii, p. 291. [*Hymenoptera.*]

509. ——. Studia synonymica. Term füzetek. xi, pp. 12–20. [*Hymenoptera.*]

This very long list of synonyms without comments relates to *Tenthredinidæ*, *Chrysididæ*, and *Aculeata*. These synonyms are not reproduced in our "Systematic" pages.

510. ——. Species tres novæ generis *Anthidium*, Fabr. *T. c.* pp. 28 & 29. [*Hymenoptera.*]

511. Moniez, R. Les mâles du *Lecanium hesperidum*. C.R. civ, pp. 449–451. [*Rhynchota.*]

Males are found in abundance, included in the ovaries of the females in a cul-de-sac. Spermatozoa are found in these males at a certain stage of development. [For notice by Douglas, see Ent. M. M. xxiv, p. 25; Summary, J. R. Micr. Soc. 1887, p. 383.]

512. ——. Note sur un parasite nouveau du ver à soie. Bull. Soc. Z. Fr. xii, pp. 535 & 536.

513. ——. Sur un champignon parasite du *Lecanium hesperidum*. *T. c.* pp. 150–152. [*Rhynchota.*]

514. Montandon, A. L. Description d'*Hémiptères-Hétéroptères* nouveaux et notes sur quelques *Hémiptères* recueillis par M. Bedel en Algerie. Rev. d'Ent. vi, pp. 64–74.

515. Moore, F. The *Lepidoptera* of Ceylon. Vol. III, pp. 393–578 & i–xv, pls. 196–215.

This work is now completed. The pp. named above include the remainder of the *Geometridæ* and subsequent families, as well as an appendix devoted to additions to families previously treated. The *Tortricidæ* and *Tineidæ* have been examined and described by Lord Walsingham.

516. Morawitz, F. Ueber transcaspische *Chlorion*-Arten. Hor. Ent. Ross. xxi, pp. 347–352. [*Hymenoptera.*]

517. Morgan, A. C. F. Observations upon *Aspidiotus rapax*, Comstock, and *A. camelliæ* (Boisd.), Signoret: two allied species of *Coccidæ*. Ent. M. M. xxiv, pp. 79–82. [*Rhynchota.*]

518. Morgan, C. L. The senses and sense-organs of Insects. P. Bristol Soc. v, pp. 178–182.

519. Müller, Cl. Vierzehn neue *Heteromeren* von Bradshaw im Zambesi-Gebiete aufgefunden, mit Abbildungen von van de Poll. Tijdschr. Ent. xxx, pp. 297–308. [*Coleoptera.*]

520. Müller, F. Zur Kenntniss der Feigenwespen. Ent. Nachr. xiii, pp. 161–163. [*Hymenoptera.*]

521. ——. Die Nymphen der *Termiten*. *T. c.* pp. 177 & 178. [*Neuroptera.*]

Relates to Jhering's observations, *ante* (350).

522. ——. Ueber die Gattung *Chimarrha*. *T. c.* pp. 225 & 226. [*Neuroptera.*]

523. ——. Die Larve von *Chimarrha*. *T. c.* pp. 289 & 290. [*Neuroptera.*]

524. ——. Ein deutsche *Lagenopsyche*. *T. c.* pp. 337–340, woodcut. [*Neuroptera.*]

525. Müller, W. Duftorgane bei *Phryganiden*. Arch. f. Nat. (2) liii, pp. 95–97. [*Neuroptera.*]

The dilated palpus of *Sericostoma personatum* ♂ is considered to be a scent-organ. [Summary, J. R. Micr. Soc. 1888, p. 406.]

526. [Müller, W.] Scent-organs in *Phryganidæ*. Ann. N. H. (5) xx, pp. 305–307. [*Neuroptera.*]

Translation of the preceding.

527. ——. Die Fächerflügler. *Strepsiptera*. S. E. Z. xlviii, pp. 150–160. [*Coleoptera.*]

528. Murtfeldt, M. E. Traces of maternal affection in *Eutilia sinuata*, Fab. Ent. Am. iii, pp. 177 & 178. [*Rhynchota.*]

——. [See also Riley (637).]

529. Nabias, B. Les galles et leurs habitants. Paris: 1886, pp. vii & 144.

A compilation intended to serve as an introductory work.

Nassonoff. [See Hachoboa (289).]

530. Nicéville, L. de. Descriptions of some new or little known Butterflies from India, with some notes on the seasonal dimorphism in the genus *Melanitis*. P. Z. S. 1887, pp. 448–467, pls. xxxix & xl. [*Lepidoptera.*]

——. [See also Elwes, H. G. (195).]

531. Nicéville & Wood-Mason, J. List of the Lepidopterous Insects collected in Cachar by Mr. J. Wood-Mason. Part ii. *Rhopalocera*. J. A. S. B. lv, pp. 343–393, pls. xv–xviii. [*Lepidoptera.*]

247 species were obtained between March 26th and October 4th.

532. Nickerl, O. *Goliathus atlas*, n. sp. S. E. Z. xlviii, pp. 174–176, pl. [*Coleoptera.*]

533. Nicolas, —. Sur l'arrêt complet de développement de certaines larves des *Hymenoptères*, et sur l'augmentation ou la diminution de nourriture imposées à d'autres larves de la même famille. C.R. Ass. Sci. Fr. (2) xv, 2ade partie, pp. 601–604.

534. Oberthür, C. New species of Algerian *Lepidoptera*. Bull. Soc. Ent. Fr. (6) vii, pp. xlviii, lvii–lix, lxvii, lxxvi, lxxxii, & xcix.

535. Oestlund, O. W. Synopsis of the *Aphididæ* of Minnesota. Bull. Sur. Minnesota, No. 4. St. Paul: 1887, 100 pp.

Describes the families, subfamilies, and genera, as well as the species; and gives list of the plants affected.

536. Olivier, E. Diagnose d'une nouvelle espèce de *Lampyride*. Bull. Soc. Ent. Fr. (6) vii, p. cexi. [*Coleoptera.*]

537. Olliff, A. S. Notes on *Zelotypia stacyi*, and an account of a variety. P. Linn. Soc. N.S.W. (2) ii, pp. 467–470. [*Lepidoptera.*]

538. ——. Contributions towards a knowledge of the *Coleoptera* of Australia. No. iv. Description of a new genus and species of *Œdemeridæ*. *T. c.* pp. 153–155.

539. ——. A Revision of the *Staphylinidæ* of Australia. Part iii. Subfamily iii—*Staphylininæ*. *T. c.* pp. 471–512. [*Coleoptera.*]

540. Ormerod, E. A. *Cecidomyia destructor*, Say, in Great Britain. Tr. E. Soc. 1887, pp. 1–6, woodcuts. [*Diptera.*]

541. ——. Notes on the "Australian Bug" (*Icerya purchasi*), in South Africa. London : 1887, pp. vii & 36, woodcuts.

Information as to its ravages, parasites, &c., and contains description of a new *Coccinellid*, by Janson.

542. ——. Report of observations of injurious Insects and common farm pests during the year 1887, with methods of prevention and remedy. Eleventh report. London : 1888, 130 pp.

Pp. 12–54 relate to the Hessian Fly, and this part of the report has also been issued as a separate pamphlet, called, "The Hessian Fly in Great Britain in 1887." The prolonged heat and drought of 1887 is said to have been accompanied by an unusual prevalence of injurious Insects.

543. Osten-Sacken, C. R. On Mr. Portchinski's publications on the larvæ of *Muscidæ*, including a detailed abstract of his last paper : comparative biology of the necrophagous and coprophagous larvæ. B. E. Z. xxxi, pp. 17–27.

The papers thus rendered available to students, contain matter of great interest about several common *Diptera*.

544. ——. Studies on *Tipulidæ*. Part II. Review of the published genera of the *Tipulidæ brevipalpi*. *T. c.* pp. 163–242. [*Diptera.*]

Revision of the classification of the group, with special reference to the work done since 1867. One new genus and several new species are proposed.

545. ——. Some North American *Tachinæ*. Canad. Ent. xix, pp. 161–166. [*Diptera.*]

——. [See also Godman & Salvin (263).]

546. Oudemans, A. C. Die gegenseitige Verwandtschaft, Abstammung und Classification der sogennanten Arthropoden. Tijdschr. Nederl. Dierk. Ver. (2) i, pp. 37–56.

Relates nearly entirely to *Arachnida*, but has a few remarks on *Myriopoda* and *Insecta*.

547. °Oudemans, J. T. Bijdrage tot de Kennis der *Thysanura* en *Collembola*. Gr. 4to, 104 pp., 3 pls. [*cf.* Zool. Anz. x, p. 398]. [*Neuroptera.*]

548. Pabst, M. Die Gross-Schuppenflügler (*Macro-Lepidoptera*) der Umgegend von Chemnitz und ihre Entwicklungsgeschichte. II. Teil. *C. noctuæ* (erste Hälfte). Ber. Ges. Chemn. x, pp. 3–52.

549. Packard, O. S. Notes on certain *Psychidæ*, with Descriptions of two new *Bombycidæ*. Ent. Am. iii, pp. 51 & 52. [*Lepidoptera.*]

550. ——. Critical remarks on the literature of the Organ of Smell in Arthropods. Am. Nat. xxi, pp. 182–185.

This is an abstract of the more important portions of Kraepelin's remarks ; at pp. 279–286 he gives an account of Hauser's researches on the same subject.

[Packard, O. S.] [See also Riley (637).]

551. Pagenstecher, A. Beiträge zur *Lepidopteren*-Fauna des Malayischen Archipels. JB. nass. Ver. xl, pp. 205–241, pls. i–iii.

552. Parona, C. Note sulle *Collembole* e sui *Tisanuri*. Ann. Mus. Genov. (2), iv, pp. 475–482. [*Neuroptera.*]

I. Intorno ad alcune specie del gen. *Achorutes*, Templ. e dell' *Achorutes murorum* (*A. viaticus*) dello stretto di Magellano. II. *Colembole* e Tisanuri raccolti nel Trentino dai March. L. e. G. Doria.

553. Pascoe, F. P. On *Byrsops* and some Allied Genera. Tr. E. Soc. 1887, pp. 323–339, pl. xi. [*Coleoptera.*]

554. ——. Descriptions of some New Species of *Brachycerus*. *T. c.* pp. 7–17, pls. i & ii. [*Coleoptera.*]

555. ——. Descriptions of some New Genera and Species of *Curculionidæ*, mostly Asiatic. Part III, Ann. N. H. (5), xix, pp. 370–380. Part IV, *op. cit.* (5) xx, pp. 348–361. [*Coleoptera.*]

556. ——. Notes on *Coleoptera*, with Descriptions of New Genera and Species. Ann. N. H. (5) xx, pp. 8–20.

557. Patten, W. Studies on the Eyes of Arthropods. I. Development of the Eyes of *Vespa*, with Observations on the Ocelli of some Insects. J. Morph. i, pp. 194–226, plate unnumbered.

"This paper contains observations on the compound eyes of *Vespa*, *Blatta*, *Phryganids*, and upon the ocelli of *Dytiscus*, *Hydrophilus*, and *Phalangium*. Only the more important facts and those of theoretical significance are mentioned here, since a more detailed account will be published later." [Summary, J. R. Micr. Soc. 1888, pp. 209 & 210.]

558. ——. Eyes of Molluscs and Arthropods. J. Morph. i, pp. 67–89, pl. iii.

A summary of the paper recorded last year from MT. z. Stat. Neapl.

559. Pearsall, R. F. Description of a New *Cochliipod*. Ent. Am. ii, p. 209. [*Lepidoptera.*]

Perez, —. [See Buysson (111).]

560. Péringuey, L. *Brachycerus guineensis*, n. sp. S. E. Z. xlviii, p. 407. [*Coleoptera.*]

561. °Petri, C. Ergebnisse entomologischer Excursionen im Gebiete Schässburgs. Schässburg: 1885. [*Coleoptera.*]

Some supposed novelties are described, but, according to authorities, are well-known species, and are not noticed in our "Systematic." [*Cf.* Reitter, Wien. ent. Z. vi, p. 247.]

562. Philippi, F. Escrecencias de la vid y dos insectos dañinos al agricultor. Bol. Soc. Nac. de Agricult. xviii, pp. 1–7 (? sep. pag.), 1 pl.

Besides brief particulars as to some insects injurious to the vine in Chili, a new moth is described, and the larva of a beetle, *Chelymorpha varians*, Bl.

563. Pictet, A., & Saussure, H. de. Catalogue d'*Acridiens*, i. MT. schw. ent. Ges. vii, pp. 331–376. [*Orthoptera.*]

Includes the first three divisions of Stål, and comprises a large proportion of new genera and species from various regions; previously imperfectly-known genera and species are described at length.

564. Pokorny, E. (ill.) Beitrag zur Dipterenfauna Tirols. Verh. z.-b. Wien, xxxvii, pp. 381–420, pl. vii. [*Diptera.*]

This Dipterous fauna of the Tyrol is quite Central-European; even the warmer valleys of the southern slopes possess only a comparatively small number of Mediterranean forms.

565. ——. Neue *Tipuliden* aus den österreichischen Hochalpen. Wien. ent. Z. vi, pp. 59–60, pl. i. [*Diptera.*]

566. Poll, J. R. H. N. van de. Description of a New Genus and Four new Species of *Longicorns*. Notes Leyd. Mus. ix, pp. 113–120. [*Coleoptera.*]

567. ——. Nova Species *Buprestidarum*. *T. c.* p. 126. [*Coleoptera.*]

568. ——. Nova Species *Cucujidarum*. *T. c.* p. 140. [*Coleoptera.*]

569. ——. Description d'une *Trachys* nouvelle et quelques remarques biologiques. *T. c.* pp. 181–183. [*Coleoptera.*]

570. ——. Contributions to the Knowledge of the Longicorn group of the *Batoceridæ*. *T. c.* pp. 271–278. [*Coleoptera.*]

A list of the species, with much new synonymy.

571. ——. Description of a New Species of the Australian Longicorn genus *Brachytria*. *T. c.* p. 283. [*Coleoptera.*]

572. Portschinsky, J. *Diptera* europæa et asiatica nova aut minus cognita (Cum notis biologicis). v. Hor. Ent. Ross. xxi, pp. 3–20, pl. i, & vi, *t. c.* pp. 176–200, pl. vii.

The descriptions are in Russian, but there are Latin diagnoses.

——. [See also Osten Sacken (543).]

573. Poujade, —. New *Lepidoptera* from Thibet. Bull. Soc. Ent. Fr. (6) vii, pp. xxxviii, xlix, lxviii, cx, cxxxv, cxxxix, & clvii.

574. Poulton, E. B. Notes in 1886 upon *Lepidopterous* larvæ. Tr. E. Soc. 1887, pp. 281–321, pl. x.

Contains many interesting observations and suggestions on a variety of anatomical, physiological, and biological points. The following are the headings:—1. Notes upon the young larvæ of *Smerinthus populi*, and upon the red spots in *Smerinthus* larvæ. 2. Description of an unnamed *Sphinx* larva from Celebes. 3. Further observations on the protective attitude of *Geometer* larvæ. 4. A further account of the defensive structures of the larva of *Dicranura vinula*. 5. Additional eversible glands in larvæ. 6. On markings which appear on larvæ before pupation, and which correspond in position to the underlying pupal wings. 7. Further notes upon the larva of *Paniscus cephalotes*. 8. A special point in the protective attitude of the imago of *Gonoptera libatrix*. 9. The compara-

tively late emergence of female moths from the pupa. 10. The hereditary transmission of pink tubercles on the larvæ of *Saturnia carpini*. 11. Relation between phytophagous larvæ and various species of food-plant. 12. The origin of carnivorous habits in phytophagous larvæ. 13. The young larvæ of *Vanessa urticæ* and *Saturnia carpini* seek light. 14. The movements of larvæ guided by an appreciation of the force of gravitation. [Summary, J. R. Micr. Soc. 1887, p. 947.]

575. [Poulton, E. B.] On the artificial production of a gilded appearance in certain *Lepidopterous* pupæ. Rep. Brit. Ass. 1886, pp. 692 & 693.

576. ——. An enquiry into the cause and extent of a special colour relation between certain exposed *Lepidopterous* pupæ and the surfaces which immediately surround them. Phil. Tr. vol. 178 (1887) B, pp. 311–441, pl. xxvi.

The species investigated are *Vanessa urticæ*, *io*, *atalanta*, *Papilio machaon*, *Pieris brassicæ*, *rapæ*. The relation in the case of certain species is considered to be established, but in others a variation of colour exists without relation to the surroundings being established. The period of life during which the surrounding influences act is considered to be a certain number of hours in the later stage of the larval life; the influence is not conveyed by the eyes, nor by any external organ yet detected; golden surroundings are the most powerful. The biological value of the gilded appearance in pupæ is discussed; and it is thought, though it may be now small, it may have been greater when the ancestor pupated on rocks. A summary of the results is given, pp. 438 & 439.

577. ——. An inquiry into the cause and extent of a special colour-relation between certain exposed *Lepidopterous* pupæ and the surfaces which immediately surround them. P. R. S. xlii, pp. 94–108.

Abstract of the preceding paper.

578. ——. The experimental proof of the value of colour and markings in Insects in reference to their Vertebrate enemies. P. Z. S. 1887, pp. 191–274.

Records in the form of tables experiments made by Weir, Butler, and himself as to the refusal by Vertebrates of highly coloured caterpillars as food. He shows that they are so refused, but that the refusal is not absolute, as the larger animals may eat when pressed by hunger Insects they refuse at other times. The first section relates to larvæ, the next to Insects other than larvæ, and he then considers Insects which escape their enemies by other means than bright colours. On pp. 266 & 267 will be found a summary of his conclusions; and there is an appendix of the observations of Jenner Weir and himself. [Summary, J. R. Micr. Soc. 1887, p. 946.]

579. ——. Some experiments upon the protection of Insects from their enemies by means of an unpleasant taste or smell. Rep. Brit. Ass. 1886, p. 694.

Relates to the subjects discussed more fully in paper in P. Z. S.

610. Proost, A. Entomologie comparée. Les instincts des *Hymenoptères*. Rev. Quest. sci. xxi, pp. 540–562.

611. Provancher, L. Petite faune entomologique du Canada. Cinquième ordre, les *Hemiptères*. Pp. 105–184.

Published, like the following, in connection with Nat. Canad. All the genera and species are described, the number of novelties being quite small in this order. There is some synonymy, chiefly concerning his own species, that is not reproduced here.

582. ——. Additions et corrections à la faune *hymenopterologique* de la province de Quebec. Pp. 165–272.

583. Pryer, H. *Rhopalocera* Nihonica. A description of the Butterflies of Japan. Part i, pp. 11, pls. i–iii. [*Lepidoptera.*]

The plates are prepared by natives of Japan, and the work is printed, on Japanese paper, in both the Japanese and English languages.

Pryer, W. B. [See Distant, W. L. (166).]

584. Purdie, A. Description of a new species of Moth. Tr. N. Z. Inst. xix, pp. 69–72. [*Lepidoptera.*]

585. Puton, A. *Hémiptères* nouveaux ou peu connus de la faune Paléarctique. Rev. d'Ent. vi, pp. 96–105.

586. —— & Lethierry, L. *Hémiptères* nouveaux de l'Algérie. *T. c.* pp. 298–311.

587. Queidenfeldt, G. Ein neues *Helopiden*-Genus von Marokko. Ent. Nachr. xiii, pp. 257–259. [*Coleoptera.*]

588. ——. Drei neue *Cerambyciden* von Kamerun. B. E. Z. xxxi, pp. 141–144. [*Coleoptera.*]

589. Radoszkowski, O. *Hymenoptères* de Korée. Hor. Ent. Ross. xxi, pp. 428–436.

590. ——. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. III. *T. c.* pp. 41–52, pls. ii & iii. [*Hymenoptera.*]

591. ——. Faune Hyménoptérologique transcaspienne. Suite. *T. c.* pp. 88–101, pls. iv & v.

592. ——. Sur quelques *Osmia* russes. *T. c.* pp. 274–293, pls. vii & viii. [*Hymenoptera.*]

Redescribes several species and figures the male characters.

593. ——. Revision des armures copulatrices de la famille *Epeolus*. *T. c.* pp. 294–296, pl. viii, part. [*Hymenoptera.*]

594. Raffray, A. Note sur la préparation des petits insectes et leur étude au microscope. Rev. d'Ent. vi, pp. 210–215.

Suggests their being dried and placed in glass cells loose; also gives directions for mounting minute dissections.

595. ——. *Pselaphides* nouveaux ou peu connus. *T. c.* pp. 18–56, 61 & 62, pls. i & ii. [*Coleoptera.*]

The numerous new species are chiefly from tropical and southern Africa.

596. Ragonot, E. L. Diagnoses d'espèces nouvelles de *Phycis*re-d'Europe et des pays limitrophes. Ann. Soc. Ent. Fr. (6) vii*ini*. 225–260. [*Lepidoptera.*] od-

190 n. spp. and several new genera, published in anticipation of a intended monograph of the group.

597. ——. Note sur la *Coleophora amethystinella*, Rag., et sur les espèces de son groupe. *T. c.* pp. 222–224, pl. v, part. [*Lepidoptera.*]

598. ——. Diagnoses de diverses espèces inédites de *Microlepidoptères* de Gabès. Bull. Soc. Ent. Fr. (6) vii, pp. cxxxvii & cxxxviii.

599. Ragusa, E. *Coleotteri* nuovi o poco conosciuti della Sicilia. Nat. Sicil. vi, pp. 214–216, and vii, pp. 25–28.

600. Raschke, W. Zur Anatomie und Histologie der Larve von *Culex nemorosus*. Zool. Anz. x, pp. 18 & 19. [*Diptera.*]

A note in anticipation of the following memoir. [Summary, J. R. Micr. Soc. 1887, p. 383.]

601. ——. Die Larve von *Culex nemorosus*. Arch. f. Nat. (2) liii, pp. 133–163, pls. v & vi. [*Diptera.*]

Deals with the anatomy, external and internal.

602. Rath, O. Ueber die Hautsinnesorgane der Insecten. Zool. Anz. x, pp. 627–631 & 645–649.

A brief account of some observations made on sections of the antennæ and trophi of various Insects. He considers that all the sense organs of Insects, except those of seeing and hearing, are modifications of a single form, viz., the hair passing through the chitinous integument with cells at its base; the integument may become thin, and of a membranous nature, and the hairs disappear, &c. [Summary, J. R. Micr. Soc. 1888, pp. 210 & 211.]

603. Rees, J. van. Over de post-embryonale ontwikkeling van *Musca vomitoria*. II. Maandbl. Natuurw. xiv, pp. 85–90.

604. Regimbart, M. Description d'un *Dytiscide* nouveau. Notes Leyd. Mus. ix, p. 244. [*Coleoptera.*]

605. ——. *Dytiscidæ* et *Gyrinidæ* collectés dans le royaume de Scioa (Abyssinie) par Mr. le Dr. Ragazzi en 1885. Ann. Mus. Genov. (2) iv, pp. 636–641. [*Coleoptera.*]

606. ——. Description de deux *Dytiscides* nouveaux. Notes Leyd. Mus. ix, p. 267. [*Coleoptera.*]

607. ——. Description d'un *Gyrinide* nouveau. *T. c.* p. 269. [*Coleoptera.*]

608. Reitter, E. Bestimmungs-Tabellen der europäischen Coleopteren. III Heft, enthaltend die Familien *Scaphidiidæ*, *Lathridiidæ*, *Dermestidæ*. II Auflage. Mödling: 1886, 74 pp.

609. ——. Bestimmungs-Tabellen der europäischen Coleopteren. XVI Heft, enthaltend die Familien *Erotylidæ* and *Cryptophagidæ*. Brunn: 1887, 54 pp.

This has also appeared in Verh. Ver. Brunn, xxvi, but only the separate pamphlet has been seen by the Recorder.

610. [Reitter, E.] Ueber *Elater*-Arten aus der Verwandschaft des *E. ochropterus*, Esch. Wien. ent. Z. vi, pp. 211–213. [*Coleoptera.*]

611. ——. Uebersicht der mir bekannten *Pedius*-Arten. *T. c.* pp. 257 & 258. [*Coleoptera.*]

612. ——. Uebersicht der mir bekannten Arten der *Coleopteren*-Gattung *Dromius*, Bon., aus Europa und den angrenzenden Ländern. *T. c.* pp. 285–288.

613. ——. Ein neuer *Carabus* aus Tscherkessien. *T. c.* pp. 184–187. [*Coleoptera.*]

614. ——. Neue Borkenkäfer aus Europa und den angrenzenden Ländern. *T. c.* pp. 192–198. [*Coleoptera.*]

615. ——. Tabelle zur Bestimmung der europäischen Arten der *Coleopteren*-Gattung *Homaloplia*, Steph. *T. c.* pp. 135–139.

Includes 4 new species.

616. ——. Revision der Gattung *Scydmænus*, Latr. (*Eumicrus*, Lap., et auct.), aus Europa und den angrenzenden Ländern. *T. c.* pp. 140–145. [*Coleoptera.*]

Numerous new species.

617. ——. Eine neue europäische *Curculioniden*-Gattung aus der Gruppe der *Acalyptini*, Bedel. *T. c.* pp. 17 & 18. [*Coleoptera.*]

618. ——. *Coleopterologische* Notizen. xx–xxvii. *T. c.* pp. 28, 76, 104, 171, 214, 224, & 254.

619. ——. Uebersicht der bekannten Arten der *Coleopteren*-Gattung *Clidicus*, Cast. *T. c.* p. 64.

620. ——. Bemerkungen zu der Arbeit "Beschreibungen neuer *Pselaphiden* aus der Sammlung des Museums Ludwig Salvator von Dr. L. W. Schaufuss." Tijdschr. Ent. xxx, pp. 316–342. [*Coleoptera.*]

[*Cf.* Schaufuss (670).]

621. ——. Zur Species-Kenntniss der Maikäfer aus Europa und den angrenzenden Ländern. Deutsche e. Z. xxxi, pp. 529–542. [*Coleoptera.*]

Kraatz, *t. c.* pp. 543 & 544, adds some remarks.

622. ——. Neue *Coleopteren* aus Europa den angrenzenden Ländern und Sibirien, mit Bemerkungen über bekannte Arten. Dritter Theil. *T. c.* pp. 241–288. Vierter Thiel, *t. c.* pp. 497–528.

More than 100 new species.

623. ——. Beitrag zur Kenntniss der europäischen *Rhyncholus*-Arten. *T. c.* pp. 123–127. [*Coleoptera.*]

624. ——. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. vi. *Clavicornia*, *Lamellicornia*, et *Serricornia*. Hor. Ent. Ross. xxi, pp. 201–234. [*Coleoptera.*]

625. ——. Insecta in itinere cl. N Przewalskii in Asia centrali novissime lecta. ix. *Tenebrionidæ*. *T. c.* pp. 355–389. [*Coleoptera.*]

626. [Reitter, E.] *Zuphium faillæ*, n. sp. Nat. Sicil. vii, p. 9. [*Coleoptera.*]

627. ——. Una nuova *Epurœa* di Sicilia. *Op. cit.* vi, p. 83. [*Coleoptera.*]

628. ——. Sulle specie del genere di *Coleotteri*, *Tetratoma*, Fabr. *T. c.* p. 84.

629. Retowski, O. Neue *Curculioniden* aus der Krim und dem Kaukasus, nebst Bemerkungen über einige schon bekannte Arten. Wien. ent. Z. vi, pp. 130–134. [*Coleoptera.*]

630. Reuter, O. M. Ad cognitionem *Heteropterorum* madagascariensium. Ent. Tidskr. viii, pp. 77–109. [*Rhynchota.*]

Includes some new genera and many new species.

631. ——. *Reduviidæ* novæ et minus cognitæ descriptæ. Rev. d'Ent. vi, pp. 149–167. [*Rhynchota.*]

632. Rey, C. Essai d'études sur certaines larves de *Coléoptères* et descriptions de quelques espèces inédites ou peu connus. Ann. Soc. L. Lyon (n.s.) xxxiii, pp. 131–259, pls. i & ii.

633. Ribbe, C. Beitrag zur Kenntniss der *Lepidopteren*-Fauna von Batjan. CB. Iris, i, pp. 203–205.

The fauna is said to be poor, notwithstanding its very rich flora. 100 species of *Rhopalocera* are here recorded.

634. Riley, C. V. Report of the Entomologist for the year 1886, from the Annual Report of the Department of Agriculture for the year 1886. Washington: 1887, pp. v & 459–592, 11 pls.

Contains articles on the Cottony Cushion-scale, *Icerya purchasi*, pp. 466–492, pls. i–v, and includes a new genus of *Chalcididæ* by Howard. Buffalo-gnats, pp. 492–578, pls. vi–ix. The Fall Web-worm, *Hyphantria cunea*, pp. 518–539. On joint-worms, *Isosoma*, showing that certain presumed species are seasonal dimorphic forms, pp. 539–546. On silk-culture, and reports of agents on a variety of entomological matters.

635. °——. The imported elm Leaf-beetle (*Galeruca xanthomelæna*): its habits and natural history and means of counteracting its injuries, with 1 pl. and 1 fig. Washington: 1885. Bull. Dep. Agric. Ent. No. 6. [*Coleoptera.*]

636. ——. Our shade trees and their insect defoliators; being a consideration of the four most injurious species which affect the trees of the capital: with means of destroying. Washington: 1887. Bull. Dep. Agric. Ent. No. 10, pp. 1–69.

This is chiefly made up from others that have previously appeared, and from the same author's report of the Entomologist for the year 1886.

637. ——. Reports of observations and experiments in the practical work of the division made under the direction of the Entomologist. *Op. cit.* No. 13, pp. 1–78; No. 14, pp. 1–59.

No. 13 contains report on Locusts in Texas, by Bruner. Fourth report on Insects injuring forest and shade trees, by the sepa- pp. 20–32. Report on Nebraska Insects, by Bruner, pp.

with insecticides on garden Insects, by ALWOOD, pp. 38–47. Report on Ohio Insects, by ALWOOD, pp. 48–53. A record of some experiments relating to the effect of the puncture of some *Hemipterous* Insects upon shrubs, fruits, grains, &c., by WEBSTER, pp. 54–58. Notes from Missouri for the season of 1886, by MURTFELDT, pp. 59–65. Apicultural experiments, by MCLAIN, pp. 66–75; and a new *Lygus* is described by UHLER, p. 63.—No. 14 contains report on Insects injurious to garden crops in Florida, by W. H. ASHMEAD, pp. 9–29, and descriptions of new parasitic *Hymenoptera*. Report on Buffalo-gnats, by WEBSTER, pp. 29–39, and two articles without entomological interest.

638. [RILEY, C. V.] The Icerya, or fluted scale, otherwise known as the Cottony Cushion-scale. *Op. cit.* No. 15, pp. 1–40. [*Rhynchota.*]

This is a reprint of some addresses to the inhabitants of Florida on *Icerya purchasi*, and it also gives extracts from correspondence about this Insect with naturalists in other parts of the world.

639. ——. The problem of the Hop-plant Louse (*Phorodon humuli*, Schranck) in Europe and America. Nature, xxxvi, pp. 566 & 567.

Abstract of paper read before the British Association at Manchester.

640. ——. Poisonous Insects: in Reference Handbook of the Medical Sciences, vol. v, pp. 741–760, woodcuts. New York: 1887.

A compilation of information as to the stings and bites of, and irritations caused by, Insects, as well as *Arachnida* and *Myriopoda.*

641. ——. Remarks on the Insect defoliators of our shade trees. New York: 1887, 12 pp.

An economic article for popular use.

642. ——. Beschreibung einer den Birnen schädlichen Gallmücke (? *Diplosis nigra*, Meig.). Wien. ent. Z. vi, pp. 201–206, woodcuts. [*Diptera.*]

643. ——. On the luminous larviform females of the *Phengodini*. Ent. M. M. xxiv, pp. 148 & 149. [*Coleoptera.*]

644. RITSEMA, C. Midden-Sumatra, iv, 6, pp. 1–210, pls. i–iii. [*Coleoptera.*]

This volume is now completed; the descriptions and lists of which it consists have been published previously in a scattered manner; but the three excellent plates are new, and two of them coloured.

645. ——. A new species of the *Longicorn* genus *Chloridolum*, Thoms. Notes Leyd. Mus. ix, p. 127. [*Coleoptera.*]

646. ——. On a few *Coleoptera* from the Island of Riouw. *T. c.* pp. 213–216.

647. ——. Alphabetical list of the described species of the Longicorn genus *Batocera*, Cast., with indication of the synonyms. *T. c.* pp. 219–222. [*Coleoptera.*]

648. RÖBER, J. Neue Schmetterlinge aus Indien. CB. Iris, i, pp. 185–202, pls. vii–ix. [*Lepidoptera.*]

649. Röder, V. v. *Rhamphomyia argentata*, n. sp. Wien. ent. Z. vi, p. [illegible] [*Diptera.*]

650. ——. Ein neue Art der Gattung *Melanochelia*, Rond. *T. c.* p. [illegible] [*Diptera.*]

651. ——. *Asyndulum montanum*, n. sp. *T. c.* p. 116. [*Diptera.*]

652. ——. Ueber eine neue Art der Gattung *Gnoriste*, Mg. *T. c.* p. 155. [*Diptera.*]

653. ——. Analytische Tabelle der *Hemerodrominæ* mit Einschluss der Gattung *Synamphotera*, Lew. *T. c.* p. 169. [*Diptera.*]

654. ——. Uebersicht der beim Dorf Elos bei Kisamos auf der Insel Creta von Herrn E. v. Oertzen gesammelten *Dipteren*. B. E. Z. xxxi, pp. 73–75.

655. ——. Eine neue *Exoprosopa* aus Syrien. *T. c.* p. 75. [*Diptera.*]

656. ——. Ueber die Gattungen *Doryclus*, Jaen., und *Megapoda*, Meq. *T. c.* pp. 76–78. [*Diptera.*]

657. Roelofs, W. *Curculionides* d'Angola determinés par. J. Sci. Lisb. xlv, pp. 48–56. [*Coleoptera.*]

A list of 41 species, 1 new.

658. Rogenhofer, A. Ueber *Polia senex*, Geyer. Verh. z.-b. Wie[illegible] xxxvii, pp. 201–204. [*Lepidoptera.*]

659. Romanoff, N. M. Mémoires sur les Lépidoptères rédigés par [illegible] Tome III. St. Petersburg: 1887, 419 pp., xvii pls.

The contents of this vol. are as follows:—1. Romanoff, N. M. Les Lépidoptères de la Transcaucasie. Troisième partie, pp. 1–49, pls. i & ii. Includes *Geometrides* part, *Pyralides*, and *Crambides*. 2. Christoph, H. *Lepidoptera* aus dem Achal-Tekke Gebiete. Dritter theil. pp. 50–125, pl. iii—v. Enumerates species throughout the order, with description of numerous novelties; they were sent by General Komaroff to Prince Romanoff. 3. Staudinger, O. Neue Arten und Varietäten von Lepidopteren aus dem Amur-Gebiete, pp. 126–232, pls. vi–xii and xvi & xvii. The descriptions extend over the groups from *Rhopalocera* to *Cymatophoridæ*. 4. Fixsen, Dr. C. *Lepidoptera* aus Korea, pp. 233–356, pls. xiii–xv, and map. A brief account of Herr Herz's journey, and mentions the species obtained of the groups from *Rhopalocera* to *Cymatophoridæ*, 175 species, including several novelties. 5. Grumm-Grshimaïlo, Gr. Bericht über meine Reise in das östliche Buchara (Correspondenz; mit 1 Karte). Nebst Anhang. Diagnosen einer neuen Species, pp. 357–402. 6. Alphéraky, S. Diagnoses de quelques Lépidoptères inédits du Thibet, pp. 403–406. Four n. spp. of *Rhopalocera*, and two or three varieties. 7. Table alphabétique des noms, de genres, d'espèces, de variétés et d'aberrations mentionnés dans ce volume, pp. 407–419. The volume is equal to its predecessors [*cf.* Zool. Rec. xxii. *Insecta* (292)] in the beauty of the typography and plates. The numerous descriptions given in the volume are not accompanied by any clear indication of what are new, and what relate to known species. [The volume is reviewed by Snellen, Tijdschr. Ent. xxx, pp. 293–296.]

660. Rondot, N. L'art de la soie. Deuxième édition. Paris: Vol. i, viii & 484 pp. (1885); Vol. ii, 604 pp.

There is much entomological information in this work, which is apparently a compilation intended for the use of manufacturers and others.

661. Kuhl, F. Zur Parthenogenesis der Blattwespen. Soc. Ent. i, pp. 179 & 180. [*Hymenoptera.*]

He objects to the inference that in cases where the ♂ is unknown the species is parthenogenetic, and thinks that the sexes may have somewhat different times of appearance.

662. ——. Zur Biologie der *Forficula*-Arten. MT. schw. ent. Ges. vii, pp. 309–312. [*Orthoptera.*]

Discusses the period of copulation; and says that the Earwig is not so injurious in gardens as is supposed by many.

Salvin, O. [See Godman & Salvin (263).]

663. Sandahl, O. Nägra ord om den svartkantade ollonborren eller kastanjebaggen (*Melolontha hippocastani*). Ent. Tidskr. viii, pp. 187–190 & 204, woodcuts. [*Coleoptera.*]

664. Sauber, A. Ueber Wanderungen der Schmetterlinge. Verh. Ver. Hamb. vi, pp. 40–43.

Relates to three species of *Lepidoptera* that he supposed to have come by migration to the lower Elbe.

665. Saulcy, F. de. Description de trois *Orthoptères* nouveaux des Pyrénées. Bull. Soc. Metz. (2) xvii, pp. 81–83.

666. ——. Encore trois nouveaux *Orthoptères* des Pyrénées. *T. c.* pp. 189–191.

667. Saussure, H. de. Spicilegia entomologica genavensia. 2. Tribus *Pamphagiens.* Geneva: 1887, 4to, 94 pp., 2 pls.

He completely revises the African species, but only gives some notes and novelties among the Palæarctic species; the distribution is discussed, and this he considers to be determined partly by geographical, partly by climatic influences.

668. ——. Sur quelques *Hyménoptères* de Madagascar. Soc. Ent. ii, pp. 2, 3, 9, 17, 18, 25, & 26.

Brief descriptions of numerous n. spp., and 2 or 3 n. gen.

——. [See also Pictet (563).]

Savastano, L. [See Jatta (348).]

669. Schatz, E. Exotische Schmetterlinge. ii Theil: Die Familien und Gattungen der Tagfalter systematisch und analytisch bearbeitet. Fürth (Bavaria): for Theil i, *vide* Staudinger (731). [*Lepidoptera.*]

670. Schaufuss, L. W. Beschreibung neuer *Pselaphiden.* Tijdschr. Ent. xxx, pp. 91–165, pls. vii–ix. [*Coleoptera.*] Continued from vol. xxix. [*Cf.* Zool. Rec. xxiii, *Ins.* (632).]

[*Cf.* Reitter (620).]

671. [Schaufuss, L. W.] Ueber *Pselaphiden* und *Scydmaeniden* Königl. zoologischen Museums z Berlin, und verwandte A[rten.] B. E. Z. xxxi, pp. 287–320. [*Col. Melano*

672. ——. Beitrag zur Fauna der den Sunda-Inseln, II. Hor[p.] *T. c.* p. 116. [*Diptera.*] [*Coleoptera.*] [attung *Gnoriste*, Mg. *T. c.* p. 155.

673. Schewiroff, J. Ueber die Met[a]morphose der *Pomerodromiæ* mit Einschluss der L. Hor. Ent. Ross. pp. 312–314.

674. Schiller-Tietz, —. Die apistis[che] p. 169. [*Diptera.*] B. E. Z. xxxi, pp. 356–366. Elos bei Kisamos auf der Insel I. The origin of the Bee's cell. II. T[he] melten *Dipteren*. B. E. Z. xxxi, storing and preservation of honey by Bees.

675. Schlechtendal, D. von. Phys[o]syrien. *T. c.* p. 75. [*Diptera.*] birge von Rott am Siebengebirge*clus*, Jaen., und *Megapoda*, Mcq. [Palæo-entomology.– *Neuroptera.*]

676. Schletterer, A. Die *Hymenop*ola determinés par. J. Sci. Lisb. vorzugsweiser Berücksichtigung d Jahrb. ii, pp. 349–510, pl. xv.

A revision of the Palæarctic species of [Ch]r, Geyer. Verh. z.-b. Wien, a few new species from other regions. A catalogue of all the kno[wn] species [to] 87, is given.

677. Schmidt, J. Verzeichniss der von Herrn Premierlieutenant [Mi]e Quedenfeldt in Marokko 1885–86 gesammelten *Histeriden*. Ent. Nachr. xiii, pp. 353–356. [*Coleoptera.*]

678. Schmidt-Schweidt, E. Ueber Athmung der Larven und Puppen von *Donacia crassipes*. B. E. Z. xxxi, pp. 325–334, pl. v B. [*Coleoptera.*]

Sketches the mode in which the insect constructs under water a cocoon filled with air; the respiration is performed by means of two pointed processes on the body of the larva, which pierce into the roots of a plant and procure air therefrom.

679. Schnabl, J. Entgegnung auf Herrn. Prof. Jos. Mik's Kritik meiner Arbeit "Contributions à la faune *dipterologique*." Ent. Nachr. xiii, pp. 343–349. [*Cf.* Mik (503).]

680. ——. *Aricia vagans*, Fall. (*nec* Shiner). Hor. Ent. Ross. xxi, pp. 458–466. [*Diptera.*]

681. Schneider, A. Ueber den Darm der Arthropoden, besonders der Insecten. Zool. Anz. x, pp. 139 & 140.

Some brief remarks of the same nature as those in his larger memoir. [Summary, J. R. Micr. Soc. 1887, p. 378.]

682. Schönfeldt, H. v. Catalog der Coleopteren von Japan mit Angabe der bezüglichen Beschreibungen und der sicher bekannten Fundorte. JB. nass. Ver. xl, pp. 29–204.

683. Schöyen, W. M. Analytisk oversigt over de Skandinaviske Slægter af phytophage *Hymenoptera*. Ent. Tidskr. viii, pp. 111–117.

684. Schreiber, K. Die Käfer der Mosigkauer Haide. B. E. Z. xxxi, pp. 335–346. [*Coleoptera.*]

Merely a local list of names.

685. Schreiber, C. Ueber *Scolytus ratzeburgi*, Jans. Ent. Nachr. xiii, pp. 220–223. [*Coleoptera.*]

686. Schulthess-Rechberg, A. von. Fauna insectorum helvetiæ *Hymenoptera*. Fam. *Diploptera*, Latr. (*Vespida*, aut.) Schaffhausen: 1887, 48 pp.

Issued in connection with MT. schw. ent. Ges. vii.

687. Scudder, S. H. The introduction and spread of *Pieris rapæ* in North America, 1860–1885. Mem. Bost. Soc. iv, pp. 53–69, pl. 3 (map). [*Lepidoptera.*]

An account of the extension of this species from Quebec to Colorado, and also of a southern colony in Florida.

688. ——. Comparative tables for the families of Butterflies. Canad. Ent. xix, pp. 201–206. [*Lepidoptera.*]

"Many of the characters here tabulated have never before been pointed out."

689. ——. *Limochores pontiac* and *Atrytone kumskaka*. *T. c.* pp. 45–48. [*Lepidoptera.*]

——. [See also Godman & Salvin (263).]

690. Seidlitz, G. Ein paar Worte über Aenderung von Gattungsnamen. Deutsche e. Z. xxxi, pp. 345–359.

Points out that the older authors had no idea of a type of a genus, and that Linnæus and others when they divided a genus retained the name for the part containing the greater number of species.

691. ——. Zur genaueren Kenntniss einiger *Catops*-Arten Europas. *T. c.* pp. 81–94. [*Coleoptera.*]

692. ——. Bestimmungs-Tabelle der *Dytiscidæ* und *Gyrinidæ* des europaïschen Faunengebietes. Verh. Ver. Brünn. xxv, pp. 3–136. [*Coleoptera.*]

Published also separately.

693. —— Fauna baltica, die Kaefer der Ostseeprovinzen Russlands. Zweite neu bearbeitete Auflage.

At present only the first part of this new edition has appeared. It contains some additional matter in the introductory part, especially on the connection between scientific and systematic zoology, pp. xv & xvi, and the scholastic and ethical importance of entomology.

694. Seitner, M. Ein neuer Borkenkäfer aus Tirol. Wien. ent. Z. vi, pp. 44–46. [*Coleoptera.*]

695. °Selvatico, S. L'Aorta nel corsaletto e nel capo della farfalla del Bombice del Gelso. Padua: 1887, 19 pp., 2 pls. [*Cf.* Zool. Anz. xi, p. 77.]

696. [Selvatico, S.] Die Aorta im Brustkasten und im Kopfe des Schmetterlings von *Bombyx mori*. Zool. Anz. x, pp. 562 & 563. [Summary, J. R. Micr. Soc. 1888, p. 212.]

697. Selys-Longchamps, E. de. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. xi. *Neuroptera*. I. Hor. Ent. Ross. xxi, pp. 441–447.

698. ——. *Odonates* de l'Asie mineure et revision de ceux des autres parties de la faune dite européenne. Ann. Ent. Belg. xxxi, pp. 1–85. [*Neuroptera*.]

In an introduction he speaks of the various works that have appeared on this part of the fauna of the palæarctic region, leaving it rather doubtful whether in his opinion Japan should be included. Then give list of the species of Asia Minor, followed by that of Mediterranea Africa, in which he includes Madeira and the Canary Islands, and co cludes with a list of the species of geographical Europe. q.

699. Séménow, A. Description de deux espèces nouvelles du g *Carabus*, L. Hor. Ent. Ross. xxi, pp. 235–239. [*Coleoptera*.] sb.

700. ——. Insecta in itinere cl. N. Przewalskii in Asia centrali no sime lecta. v. *Carabus*. *T. c.* pp. 165–175. [*Coleoptera*.]

701. ——. Insecta in itinere cl. G. N. Potanin in China et in Mongo novissime lecta. i. Tribus *Carabidæ*. *T. c.* pp. 390–427. [*Coleo ptera*.] 6, c

An account of the journey is prefixed. It extended over three years, very rich collections being made in regions hitherto very little explored. Three faunæ are found to be represented, one of them being of an "eminently palæarctic character."

702. Semper, G. Reisen im Archipel der Philippinen von Dr. C. Semper. Zweiter Theil. Wissenschaftliche Resultate, Fünfter Band, Zweite Lieferung. Die Tagfalter, pp. 47–86, pls. ix–xiv. [*Lepidoptera*.]

A separate edition of this is published, the title on cover being in that case "Die Schmetterlinge der philippinischen Inseln. Beitrag zur Indo-Malayischen Lepidopterenfauna. Erste Band: die Tagfalter: *Rhopalocera*." We cite it in the correct form, judging from the press-marks of the sheets.

703. Sénac, H. Sous-genre *Pachyscelodes* (subdivision nouvelle genre *Pachyscelis*, Sol.). Ann. Soc. Ent. Fr. (6) vii, pp. 187–194. [*Coleoptera*.]

704. Sharp, D. Three new Water-beetles. Wien. ent. Z. vi, pp. 170 & 171. [*Coleoptera*.]

——. [See also Godman & Salvin (263).]

705. Sintenis, —. Verzeichniss der 1872–1885 in Merrekül bei Narva gefundenen *Rhopalocera*, *Sphinges*, *Bombyces*, und *Noctuæ*. SB Dorp. viii, pp. 60–81. [*Lepidoptera*.]

706. Smith, H. G. Description of nine new species of African Butterflies. Ann. N. H. (5) xix, pp. 62–66. [*Lepidoptera*.]

707. [SMITH, H. G.] Descriptions of three new species of Butterflies from Burmah. *T. c.* pp. 296 & 297. [*Lepidoptera.*]

708. ——. Description of two new species of *Danainæ*. *T. c.* p. 369. [*Lepidoptera.*]

709. ——. Descriptions of two new species of Butterflies from South Afghanistan. *Op. cit.* xx, pp. 129 & 130. [*Lepidoptera.*]

710. ——. Descriptions of eight new species of Asiatic Butterflies. *T. c.* pp. 265–268. [*Lepidoptera.*]

711. ——. Descriptions of six new Butterflies captured by Mr. John Whitehead at Kina Balu mountain, North Borneo. *T. c.* pp. 432–435. [*Lepidoptera.*]

712. SMITH, H. G., & KIRBY, W. F. *Rhopalocera exotica*; being illustrations of new, rare, or unfigured species of Butterflies, with coloured drawings and descriptions. London.

This is a 4to work, similar to Hewitson's Exotic Butterflies. Pts. i & ii have been published in 1887.

713. SMITH, J. B. New species of *Callimorpha*. Ent. Am. iii, pp. 25 & 26. [*Lepidoptera.*]

714. ——. The North American species of *Callimorpha*, Latr. P. U. S. Nat. Mus. x, pp. 338–353, pl. xiii. [*Lepidoptera.*]

715. ——. Notes on *Callimorpha*. Canad. Ent. xix, pp. 235–239 [*Lepidoptera.*]

Refers to LYMAN'S paper (454).

716. ——. The species of *Euerythra*. P. U. S. Nat. Mus. x, pp. 335–337, pl. xiii. [*Lepidoptera.*]

717. ——. *Euerythra trimaculata*, n. sp. Ent. Am. iii, p. 17. [*Lepidoptera.*]

718. ——. New genera and species of N. American *Noctuidæ*. P. U. S. Nat. Mus. x, pp. 450–479. [*Lepidoptera.*]

719. ——. A new genus and species of *Arctiidæ*. Ent. Am. iii, p. 79. [*Lepidoptera.*]

720. ——. A new *Sphinx*. *T. c.* p. 153. [*Lepidoptera.*]

721. ——. Notes on *Apion*, with description of a new species. *T. c.* p. 56. [*Coleoptera.*]

722. SMITH, T. F. On the finer structure of Butterfly and Moth scales. J. Quek. Club (2) iii, pp. 178–181.

723. SNELLEN, P. C. T. Nouvelle espèce de *Lepidoptère* de la famille des *Lycænides*. Notes Leyd. Mus. ix, p. 217.

724. ——. Bijdrage tot de kennis der *Lepidoptera* van het eiland Curaçao, met afbeeldingen door Prof. J. van Leeuwen, Jr. Tijdschr. Ent. xxx, pp. 9–66, pls. i–v.

An account of a small collection made by a missionary; 64 sp. *Rhopalocera*, 89 of *Heterocera*. Several new species are described, and a number of the smaller forms are left undetermined.

725. [Snellen, P. C. T.] Aanteekeningen over Nederlandsche *Lepidoptera*. *T. c.* pp. 199–226.

A supplement to his Vlinders van Nederland. Includes 45 additional species, bringing the total of species of Netherlands *Lepidoptera* to 1670.

726. Sörensen, W. Sur la faculté des *Condylopodes* de fermer et d'ouvrir spontanément leurs trachées. Ent. Tidskr. viii, pp. 71–75.

Points out some errors in the works of Landois & Thelen, and of Krancher.

727. South, R. Notes on the genus *Lycæna*. Ent. xx, pp. 1–8, 49–52, 73–85, & 121–127, pls. i & ii. [*Lepidoptera*.]

Relates to the variation of certain European species.

728. Stainton, H. T. Description of a new species of *Elachista*, allied to *rhynchosporella*, Stn. Ent. M. M. xxiii, p. 253. [*Lepidoptera*.]

729. ——. *Coleophora mühligiella*, n. sp. *Op. cit.* xxiv, p. 14. [*Lepidoptera*.]

730. ——. A new species of *Nepticula*, bred from birch. *T. c.* p. 62. [*Lepidoptera*.]

——. [See also Threlfall. (752).]

731. Staudinger, O. Exotische Schmetterlinge. 1. Theil: Abbildungen und Beschreibungen der wichtigsten exotischen Tagfalter.... Fürth (Bavaria): G. Löwensohn.

Parts 17–19 have appeared in 1887. The work is noticed by Kirby, Ann. N. H. (5) xix, p. 390.

732. ——. Einige neue Arten und Varietäten der Gattungen *Sesia* und *Zygæna*. B. E. Z. xxxi, pp. 29–42. [*Lepidoptera*.]

733. ——. Centralasiatische *Lepidopteren*. S. E. Z. xlviii, pp. 49–102.

New species and varieties of *Rhopalocera* and *Heterocera*.

——. See also Romanoff (659).

734. Stearns, R. E. C. *Aranjia albens* as a Moth trap. Am. Nat. xxi, pp. 501–507, woodcuts. [*Lepidoptera*.]

735. Steel, J. H. On bots (larval *Œstridæ*) of the horse and camel. J. Bomb. N. H. Soc. ii, pp. 27–32. [*Diptera*.]

736. Stefani, T. de. Un nuovo genere di *Crabronidi* ed altri imenotteri nuovi o poco cogniti raccolti in Sicilia. Nat. Sicil. vi, pp. 59–62, 85–90, 110–114, & 143–147. [*Hymenoptera*.]

737. ——. Specie siciliane del genere *Dasypoda*, Latr. Nat. Sicil. vi, pp. 188–192 & 210–214. [*Hymenoptera*.]

738. ——. Aggiunte al prospetto degli *Imenotteri* italiani. *Op. cit.* vii, p. 24.

739. Stein, R. R. v. Tenthredinologische Studien. xii. Synonymische Bemerkungen. Ent. Nachr. xiii, pp. 165–173 & 209–213. [*Hymenoptera*.]

791. [illegible]EMAN, *Scolytus* [illegible]VON. Spermatologische Beiträge. Fünfte MEDDEN (304).—Centr[illegible]er die Bildung der Spermatocysten bei den Sui[illegible] 224); KOENIG (Arch. mikr. Anat. xxx, pp. 426–434, pl. xxv.

Brief details and figures relating to the spermatocysts in the larvæ of six species. [Summary, J. R. Micr. Soc. 1887, p. 945.]

741. S[illegible]LIN, G. Beschreibung neuer Rüsselkafer und Bemerkungen. Schw. ent. Ges. vii, pp. 390–399. [*Coleoptera.*]

[illegible]XBERG, A. Faunan på och kring Novaja Semlja. In Vega-[illegible]itionens Vetenskapliga iakttagelser . . . utgifna af A. E. Norden-[illegible] 3–44.

A list [illegible]cies, with localities, of the orders *Coleoptera*, *Lepidoptera*, *Hymenoptera*, *Diptera*, *Collembola*.

743. SWINHOE, C. On mimicry in Butterflies for protection. J. Bomb. N. H. Soc. ii, pp. 169–175. [*Lepidoptera.*]

——. [See also COTES, E. C. (144).]

744. SZNABLA, J. Przyczynek do fauny owadów dwuskrzydlych. [*Diptera.*] Pam. Fizyjogr. vii, pp. 161–264, pls. iii–viii.

This is evidently a reproduction of the paper published in French by Schnabl last year [*cf.* Zool. Rec. xxiii, *Insecta*, Titles (638)]; thus, although certain species are marked "n. sp.," I have not noticed them under Systematic.

745. TARGIONI-TOZZETTI, —. Una *Diaspis* nociva ai gelsi. Bull. Ent. Ital. xix, pp. 184–186.

746. °TCHENG-KI-TONG. Les insectes utiles de la Chine, conférence faite à l'exposition des insectes utiles et des insectes nuisibles le 24 Sept., 1887. Paris: 1887, 15 pp. [*Cf.* Zool. Anz. xi, p. 9.]

747. TEPPER, J. G. O. Common native Insects of South Australia. A popular guide to S. Australian entomology. Part I. *Coleoptera*, or Beetles. Adelaide: 1887, 48 pp.

Besides brief indications of characters, this contains many notes on habits. The writer has apparently long been familiar with entomology in Australia, and repeatedly remarks on the rarity or extinction of species formerly common.

748. ——. Description of a supposed new species of *Phasmidæ*. Tr. R. Soc. S. Austr. ix, p. 112, pl. vi. [*Orthoptera.*]

749. THOMSON, C. G. Opuscula entomologica, edidit. Fasciculus xi. Lund: 1887, pp. 1045–1182. [*Hymenoptera.*]

Includes the European species of *Campoplegina*, and describes many new genera and a very large number of new species.

750. ——. Notes *hyménoptérologiques*. Quatrième partie. Observations sur le genre *Ichneumon* et descriptions de nouvelles espèces. No. II. Ann. Soc. Ent. Fr. (6) vii, pp. 5–16

A continuation [*cf.* Zool. Rec. xxiii, *Insecta*, Titles (699)]. This instalment includes 10 new species from Scandinavia.

751. [Thomson, C. G.] *Hymenopterologisc*[illegible]ogen over Nederlandsche *Lepido*-
xxxi, pp. 193–218.
[illegible]ludes 15 additional
Relates to *Tryphonides*, and contains descriptions [illegible] to 16[illegible]
from Northern and Central Europe.

752. Threlfall, I. H. *Gelechia semidecandrella*, n. sp. Ent. M. M. xxiii, p. 233. [*Lepidoptera*.]

The description is quoted from a letter of Stainton.

753. °Tief, —. Beitrag zur kenntniss der Dipterenfauna Kärntens. Programm aus dem Jahresberichte des k. k. Gymnasiums zu Villach in Kärnten, für das Jahr 1887. [*Cf.* Wien. ent. Z. vi, p. 245.] [*Diptera*.]

754. Trimen, R., & Bowker, J. H. South-African Butterflies: a Monograph of the Extra-tropical Species. Vol. i. *Nymphalidæ*, xiv & 355 pp., vi pls., and map. Vol. ii. *Erycinidæ* and *Lycænidæ*, 242 pp., pls. vii–ix. London: 1887, 8vo. [*Lepidoptera*.]

The work is to be completed by a third part, dealing with the *Papilionidæ* and *Hesperidæ*, and will contain altogether about 380 species, as against the 197 of the work on the same subject published by the author twenty-one years ago, 195 of the 380 being peculiar to the S. African subregion. In addition to the preface, 44 pages are devoted to introductory matter, discussing classification, distribution, protective resemblances, &c. The plates are wholly new, and two of them are devoted to larvæ and pupæ. The genera and species are fully described, the distribution of each species is given in detail, and the metamorphoses when they are known. In addition to the numbered plates, there is another devoted to wing neuration and other structural features.

755. Trimen, H. Note on *Helopeltis antonii*, Sign., in Ceylon. Rep. Brit. Ass. 1886, p. 711. [*Rhynchota*.]

756. Trois, H. Quelques expériences sur la conservation des larves des insectes. Arch. Ital. Biol. viii, pp. 37–39.

A result with which he is satisfied has been obtained by a modification of Owen's liquid.

757. Tschitchérine, T. Description de deux espèces nouvelles du genre *Pœcilus*, Bon. Hor. Ent. Ross. xxi, pp. 240–242. [*Coleoptera*.]

758. Tutt, J. W. The *Crambus contaminellus* discussion; with description of *Crambus salinellus* mihi. Ent. xx, pp. 52–57. [*Lepidoptera*.]

759. ——. Description of a new *Gelechia* of the "lita" group, closely allied to *G. maculea*. Ent. M. M. xxiv, pp. 105 & 106. [*Lepidoptera*.]

760. Uhagon, S. de. *Coleópteros* de Badajoz. Tercera parte. Ann. Soc. Esp. xvi, pp. 373–404.

761. Uhler, P. R. Observations on some *Capsidæ*, with descriptions of a few new species, No. 2. Ent. Am. iii, pp. 29–35. [*Rhynchota*.] No. 3, *t. c.* pp. 67–72; No. 4, *t. c.* pp. 149–151. [illegible]r indi-

762. ——. Observations on some N. American *Capsidæ*. *T. c.* pp. 22[illegible] 231. [*Rhynchota*.]

791. [illegible]EMAN, *Scolytus* [illegible] also RILEY (637).]
[illegible]DEN (304).—Cent[illegible]. Trzy nowe gatunki chrzaszczów. Kosmos Lem-[illegible]; KOENIG (3[illegible]342. [*Coleoptera.*]
Curculionidæ and 1 *Orina.*

764. ULKE, H. A New Species of *Amphotis.* Ent. Am. iii, p. 77. [*Coleoptera.*]

765. UBECH, F. Détermination et étude de la diminution successive du poids de la chrysalide *Pontia brassicæ.* Arch. Sci. Nat. xviii, pp. 433–436.

[Summary, J. R. Micr. Soc. 1888, p. 31.]

766. *VAYSSIÈRE, A. Étude sur le *Chionaspis evonymi*, espèce de Cochenille qui ravage les fusains dans le midi de la France. Avignon: 1886, 18 pp. [*Cf.* Zool. Anz. x, p. 82.] [*Rhynchota.*]

767. VERRALL, G. H. List of British *Tipulidæ*, &c. Ent. M. M. xxiii, pp. 205–209 & 263–267, and xxiv, pp. 108–112. [*Diptera.*]

A continuation from last year.

768. °VERSON, E. Il meccanismo di chiusura negli *stimmati* del *Bombyx mori.* Padua: 1887, 9 pp., 1 pl. [*Cf.* Zool. Anz. xi, p. 77.]

769. ——. Der Bau der Stigmen bei *Bombyx mori.* Zool. Anz. x, pp. 561 & 562. [*Lepidoptera.*]

770. VIALLANES, H. Sur la structure intime du cerveau de la guêpe (*Vespa vulgaris* et *Vespa crabro*). C.R. Ass. Sci. Fr. (2) xv, 2nde partie, pp. 608–614. [*Hymenoptera.*]

771. ——. Études histologiques et organologiques sur les centres nerveux et les organes des sens des animaux articulés. Quatrième mémoire. Le cerveau de la guêpe (*Vespa crabro* et *Vespa vulgaris*). Ann. Sci. Nat. (7) ii, pp. 1–100, pls. i–vi.

Describes the general anatomy of the brain, and the internal structure, as ascertained by sections; the plates represent these latter. There is also a chapter giving an account of the investigations of his predecessors. [Summary, J. R. Micr. Soc. 1887, pp. 578 & 579.]

772. ——. Études histologiques et organologiques sur les centres nerveux et les organes des sens des animaux articulés. 4 mémoire. Bibl. haut. études, xxxiii, 4me memoire.

The same paper as the preceding, I believe.

773. ——. Cinquième mémoire. I. Le cerveau du criquet (*Œdipoda caerulescens et Caloptenus italicus*). II. Comparaison du cerveau des Crustacés et des Insectes. III. Le cerveau et la morphologie du squelette céphalique. Ann. Sci. Nat. (7) iv, pp. 1–120, pls. i–vi.

Preceded by a discussion of the descriptive terms in use, some of which he thinks conducive of error. The brain of the *Orthoptera* is

more suitable for study for general purposes, ...ven over Nederlandsche *Lepido-*
larger part of the paper is occupied with descri...ludes 15 additional
out in a similar manner to the memoir on the W... to 1670.
works of previous writers are noticed, and Packard's criticised. It is
really a quite different memoir; he considers Huxley's view as to the
number of zoonites in the head more reasonable than other hypotheses,
and so concludes that the head of the insect consists of 6 zoonites,
3 pre-oral and 3 post-oral. [Summary, J. R. Micr. Soc. 1888, pp. 403
& 404.]

774. [Viallanes, H.] La structure du cerveau des *Orthoptères*. Bull. Soc. Philom. (7) xi, pp. 119–126.

Gives names to several lobes and parts, and mentions the components of the three parts of the brain that he calls protocérébron, deutocérébron, tritocérébron.

775. ——. Sur la morphologie comparée du cerveau des Insectes et des Crustacés. C.R. civ, pp. 444–446.

"In the insect the brain should be looked on as formed of three pairs of primordial ganglia. The first two are entirely supra-œsophageal; the third is so as regards its chief part, but its transverse commissure ...887, p. 379.]

776. Wachtl, F. A. Zwei Gallmücken und ihre Gallen. Wien. ent. Z. vi, pp. 289–292, pl. iv. [*Diptera.*]

777. Wailly, A. Notes on Silk-producing *Bombyces*, 1885. Ent. xx, pp. 127–131 & 152–156. [*Lepidoptera.*]

778. Walsingham (Lord). A revision of the genera *Acrolophus*, Poey, and *Anaphora*, Clemens. Tr. E. Soc. 1887, pp. 137–172. [*Lepidoptera.*]

——. [See also Moore (515).]

779. Warren, W. Notes on the species of Heinemann's family, *Chauliodidæ*, that occur in England. Ent. M. M. xxiv, pp. 141–147. [*Lepidoptera.*]

780. Wasmann, E. Neue brasilianische *Staphyliniden*, bei *Eciton hamatum* gesammelt von Dr. W. Müller. Deutsche e. Z. xxxi, pp. 403–416, pl. v. [*Coleoptera.*]

The species were found in one nest in a hollow tree (*cf.* Cosmos, 1886, p. 85).

781. ——. Ueber die Lebensweise einiger Ameisengäste. *T. c.* pp. 108–122.

A continuation of the observations recorded last year.

782. ——. Ueber die europäischen *Atemeles*. *T. c.* pp. 97–107. [*Coleoptera.*]

791. [illegible]EMAN, *Scolytus* [illegible]kungen ueber die *Attelabiden*, *Rhynchitiden*, MEIJDEN (304).—Centr[illegible] von Holländisch Limburg. Tijdschr. Ent. xxx, Sup. 224); KOENIG (? *Coleoptera.*]

784. WATERHOUSE, C. O. Aid to the identification of Insects. Part 28, pls. clxxiii–clxxvi.

785. ——. New genera and species of *Buprestidæ*. Tr. E. Soc. 1887, pp. 177–184. [*Coleoptera.*]

786. ——. Note on a new parasitic *Dipterous* Insect of the family *Hippoboscidæ*. P. Z. S. 1887, pp. 163 & 164.

787. ——. Report on a Zoological collection made by the officers of H.M.S. 'Flying Fish,' at Christmas Island, Indian Ocean. P. Z. S. 1887, pp. 520 & 521. [*Coleoptera.*]

788. ——. Characters of undescribed *Coleoptera* in the British Museum. Ann. N. H. (5) xix, pp. 446–449.

789. ——. Descriptions of two new species of *Coptengis* (*Coleoptera*, *Erotylidæ*). *T. c.* p. 382.

790. ——. Note on two species of *Lucanoid Coleoptera*, allied to *Cladognathus bison*. *T. c.* pp. 381 & 382.

791. ——. Descriptions of new *Coleoptera* in the British Museum. *T. c.* pp. 289–295.

——. [See also GODMAN & SALVIN (263).]

WEBSTER, F. M. [See RILEY (637).]

792. WEEKS, A. C. Method of oviposition of *Tachina*. Ent. Am. iii, p. 126. [*Diptera.*]

"Even the slightest hair or spine development adds to the safety of its possessor."

793. WEISE, J. Ueber des Gozis' Nomenclatur. Deutsche e. Z. xxxi, pp. 350–352.

Points out numerous errors in des Gozis' work.

794. ——. *Anthobiodes* n. g. *Halticarum*. *T. c.* p. 402. [*Coleoptera.*]

795. ——. *Hydrothassa planiuscula*, n. sp. *T. c.* p. 188. [*Coleoptera.*]

796. ——. Neue sibirische *Chrysomeliden* und *Coccinelliden*. Arch. f. Nat. (2) liii, pp. 164–214. [*Coleoptera.*]

797. ——. Mittheilungen über das Sammeln von Käfern und über die Fangstellen im Glatzer Gebirge. Z. Ent. Bresl. xii, pp. 47–60. [*Coleoptera.*]

Includes descriptions of two or three new species from other localities.

Insects f[illegible]. [See also HEYDEN (304 & 307).]

Small[illegible]

WERTHEIMER, L. Sur la structure du tube digestif de l'*Oryctes nasicornis*. C.R. Soc. Biol. (8) iv, pp. 531–535.

en over Nederlandsche *Lepido-*

799. Weymer, G. Exotische *Lepidopteren* ludes 45 additional pls. i & ii. 12 new species, all of which are figured. v[illegible] to 167[illegible]

800. Wielowieyskiego, H. O budowie jajnika u owadów. Rospraw. Wydz. matem.-przyr. Akad. Umiej. xv, pp. 76–184, pls. iii–vi.

This paper, entirely in the Polish language, deals, apparently, with the formation of the egg in Insects of various orders.

801. Will, F. A. Forel sur les sensations des Insectes. Ent. Nachr. xiii, pp. 227–233.

In addition to epitomising Forel's views, this gives some original considerations on the senses.

802. ——. Die *Coloradokäfer*-frage. *T. c.* pp. 381 & 382. [*Cf.* Karsch (361).]

803. Williston, S. W. Synopsis of the North American *Syrphidæ*. Bull. U. S. Nat. Mus. No. 31. Washington: 1886, pp. xxx & 335, 12 pls. [*Diptera.*]

A complete monograph of the group, with descriptions and tables of the genera and species; many of the latter being new. Part iii deals with habits, metamorphoses, particulars of structural and sexual characters, geographical and geological distribution, chronological list of genera, and glossary. [For important remarks on the synonymy of this paper, not given by us in Systematic, *cf.* Bigot, Bull. Soc. Ent. Fr. (6) vii, pp. cxxi & cxxii.]

804. ——. North American *Tachinidæ*.—*Gonia*. Canad. Ent. xix, pp. 6–12. [*Diptera.*]

805. ——. An interesting genus of South American *Tachinidæ*. Ent. Am. iii, pp. 151 & 152. [*Diptera.*]

806. Witlaczil, E. Zur Kenntniss der Gattung *Halobates*. Zool. Anz. x, pp. 336–339. [*Rhynchota.*]

Brief remarks on the nervous and muscular systems, suctorial apparatus, and reproductive organs. Some of the organs, usually seated in the abdomen, are here in the thorax. *Halobates* is not a primitive form. [Brief notice in J. R. Micr. Soc. 1887, p. 745.]

807. Wocke, M. F. Zwei neue *Gelechiden*. Z. Ent. Bresl. xii, pp. 62–64. [*Lepidoptera.*]

Wood-Mason, J. [See Nicéville (531).]

808. Wulp, F. M. van der. Nog iets over langwerpige *Dexinen*. Tijdschr. Ent. xxx, pp. 168–172, pl. xi, pt. [*Diptera.*]

809. ——. *Sarcophagula* een nieuw geslacht der *Sarcophaginæ*. *T.* pp. 173 & 174. [*Diptera.*]

810. ——. Aanteekeningen betreffende Javaansche *Diptera*. [illegible] pp. 175–180, pl. xi, pt.

791) EMAN, *Scolytus* [illegible]
MER DEN (304).—Centr OMY, PHYSIOLOGY, BIOLOGY.
Sut 224); KOENIG (
I

1. General, Comparative, and External.

General anatomy of larva of *Culex nemorosus*, RASCHKE (600, 601); of *Halobates*, WITLACZIL (806); of *Aspidiotus nerii*, LEMOINE (427); of *Lepisma* and *Lepismina*, GRASSI (276).—External anatomy of ants, ADLERZ (1).

Morphology of the skeleton of the head, VIALLANES (773).—Structure of head of larva of blow-fly, LOWNE (451).

Wing-veins, COMSTOCK (136).

Odoriferous glands of *Cimex*, KÜNCKEL (407).

Sound organs of *Cicada* (*Cyclochila australasiæ*, Don.), LUCAS (453).

Post embryonal development of *Muscidæ*, REES (603), KOWALEVSKY (395).

2. Nervous System, Organs of Sense, and Psychology.

Nervous system of *Phylloxera punctata*, LEMOINE (426).—Nervous system of ants, and development of ganglionic chain, ADLERZ (1).—Nerves of salivary glands of *Blatta*, HOFER (311).—Antennary nerve of *Tinea*, CHATIN (127).—Histology of sensitive parts of antennæ and trophi, RATH (602).

Optic ganglion of *Musca*, BELLONCI (51).—Development of eyes, PATTEN (557).—Origin of the retina in simple eyes, MARK (469).—Sight of Lepidopterous larvæ, POULTON, P. E. Soc. 1887, p. xx.

Experiments on the sense of smell, GRABER, Biol. Centralbl. v, pp. 385–398 & 449–459.—Organ of smell, PACKARD (550).

Anatomy of brain of *Vespa*, VIALLANES (770, 771, 772); of *Œdipoda cærulescens* and *Caloptenus italicus*, VIALLANES (773); of *Orthoptera*, VIALLANES (774).—Ears of Insects, note, Am. Nat. xxi, p. 579.

Brain of *Orthoptera*, CUCCATI (148, 148*a*).—Comparison of brain of Insects and Crustacea, VIALLANES (775).

Appreciation of the force of gravitation, POULTON (574) and P. E. Soc. 1887, pp. xix–xxi.—Instinct, PROOST (580).—Instinct of *Cerceris ornata*, MARCHAL (468).

Relation between the larvæ and food plant in part merely habit, POULTON (574); origin of carnivorous habits in larvæ, *id.*—Modification of habit, MACCOOK (455); sense of direction, &c., *id.* (456).—Senses and psychology, WILL (801).—Senses, MORGAN (518).—Maternal affection, MURTFELDT (528).

3. Muscular System.

Muscular system of *Lepisma*, GRASSI (276).—Histology of muscles of Insects (Loewen [illegible]).—Histolysis of muscles during metamorphosis, Small birds and the *Le* summary of LIMBECK's paper (1886) on histology xxiv, p. 86. . Micr. Soc. 1887, pp. 744, 745.

4. Organs and Function of N.

Nederlandsche *Lepido-*

Alimentary canal: Schneider (681); of *Blat*
of *Eremobia* and of *Æschna* larva, Faussek (2[illegible]; 215); [illegible] *Orthetrum nasicornis*, Wertheimer (798).—Alimentary canal of ants and its metamorphoses, Adlerz (1).—Changes in alimentary canal during metamorphosis, Kowalevsky (395).—Digestive system of *Lepidoptera* during metamorphosis, Casagrande (121).—*Scymnus* sp.? digesting its victim by the injection of digestive fluid; Lemoine, Bull. Soc. Ent. Fr. (6) vii, pp. iv & v.—Salivary glands, Knüppel (378, 379); of *Blatta*, Hofer (311).—Changes in salivary glands during metamorphosis of *Diptera*, Kowalevsky (395).—Malpighian vessels, Cholodkovsky (130).

5. Circulation and Respiration.

Aorta of *Bombyx mori*, Selvatico (695, 696).

Mode of aquatic respiration in larva and pupa of *Donacia crassipes*, Schmidt-Schwedt (678).—Respiration of aquatic *Rhynchota*, Comstock (136).—Stigmata and tracheæ in *Elateridæ* and *Buprestidæ*, Künckel (406).—Stigmata, Sörensen (726); in *Bombyx mori*, Verson (768, 769).—"Holopneusty" in larva of *Coleoptera*, Haase (287).

6. Sexual Organs and Embryology.

Anatomy of ovaries of *Phlœosinus thujæ*, Bugnion (99).—Ovaries and changes in, oogenesis, Korschelt (393).—Oogenesis, Wielowieyskiego (800), Blochmann (73, 74), Korschelt (393, 394).—Development of eggs of *Phylloxera punctata*, Lemoine (426).

Spermatogenesis in *Cantharis*, Beauregard (40, 41).—Spermatocysts (*Lepidoptera*), St. George (740).—Spermatozoa and egg of *Periplaneta*, Dewitz (157).

Polar-bodies in eggs, Blochmann (73, 74).

The development of *Anurida maritima*, Guer.; Ryder, Am. Nat. xx, pp. 299–302.—Development of embryo in *Botys hyalinalis*, Jeffery (349).

Parthenogenesis: Brischke (94), Rühl (661); in *Eriocampa annulipes*, Cameron, Ent. M. M. xxiii, p. 195.—Parthenogenesis and reduced males, Moniez (511).

Hermaphrodites: Goossens, Bull. Soc. Ent. Fr. (6) vii, p. clxvi, and Bellier, *t. c.* p. clxxxii.

7. General Biology and Stray Notes.

Biology of Coprophagous and Necrophagous *Diptera*, Osten-Sacken (543).—Diminution of weight of chrysalis of *Pontia brassicæ*, Urech (765).—Amount of nourishment and retardation of development in larvæ of *Hymenoptera*, Nicolas (533).

Hibernation of *Lepidoptera*, Poujade, Bull. Soc. Ent. Fr. (6) xiii, p. xxix; Kerville, *t. c.* p. l; Olivier, *t. c.* p. lxvi.

Temperature experiments on *Periplaneta*, G[illegible]nsche *Diptera*. [illegible]*steo-*
experiments on pupæ, Arkle (13).

791) REMAN, *Scolytus* [illegible] eat of claws in larva; eggs laid inside pupa: MEINERT (304).—Centres, xliii.

Sui[illegible] 224); KOENIG (3[illegible]ations, JHERING (350, 351); KARSCH (358).

Introduction of winged forms in *Phylloxera*, KELLER (370).

Value of difference in date of appearance of ♂ and ♀, POULTON (574).

Chemical composition of excrement found in galls of *Schizoneura lanuginosa*, HORVATH (326, 327).

Ants and their guests, WASMANN (781).

Insects infesting maple trees; HARRINGTON, Rep. E. Soc. Ont. xvii, pp. 22–33.

Plants and ants, HALLIER (295).

Mimicry, SWINHOE (743).—Mimicry and resemblances, DÖNITZ (176).—Mimicry in *Pachyrrhynchides*; BEHRENS, S. E. Z. xlviii, pp. 219 & 220.—Resemblance in appearance between two genera of *Tachinidæ*; KARSCH, Ent. Nachr. xiii, p. 105.

Metallic colour in Insects; its physical cause: BERGÉ (53).—Colour of Lepidopterous pupæ and their surroundings, POULTON (575, 576, 577).—Colour of Lepidopterous larvæ in relation to environment; P. E. Soc. 1887, pp. l–li.—Tannin in Insects; its influence on coloration: SLATER, P. E. Soc. 1887, pp. xxxii–xxiv.—Changes in coloration before pupation, POULTON (574); colour and warmth, *id.*

Luminosity, DUBOIS (182).—Sur la luminosité des œufs d'insectes; DUBOIS, C.R. Ass. Fr. Sci. (2) xv, p. 155.—Luminosity of eggs of *Lampyris*, DUBOIS (183).—Luminosity in *Coleoptera*, JHERING (352).—Additional notes on phosphorescent Insects, GADEAU (244).

Protection: terrifying attitudes and defensive structures, POULTON (574); Protection and colour, POULTON (576, 578); Protective coloration, HUDSON, Ent. xx, pp. 193–196.

Heredity: GALTON (245), MERRIFIELD (488).—Transmission of larval spots, POULTON (574).

Phylogeny: Relation of water Insects to *Crustacea* discussed; SCHMIDT, B. E. Z. xxxi, p. ix.—Spots on Lepidopterous larvæ; WHITE, P. E. Soc. 1887, pp. xxiv–xxvii.—Colour and clothing in *Sphingidæ* larvæ; POULTON (574).

Scent-organs of *Lepidoptera*, HAASE (288); in *Phryganidæ*, MÜLLER (525, 526).

Stridulation in *Lepidoptera*, DÖNITZ (175).

Galls: ASHMEAD (14), NABIAS (529), WACHTL (776); of *Nematus capreæ*, BEIJERINCK (61, 62).—Galls made by a *Coccid*, HART (298).

Insects and flowers; see Economic.

Teratology, BELLEVOYE (50).

Disease in Insects; Ent. Nachr. xiii, p. 266.—Discussion on bacteria in tissues and eggs of Insects; Ent. Nachr. xiii, pp. 361 & 362.—Bacteria in tissues and eggs of Insects; BLOCHMANN, Biol. Centralbl. vii, p. 606.—Fungus-disease of *Hyphantria cunea*, Dru.; RILEY (634).

Faunæ of tombs, MÉGNIN (483). [See also Economic.]

Insects found in a mummy, Ent. Am. iii, pp. 105 & 106.

Small birds and the *Lepidoptera* eaten by them; JORDAN, Ent. M. M. xxiv, p. 86.

III.—FAUNISTIC AND PALÆO[illegible] Nederlandsche *Lepido-*[illegible]nal

The reference-numbers under each of the twelve regions are believed to give a reference to every memoir containing a notice affecting the Entomological fauna of that region. But synonymical notes and changes of systematic position are only incompletely referred to.

Geographical Distribution, Heilprin (300).

1. Arctic and Antarctic.

Insecta. Novaia semlja, Stuxberg (742); Lewaski, Taimyr river, Soc. Ent. ii, pp. 44 & 116; Aurivillius (23).

2. Insular (including New Zealand).

Madeira. *Tenthredinidæ*, Konow, Wien. ent. Z. vi, p. 26, note; (and Canaries), *Odonata*, Selys (698).

Canary Is. (*Lepidoptera*), Blachier (72).

Loo-Choo Is. (*Neuroptera*), Selys (698).

Torres Straits (*Coleoptera*), Waterhouse (790).

Hawaiian Is (*Hymenoptera*), Cameron, Ent. M. M. xxiii, p. 195.

Tahiti (*Lepidoptera*), Meyrick (490).

Fiji Is. (*Lepidoptera*), Druce (180); Meyrick (490, p. 223).—(*Orthoptera*) Bolivar (78).

Solomon Is. (*Coleoptera*), Waterhouse (791); Pascoe (555); Baly (33).—(*Lepidoptera*) Mathew (478); Butler (104, 106, 107, 108); Meyrick (490, p. 266).

New Britain (*Coleoptera*), Poll (566).—(*Lepidoptera*) Weymer (799).

New Pommerania (*Lepidoptera*), Honrath, B. E. Z. xxxi; S.B. p. xvi.

New Caledonia (*Coleoptera*), Faust, *Echinocnemus* (222).—(*Hymenoptera*) Emery (196).—(*Diptera*) Bigot (65, 68).—(*Rhynchota*) Reuter (631).—(*Orthoptera*) Bolivar (78).

New Zealand: (*Lepidoptera*) Hudson, Tr. N. Z. Inst. xix, p. 201; Meyrick (492); Purdie (584).—(*Diptera*) Hudson (331); Osten-Sacken (544), and Ent. M. M. xxiii, p. 230.—(*Rhynchota*) Maskell (474, 475, 476).—(*Orthoptera*) Colenso (135).

S. Georgia Is. (*Coleoptera*), Behrens (48).

K. George Is. (? S. Georgia I.), Régimbart (606).

3. Palæarctic Region.

(a.) *The Region.*

Similarity of European and N. American faunæ; Dupont, Feuill. Nat. xvii, pp. 123–128, 133 & 134.

Coleoptera. Ballion, *Blaps* (32); Baudi, *Bruchidæ* (?[illegible] *Diptera.* [illegible]bauer, *Carabidæ* (247, 249); Jakowleff, *Sphenopter*[illegible] *Coleo-Prionus* (346); Kuwert, *Hydrophilidæ* (410, 411, 4[illegible]

791) EMAN, *Scolytus* &c., 614, 615, 616, 618, 621, 622, 623, 628).—SEIDLITZ, MEI DEN (304).—Centr*idæ* (692).
Sui 224); KOENIG (SUYSSON, *Chrysidides* (110); HANDLIRSCH, *Nysson* L. (296); SCHLETTERER, *Cerceris* (676).

Lepidoptera. RAGONOT, *Phycitidæ* (596).—Palæarctic and Nearctic distribution of *Geometridæ*; GUMPPENBERG (285, pp. 237–267).

Diptera. PORTSCHINSKY (572); MIK (496).

Rhynchota. HORVATH, *Stenocephalus* (329); PUTON (585).—BERGROTH, Remarques sur le nouveau catalogue des Hemiptères de la faune paléarctique du Dr. Puton; Rev. d'Ent. vi, pp. 146–148.

Neuroptera. SELYS, *Odonata* (698).

Orthoptera. BOLIVAR (78).

(b.) *Collective Europe.*

Insecta. Verzeichniss der im Laufe des Jahres 1886 als neu beschreibenen recenten Insectenarten Europas; Ent. Nachr. xiii, pp. 293–302, 310–319, 332, & 333 (in all 298 species).

Coleoptera. BELON, *Lathridiidæ* (52); BOURGEOIS (82); CZWALINA, *Byrrhidæ* (149); FAUST, *Curculionidæ* (222).—FAUVEL, supplément aux *Longicornes* Gallo-rhenans; Rev. d'Ent. vi, pp. 234–243; *id.*—Rectifications au Catalogus Coleopterorum Europæ et Caucasi; *t. c.* pp. 75–96, and 255–276.—FLACH, *Trichopterygidæ* (229); KRAATZ, *Carabus* (398); SEIDLITZ (691, 693); STIERLIN, *Curculionidæ* (741); WASMANN, *Atemeles* (782).

Hymenoptera. KONOW (388, 389, 390); KRIECHBAUMER (402, 403); THOMSON (749, 750, 751).

Lepidoptera. OBERTHUR, *Boarmia sublunaria*; Bull. Soc. Ent. Fr. (6) vii, p. xlix.—Berichtigungen und Ergänzungen zum *Lepidopteren*-Catalog von Dr. Staudinger und Dr. Wocke; HÖFNER, Soc. Ent. i, pp. 41, &c., and ii, pp. 12, &c.

Diptera. BIGOT (67); GIRSCHNER, *Alophora* (259).

Rhynchota. KESSLER (372); MONTANDON (514); MORGAN, *Aspidiotus*, Ent. M. M. xxiv, p. 68.

Neuroptera. EATON (188).—List of *Odonata* of geographical Europe; SELYS (698).

(c.) *British Islands.*

Insecta. Immigration and migration; BARRETT, Ent. M. M. xxiv, p. 85; SOUTH, *t. c.* p. 85; JENNER, *t. c.* p. 113.—Migration; JORDAN, Ent. M. M. xxiv, p. 64.—Report on Insects observed in Hertfordshire during the year 1886; SILVESTER, Tr. Hertf. Soc. iv, pp. 201–204.—Esher; BRUNETTI, Ent. M. M. xxiv, pp. 66 & 67.—Thirty-six hours' hunting among the *Lepidoptera* and *Hymenoptera* of Middlesex; KLEIN, Tr. Middl. Soc. 1886–87, pp. 15–33.—Chiswick; COCKERELL, Ent. xx, p. 43.—Loch Awe; KING, P. N. H. Soc. Glasg. (n.s.) i, pp. xlvii & xlix.

Coleoptera. FOWLER (237), and on certain species of *Coleoptera* new to Britain, or reinstated, Ent. M. M. xxiv, pp. 49–53.—SHARP, novelties,

P. E. Soc. 1887, p. l.—Portland ; Walker, Ent. N
173.—New Forest ; Gorham, P. E. Soc. 1887, p. [illegible] Nederlandsche *Lepido-*
Champion, Ent. M. M. xxiv, pp. 136–138, and P. I
Fowler, Ent. M. M. xxiii, p. 236.—Margate ; Wood, Ent. M. M. xxiv
pp. 260 & 261.—Tonbridge ; Horner, P. E. Soc. 1887, p. xxxi, and Ent.
M. M. xxiv, p. 69.—London district ; Stevens, P. E. Soc. 1887, p. xxxi.
—Bromley, *Compsochilus* ; Saunders, Ent. M. M. xxiv, p. 46.—Windsor
and Chobham ; Blatch, Ent. M. M. xxiv, p. 138.—Warwickshire ;
Blatch, Ent. M. M. xxiv, p. 155.—Birmingham ; Blatch, Ent. M. M.
xxiii, p. 236.—Bath, *Gyrinus* ; Gillo, J. Micr. & Nat. Sci. vi, pp. 34–39,
pl. ii.—Sherwood Forest ; Horner, Ent. M. M. xxiii, pp. 212 & 213 ;
Blatch, Ent. M. M. xxiv, p. 155.—Huntingdonshire, *Mesosa nubila* ;
Brown, Ent. M. M. xxiv, p. 83.—Lincoln, *Tachinus elongatulus* ; Fowler,
Ent. M. M. xxiv, p. 46.—Liverpool ; Ellis, Naturalist, 1887, pp. 209–
216.—Scotland ; Logan, Ent. M. M. xxiii, p. 189.—Edinburgh ; Logan,
Ent. M. M xxiii, p. 260.—Wales ; Ellis, Ent. M. M. xxiii, pp. 210 & 211.
—Ireland, Armagh ; Johnson, Ent. M. M. xxiv, pp. 16 & 156.

Hymenoptera. Bridgman : *Ichneumonidæ* novelties, n. spp. (92) ; *Anomalon nigripes*, n. sp. (93).—Cameron, novelties, n. sp. (114).—Marshall, *Braconidæ* novelties, n. spp. (473).—Thomson, n. spp. (749), n. spp. (751).—*Tapinoma melanocephalus* living at Kew ; Billups, P. E. Soc. 1887, p. xxvii.—*Sphecodes* and *Nomada* ; Perkins, Ent. M. M. xxiv, pp. 271–273.—Andrew, the British Bees (unimportant), Rep. Belf. N. H. Club (2) ii, p. 449.—Tabulation of British oak-galls ; Bignell, Rep. Plym. Inst. ix, pp. 391 & 392.—Plymouth, *Ichneumonidæ* ; Bignell, t. c. pp. 318–326.—Ilfracombe ; Saunders, Ent. M. M. xxiv, p. 46.—Bournemouth, *Linoceras* and *Rhogas modestus* (novelty ?) ; Bridgman, Ent. xx, p. 18.—Dover, *Lasius niger* swarming ; Hall, Ent. M. M. xxiv, p. 91.—Woking, *Macropis labiata* ; Saunders, Ent. M. M. xxiv, p. 91.—Chobham, *Odynerus reniformis* ; Saunders, Ent. M. M. xxiv, p. 68.—Lewisham, *Strongylogaster macula* ; Cameron, Ent. M. M. xxiv, p. 45.—Wotton-under-Edge ; Perkins, Ent. M. M. xxiv, p. 91.—Wotton-under-Edge ; Perkins, *Sirex juvencus*, Ent. M. M. xxiv, p. 156.—Norfolk ; Bridgman, Ent. M. M. xxiv, p. 15.—Yorkshire, Naturalist, 1887, p. 290.—Cheshire ; Newstead, Ent. xx, pp. 112–114.—Moray ; Gordon, Scot. Nat. (n s.) 1887, p. 177.

Lepidoptera. Dorset ; Bankes, *Butalis* novelty, Ent. M. M. xxiii. p. 275.—Norfolk ; Barrett, *Notodonta* novelty, Ent. M. M. xxiii, p. 276.—Jenner, *Acidalia immorata*, L., novelty, Ent. xx, p. 289.—Stainton : *Elachista*, n. sp. (728) ; *Nepticula*, n. sp. (730) ; *Coleophora*, n. sp. (729).—*Gelechia semidecandrella*, novelty ; Threlfall, Ent. M. M. xxiii, p. 233.—Tutt : *Gelechia*, n. sp. (759) ; *Crambus*, n. sp. (758).—*Lozotænia* (*Cacœcia*) *decretana*, Tr., novelty ; Warren, Ent. M. M. xxiv, p. 125.—*Stepanoptychia* novelty ; Warren, Ent. M. M. xxiv, p. 6.—*Stigmonota pallifrontana*, Z., novelty ; Warren, Ent. M. M. xxiii, p. 232.—*Doryphora quæstionella*, H.-S., novelty ; Warren, Ent. M. M. xxiv, [illegible] Carrington (reputed novelty), Ent. xx, p. 173.—*Apor*[illegible] tion of ; Goss, Ent. M. M. xxiii, pp. 217–220 & 257 ; He[illegible]ptera. Parfitt [illegible] : *Aporia crataegi*, migration of, &c. ; Tut[illegible] *aleo-*

79 EMAN, *Scolytus* &c.; BATH, *t. c.* p. 39; BUTLER, *t. c.* p. 40.—SOUTH, M DEN (304).—Centr*ilossa* and *Sesia*; CARRINGTON, Ent. xx, pp. 96–105. S 224); KOENIG (c. 1887, p. xxi.—*Sphinx convolvuli* larva; POULTON, P. E. Soc. 1887, p. xliv.—BUCKLER, larvæ (98).—TUTT, *Scoparia*, Ent. M. M. xxiv, p. 42.—BARRETT, *Ephestia kühniella*, Ent. M. M. xxiii, p. 255. —WARREN, *Chauliodidæ* (779).—Migration; LONGSTAFF, Ent. M. M. xxiv, p. 158, HALL, *t. c.* p. 159.—BARRETT, notes on British *Tortrices*, Ent. M. M. xxiv, pp. 34–36.—*Pancalia*; TUTT, Ent. M. M. xxiv, pp. 64–66 & 116.—STAINTON, *Lobesia permixtana*, Ent. M. M. xxiv, pp. 58–61.—Some notes on the comparative study of British and Continental *Rhopalocera*; KANE, Ent. M. M. xxiii, pp. 244–248.—*Sphinx convolvuli* at Lee, Birmingham, Newmarket, Cambridge, Ent. M. M. xxiv, p. 103; see also Ent. xx, in various places.—Cornwall, *Sesia philanthiformis*; ATMORE, Ent. M. M. xxiii, p. 259.—Devonshire, *Aporia crataegi*, &c.; BAKER, Ent. M. M. xxiii, p. 256.—Dartmoor; ARNOLD, Ent. xx, p. 268.—Teignmouth, *Coriscium sulphurellum*; JORDAN, Ent. M. M. xxiv, p. 63.—Dorset, *Acrolepia marcidella*; DIGBY, Ent. M. M. xxiv, p. 42.—Isle of Purbeck, *Cosmopteryx schmidiella*; BANKES, Ent. M. M. xxiv, p. 135.—Hampshire; PORRITT, P. E. Soc. 1887, p. xxxi.—Isle of Wight: WARREN, Ent. M. M. xxiii, p. 233; *Anosia plexippus*, Ent. M. M. xxiii, p. 213.—Sussex: °List of *Lepidoptera* observed in West Sussex; FLETCHER, Transactions of the Chichester and West Sussex Natural History Society, No. 5, new series: °List of the *Macro-Lepidoptera* of East Sussex; JENNER, Proc. Eastbourne Nat. Hist. Soc. 1885–86; *cf.* Ent. M. M. xxiii, p. 215.—Deal, TUTT, P. E. Soc. 1887, p. xxxviii.—Sandwich and Sittingbourne, *Aporia crataegi*, Ent. M. M. xxiv, p. 131.—Dover: HALL, Butterflies occurring at D. and its vicinity since 1860; Ent. M. M. xxiv, pp. 77–79 & 131.—Folkestone, *Deiopeia*; KEAYS, Ent. M. M. xxiv, p. 132.—Lewes, JENNER *Acidalia immorata*, L., novelty, Ent. M. M. xxiv, p. 133.—Hastings, *Charrocampa celerio*, Ent. xx, p. 16.—Kent, *Aporia crataegi*; TUTT, Ent. M. M. xxiii, p. 220.—Kent, *Tortrices*; FENN, Ent. M. M. xxiv, p. 87.—North Kent: SOUTH and SABINE, Ent. xx, pp. 220, &c.; TUTT, Ent. xx, p. 42.—Rochester, *Macro-Lepidoptera*; CHANEY, Roch. Nat. i, pp. 287, &c, and TUTT, *t. c.* p. 297.—London: RENDALL, Ent. xx, pp. 158–202, BIGGS, *t. c.* p. 234, MELDOLA, *t. c.* p. 235.—Lewisham, *Pyrausta punicealis*; MACLACHLAN, Ent. M. M. xxiv, p. 86.—Croydon; SHELDON, *Tortrices*, Ent. xx, pp. 31–33.—Essex, Entomological notes from an old pocket-book; ENGLISH, Tr. Ess. Club, v, pp. 109–112.—Somerset: MACMILLAN, Ent. xx, p. 42.—Herefordshire, novelty; WOOD, Ent. M. M. xxiii, p. 183.—Gloucestershire; PERKINS, Ent. xx, p. 108.—South Buckinghamshire; ST. JOHN, Ent. xx, pp. 89–91. —Hertfordshire; BOWYER, Ent. xx, p. 306.—Rugby, Rep. Rugby Soc. xx, pp. 48–53.—North Staffordshire; DALTRY, Rep. N. Stafford. 1887, pp. 10–13, and BARRETT, *t. c.* pp. 13–15.—Cannock Chase; BARRETT, Ent. M. M. xxiii, pp. 195–198.—Norfolk: BARRETT, Ent. M. M. xxiv, p. 117, *cf.* also TUTT, *t. c.* p. 133; BARRETT, *Sphinx convolvuli*, Ent. M. M. xxiv, pp. 101–103; *Eupithecia extensaria*, BARRETT, Ent. M. M. xxiv, p. 114; NORGATE, *Thecla quercus* var. *bellus*, Gerh., Ent. M. M. xxiv, p. 9.—King's Lynn, *Deilephila euphorbiæ*; BARRETT, Ent. M. M. xxiv,

P. E. Soc. 1887, p. l.—Portland ; Walker, Ent. N. Nederlandsche *Lepido-*
173.—New Forest ; Gorham, P. E. Soc. 1887, p.
Champion, Ent. M. M. xxiv, pp. 136–138, and P. [illegible]
Fowler, Ent. M. M. xxiii, p. 236.—Margate ; Wood, Ent. M. M. xxiii,
pp. 260 & 261.—Tonbridge ; Horner, P. E. Soc. 1887, p. xxxi, and Ent.
M. M. xxiv, p. 69.—London district ; Stevens, P. E. Soc. 1887, p. xxxi.
—Bromley, *Compsochilus* ; Saunders, Ent. M. M. xxiv, p. 46.—Windsor
and Chobham ; Blatch, Ent. M. M. xxiv, p. 138.—Warwickshire ;
Blatch, Ent. M. M. xxiv, p. 155.—Birmingham ; Blatch, Ent. M. M.
xxiii, p. 236.—Bath, *Gyrinus* ; Gillo, J. Micr. & Nat. Sci. vi, pp. 34–39,
pl. ii.—Sherwood Forest ; Horner, Ent. M. M. xxiii, pp. 212 & 213 ;
Blatch, Ent. M. M. xxiv, p. 155.—Huntingdonshire, *Mesosa nubila* ;
Brown, Ent. M. M. xxiv, p. 83.—Lincoln, *Tachinus elongatulus* ; Fowler,
Ent. M. M. xxiv, p. 46.—Liverpool ; Ellis, Naturalist, 1887, pp. 209–
216.—Scotland ; Logan, Ent. M. M. xxiii, p. 189.—Edinburgh ; Logan,
Ent. M. M xxiii, p. 260.—Wales ; Ellis, Ent. M. M. xxiii, pp. 210 & 211.
—Ireland, Armagh ; Johnson, Ent. M. M. xxiv, pp. 16 & 156.

Hymenoptera. Bridgman : *Ichneumonidæ* novelties, n. spp. (92) ;
Anomalon nigripes, n. sp. (93).—Cameron, novelties, n. sp. (114).—Mar-
shall, *Braconidæ* novelties, n. spp. (473).—Thomson, n. spp. (749),
n. spp. (751).—*Tapinoma melanocephalus* living at Kew ; Billups, P. E.
Soc. 1887, p. xxvii.—*Sphecodes* and *Nomada* ; Perkins, Ent. M. M. xx.
pp. 271–273.—Andrew, the British Bees (unimportant), Rep. Belf. N. H
Club (2) ii, p. 449.—Tabulation of British oak-galls ; Bignell, Rep.
Plym. Inst. ix, pp. 391 & 392.—Plymouth, *Ichneumonidæ* ; Bignell, *t. c.*
pp. 318–326.—Ilfracombe ; Saunders, Ent. M. M. xxiv, p. 46.—Bourne-
mouth, *Linoceras* and *Rhogas modestus* (novelty ?) ; Bridgman, Ent. xx,
p. 18.—Dover, *Lasius niger* swarming ; Hall, Ent. M. M. xxiv, p. 91.—
Woking, *Macropis labiata* ; Saunders, Ent. M. M. xxiv, p. 91.—Chob-
ham, *Odynerus reniformis* ; Saunders, Ent. M. M. xxiv, p. 68.—Lewis-
ham, *Strongylogaster macula* ; Cameron, Ent. M. M. xxiv, p. 45.—
Wotton-under-Edge ; Perkins, Ent. M. M. xxiv, p. 91.—Wotton-under-
Edge ; Perkins, *Sirex juvencus*, Ent. M. M. xxiv, p. 156.—Norfolk ;
Bridgman, Ent. M. M. xxiv, p. 15.—Yorkshire, Naturalist, 1887, p. 290.
—Cheshire ; Newstead, Ent. xx, pp. 112–114.—Moray ; Gordon, Scot.
Nat. (n s.) 1887, p. 177.

Lepidoptera. Dorset ; Bankes, *Butalis* novelty, Ent. M. M. xxiii.
p. 275.—Norfolk ; Barrett, *Notodonta* novelty, Ent. M. M. xxiii, p. 276.
—Jenner, *Acidalia immorata*, L., novelty, Ent. xx, p. 289.—Stainton :
Elachista, n. sp. (728) ; *Nepticula*, n. sp. (730) ; *Coleophora*, n. sp. (729).
—*Gelechia semidecandrella*, novelty ; Threlfall, Ent. M. M. xxiii,
p. 233.—Tutt : *Gelechia*, n. sp. (759) ; *Crambus*, n. sp. (758).—*Lozotænia*
(*Cacœcia*) *decretana*, Tr., novelty ; Warren, Ent. M. M. xxiv, p. 125.—
Stepanoptychia novelty ; Warren, Ent. M. M. xxiv, p. 6.—*Stigmonota*
pallifrontana, Z., novelty ; Warren, Ent. M. M. xxiii, p. 232.—*Dory-*
phora quæstionella, H.-S., novelty ; Warren, Ent. M. M. xxiv, p.
Carrington (reputed novelty), Ent. xx, p. 173.—*Apor*
tion of ; Goss, Ent. M. M. xxiii, pp. 217–220 & 257 ; He*ptera.*
Parfitt [illegible] : *Aporia crataegi*, migration of, &c. ; Tut *tea-*

79 EMAN, *Scolytus* ♂; BATH, *t. c.* p. 39; BUTLER, *t. c.* p. 40.—SOUTH, MIDEN (304).—Centr*glossa* and *Sesia*; CARRINGTON, Ent. xx, pp. 96–105. S 224); KOENIG (c. 1887, p. xxi.—*Sphinx convolvuli* larva; POULTON, E. E. Soc. 1887, p. xliv.—BUCKLER, larvæ (98).—TUTT, *Scoparia*, Ent. M. M. xxiv, p. 42.—BARRETT, *Ephestia kühniella*, Ent. M. M. xxiii, p. 255. —WARREN, *Chauliodidæ* (779).—Migration; LONGSTAFF, Ent. M. M. xxiv, p. 158, HALL, *t. c.* p. 159.—BARRETT, notes on British *Tortrices*, Ent. M. M. xxiv, pp. 34–36.—*Pancalia*; TUTT, Ent. M. M. xxiv, pp. 64–66 & 116.—STAINTON, *Lobesia permixtana*, Ent. M. M. xxiv, pp. 58–61.—Some notes on the comparative study of British and Continental *Rhopalocera*; KANE, Ent. M. M. xxiii, pp. 244–248.—*Sphinx convolvuli* at Lee, Birmingham, Newmarket, Cambridge, Ent. M. M. xxiv, p. 103; see also Ent. xx, in various places.—Cornwall, *Sesia philanthiformis*; ATMORE, Ent. M. M. xxiii, p. 259.—Devonshire, *Aporia crataegi*, &c.; BAKER, Ent. M. M. xxiii, p. 256.—Dartmoor; ARNOLD, Ent. xx, p. 268.—Teignmouth, *Coriscium sulphurellum*; JORDAN, Ent. M. M. xxiv, p. 63.—Dorset, *Acrolepia marcidella*; DIGBY, Ent. M. M. xxiv, p. 42.—Isle of Purbeck, *Cosmopteryx schmidiella*; BANKES, Ent. M. M. xxiv, p. 135.—Hampshire; PORRITT, P. E. Soc. 1887, p. xxxi.—Isle of Wight: WARREN, Ent. M. M. xxiii, p. 233; *Anosia plexippus*, Ent. M. M. xxiii, p. 213.—Sussex: °List of *Lepidoptera* observed in West Sussex; FLETCHER, Transactions of the Chichester and West Sussex Natural History Society, No. 5, new series: °List of the *Macro-Lepidoptera* of East Sussex; JENNER, Proc. Eastbourne Nat. Hist. Soc. 1885–86; *cf.* Ent. M. M. xxiii, p. 215.—Deal, TUTT, P. E. Soc. 1887, p. xxxviii.—Sandwich and Sittingbourne, *Aporia crataegi*, Ent. M. M. xxiv, p. 131.—Dover: HALL, Butterflies occurring at D. and its vicinity since 1860; Ent. M. M. xxiv, pp. 77–79 & 131.—Folkestone, *Deiopeia*; KEAYS, Ent. M. M. xxiv, p. 132.—Lewes, JENNER *Acidalia immorata*, L., novelty, Ent. M. M. xxiv, p. 133.—Hastings, *Chærocampa celerio*, Ent. xx, p. 16.—Kent, *Aporia crataegi*; TUTT, Ent. M. M. xxiii, p. 220.—Kent, *Tortrices*; FENN, Ent. M. M. xxiv, p. 87.—North Kent: SOUTH and SABINE, Ent. xx, pp. 220, &c.; TUTT, Ent. xx, p. 42.—Rochester, *Macro-Lepidoptera*; CHANEY, Roch. Nat. i, pp. 287, &c, and TUTT, *t. c.* p. 297.—London: RENDALL, Ent. xx, pp. 198–202, BIGGS, *t. c.* p. 234, MELDOLA, *t. c.* p. 235.—Lewisham, *Pyrausta punicealis*; MACLACHLAN, Ent. M. M. xxiv, p. 86.—Croydon; SHELDON, *Tortrices*, Ent. xx, pp. 31–33.—Essex, Entomological notes from an old pocket-book; ENGLISH, Tr. Ess. Club, v, pp. 109–112.—Somerset: MACMILLAN, Ent. xx, p. 42.—Herefordshire, novelty; WOOD, Ent. M. M. xxiii, p. 183.—Gloucestershire; PERKINS, Ent. xx, p. 108.—South Buckinghamshire; ST. JOHN, Ent. xx, pp. 89–91. —Hertfordshire; BOWYER, Ent. xx, p. 306.—Rugby, Rep. Rugby Soc. xx, pp. 48–53.—North Staffordshire; DALTRY, Rep. N. Stafford. 1887, pp. 10–13, and BARRETT, *t. c.* pp. 13–15.—Cannock Chase; BARRETT, Ent. M. M. xxiii, pp. 195–198.—Norfolk: BARRETT, Ent. M. M. xxiv, p. 117, *cf.* also TUTT, *t. c.* p. 133; BARRETT, *Sphinx convolvuli*, Ent. M. M. xxiv, pp. 101–103; *Eupithecia extensaria*, BARRETT, Ent. M. M. xxiv, p. 114; NORGATE, *Thecla quercus* var. *bellus*, Gerh., Ent. M. M. xxiv, p. 9.—King's Lynn, *Deilephila euphorbiæ*; BARRETT, Ent. M. M. xxiv,

p. 114, *cf.* also Bell, *t. c.* p. 132.—Wicken Fen; J. [illegible] al xx, pp. 33–37.—Lincolnshire, Naturalist, 1887, [illegible]p, Ent. M. M. xxiii. Atmore, Ent. M. M. xxiii, p. 260.—Yorkshire [illegible] and Mat. *Nepticula tormentillella*; Bankes, Ent. M. M. xxiv, p. 160.—Yorkshire Naturalist, 1887, p. 290; Porritt, Naturalist, 1887, pp. 67–69.—Cheshire, *Deilephila euphorbiæ* withdrawn; Chappell, Ent. xx, p. 108.—Lancashire and Cheshire; Ellis, Naturalist, 1887, pp. 97–115 & 367–374.—Northumberland, *Lyæna artaxerxes*; Elliott, Ent. M. M. xxiv, p. 131.—Wales: Smith, *Parnassius delius*, Ent. xx, p. 301; Meyrick, *Parnassius delius*, Ent. M. M. xxiv, p. 130.—Swansea, *Sphinx convolvuli*; Keys, Ent. M. M. xxiv, p. 132.—Supplementary list of *Lepidoptera* of Berwickshire; Elliott, P. Berw. Cl. x, pp. 532–535.—Roxburghshire: Elliott, Ent. M. M. xxiv, p. 132.—Moffat; Lonsdale, Ent. xx, p. 271.—Clydesdale; Watson, P. N. H. Soc. Glasg. (n. s.) i, pp. lxxvi & lxxvii.—Argyleshire; Walker, Ent. xx, p. 301.—N. of Scotland; Slater, P. E. Soc. 1887, p. xliii.—Shetland Isles, Hoffmann (313).—Ireland; Walshe, Ent. xx, p. 276.—Waterford, *Sphinx convolvuli*, Ent. M. M. xxiv, p. 159.—Armagh, *Sphinx convolvuli*; Johnson, Ent. M. M. xxiv, p. 132.

Diptera. *Cecidomyia destructor*; Ormerod (540): Hessian-fly; *id.* Ent. xx, p. 262.—Introduction of Hessian-fly; P. E. Soc. 1887, pp. xlv–xlviii.—Hessian-fly; Campbell, Tr. Hertf. Soc. iv, pp. 180–192.—The Hessian-fly in Britain; Ent. xx, pp. 9–13.—Meade, *Anthomyiidæ*, novelties and n. spp. (482).—Verrall, *Tipulidæ* novelties, n. spp. (767).

Rhynchota. Douglas, *Coccidæ* novelties, n. sp. (178).—*Cf.* in Europe, *ante*, *Aspidiotus rapax*.—Cornwall, *Aëpophilus*; Marquand, Ent. M. M. xxiii, p. 169.—N. Forest *Cicadetta*; P. E. Soc. 1887, p. lv.—Fareham: Ent. M. M. xxiii, p. 213.—Bromley: Saunders, Ent. M. M. xxiv, p. 91.—Wales; Ent. M. M. xxiii, p. 213.

Neuroptera. Fletcher, *Holocentropus stagnalis* novelty; Ent. M. M. xxiv, p. 43.—Morton, *Tinodes maculicornis* novelty; Ent. M. M. xxiv, p. 136.—Eaton, novelty (188).—*Apatania fimbriata* novelty, Killarney; Morton, Ent. M. M. xxiv, p. 118.—Somersetshire, *Chrysopidæ*; MacLachlan, Ent. M. M. xxiv, p. 69: *Cecilius dalii*; *id.* Ent. M. M. xxiv, p. 136.—MacLachlan, *Hydroptila femoralis* and *longispina*; Ent. M. M. xxiv, p. 44.—York, Naturalist, 1887, p. 290.—Kirkcudbright: King, notes on some *Trichoptera* from the Stewartry; Tr. Dumf. & Gall. Soc. iv, pp. 57 & 58.—Notes on the *Neuroptera* of Rothiemurchus and Kingussie; King, P. N. H. Soc. Glasg. (n.s.) i, pp. 354–365.—Glasslough, Ireland; Morton, Ent. M. M. xxiv, p. 136.

Orthoptera. Ireland, *Periplaneta australasiæ*, F.; MacLachlan, Ent. M. M. xxiii, p. 235.

(d.) *North Europe and Siberia* [see also (a.) and (b.)].

Insecta. Norway; Jordan, Ent. M. M. xxiv, p. 127.

Coleoptera. Denmark; Meinert (486).—Siberia: Lewis, *Phellopsis* (434); Heyden (306); Reitter (624); Weise (796); Faust (217); Eppelsheim (199).

79 EMAN, *Scolytus æumonidæ*; THOMSON (750).—*Formicidæ* of Sweden : M DEN (304).—Centr; RADOSZKOWSKI (590, 592, 593).
S 224); KOENIG (Indinavia; AURIVILLIUS (28).—Stockholm; HOLM- GRE (318).—Bidrag till kännedomen om svenska fjärilars geografiska utbredning; AMMITZBÖLL, Ent. Tidskr. viii, pp. 67-69.—Denmark; DUURLOO, Ent. Med. i. pp. 29-32.—Siberia; ROMANOFF (659).

Neuroptera. E. Siberia; MACLACHLAN, *Panorpides* (457); Ent. M. M. xxiv, pp. 69 & 70.

Orthoptera. Denmark; MEINERT (486).

(c.) *Central and Eastern Europe* [see also (a.) and (b.)].

Insecta. Netherlands, Tijdschr. Ent. xxx, pp. xxx & xxxi.—Belgium as a faunistic region discussed; BORRE, C.R. ent. Belg. 1887, pp. xxix-xxxi.—Germany; FLACH, S. E. Z xlviii, p. 360.—Kurze Beschreibung der im Jahre 1886, als species novæ beschreibenen Insecten Deutschlands; Ent. Nachr. xiii, pp. 369-379 (45 species).—Bitche; KIEFFER, Bull. Soc. Metz (2) xvii, pp. 1-43.—Silesia; Z. Ent. Bresl. xii, Vereinsnachrichten, pp. xiii-xxi.—Rheingau; Ent. Nachr. xiii, p. 359.—Prossnitz; HALLAMA, Ent. Nachr. xiii, pp. 255 & 256.—Literature of Entomology of Tyrol; DALLA TORRE (150).

Coleoptera. Riga; MÜTHEL, KB. Ver. Riga, xxix, pp. 21 & 22.—Schleswig; LETZNER, JB. schles. Ges. lxiv, p. 228.—Hamburg: NISSEN, WIMMEL, NIEMEYER, BEUTHIN, Verh. Ver. Hamb. vi, pp. 7-9.—Stettin; VARENDORFF, Soc. Ent. ii, pp. 41, &c.—°Verzeichniss der in der naheren Umgebung Sonderburgs bisher aufgefundenen Käfer. WÜSTNEI. I Hälfte, Sonderburg, 1886, 30 pp.; II Hälfte, *ib.* 1887, 56 pp. [*cf.* Zool. Anz. xi, p. 125].—Netherlands, Catalogue of Netherlands *Col.*; EVERTS (202).—VETH, Tijdschr. Ent. xxx, p. xxvii-; Tijdschr. Ent. xxx, pp. cv-cvii.—Holland: *Bembidium guttula* and allies; Tijdschr. Ent. xxx, p. xviii.—*Meloe rugosus* and *Xyloterus dispar*; *t. c.* p. xx.—Limburg, *Donacia appendiculata*; EVERTS, Tijdschr. Ent. xxx, p. xx; WASMANN, *Attelabidæ*, &c. (783).—Belgium: FAUVEL, Rev. d'Ent. vi, pp. 118-122; BORRE, Matériaux pour la faune entomologique de la province du Brabant. *Col.* quatrième centurie (Ex. Bull. Soc. L. Bruxelles); C.R. ent. Belg. 1887, pp. xii, xxiv, xxxii, xxxviii, lxvi, lxvii, lxxv, lxxix, lxxxix, xcvii, ci.—Germany: SCHILSKY, Deutsche e. Z. xxxi, p. 192; SEIDLITZ, *Brumus*, Deutsche e. Z. xxxi, p. 353; GERHARDT, Sammelbericht pro 1886, Deutsche e. Z. xxxi, pp. 219-223; BEDEL (43).—Prussia: MÜLVERSTEDT, Soc. Ent. ii, p. 76; Schwarzwalde, Deutsche e. Z. xxxi, p. 368.—Nassau, Ent. Nachr. xiii, p. 308.—Verzeichniss der in der Umgegend von Magdeburg aufgefundenen Käfer; HAHN, JB. Ver. Magdeburg, 1885, pp. 95-121.—Galizia, *Chrysomelidæ*; WEISE, Deutsche e. Z. xxxi, pp. 185 & 186.—*Trachyderes striatus* in Kreuznach; Verh. Ver. Rheinl. xliv, p. 117.—Silesia: LETZNER, Fortsetzung des Verzeichnisses der Käfer Schlesiens; Z. Ent. Bresl. xii, app., pp. 149-180.—Silesia and Transylvania; WEISE (797).—Leipsig; SCHREIBER (684).—JORDAN, Hildesheim, Soc. Ent. ii, pp. 4, &c.—Switzerland: MÜHL, *Pityophthorus*, MT. schw. ent. Ges. vii, p. 411; RÜHL, Averser-Thal, Soc. Ent. ii, pp. 90, 91, & 123.—Austria:

Nederlandsche *Lepido-*
Eppelsheim, *Staphylinidæ* (200) ; Schässburg, Pe.
Bielz (63) ; Sommer, Adelsberg caves, Soc. Ent. .
Kraatz, Deutsche e. Z. xxxi, p. 296 ; *Scolytidæ*, Se
Bertolini (57).—Hungary : *Carabus*, Kraatz (397); Kuthy, *Trachyphlœus* (408).

Hymenoptera. Hamburg ; Beuthin, Verh. Ver. Hamb. vi, p. 44.—Netherlands, *Formicidæ*, Bos (80).—Belgium ; C.R. ent. Belg. 1887, pp. xx–xxiii, xxxix, xliii–xlvii, & lxvi.—Germany : Bitsch, Kieffer (373) ; Mocsáry, *Ellampus* (508).—Heyden, Frankfort-a.-M., *Tenthredinidæ* (308).—Switzerland : *Vespidæ*, Schulthess (686) ; Frey-Gessner, *Chrysididæ* (240) ; Frey-Gessner, *Bombus*, MT. schw. ent. Ges. vii, p. 380 ; Konow (391) ; Heyden, Beiträge zur Kenntniss der schweizer Blattwespen (*Tenthredinidæ*), MT. schw. ent. Ges. vii, pp. 407–411.—Eastern Europe, Lindeman, parasites of Hessian-fly (443).—Hungary : Friese (241) ; Friese, *Andrena* (242).

Lepidoptera Riga : Lutzau, K. B. Ver. Riga, xxviii, pp. 18 & 19 ; Teich, *op. cit.* xxix, pp. 12 & 13 ; Lutzau, *op. cit.* xxx, pp. 11–14.—Sintenis (705).—Lutzau, Aus der Lepidopteren-Fauna der russischen Ostseeprovinzen, S. E. Z. xlviii, pp. 106–110.—Nachtrag zur lepidopterologischen Fauna der Ostseeprovinzen insbesondere Estland's ; Petersen, SB. Ges. Dorp. viii, pp. 149–154.—Netherlands : Haar, Tijdschr. Ent. xxx, pp. xxiii & xxiv ; Haar, list of the plants inhabited by the *Micro-Lepidoptera* of the Netherlands completed, Tijdschr. Ent. xxx, pp. 245–292 ; Vries, Tijdschr. Ent. xxx, p. cxi ; Snellen (725), and Tijdschr. Ent. xxx, p. c.—Belgium, C.R. ent. Belg. 1887, pp. xii, xvi, xxxi, lxxv, & civ.—Lower Elbe : Sauber, Verh. Ver. Hamb. vi, pp. 92–96 ; Zimmermann, *t. c.* p. 10 ; Die Gross-schmetterlinge der Fauna der Nieder-Elbe, *id. t. c.* pp. 11–39.—Germany. °Bau, A. Handbuch für Schmetterlings-Sammler. Beschreibung und Naturgeschichte aller in Deutschland, Oesterreich-Ungarn und der Schweiz vorkommanden Gross- und der vorzugsweise gesammelten Klein-Schmetterlinge in systematischer und analytischer, zum Selbstbestimmen geeigneter Anordnung. Magdeburg : 1886 [*cf.* Wien. ent. Z. vi, p. 79].—°Rothe, C. Vollständiges Verzeichniss der Schmetterlinge Oesterreich-Ungarns, Deutschland's und der Schweiz. Nebst Angabe der Flugzeit, der Nährpflanzen und der Entwicklungszeit der Raupen. Für Schmetterlings Sammler zusammengestellt. Wien : 1886 [*cf.* Wien. ent. Z. vi, p. 80].—Wocke (807) ; Streckfuss, B. E. Z. xxxi, p. xvii ; Amelang (9) ; Hiberation of *Lepidoptera* in Germany, Mische (507).—Harz, Fischer (228) and Schr. Ver. Harzes, ii, p. 74.—Riesen, Lepidopterologische Mittheil. aus Ostpreussen S. E. Z. xlviii, pp. 42–46.—Frankfort-on-M., Stainton (729).—Chemnitz, Pabst (548).—Knapp, Thuringia (376).—Switzerland : Huguenin (332) ; Jones, Ent. M. M. xxiii, pp. 182–185 ; Beutel, Köderfang von *Noctuinen* in Bern, Soc. Ent. ii, pp. 18 & 19.—Austria, Bohatsch, *Eupithecia* (76).—Die Schmetterlinge des Lavanthales und der beiden Alpen "Kor- u. Saualpe." vi. Nachtrag. JB. Mus. Kärnt. xix, pp. 113–120.

Diptera. Beuthin (59) ; Röder (649, 650).—Netherlands, Wulp, Tijdschr. Ent. xxx, pp. xxvi & xxvii.—Harz, Röder (652).—Germany,

EMAN, *Scolytus* &c.).—Switzerland, BECKER (42).—Austria: MIK DEN (304).—Centr*elidæ* (565).—Tyrol, POKORNY (564); MIK, *Chorto*- 224); KOENIG (3ia, KOWARZ (396).—Hamburg, BEUTHIN (60).—Netherlands, FOKKER, Tijdschr. Ent. xxx, pp. xxii & cv.—Nicht eine, soudern zwei Singcicaden in der Rheinproviuz, GEISENHEYNER, Verh. Ver. Rheinl. xliv, pp. 116 & 117.—Germany: see Systematic *Aphididæ*, *Myzus junackianus*.—Hungary, HORVATH, *Psyllides* (327).—S.W. Russia, HORVATH (329).

Neuroptera. Trichoptera, KOLBE (385).—*Thysanura*, BELING (49).—LINDEMAN, *Thysanoptera* (442).—Hamburg, BEUTHIN, *Myrmeleon*, Verh. Ver. Hamb. vi, p. 91.—KIEFFER, Verzeichniss der von 1880-1884 um Bitsch beobachteten *Neuropteren*; Ent. Nachr. xiii, pp. 49-51.—Lorraine, BARBICHE, *Odonates* (35).—Vosges, MACLACHLAN, Rev. d'Ent. vi, pp. 57 & 58.

Orthoptera. Trient, COBELLI (134).

(f.) *France* [see also (a.) (b.) and (g.)].

Insecta. Chantilly and Villers-Cotterets, Bull. Soc. Ent. Fr. (6) vii, pp. cxiv-cxvii.—Saone et Loire, MARCHAL, Bull. Soc. Saone, iv, pp. 29-33.—Haute Auvergne, FAUVEL, Rev. d'Ent. vi, pp. 12-17, 59, 60, & 106-110.

Coleoptera. ARGOD (12), BEDEL (43, 45).—DESBROCHERS, *Anthonomus* QUET (340), RAFFRAY (595).—See also Systematic, *Curculionidæ*, *Coleopt[e]anthemi*.—*Neuraphes*, CROISSANDEAU (146).—Paris, BARNE- 420); Bull. Soc. Ent. Fr. (6) vii, p. cv.—Fontainebleau, Bull. Soc. Ent. Fr. (6) vii, p. cix.—Haute-Vienne, *Hybius*, BLEUSE, Rev. d'Ent. vi, p. 62.—Drôme, Bull. Soc. Ent. Fr. (6) vii, p. cxix.—Beziers, BARBIER, Feuill. Nat. xviii, pp. 6-8.

Hymenoptera. Cleptes, BUYSSON (110).

Lepidoptera. MILLIÈRE, Nat. Sicil. vi, pp. 127, &c.; RAGONOT, Bull. Soc. Ent. Fr. (6) vii, p. clxxxv, and CONSTANT, *l. c.*—Fontainebleau, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. cxx.—Lépidoptères nouveaux pour la faune du département de la Seine inférieure; LHOTTE, Bull. Soc. Rouen, xxiii, pp. 137 & 138; also LÉVÊQUE, *l. c.* pp. 139 & 140.—Bordeaux, BROWN, Act. Soc. L. Bord. (C.R.) p. xix.—Digne, DUFBERG, B. E. Z. xxxi, p. xxxix.

Diptera. BIGOT (65, 68), GOBERT (262).—Matériaux pour l'histoire des Diptères de Saone-et-Loire; PIERRE, Bull. Soc. Saone, iv, pp. 36-42.

Rhynchota. HORVATH (325).—Catalogue des Hémiptères du département de la Seine-inférieure; BUCAILLE, Bull. Soc. Rouen, xxiii, pp. 143-181.

Orthoptera. FINOT (227).

(g.) *Southern Europe and Mediterranean Basin* [see also (a.) and (b.)].

Syrphidæ. Italy and Sicily, Costa (141).—Sicily, STECK, *Col.* and ii, p. 232.—[illegible]. GRANara, 1886, pp. 178-188.—Escursione entomologica LINELL, *Dytisc* the list of *Coleo* REUTER; FAILLA, Nat. Sicil. vi, pp. 53, &c.

BOLIVAR (4), FAUST (219, 220), MARSEUL (470), REITTER

(615, 617), Sharp (704).—Spain, Reitter, Nederlandsche *Lepido-* Uhagon (760).—Weise, *Hydrothassa* (795).—N. [illegible] —Val Sesia, Sinigaglia, Feuill. Nat. xvii, pp. 7). Kuthy, *Trachy-* Ghiliani (256).—Liguria, *Anopthalmi*, Gestro (254).—Sardinia, Alla- & Dodero (6), Dodero (168), Lostia (450).—Sicily, Desbrochers, *Sitones* (156); Eppelsheim, *Anthobium* (201); Kuwert, *Limnebius* (409), Ragusa (599), Reitter (626, 627, 628).—Fiume, Hoffmann, *Agonolia* (314).—Dalmatia, Ulanowski (763). — Greece; Emge, Soc. Ent. ii, pp. 100, &c.—N. Africa, Sénac (703), Bedel (44), Brisout (95).—Tangier, *Hetærius*, Lewis (430). — Morocco, Heyden (305); Queden-feldt, *Helopidæ* (587); Schmidt, *Histeridæ* (677).—Riff, Fairmaire (206).—Tunis, Mayet (480).—Egypt, Allard (5).—Syria, Weise, *Halticidæ* (794).—Adalia, Ganglbauer (252).—Asia Minor, Reitter (611).—Syria and Turcomania, Faust (218).—Crimea, Retowski (629).—Arabia, Raffray (595), Fairmaire (205, p. 303).

Hymenoptera. Costa (142, 143).—*Aculeata*, Perez (111).—Spain, Gogorza, *Chrysididæ* (265).—Italy, Stefani (738).—Lombardy, Magretti (467).—Sicily, Stefani (736, 737); see also Systematic, *Bombus fairmairei*.—S. Russia, Konow (392).—Syria, Buysson, *Cleptes* (110); Mocsáry, *Anthidium* (510).

Lepidoptera. Camus, *Bucculatrix* (117); Staudinger, [illegible]*erna*, *Sesia* (732).—Alpes maritimes, Millière (504).—Elwes, *Rhopa*[illegible] xx, pp. 245-[illegible] Pyrenees (193).—Italy, Calberla (113); Jones, Ent. M[illegible] Tijdschr., pp. 151–153; Kane, *t. c.* p. 153.—Sicily, Minà (506); Rag[illegible] xxv, &c. Sicil. vi, pp. 236–238.—Algeria, Oberthür (534); Seriziat, Cata[illegible] des *Lep.* des environs de Collo, Bull. Ac. Hipp. 20, pp. 91–109.—Tunis, Ragonot (598).—Armenia, Staudinger, *Cossidæ* (733).

Diptera. Bigot (65), Mik (497, 498), Röder (654).—Sicily, Minà, Nat. Sicil. vi, pp. 115–119 & 147–153.—Illyria, Mik (499).—Carinthia, Tief (753).—Algeria, Bigot (66).—Syria, Röder (655).—Asia Minor: see Systematic, *Bombyliidæ*, *Stomylomyia*.

Rhynchota. Reuter, *Reduviidæ* (631), Puton & Lethierry (586).—Hyères, Loew, *Psyllidæ* (448).—Italy, Carlini (120), Horvath (329).—Sicily, Costa, Nat. Sicil. vi, pp. 228; Ragusa, *t. c.* pp. 119–125, 153–156, & 183–187.—Illyria, Horvath (324).

Neuroptera. Grassi, *Thysanuridæ* (275, 276).—Portugal, *Ephemeridæ*; Eaton, Ent. M. M. xxiv, pp. 4–6.—Italy, *Collembola* and *Thysanura*, Parona (552).—Greece and Crete, *Japyx*; Karsch, B. E. Z. xxxi, p. 154.

Orthoptera. Bolivar (79), Saussure (667).—Pyrenees, Saulcy (665, 666).—Guadarrama, Bolivar, Act. Soc. esp. xvi, pp. 4–9.—Sicily, Riggio, Nat. Sicil. vii, pp. 28–33, 54–59, 73, & 74; Krauss (401). Catalogue of *Orthoptera* of Sicily (cont.); Riggio & Pajno, Nat. Sicil. vi, pp. 47 & 63.

(h.) *Caucasus and Western Asia* [see also (a.) and (b.), Arabia, see also (g.).]

[illegible].—Netherlands, Wulp. *Coleoptera.* Allard, *Heteromera* (4).—Caucas[illegible]der (652).—Germany, 251); Koenig (380); Reitter (613); Retowsk

EMAN, *Scolytus amygdali* (441).—N. Persia: REITTER (618).—DEN (304).—Central Asia: DOKHTOUROFF (172, 173); FAUST (221, 224); KOENIG (380); JAKOWLEFF (343, 345); REITTER (624, 625); SÉMÉNOW (699, 700).—Thibet (see also E. Asia).—West Asia and Mongolia, TSCHITCHÉRINE (757).—CONRADT, Notizen über einige Käfer des östlichen Turkestan, S. E. Z. xlviii, pp. 127–130.

Hymenoptera. Turkestan, MOCSARY, *Anthidium* (510).—JAKOWLEW (347); MORAWITZ (516); RADOSZKOWSKI (590, 591).

Lepidoptera. Transcaucasus, Central Asia, &c.: ROMANOFF (657); ALPHERAKY (7); CHRISTOPH (132); STAUDINGER (733); HEYLAERTS, *Psychidæ* (310).

Diptera. Caucasus: BIGOT (65); MIK (497).

Rhynchota. JAKOWLEFF (344).

Neuroptera. SELYS (697); MACLACHLAN (458).

Orthoptera. SAUSSURE (667).

4. AFRICA (ETHIOPIAN REGION).

Insecta. AURIVILLIUS (25); KOLBE (386); ORMEROD (541).

Coleoptera. ALLARD (5); AURIVILLIUS (24, 27); BELON (52); CASEY [illegible] XHTOUROFF (174); FAIRMAIRE (205, 210, 211); JACOBY (337); [illegible] 1); LANSBERGE (416, 417); LEFÈVRE (422); MATTHEWS (479); [illegible] (519); NICKERL (532); PASCOE (553, 554, 555, 556); PERINGUEY [illegible]); QUEDENFELDT (588); RAFFRAY (595); RÉGIMBART (605, 607); REITTER (608, 622); ROELOFS (657); WATERHOUSE (791); and P. Z. S. 1887, p. 128.—See also Systematic, *Cantharidæ*, *Eletica ornatipennis*.

Hymenoptera. ANDRÉ (11); HANDLIRSCH (296).

Lepidoptera. BUTLER (101, 105); CROWLEY (147); DEWITZ (158, 159); DRUCE (179, 180); FROMHOLZ (243); KIRBY (374, 375); MEYRICK (491); SMITH (706, 708, 712); STAUDINGER (731); TRIMEN & BOWKER (754).

Diptera. BIGOT (65, 68); KARSCH (363, 364, 366); LEWIS, Soc. Ent. ii, p. 50.

Rhynchota. REUTER, *Reduviidæ* (631).

Neuroptera. *Termitidæ*, FOREL (236).

Orthoptera. BOLIVAR (78); KARSCH (356, 367, 369); SAUSSURE (667).

5. MADAGASCAR, MASCARENE ISLANDS, SEYCHELLES.

Coleoptera. KOLBE (384); PASCOE (555); RAFFRAY (595); WATERHOUSE (791).—See also Systematic, *Cetoniidæ*, *Bothrorrhina radama*.

Hymenoptera. ANDRÉ (11); BUYSSON (111); FOREL (235); SAUSSURE [illegible]

ii, p. 232.—[illegible]. GRANDIDIER (274); MEYRICK, Réunion, Mauritius (491).
LINELL, *Dytisc* REUTER (630, 631).
the list of *Coleop* BOLIVAR (78); DOHRN (170).

6. Tropical and Eastern Asia and Japan. [For Thibet & Arabia see also 3 (h.).]

Coleoptera. Allard (4); Baly (33); Dokhtouroff (174); Faust 216, 222); Gestro (255); Lameere (414); Matthews (479); Pascoe (555, 556); Schaufuss (671); Waterhouse (788, 791).—Afghanistan, Ann. N. H. pp. 28-30.—Fairmaire, Sikkim (206).—Dokhtouroff, Thibet (171).—Duvivier, N. India (186).—Hindostan, Lefevre (423).—India, Baly (34); Lansberge (419).—Annam, Fleutiaux (232).—Annam and Malacca, Allard (5).—Mergui, Bates (37).—Burma, Schaufuss (670).—Cambodia, Grouvelle (283).—Ceylon, Jacoby (336); Flach (230).—Andaman, Régimbart (606).—China, Fairmaire (204, 209); Heyden (303); Ganglbauer (250); Lefèvre (and Cochin China) (425); Schaufuss (672); see also Systematic, *Cerambycidæ*, "*Callichroma provosti*," and *Carabidæ*, *Coptolabrus gemmifer*, and *Lucanidæ*, *Lucanus delavayi*.—China and Mongolia, Séménow (701).—Pekin and Japan, Fairmaire (203).—Suy-fun, Faust (219).—Korea, Heyden (307); Koenig (380).—Japan: Gorham (269); Lewis (431, 432, 433, 434, 435, 437, 438, 439, 440); Schönfeldt (682); Reitter (609).—Formosa, Ent. Nachr. xiii, p. 340.

Hymenoptera. André (11); Buysson (111); Schletterer, pp. 245-Emery (196); Cameron, Japan (115).—Korea and Japan, Tijdschr. kowski (589). xxv, 8.

Lepidoptera. Elwes (194), and P. E. Soc. 1887, pp. ix-xi; Smith (710).—Meyrick, Aden (491); Poujade, Thibet (573); Weymer, India (799); Smith, S. Afghanistan (709); Cat. of Moths of India, Cotes & Swinhoe (144); Nicéville (530); Nicéville & Wood-Mason (531); Aitken, Bombay *Rhopalocera*, J. Bomb. N. H. Soc. ii, pp. 35-44; Swinhoe, *Rhopalocera* of Karachi, *t. c.* pp. 269-280.—Tavoy and Siam, Elwes & Nicéville (195).—Smith, Burmah (707).—Honrath, Malacca (320) and B. E. Z. xxxi, p. xviii.—Distant, Malay (164).—Ceylon, Moore (515); Meyrick (491).—Japan: Pryer (583); Romanoff (659).—Leech, Japan and Corea (421).—Holland, Hainan I. (316).

Diptera. Bigot (65, 68); Osten-Sacken (544).—Bigot, Japan and Ceylon (67, 68).—Bigot, Japan (69).

Rhynchota. Atkinson (20); Distant (161, 163, 165); Reuter (631).

Neuroptera. Himalaya, MacLachlan, *Notholestes* (461).—Japan: MacLachlan, *Panorpides* (457); Selys, *Odonata* (698).

Orthoptera. Bolivar (78).

7. Asiatic Archipelago and Papua.

Coleoptera. Behrens (47); Dokhtouroff (174); Fairm- lands, Wulp, 210); Jacoby (337); Lansberge (420); Lefèvre (422); 2).—Germany, (479); Pascoe (555, 556); Schaufuss (671, 672); Wate-

791).—Aurivillius, Philippines (27).—Java: Reitter (619); Lameere (414); Poll (566).—Christmas I., Waterhouse (787).—Allard, Sumatra, Java (5).—Sumatra: Ritsema (644, 645); Fowler (238); Lansberge (416, 418); Candèze, Notes Leyd. Mus. pp. 189 *et seq.*—I. of Riouw, Ritsema (646).—Poll, Celebes (569).—Aru Is.: Fairmaire (208); Kraatz (399).—N. Guinea: Jacoby (338); Reitter (622, p. 259, note).

Hymenoptera. André (11); Emery (196); Mayr (481, p. 539).

Lepidoptera. Butler (106); Distant (164); Heylaerts (310); Kirby (374); Kühn (405); Pagenstecher (551); Röber (648); Smith (708, 710); Staudinger (731); Weymer (799).—Semper, Philippines (702).—Borneo: Distant & Pryer (166); Smith (711); Capronnier, C.R. ent. Belg. 1887, p. xciv.—Java, Snellen, Tijdschr. Ent. xxx, pp. xcviii & xcix.—Christmas I., Butler (100).—Ribbe, Batchian (633).—Snellen, N. Guinea (723).

Diptera. Bigot (65, 67, 68); Osten-Sacken (544); Wulp, Java (810).

Rhynchota. Reuter (631).

Neuroptera. Hagen, Borneo, *Neurobasis* (292).

Orthoptera. Bolivar (78).

8. Australia and Tasmania.

Coleoptera.—Belon (52); Candèze (119); Jacoby (338); Lansberge (420); Macleay (464, 465, 466); Masters (477); Matthews (479); Olliff (538, 539); Pascoe (555); Poll (566, 567, 568, 571); Raffray (595); Régimbart (604); Tepper (747); Waterhouse (791).—Notes on some S. Australian *Trogidæ*, and a new species of *Trox*; Tepper, Tr. R. Soc. S. Austr. ix, p. 12.

Hymenoptera. Emery (196); Handlirsch (296).

Lepidoptera. Guest (284); Meyrick (490, 493), and P. E. Soc. 1887, pp. xxix & xxx; Olliff (537); Tepper, Tr. R. Soc. S. Austr. ix, p. 13.

Diptera. Bigot (65, 67, 68); Osten-Sacken (544).

Rhynchota. Hart (298); Reuter (631).

Neuroptera. MacLachlan (459, 460).

Orthoptera. Bolivar (78); Tepper (748).

9. North America.

Insecta. Godman & Salvin (263); Hubbard (330); Riley (634, 636, 637, 641).—Saunders, collecting at the electric light; Canad. Ent. xix, pp. 21–29.

Coleoptera. Brendel (91); Casey (123); Horn (321, 322, 323); Smith (721); Schaufuss (670, 671); Ulke (764).—Hamilton, Pennsylvania; Canad. Ent. xix, pp. 62, &c.—Hagen, *Ptinus latro*; Ent. Am. ii, p. 232.—Beutenmuller, Notes; Ent. Am. iii, p. 156.—New York, Linell, *Dytiscus*; Ent. Am. iii, p. 27.—Henshaw, First supplement to the list of *Coleoptera* of America, North of Mexico; Ent. Am. ii, pp. 213–

220.—Corrections to Henshaw's Check List; Schwarz, Ent. Am. iii, p. 13.

Hymenoptera. André (11); Ashmead (14, 15, 16, 17, 18); Cresson (145); Handlirsch (296); Mayr (481, sparsim); Provancher (582); Harrington, *Orgssus*; Canad. Ent. xix, pp. 81-86, 239, & 240.

Lepidoptera. Behrens (46); Beutenmuller (58); Butler, *Acronycta*, Ent. Am. iii, pp. 35 & 36; Edwards (189, 190, 192); Fernald (225, 226); French (239); Graef (272); Grote (279, 280), and Canad. Ent. xix, p. 220.—Hulst, *Geometridæ* (333, 334, 335), and Connecticut, *Catocala*, Ent. Am. iii, p. 27.—Lyman (454), and Canad. Ent. xix, p. 19.—Packard (549); Pearsall (559); Scudder (687, 689); Smith (713, 714, 715, 716, 718, 719, 720); Walsingham (778).—An unknown or forgotten illustration of N. American *Sphingidæ*; Hagen (293).—Additions to the list of Canadian *Lep.*; Moffat, Canad. Ent. xix, p. 4.—White Mountains, early Butterflies; Scudder, Canad. Ent. xix, pp. 101-105.—Montreal; Bowles, Canad. Ent. xix, pp. 86 & 87.—Canada, *Microlepidoptera*; Moffat, Canad. Ent. xix, pp. 88 & 89.—Fyles, Rep. E. Soc. Ont. xvii, p. 10.—Barrett, notes on British *Tortrices*; Ent. M. M. xxiv, pp. 35 & 36 (includes some N. Am. species).—See also Gumppenberg, in Palæarctic.

Diptera. Bigot (65, 66, 67, 68, 70, 71); Coquillett (138, 139, 140); Osten-Sacken (545); Riley (642); Röder (651); Waterhouse (786); Williston (803, 804).

Hemiptera. Ashmead (19); Bergroth (54); Provancher (581); Uhler (761, 762).—Duzee, Buffalo, Canad. Ent. xix, pp. 69-73.

Orthoptera. Bolivar (78); Caulfield (124), and Can. Rec. ii, pp. 378-383; Davis (152).—Scudder, Texan *Forficulidæ*; Canad. Ent. xix, p. 67.

10. Central America, including Mexico.

Insecta. Godman & Salvin (263).

Coleoptera. Belon (52); Dugès (185); Flohr (233); Horn (321); Lansberge (420); Lefèvre (424); Schaufuss (670, 671); Waterhouse (785).—Dugès, *Meloidæ* of Mexico; Nat. Mex. vii, p. 342-344.

Hymenoptera. André (11); Handlirsch (296); Schletterer (676).

Lepidoptera. Butler (103); Edwards (191); Staudinger (731).

Diptera. Bigot (65, 66, 68, 70, 71); Dugès (184); Williston (803).

Rhynchota. Aleman (3).

Orthoptera. Bolivar (78); Dohrn (169); Pictet & Saussure (563).

11. Antilles.

Insecta. Godman & Salvin (263).—Gundlach, Porto Rico (286).

Coleoptera. Belon, Cuba (52); Schaufuss (671).—Schaufuss, Cuba S. Domingo (670).—Waterhouse, Jamaica (785).

Hymenoptera. André (11); Schletterer (676).

Lepidoptera. Cuba, Honrath (319), and B. E. Z. xxxi, p. xxx.—Wulp, (Curaçao, *cf.* S. America.)

Diptera. Bigot (67) ; Williston (803).—Cuba, Bigot (65, 68, 71).—Porto Rico, Osten-Sacken (544).

Rhynchota. Uhler (761).

Orthoptera. Bolivar (78).

12. South America.

Insecta. Godman & Salvin (263).—Insects introduced into Chili, Philippi, Fest. Ver. Nat. Cassel, 1886, pp. 1–21.

Coleoptera. Allard, Chili (5) ; Aurivillius (27) ; Bates (38) ; Belon (52) ; Bourgeois (83, 84) ; Candèze (118) ; Dokhtouroff (174); Duvivier (186) ; Fairmaire (207, 209) ; Jacoby (339) ; Kerremans (371) ; Kolbe (382, 383) ; Lansberge (420) ; Marseul (471, 472) ; Matthews (479) ; Michard (494) ; Olivier (536) ; Pascoe (556) ; Raffray (595) ; Schaufuss (670, 671) ; Wasmann (780) ; Waterhouse (785, 788, 791).—See also Systematic, *Scolytidæ*, *Phlœoborus*.—Los estafilinos de Buenos Aires, notes sur l'ouvrage de M. F. Lynch Arribalzaga ; Fauvel, Rev. d'Ent. vi, pp. 230–234.

Hymenoptera. Emery (196) ; Handlirsch (296) ; Holmberg (317); Marshall, Trinidad (473, p. 66) ; Mayr (481) ; Müller (520) ; Schletterer (676).

Lepidoptera. Baker (29) ; Butler (103) ; Kirby (374) ; Meyrick, Magellan (491) ; Philippi, Chili (562) ; Snellen, Curaçao (724) ; Staudinger (731) ; Walsingham (778).—Notes on species of *Morpho* and *Agrias* in French Guiana ; Honrath, B. E. Z. xxxi, pp. 147–152.

Diptera. Bigot (65, 66, 67, 68, 69) ; Osten-Sacken (544) ; Röder (656) ; Williston (805).—*Syrphidæ* : Catalogue of S. American additions and corrections ; Williston, Ent. Am. iii, pp. 27 & 28.

Rhynchota. Distant (162).

Neuroptera. Jhering (350, 351) ; Müller (521) ; MacLachlan (462) ; Parona, Patagonia, *Thysanura* (552).

Orthoptera. Bolivar (78) ; Dohrn (169) ; Pictet & Saussure (563).

Palæo-entomology.

Deichmüller (154) ; Fauconnet (213) ; Osten-Sacken (544) ; Schlechtendal (675).—Palæo-entomology of Solenhofen ; Schumann, B. E. Z. xxxi, p. xix.

Coleoptera. *Microcara baylei* in amber ; Fauconnet (213).

Diptera. Notes on fossil *Tipulidæ* ; Osten-Sacken (544).

Neuroptera. Schlechtendal (675) describes the following *Thysanoptera* as n. spp. :—*Phlœothrips pohligi*, p. 560, pl. iii, fig. 1 ; *Thrips gravallens*, p. 564, pl. iii, figs. 2-8, *longula*, p. 568, pl. iii, fig. 9, *pennifera*, ii, p. 232, iii, figs. 10–12, *brevicentris*, p. 572, pl. iv, figs. 13–15, *minima*, Linell., figs. 16 & 17, *pygmæa*, p. 577, figs. 18 & 19, *capito*, p. 579, pl. v, fig. 20, *Heliothrips cucullata*, p. 582, pl. v, figs. 21 & 22, *longipes*, p. 586, p. 361. *Æ. clypeata*, p. 589, pl. v, fig. 24, *frechi*, p. 591, pl. iv, fig. 25.

Thysanoptera. *Etoblattina ornatissima*, p. 90, pl. iii, fig. 1, *rollei*, p. 92, pl. iii, fig. 2 ; Deichmüller (154), n. spp.

IV.—ECONOMIC.

Reports and Lists: Balfour (31); Beling (49); Brown (96); Krassilstchik (400); Meves (489); Ormerod (542); Riley (634, 637); Tcheng-ki-Tong (746).—Injurious insects in Canada; Rep. E. Soc. Ont. xvii.—Insects injurious to bottled wines; Borre, C.R. ent. Belg. 1887, pp. xiv, xvii, xxxvi, l, xcvii; remedy for; Claes, *t. c.* p. lxxiii.—Poisonous insects; Riley (640).—*Phylloxera*: Goethe (264); Laborier (413).—Mode of destroying *Phylloxera*; Couanon & Salomon, C.R. civ, pp. 340–342.—The Hessian-fly; Campbell (116).—Hessian-fly in Britain; Ormerod (540) and Nature, xxxvi, p. 439.—Hessian-fly in Russia; Lindeman (443, 445).—*Forficula* in gardens; Ruhl (662).—Ravages of *Atta cephalotes* in Brazil; Ent. Nachr. xiii, pp. 205–207.—*Scolytus ratzeburgi* ravages; Schreiber (685).—*Opatrum* and *Pedinus* injurious to tobacco; Lindeman (446).—*Leptinotarsa decemlineata*, Say, in Germany; Ent. Nachr. xiii, p. 256; Karsch (361) and B. E. Z. xxxi, p. xxxix; Will (802).—*Opatrum tibiale* injurious to fir-trees; Ent. Nachr. xiii, pp. 283 & 284.—*Ælia acuminata*, L., ravages in Germany; Schumann, B. E. Z. xxxi, p. xix: other insects; *t. c.* p. xx.—Ravages of *Liparis monacha* in Thuringia; Förster, Soc. Ent. ii, p. 75.—Ravages of *Dasychira pudibunda* on the Island of Rügen; Rühl, Soc. Ent. [illegible], pp. 30, &c.—Ravages of *Nematus erichsonii* in N. America; Ent. Am. iii, p. 121.—*Adoxus vitis*, Fab., ravages in vineyards; Bull. Soc. Ent. Fr. (6) vii, p. cxxvii.—*Helopeltis antonii* attacking *Theobroma cacao*; Trimen (755).—Ravages of *Charæas graminis* on the Borders; Hardy (297).—Insects injurious to vine in Chili; Philippi (562).—Injury to *Rumex acetosa* by *Phytonomus rumicis*, and to *Allium porrum* by *Acrolepia assectella*; Decaux, Feuill. Nat. xvii, pp. 134–137.—Injuries to corn in Russia by *Thysanoptera*; Lindeman (442).—Injuries to vine of *Otiorhynchus turca*; Ballion, Bull. Mosc. (n. s.) i, pp. 813 & 814.—Injuries of *Haltica vittula* to corn, of *Scolyti* to trees, and of *Cleigastra flavipes*, Meig., to corn in Russia; Lindeman (444).—Ravages of *Chionaspis evonymi*; Vayssière (766).—*Phorodon humuli*, biology, ravages, and prevention; Riley (639).—Insects affecting orange; Hubbard (330).—*Diaspis* injurious to mulberry-tree; Targioni (745).—*Termitidæ* injurious to vines in Catania; Grassi (277).—Further injury to living plants by white ants; Scudder, Canad. Ent. xix, p. 217.—Ravages of *Acridiidæ* in Belgium; C.R. ent. Belg. 1887, p. lxxvii.—*Anomala vitis*, ravages, prevention, &c.; Jatta & Savastano (348).—Insects affecting wheat, barley, buckwheat, timothy, white clover; Webster, in Riley Rep. 1886, pp. 573–582.—Sooty fungus on leaves really due to *Coccidæ*; Maskell (475).—Shade-trees and their defoliators, means of prevention, &c.; Riley (635, 636, 641).—Locusts in Algeria; Decroix (153).—New Zealand *Coccidæ*; Maskell (476).—Sheep-fly disease; Bos (81), Karsch (362).—*Coprophilus striatus* injurious to maiz; Bos (81).—Bots of the horse and ca[illegible] (735).—Destruction of *Nematus ribesii*; Gilbert, C.R. ent. Wulp, 1887, p. l.

Insects attacking man : Ent. Nachr. xiii, p. 287 ; CALANDRUCCIO (112). *Diptera* attacking man ; JOSEPH (353, 354, 355) ; MIK (and JOSEPH) (501, 502) ; LAMPA (415).—*Diptera* in the human body and about corpses ; HOFFMANN (315) ; MEGNIN (483).—Note on Paul Megnin's observations on the fauna of graves; KÄRSCH, B. E. Z. xxxi, p. xliii.—Entomo-helminthology ; Ent. Nachr. xiii, p. 350 : and Arch. f. Nat. lii, pp. 110–118; FEDSCHENKO, Reise v. Helminthen (*cf.* Ent. Nachr. xiii, p. 287).

Insects and flowers : Pronuba and fertilisation of Yucca ; RILEY, Ent. Am. ii, pp. 233–236 ; HULST, *t. c.* pp. 236–238 ; RILEY, *op. cit.* iii, p. 107.—LENDL (428) ; DAMANTI (151) ; STEARNS (734).

Beekeeping : CHESHIRE (129) ; GIRARD (257) ; LETT (429) ; SCHILLER-TIETZ (674).—Ueber künstliche Verjüngung bezw. Veredelung von Bienenstöcken ; FRICKERT, Naturforscher, xx, pp. 451 & 452.—Diseases of Bees : control of reproduction, fertilization in confinement ; MACLAIN in RILEY (634).—Preparing Bees for winter ; hibernation ; spring dwindling ; Bees *versus* fruit ; Bee forage : MACLAIN (637).—3500 kilogrammes of honey taken from a Bee's nest in Australia ; Ent. Nachr. xiii, p 266.—The Indian Honey-bee, *Apis dorsata*, Fab., in Borneo ; KARSCH, B. E. Z. xxxi, S. B. pp. xxiii–xxvi.—For numerous other works on Beekeeping *cf.* Zool. Anz. xi. pp. 103 & 104, &c.

Silk : RONDOT (660).—DUMAINE, C. J. : Remarks on the wild silk-feeders found in the Hazaribagh district ; J. Agr. Hort. Soc. Ind. (n. s.), ii, pt. 4.—Rearing, &c., of silk-producing moths ; WAILLY (777).—Silk-culture : osage-orange as food for the worm, &c., &c. ; RILEY, Rep. 886, pp. 546–558.—Notes sur les Bombyciens séricigènes élevés à Londres en 1885 ; WAILLY, Bull. Soc. Acclim. (4) iv, pp. 111–116.

Collections : Cage for rearing larvæ ; MEVES, Ent. Tidskr. viii, pp. 35–37.—Preparation and preservation of small larvæ ; DEWITZ (160).—Preservation of larvæ ; HAAR, Tijdschr. Ent. xxx, p. xxv : TROIS (736).—The preservation of larvæ by inflation ; TUTT, Ent. xx, pp. 132–134.—Preparation and preservation of denuded lepidopterous wings ; DEWITZ, Ent. Nachr. xiii, pp. 164 & 165.—Means of removing lepidopterous scales ; WATERHOUSE, P. E. Soc. 1887, p. xxiii.—Note on collecting *Coleoptera* ; ESCHERICH, Soc. Ent. ii, p. 115.—New mode of preparing small *Coleoptera* ; CROISSANDEAU, Feuill. Nat. xvii, p. 167.—Note on some modes of collecting and preparing *Coleoptera* ; BEHRENS, S. E. Z. xlviii pp. 312–315.—Frühlingsbeschäftigungen für den Insektensammler, besonders den Hymenopterologen ; KRIECHBAUMER, Ent. Nachr. pp. 65–67.

Mode of killing *Lepidoptera* ; DÖNITZ, B. E. Z. xxxi, S. B. pp. xxvi–xxviii.—Insects and electric light ; Ent. Am. iii, p. 160.—Sigteapparat ; SCHLICK, Ent. Med. i, p. 28.—Preparations of small Insects ; RAFFRAY (594).—Setting undersides of *Rhopalocera* ; RENDALL, Ent. xx, pp. 320–322.—Use of creosote for preservation of collections ; LEFRIEUR, Bull. Soc. Ent. Fr. (6) vii, pp. lxix & lxxi ; and FINOT, *t. c.* p. lxxxii.—Binocular dissecting microscope described ; SCHULZE, Ent. Nachr. xiii, p. 361.

The museums of Canada ; PROVANCHER, Nat. Can. xvi. p. 130, &c.—Account of acquisitions of U.S. National Museum, N. America ; Ent.

Am. iii, p. 148.—The Curtis collection; MEYRICK, Ent. M. M. xxiii, p. 223.—Proposal for a general collection of the Insects of Germany; LANDOIS, Ent. Nachr. xiii, p. 305.—The educational value of entomological collections; TUTT, Ent. xx, pp. 245–251; and others, *l. c.*

V.—BIBLIOGRAPHY, BIOGRAPHY, NOMENCLATURE.

1. *Bibliography.* Verzeichniss der Arten-Namen, welche in SCHINER's Fauna Austriaca *Diptera*; Tom. i & ii, enthalten sind. Zusammengestellt von Jos. MIK. Wien: 1887, 57 pp.—List of writings on *Aphididæ* of N. America; OESTLUND, (535) pp. 9–14.—Svensk-Norsk entomologisk litteratur, 1886; Ent. Tidskr. viii, pp. 51–56.—Zoological literature of Tyrol; DALLA TORRE (150).—OSTEN-SACKEN: Reprint of paper on the characters of the *Mycetophilidæ* from Proc. Ent. Soc. Philad. 1862. Heidelberg: 1886, 29 pp., 1 pl.—Recent bibliography of *Œstridæ*; BRAUER (89).—List of memoirs (with summaries) on the brain of Insects; VIALLANES (771).—List of works on phosphorescent Insects; GADEAU (244).—Account of Wilkes' "English Moths and Butterflies"; HEWETT, Ent. xx, pp. 189–192.—Account of Townend Glover's Illustrations of North American entomology; H. HAGEN, S. E. Z. xlviii, pp. 131–142.—[illegible], unrecorded note of Meinert, on *Thysanuridæ*; GRASSI, (276) p. 52.—Note, on date, &c., of Spinola's "Insetti artroidignati"; BERGROTH (55).—Notes on the second edition of Curtis' British Entomology, by H. STAINTON, Ent. M. M. xxiii, pp. 221–223.—Asso, "Introductio in Oryctographiam" noticed; C.R. ent. Belg. 1887, p. xcii.—Lists of the writings of Motschoulsky, Mannerheim, Ferté-Senectère, Brullé, Jacquelin-Duval, Piochard de la Brulerie, Klug, Herbst, Illiger, Rosenhauer, Hochuth, Retzius; MARSEUL (470).—Table generale des Annales de la Société entomologique de Belgique, i–xxx, par A. Lameere. Brussels: 1887. A list of the memoirs arranged alphabetically, according to the names of the authors.

2. *Nomenclature.* BERGROTH (55); SEIDLITZ (690); WEISE (793).—Multiplication of generic names discussed; SEIDLITZ (691).—Priority of generic names in *Coleoptera*; CHAMPION (125).—Note on the validity of Hübner's genera; BUTLER, Ent. Am. iii, p. 18.

3. *Biographical.* Obituary notes: Becher, Dr. Eduard; Ent. Nachr. xiii, p. 15.—A. T. Bruce; Zool. Anz. x, p. 276.—Dr. Max Gemminger; Ent. M. M. xxiv, p. 92, and by F. WILL, Ent. Nachr. iii, p. 237: note on his work; DOHRN, S. E. Z. xlviii, p. 206.—Edgar von Harold, Notice nécrologique sur, par L. FAIRMAIRE; Ann. Soc. Ent. Fr. (6) vii, pp. 47 & 48.—Rev. John Hellins; Ent. M. M. xxiv, p. 20.—Johann v. Hornig; Wien. ent. Z. vi, p. 48, and Zool. Anz. x, p. 104.—J. Kneppelhout; Tijdschr. Ent. xxx, p. iii.—Hermann Kunstler, by HONRATH; B. E. Z. xxxi, pp. 353–355.—Jules Lichtenstein, Notice nécrologique sur, by VALÉRY MAYET; Ann. Soc. Ent. Fr. (6) vii, pp. 49–58, with list of his writings.—Robert Francis Logan; Ent. M. M. xxiv, p. 92.—Pierre Millière; Ent. M. M. xxiv, pp. 70 & 71: by NAPOLEON M. KHEIL; B. E. Z.

xxxi, pp. 383–386: notice nécrologique sur, by M. A. CONSTANT; Ann. Soc. Ent. Fr. (6) vii, pp. 209–214: by DES GOZIS; Rev. d'Ent. vi, pp. 248–253.—Max Mützell, by E. G. HONRATH; B. E. Z. xxxi, p. 145.—Dr. François P. L. Pollen; Tijdschr. Ent. xxx, p. iii.—Leo Sahlke, obituary notice by HONRATH; B. E. Z. xxxi, p. 152.—John Sang; Ent. M. M. xxiii, p. 278.—W. C. Unwin; Ent. M. M. xxiv, p. 47.—Wernebrug, Adolf; Ent. Nachr. xiii, p. 15.—Dr. Hendrik Weyenbergh, jr.; Tijdschr. Ent. xxx, pp. iv–vi.—Packard, A. S., list of his writings and notes on his life; HENSHAW (302).—Fifty years' jubilee of H. F. Kessler; Ent. Nachr. xiii, pp. 76–78.—FABRE, J. H., & REY, CL., awarded the prix Dollfuss by the Entomological Society of France; Bull. Soc. Ent. Fr. (6) vii, pp. x–xii.

VI.—SYSTEMATIC.

Newman's classification of *Insecta* discussed by KARSCH (357) and BRAUER (87).—BRAUER's classification : opinions of COMSTOCK, RILEY, & SMITH on ; Ent. Am. iii, pp. 101 & 102.

N.B.—The reference-numbers collected under the headings of the various groups refer to "Titles," and are intended to give a complete list of all memoirs containing anything of importance in connection with the group.

(A.) *COLEOPTERA.*

Neuration of wings as systematic character ; C.R. ent. Belg. 1887, p. xlii.—Ovaries and oogenesis ; KORSCHELT (393, 394).—Fossil, FAUCONNET (213).

CICINDELIDÆ.

[*Cf.* DOKHTOUROFF (173, 174), FAIRMAIRE (204, 205), MACLEAY (465), REY (632).]

Additions and corrections to the list of *Cicindelidæ* published by Demoor ; DOKHTOUROFF, Ann. Ent. Belg. xxxi, pp. 149–152.

Amblychila picolominii, note on ; HORN, Ent. Am. ii, p. 208.

Dromochorus, Guer., validity of impugned ; HORN, Ent. Am. ii, p 208.

Cicindela octassis, Dohrn, note on ; KRAATZ, Deutsche e. Z. xxxi, p. 150. *C. aphrodisia*, Baudi, note on ; RAGUSA, Nat. Sicil. vi, p. 214. *C.* (*Euryoda*) *auripennis*, Luc, ♀ described, p. 154 ; *C. littoralis* n. var. *massaniensis* ; DOKHTOUROFF, Ann. Ent. Belg. xxxi. *C. gemmata*, Fald., = (*vitiosa*, Heyd.) ; HEYDEN, Hor. Ent. Ross. xxi, p 245. *C. litterata*, Sulz., larva described ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 133. *C. littoralis* var. *conjunctæ-pustulata*, n. var. ; DOKHTOUROFF, Hor. Ent. Ross. xxi, p. 438.

C. przewalskii, Central Asia, DOKHTOUROFF, Hor. Ent. Ross. xxi, p. 439 ; *C. froggatti*, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 213 ; *C. desjodinsii* (Obert.), p. 77, *C.* (*Heptodonta*) *yunnana*, *C. davidis*, p. 88, *mandarina* (Fleut.), p. 89, China, FAIRMAIRE, Ann. Ent. Belg. xxxi ; *C.* (*Habroscelis*) *dohrni*, Venezuela, p. 152, *C. tenebrosa*, Congo, p. 153, *friedenreichi*, Brazil, p. 154, *C.* (*Cylindera*) *aruana*, Aru Island, p. 155, *C.* (*Thopeutica*) *chloe* (Laferté), E. India, p. 156, DOKHTOUROFF, Ann. Ent. Belg. xxxi : n. spp.

Elliptica flavovestita, Fairm., the genus and species more fully described, p. 71 ; the latter figured, pl. i, fig. 1 ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Odontochila cayennensis, Fab., = (*bipunctata*, Dej.); Dokhtouroff, Ann. Ent. Belg. xxxi, p. 157.

Cychropinqua, p. 156, *chaudoiri*, p. 157, S. America, Dokhtouroff, Ann. Ent. Belg. xxxi, n. spp.

Distypsidera flavipes, p. 214, *pascoei, parva*, p. 215, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Myrmecoptera bertolonii, Th., = (*Dromica scrobiculata* or *rugosa*, Bert.); Dohrn, S. E. Z. xlviii, p. 171.

Dromica hexasticta, Uzagara, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 71, n. sp.

Bostricophorus bianconi, Bert., noticed; Dohrn, S. E. Z. xlviii, p. 172.

Therates sumatrensis, Putz., figured; Midden-Sumatra, iv, 6, pl. ii, fig. 1.

Carabidæ.

[*Cf.* Argod (12), Bates (37), Fairmaire (203, 204, 205), Fleutiaux (232), Flohr (233), Ganglbauer (247, 249, 252), Haury (299), Heyden (304, 306), Jakowleff (343, 345), Kolbe (381), Kraatz (397, 398), Macleay (464, 465), Mayet (480), Reitter (611, 612, 613, 622, 626), Rey (632), Schaufuss (672), Seidlitz (693), Sémènow (699, 700, 701), Tschitcherine (757).]

Elaphrus ulrichi var. *beraneki*; Reitter, Deutsche e. Z. xxxi, p. 242.

E. smaragdinus, Paskau, Reitter, Deutsche e. Z. xxxi, p. 241; *E. davidis*, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 89: n. spp.

Diachila fausti, Turkestan, Heyden, Deutsche e. Z. xxxi, p. 322, n. sp.

Nebria fussi, Bielz, a valid species; Reitter, Wien. ent. Z. vi, p. 77. *N. testacea*, Ol., = (*heldreichi*, Schm.); *id. t. c.* p. 76. *N. basipes*, n. n. for *N. reichi*, pt.; *id. t. c.* p. 224.

Pelophila borealis, abnormality of tarsi; Wood, Ent. M. M. xxiv, p. 16.

Leistus denticollis, Caucasus, Reitter, Deutsche e. Z. xxxi, p. 527, n. sp.

Procerus laticollis, Kr., note on; Kraatz-Koschlau, S. E. Z. xlviii, p. 359.

Procrustes duponcheli and *durvillei*, Barth., synonymy of; Ganglbauer, Soc. Ent. ii, p. 1. *P. payafa*, White, described, figured, and distinguished from *Sphodristus acuticollis*, Motsch.; Haury, S. E. Z. xlviii, pp. 286–290, pl. unnumbered. *P. hybridus*, *kotschyi*, briefly described, without localities; Ganglbauer, Soc. Ent. ii, p. 2, ? n. spp. *P. payafa*, Haury, and *Sphodristus acuticollis*, Motsch., note on their generic characters and possible identity; *id.* S. E. Z. xlviii, pp. 339–343. *Sphodristus*, Motsch., and *Procusticus* discussed; *id.* Deutsche e. Z. xxxi, pp. 146 & 147. *P. payafa*, White, note on; Kraatz, Deutsche e. Z. xxxi, p. 145.

Sphodristocarabus, the species and varieties described at length; Ganglbauer, Deutsche e. Z. xxxi, pp. 129-143.

Carabus. Ueber Thomson's Series *umbilicata* und *accessoria* am Schaufuss, Flügeldecken der Gattung *Carabus*; Kraatz, Deutsche e. Z. & 340 *Nebria*, pp. 239 & 240: synonymy of some Turkestan forms; Heyden, *t. c.* pp. 307–309. *C. styriacus*, race of *Scheidleri*; Kraatz, *t. c.*

p. 343. *C. scheidleri*, *kollari*, &c., note on; *id. t. c.* pp. 337–344. *C. errans* n. var. *pedator*; Reitter, Wien. ent. Z. vi, p. 214. *C. rugosus* var. *richteri*; Quedenfeldt, Ent. Nachr. xiii, p. 3[illegible]. *C. olympiæ*, Sella, varietal note; Gibelli, Boll. Mus. Tor. ii, No. 33. *C. helveticus*, Heer, note on; Rühl, Soc. ent. i, p. 170. *C. vagans*, Ol., larva described; Rey, Ann. Soc. L. Lyon, xxxiii, p. 137. *C. weisei*, locality of; Reitter, S. E. Z. xlviii, pp. 310–312, and Gaiger, *t. c.* p. 207. *C. auratus*, L., in America; Henshaw, Canad. Ent. xix, p. 159. *C. striatus*, Chaud., redescribed, p. 398, *kraberi*, Fisch., p. 405, *breviformis*, Chaud., and *microchondus*, Fisch., p. 406, noticed; *C.* (*Pagocatrabus*) *diruptus*, Mor., ♂ described, p. 412; Sémènow, Hor. Ent. Ross. xxi. *C. ehrenbergi*, Kl., is not a *Pseudoprocrustes*, but is a *Chætomelas*, and = (*præstigiator*, Mor.), and for *C. ehrenbergi*, Mor., the new name, *morawitzi*, is proposed; Ganglbauer, Soc. ent. ii, p. 1. *Tribax*, note on the Caucasian species of; Reitter, Wien. ent. Z. vi, p. 186. *T. mellyi*, Chd., and *reitteri*, Ret., notes on; Ganglbauer, Deutsche e. Z. xxxi, p. 144. Discussion on *Orinocarabus*, &c.; Kraatz & Kolbe, Ent. Nachr. xiii, pp. 28, 90–94, 105–109, 122–127, 132–141, 182–192, 262–265, & 266: at p. 135, Kolbe states that the œdeagus (penis) varies geographically. The discussion is largely of personal nature, and Schilsky also contributes a note to it, "Die Wahrheit der Ehre," *t. c.* pp. 200–205. *Orinocarabus*, composition of the group; Kraatz, Deutsche e. Z. xxxi, p. 362. *Plectes* and *Neoplectes*, nomenclatorial discussion; Reitter, Wien. ent. Z. vi, pp. 104 & 105. *Pseudoprocrustes*, Mor., noticed; Ganglbauer, Soc. ent. ii, p. 2.

C. (*Neoplectes*) *prometheus*, West Caucasus, Reitter, Wien. ent. Z. vi, p. 184; *C. brevisculus*, Hungary, ? *glabratus* var., Kraatz, Deutsche e. Z. xxxi; *C. viridifossulatus*, Moupin, Fairmaire, Ann. Ent. Belg. xxxi, p. 91; *C. pekinensis*, Pekin, *id.* Rev. d'Ent. vi, p. 312; *C. tanguticus*, p. 169 (with var. *rufipes*, p. 171), *roborowskyi*, p. 171, *morawitzianus*, p. 173, Central Asia, Sémènow, Hor. Ent. Ross. xxi; *C. buddaicus*, Sechuen, p. 401, *gracilicollis*, p. 404, *modestulus*, p. 407, *gansuensis*, p. 410, *C.* (*Coptolabrus*) *formosus*, p. 413, *subformosus*, p. 415, *C.* (*Cathaicus*) *potanini*, p. 416, *alexandræ*, p. 421, Kansou, China, *id. t. c.*; *C. vicinus*, p. 235, *imperfectus*, p. 237, Kuldscha, *id. t. c.*: n. spp.

Rhabdotocarabus, *Archicarabus*, p. 6, *Autocarabus*, p. 7 (Arten), n. subgg. of *Carabus*; Seidlitz, Fauna baltica, ed. 2.

Archicarabus and *Autocarabus*, Seidl., noticed; Kraatz, Deutsche e. Z. xxxi, p. 362.

Calocarabus, n. subg. of *Carabus*, p. 168, for *C.* (*C.*) *gratus*, n. sp., Central Asia, p. 166; Sémènow, Hor. Ent. Ross. xxi.

Ceroglossus, notes on varieties of; Kraatz-Koschlau, S. E. Z. xlviii, pp. 193–200. *C. buqueti* varr., notes on; *id. t. c.* pp. 356–359. Zur Kenntniss der Chilenischen *Ceroglossus*-arten; Kraatz, Deutsche e. Z. xxxi, pp. 225–239, with *C. morawitzi* (? n. sp.), p. 236.

Coptolabrus dohrni, n. var.; Kraatz, Deutsche e. Z. xxxi, pp. 148–[illegible].

C. gemmifer, Yunnan, Fairmaire, Bull. Soc. Ent. Fr. (6) viii, re fully more fully described, Ann. Ent. Belg. xxxi, p. 91: n. sp.

Damaster, in Formosa; Kolbe, Ent. Nachr. xiii, p. 340.

Ornithocephalus, n. g. (connecting *Cychrus* and *Carabus*), p. 393, for *C. potanini*, n. sp., China, p. 395; SÉMÉNOW, Hor. Ent. Ross. xxi.

Cychrus yunnanus, China, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 90, n. sp.

Calosoma maderæ, olivieri, larvæ described; MAYET, Bull. Soc. Ent. Fr. (6) vii, pp. clxxi & clxxiii.

C. thibetanum, Moupin, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 92, n. sp.

Drypta dimidiata, Putz., figured Midden-Sumatra, iv, 6, pl. 2, fig. 2.

Galerita intermedia, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 72; *G. carinifrons*, Macassar, SCHAUFUSS, Hor. Ent. Ross xxi, p. 103 : n. spp.

Gigudema atrum, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 217, n. sp.

Helluosoma viridipenne, p. 216, *latipenne*, p. 217, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Acanthogenius carinulatus, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 73, n. sp.

Zuphium faillæ, Sicily, REITTER, Nat. Sicil. vii, p. 9, n. sp.

Brachinus proximus, Tabora, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 74, n. sp.

Callida [illegible] *flavipes*, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 59; *C. pexifrons*, p. 75, *centralis*, p. 76, Tabora, FAIRMAIRE, *t. c.* p. 76 : n. spp.

Cymindis breviuscula, Central Asia, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 315; *C. tristis*, Alai Mountains, p. 149, *attenuata*, Pamir, p. 150, *cordicollis*, Turkestan, p. 152, *id. t. c.* : n. spp.

Glycia sulcatula, Somali-land, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 75, n. sp.

Demetrias rufescens, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 217, n. sp.

Dromius: tabulated characters of European species: REITTER, Wien. ent. Z. vi, pp. 285–287. *D. ramburi*, Brul., = (*lateplagiatus*, Fairm.), BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 196; *D. amurensis*, Siberia, REITTER, Wien. ent. Z. vi, p. 287; *D. fedjejensis*, Tunis, MAYET, Bull. Soc. Ent. Fr. (6) vii, p. lxxxix; *D. semiplagiatus, königi*, Caucasus, REITTER, Deutsche e. Z. xxxi, p. 257 : n. spp.

Metabletus paracenthesis and allies, synonymy discussed; REITTER, Deutsche e. Z. xxxi, pp. 500 & 501. *M. scapularis*, Dej., = (*flavoaxillaris*, Motsch.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 196.

M. dilutipes, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 502, n. sp.

Somotrichus, n. g., for *Lebia elevata*, Fab.; SEIDLITZ, Fauna baltica, ed. 2, p. 7 (Gattungen).

Amblystomus algerinus, Algeria, REITTER, Deutsche e. Z. xxxi, p. 498 : n. sp.

Rhysodera davidis, China, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 92, & 340 [illegible]

Fagonoderus ochreorufus, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 76, n. sp.

Masoreus (*Anaulacus*) *basalis*, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 59, pl. 4, fig. 1 (but p. 60, note, said to be a var. of *fasciatus*, Schm.-Gœb.), n. sp.

Pericalus adonis, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 104, n. sp.

Scopodes fasciolatus, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p 219, n. sp.

Siagona depressa, Fab., = (*europæa*, Dej.) and *S. plana*, Bon., = (*depressa*, Dej.) ; BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 195.

S. somalia, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 76, n. sp.

Anthia hildebrandti, Har., = (*alternata*, Waterh.) ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 82. *A. minima*, Bert., = (*baucis*, Dohrn) ; DOHRN, S. E. Z. xlviii, p. 173.

Piezia stenotrachela, Fairm., fully described, p. 80, figured pl. i, fig. 7 ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

P. quinquesignata, p. 80, *emarginata*, p. 81, Tabora, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Polyhirma suturata, Perr., = (*Anthia leucospilota*, Bert.) ; DOHRN, S. E. Z. xlviii, p. 172. FAIRMAIRE more fully describes *P. cinereocincta*, p. 84, *serieſoveata*, p. 85, *posticalis*, p. 87, *grisescens*, p. 88, *pluricostata*, p. 90, *apicata*, p. 91, pl. i, fig. 3 ; Ann. Soc. Ent. Fr. (6) vii.

P. subparallela, p. 83, *biscutellata*, p. 85, pl. i, fig. 6, *cardioderæ*, *griseostriata*, p. 86, *interrupta*, p. 89, *similiophora*, p. 90, *obtusata*, p. 91, pl. i, fig. 2, *circuligera*, p. 92, pl. i, fig. 4, *elegantula*, p. 93, pl. i, fig. 5, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Graphipterus castanopterus and *discicollis*, more fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 79.

Pasimachus quirozi, Mexico, FLOHR, Deutsche e. Z. xxxi, p. 128, n. sp.

Carenides, revision of the Australian ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii.

Calliscapterus, n. g. for 15 species of *Carenum* ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 121.

Platythorax, n. g. for *Carenum rectangulare* and *transversicolle* ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii, pp. 122.

Carenoscaphus, n. g., p. 120, for *C. lucidus*, n. sp , Australia, p. 131 ; to include also 15 species of *Carenum* ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii.

Laccopterum, n. g., p. 122, type *Carenum spencei*, Westw. ; to include also 10 others and *L. lacunosum*, n. sp., Australia, p. 132 ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii.

Philoscaphus, n. g. for 5 species of *Carenum* ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 123.

Carenidium damelii, Macl., redescribed ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 125.

C. darlingense, p. 124, *chaudoirii*, p. 125, *septentrionale*, p. 126, *tropicale*, p. 127, Australia, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Conopterum, Chaud., defined ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 127.

C. violaceum, p. 127, *littorale*, *bicornutum*, p. 128, *barnardi*, *incor.*, more fully p. 129, Australia, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Eutoma punctulatum, *magnificum*, p. 130, *brevipenne*, p. 131, Australia, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Carenum purpureo-marginatum, Australia, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. sp.

Steganomma, n. g. (? *Cnemacanthidæ* or *Scaritidæ*) for *S. porcatum*, n. sp., Queensland ; MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 133.

Scarites buparius, larva described ; MAYET, Bull. Soc. Ent. Fr. (6) vii, p. clxii.

S. tenuis, *ovalipennis*, p. 77, *atronitens*, p. 78, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii ; *S. estriatus*, China, *id.* Ann. Ent. Belg. xxxi, p. 93 : n. spp.

Clivina collaris, Hbst., its specific validity discussed ; SCHILSKY, Deutsche e. Z. xxxi, pp. 365–367.

Dyschirius hispidus, Lec, distinctive characters of ; BLANCHARD, Ent. Am. iii, p. 85. *D. cylindricollis*, Dej., = (*tensicollis*, Mars., *longicollis*, Fairm.) ; BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 194.

Brachyonychus andersoni, Mergui Archipelago, BATES, J. L. S. xxi, p. 135, n. sp.

Pagnagæus davidis, Pekin, FAIRMAIRE, Rev. d'Ent. vi, p. 313, n. sp..

D. (Promerus (Stomonaxus) chaudoiri, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 60, n. sp.

Callisthus (*Callistomimus*) *suturalis*, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 61, pl. iv, fig. 2, n. sp.

Chlænius gracilicollis, Askhabad, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 148; *C. violaceipennis*, Erzeroum, REITTER, Deutsche e. Z. xxxi, p. 49 : n. spp.

Trichochlænius, n. subg. of *Chlænius* ; SEIDLITZ, Fauna baltica, ed. 2, p. 23, Arten.

Trimerus, Chaud., characters and position discussed, p. 96, *T. raffrayi* described, p. 96, figured, pl. i, fig. 8 ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

T. latiusculus, Usagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 97, n. sp.

Oodes piccolus, China, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 93 ; *O. cuneatus*, *convergens*, E. Africa, *id.* Ann. Soc. Ent. Fr. (6) vii, p. 98 : n. spp.

Dioctes lehmanni and *concinnus*, characters of ; REITTER, Wien. ent. Z. vi, p. 224.

Dispharicus sulcostriatus, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 99, n. sp.

Bradycellus puncticollis, Coq., referred to *Acupalpus*, BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 195.

Ophonus pleuralis, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 245, n. sp.

Harpalus pallidipennis, Mor., = (*Selenophorus temperatus*, Kolbe) ; HEYDEN, Deutsche e. Z. xxxi, p. 293. *H. cupreus* with three antennæ ; BARBIER, Feuill. Nat. xvii. p. 106.

H. retowskii (altered, p. 500, to *retowskianus*), *chrysopus*, Circassia, SCHAUF[illegible] 246, *angustitarsis*, Arragonia, p. 247, REITTER, Deutsche e. Z. xxxi ; & 340 (*Pseudoophonus*) *suturangulus*, Erzeroum, *id. t. c.* p. 499 : n. spp.

Deu[illegible]*palidium*, n. subg. of *Harpalus* ; KOLBE, Nova Acta Ac. L.-C. Nat. cur. l, p. 231.

Gnathaphanes æreus, Macassar, China, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 105, n. sp.

Platymetopus obsuripes, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 106, n. sp.

Trigonotoma verberifera, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 106, n. sp.

Lesticus crenicollis, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 107, n. sp.

Haptoderus lagaroides, Circassia, REITTER, Deutsche e. Z. xxxi, p. 249, n. sp.

Platyderus talyschensis, Hamarat, REITTER, Deutsche e. Z. xxxi, p. 253, n. sp.

Pterostichus (*Lyperosomus*) *tingitanus*, Luc., = (*Steropus sycophanta*, Fairm.) ; BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 195. *P. spinicollis*, Dej., is a true *Pterostichus*, and *P. microphthalmus*, Del., is probably identical ; REITTER, Wien. ent. Z. vi, p. 29.

Pterostichus microps, Wladiwostok, HEYDEN, Deutsche e. Z. xxxi, p. 300 ; *P.* (*Argutor*) *pseudopedius*, p. 247, *P.* (*Haptoderus*) *percontator*, p. 248, Caucasus, REITTER, Deutsche e. Z. xxxi : n. spp.

Omaseus reflexicollis, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 99, n. sp.

Platysma latecostata, *yunnana*, p. 94, *æneocuprea*, p. 95, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, n. spp.

Abax beckenhaupti var. *ecchelii* ; BERTOLINI, Bull. Ent. Ital. xix, p. 114.

Pœcilus akinini, Turkestan, p. 240, *latithorax*, Mongolia, p. 241, TSCHITCHÉRINE, Hor. Ent. Ross. xxi, n. spp.

Pedius : (sub *Feronia*) *ineptus*, Coq., = (*F. pommereani*, Per.) ; BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 195 : table of specific characters of species of ; REITTER, Wien. ent. Z. vi, p. 257.

P. sculpticollis, Asia Minor, *planidorsis*, Andalusia, *id. t. c.* p. 258, n. spp.

Parapedius, *Pseudoderus*, *Pseudopedius*, *Lyropedius*, n. subgg. of *Pterostichus* ; SEIDLITZ, Fauna baltica, ed. 2, p. 36, Arten.

Aphaonus, n. g., p. 250, near *Tapinopterus*, for *A. starcki* (altered, p. 500, to *starckianus*), p. 251, *cylindriformis*, p. 252, n. spp., Tscherkessia, REITTER, Deutsche e. Z. xxxi.

Lyrothorax königi, p. 249, *starcki*, p. 250, Caucasus, REITTER, Deutsche e. Z. xxxi, n. spp.

Speluncarius and *Elasmopterus*, synonymy of ; SEIDLITZ, Fauna baltica, ed. 2, p. 37, & REITTER, Wien. ent. Z. vi, p. 256. *Speluncarius*, Reitter, = (*Elasmopterus*, Kr.) ; REITTER, Wien. ent. Z. vi, p. 171.

Homalosoma opacipenne, p. 219, *obscuripenne*, p. 220, Queensland, MACLEAY. P. Linn. Soc. N.S.W. (2) ii, n. spp.

Zabrus gibbus, note on habits of ; LUCAS, Bull. Soc. Ent. Fr. (6) vii, p. c.

Amathitis yunnana, China, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 9[illegible] n. sp.

Antisphodrus königi, Caucasus, REITTER, Deutsche e. Z. xxxi, p. [illegible] Soc. n. sp.

Pristonychus circassius, Tscherkessia, REITTER, Deutsche e. Z. xxxi, p. 254; *P. picescens*, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 95; n. spp.

Sphodropsis, n. subg. of *Sphodrus*; SEIDLITZ, Fauna baltica, ed. 2, p. 33, Arten.

Calathus corallipes, *tricolor*, Caucasus, REITTER, Deutsche e. Z. xxxi, p. 255; *C. delavayi*, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 96: n. spp.

Anchomenus nuceus, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 96, n. sp.

Agonum viridescens, Attica, REITTER, Deutsche e. Z. xxxi, p. 256; *A. semicupreum*, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 97: n. spp.

Colpodes mucronatus, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. sp.

Deltomerus, table of the species, *D. elegans*, Chaud., = (*raddei*, Putz.); REITTER, Deutsche e. Z. xxxi, p. 244.

D. tibialis, p. 242, *pseudoplatynus*, p. 243, Caucasus, *id. t. c.*, n. spp.

Trechus quadrinotatus, Crete, REITTER, Deutsche e. Z. xxxi, p. 242, n. sp.

Anophthalmus croissandeaui, Ariège, ARGOD, Bull. Soc. Ent. Fr. (6) vii, p. clxi; *A. ramorinii*, Liguria, GESTRO, Ann. Mus. Genov. (2) v, p. 61-2: n. spp.

Tropopterus patulus, Broun, figured, pl. 174, fig. 5; WATERHOUSE, Aid.

Paromphreus, n. subg. of *Omphreus*, with *O.* (*P.*) *korbi*, n. sp., Lycia; GANGLBAUER, S. E. Z. xlviii, p. 344.

Tachys unistriatus, E. Siberia, REITTER, Deutsche e. Z. xxxi, p. 497, n. sp.

Bembidium obliquum, St., and *varium*, Ol., distinctive characters; SCHILSKY, Deutsche e. Z. xxxi, p. 367. *B. latiusculum*, Broun, figured, pl. 174, fig. 6; WATERHOUSE, Aid. *B. nitidulum*, Marsh, larva described; REY, Ann. Soc. L. Lyon, xxxiii, p. 139.

Bembidium güntheri, Petrosawodsk, p. 65, Arten, SEIDLITZ, Fauna baltica, ed. 2, n. sp.

HALIPLIDÆ and DYTISCIDÆ.

[*Cf.* REGIMBART (604, 605, 606), RITSEMA (644), SEIDLITZ (692), SCHAUFUSS (672), SHARP (263, 704).]

Haliplus heydeni and *immaculatus*, Gerh., characters of; GERHARDT, Deutsche e. Z. xxxi, p. 219.

H. furcatus, Germany, SEIDLITZ, Best.-Tab. Dyt. p. 33; *H. curtulus*, Mexico, SHARP, Biol. Centr. Am. Col. i (2), p. 748: n. spp.

Cnemidotus conifer, Sicily, Greece, SEIDLITZ, Best.-Tab. Dyt. p. 35, n. sp.

Hydrocanthus ritsemæ, Regt., figured, Midden-Sumatra, iv, 6, & 340 *bis* 7.

Desmanthydrus similaris, Mexico, SHARP, Biol. Centr. Am. Col. i (2), p. 748, n. sp.

Laccophilus decipiens, *fuscipennis*, Shp., correction in characters of p. 749, *duplex*, Shp., note on, p. 750 ; Sharp, Biol. Centr. Am. Col. i (2). *L. ritsemæ*, Regt., figured, Midden-Sumatra, iv, 6, pl. i, fig. 1.

L. chloroticus, Andaman Is., Regimbart, Notes Leyd. Mus. ix, p. 267, *L. filicornis*, *agilis*, p. 750, *fragilis*, p. 751, Panama, Sharp, Biol. Centr. Am. Col. i (2) : n. spp.

Hydrovatus atricolor, fig. 5, *consanguineus*, figured, Midden-Sumatra, iv, 6, pl. 1.

H. concolor, Mexico, Sharp, Biol. Centr. Am. Col. 1 (2), p. 751, n. sp.

Hyphydrus sumatræ, Regt., figured ; Midden-Sumatra, iv, 6, pl. i, fig. 4.

Desmopachria speculum, *striola*, Panama, *vicina*, Mexico, Sharp, Biol. Centr. Am. Col. i (2), p. 752, n. spp.

Bidessus sordidus, Shp., var. described ; Regimbart, Ann. Mus. Genov. (2) iv, p. 636.

B. nasutus, S.E. Europe, Sharp, Wien. ent. Z. vi, p. 170 ; *B. curtulus*, Panama, *centralis*, Mexico, Sharp, Biol. Centr. Am. Col. i (2), p. 753 : n. spp.

Colambus puncticeps, Germany, Seidlitz, Best.-Tab. Dyt. p. 43, n. sp.

Deronectes cerisyi, toleration of salt water ; C.R. ent. Belg. 1887, p. c. *D. abyssinicus*, Shp., var. described ; Regimbart, Ann. Mus. Genov. (2) iv, p. 637. *D. turca*, n. n. for *variegatus*, Shp., *nec* Aubé ; Seidlitz, Best.-Tab. Dyt. p. 55.

D. grammicus, Mexico, Sharp, Biol. Centr. Am. Col. i (2), p. 754, n. sp.

Hydroporus (*Graptodytes*) *epipleuricus*, Spain, p. 59, *optatus*, Algeria, p. 60, *H. fennicus* = (*arcticus*, Sahlb., *nec* Thoms.), Finland, p. 66, *convexior*, Lille, p. 67, Seidlitz, Best.-Tab. Dyt. ; *H. corvinus*, p. 754, *circicus*, p. 755, Mexico, Sharp, Biol. Centr. Am. Col. i (2) : n. spp.

Oreodytes, *Graptodytes*, n. subgg. of *Hydroporus* ; Seidlitz, Best.-Tab. Dyt. p. 57.

Methles sternalis, Syria, Seidlitz, Best.-Tab. Dyt. p. 78, n. sp.

Agabus ragazzii, Abyssinia, Regimbart, p. 638, Ann. Mus. Genov. (2) iv ; *A. flohrianus*, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 756 ; *A.* (*Gaurodytes*) *baudii*, Italy, p. 85, *A.* (*Xanthodytes*) *lederii*, Caucasus, p. 94, Seidlitz, Best.-Tab. Dyt. : n. spp.

Xanthodytes, *Scytodytes*, *Heteronychus*, n. subgg. of *Agabus* ; Seidlitz, Best.-Tab. Dyt. p. 81.

Agametrus nitens, Panama, Sharp, Biol. Centr. Am. Col. i (2), p. 756, n. sp.

Agabidius, n. subg. of *Ilybius*, Er., Seidlitz, Best.-Tab. Dyt. p. 97.

Copelatus tenebrosus, Regt., figured ; Midden-Sumatra, iv, 6, pl. i, fig. 3.

C. ragazzii, Abyssinia, Regimbart, p. 637, Ann. Mus. Genov. (2) iv ; *C. mancus*, Panama, p. 757, Sharp, Biol. Centr. Am. Col. i (2) : n. spp.

Lancetes angustissimus, K. George Is., Regimbart, Notes Leyd. Mus. ix, p. 267, n. sp.

Rhantus capensis, Aubé, noticed ; Regimbart, Ann. Mus. Genov. (2) iv, p. 639.

R. flavicollis, Abyssinia, Regimbart, Ann. Mus. Genov. (2) iv, p. n. sp.

Melanodytes, n. g., pp. 24 & 101, for *Colymbetes pustulatus*, Rossi; SEIDLITZ, Best.-Tab. Dyt.

Dytiscus marginalis, humming of; P. E. Soc. 1887, p. xxiv. *D. latissimus*, ♂ noticed; BORRE, C.R. ent. Belg. 1887, p. xv.

Hydaticus litigiosus, Regt., figured; Midden-Sumatra, iv, 6, pl. i, fig. 2.

H. consimilis, Australia, REGIMBART, Notes Leyd. Mus. ix, p. 244, n. sp.

Graphoderes sahlbergii, n. n. for *verrucifer*, Shp.; SEIDLITZ, Best.-Tab. Dyt. p. 107.

Acilius, eyes of larvæ; PATTEN, (557) pp. 212, &c.

Eunectes sticticus, larva described; MAYET, Bull. Soc. Ent. Fr. (6) vii, p. cciii.

Cybister raseli, longevity of; MAYET, Bull. Soc. Ent. Fr. (6) vii, p. lxxxvii.

C. semiaciculatus, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 107; *C. cavicollis*, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 759: n. sp.

GYRINIDÆ.

[*Cf.* REGIMBART (605, 607), SEIDLITZ (692), SHARP (263).]

Dineutes fairmairei, Regt., note on varietal and sexual characters; REGIMBART, Notes Leyd. Mus. ix, p. 245; *D. gondaricus*, Reiche, var. *ragazzii*, *id.* Ann. Mus. Genov. (2) iv, p. 640. *D. fulgidus*, Regt., figured; Midden-Sumatra, iv, 6, pl. i, fig. 8.

Gyrinus hungaricus, Hungary, SEIDLITZ, Best.-Tab. Dyt. p. 115, n. sp.

Aulonogyrus abyssinicus, Regt., var. described; REGIMBART, Ann. Mus. Genov. (2) iv, p. 640.

Orectogyrus büttikoferi, W. Africa, REGIMBART, Notes Leyd. Mus. ix, p. 269, n. sp.

Orectochilus punctipennis, Shp., note on; REGIMBART, Notes Leyd. Mus. ix, p. 246. *O. spiniger*, fig. 9, *subsulcatus*, fig. 10, *scalaris*, fig. 11, figured; Midden-Sumatra, iv, 6, pl. i.

O. reitteri, Mediterranean region, SEIDLITZ, Best.-Tab. Dyt. p. 117, n. sp.

Gyretes bidens, Ol., var. *spitzlyi*; REGIMBART, Notes Leyd. Mus. ix, p. 246.

HYDROPHILIDÆ.

[*Cf.* KUWERT (409, 410, 411, 412), REY (632), SCHAUFUSS (672), SHARP (263, 704).]

Hydrophilus, note on respiration; Ent. Nachr. xiii, pp. 306-308. *H. violaceo-nitens*, Duv., note on; SHARP, Biol. Centr. Am. Col. i (2) p. 762.

H. pollens, Mexico, Demerara, SHARP, Biol. Centr. Am. Col. i (2) p. 762, n. sp.

Hydrobius semistriatus, Singapore, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 108, n. sp.

Berosus rudis, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 765, n. sp.

SCHAUFUSS's *emarginatus*, biological note; SCHLICK, Ent. Med. i, p. 26, & 340. *Laebius nitidus*, Marsh, and *sericeus*, Muls., are distinct; GERHARDT, Deutsche e. Z. xxxi, p. 219.

L. uncigaster, Sicily, KUWERT, Nat. Sicil. vii, p. 43, n. sp.

Berosus hoplites, p. 765, *flavipes*, p. 766, *dispar*, *debilis*, p. 767, Mexico, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Hydrochus, the European species tabulated; KUWERT, Deutsche e. Z. xxxi, pp. 289-292. *H. angustatus*, Germ., = (*obtusicollis*, Fairm., and *smaragdineus*, Fairm.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 196.

H. testaceipennis, Ionian Is., KUWERT, Deutsche e. Z. xxxi, p. 291, n. sp.

Helophorus fausti, Turkestan, p. 165, *similis*, Orenburg, p. 166, *costulatus*, Caucasus, p. 167, *minimus*, Siberia, p. 168, KUWERT, Wien. ent. Z. vi, n. spp.

Calobius quadricollis, Muls., larva described: REY, Ann. Soc. L. Lyon (2) xxxiii, p. 141.

Octhebius divided into 16 groups (*infra*), to each of which a new name is given; the European species tabulated, and sculpture of head and thorax of many species figured; KUWERT, Deutsche e. Z. xxxi, pp. 369-401, pls. i-iv.

Octhebius lavigatus, p. 170, *fausti*, p. 171, Orenburg, SHARP, Wien ent. Z. vi, p. 171; *O. azteeus*, Mexico, *id.* Biol. Centr. Am. Col. i (2), p. 768; *O.* (*Calochthebius*) *steinbuhleri*, pl. ii, fig. 7, *O.* (*Prionochthebius*) *adriaticus*, pl. ii, fig. 7, Adriatic Sea, p. 387, *O.* (*Cheilochthebius*) *schneideri*, p. 388, pl. ii, fig. 14, *O.* (*Camptochthebius*) *caucasicus*, p. 389, pl. iv, fig. 71, *O.* (*Trymochthebius*) *lenkoranus*, p. 390, pl. iv, fig. 65, Caucasus, *neglenl*, Spain, fig. 63, *kiesenwetteri*, Caucasus, fig. 60, p. 391, *czwalinæ*, Russia, fig. 61, p. 392, *O.* (*Homalochthebius*) *eppelsheimi*, Hungary, pl. iii, fig. 50, *O.* (*Colpochthebius*) *villosulus*, Tunis, fig. 29, p. 394, *O.* (*Trymochthebius*) *bellieri*, Andalusia, p. 395, *breviusculus*, Spain, Morocco, pl. iv, fig. 25, p. 396, *O. erzerumi*, Asia Minor, p. 397, pl. iii, fig. 37, *glabratus*, Servia, p. 398, pl. iii, fig. 32, *O.* (*Camptochthebius*) *ragusæ*, Sicily, p. 398, KUWERT, Deutsche e. Z. xxxi: n. spp.

Cyrtochthebius, *Sphærochthebius*, p. 371, *Calochthebius*, p. 372, *Dryochthebius*, *Prionochthebius*, p. 373, *Cheilochthebius*, p. 374, *Aulacochthebius*, p. 376, *Odontochthebius*, *Camptochthebius*, p. 377, *Colpochthebius*, *Eccoptochthebius*, p. 379, *Trymochthebius*, p. 380, *Chirochthebius*, *Acanthochthebius*, *Homalochthebius*, p. 383, n. subgg. of *Ochthebius*, defined only in tabular form: KUWERT, Deutsche e. Z. xxxi.

Cyclonotum externum, *posticatum*, Panama, SHARP, Biol. Centr. Am. Col. i (2) p. 769, n. spp.

Perochthes lævis, Panama, SHARP, Biol. Centr. Am. Col. i (2), p. 770, n. sp.

Cercyon æqualis, Mexico, p. 770, *alticola*, Panama, p. 771, SHARP, Biol. Centr. Am. Col. i (2) n. spp.

Pelosoma collare, *liodes*, Panama, p. 771, *ovulum*, Mexico, p. 772, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

STAPHYLINIDÆ.

[*Cf.* EPPELSHEIM (199, 200, 201, 304), FAIRMAIRE (204), FO[illegible] OLLIFF (539), REITTER (618, 622, 624), REY (632), SCHAUFUS[illegible] SHARP (263), WASMANN (780, 781, 782).]

Aleocharides (and *Xenocephalini*).

Aleochara bonariensis, Arrib., Note on ; Fauvel, Rev. d'Ent. vi, p. 230. *A. stygialis*, Mexico, pp. 775, *repetita*, *hilaris*, Panama, p. 776, Sharp, Biol. Centr. Am. Col. i (2), n. spp.

Baryodma duplicata, Er., note on ; Fauvel, Rev. d'Ent. vi, p. 231.

Maseochara högei, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 777, n. sp.

Polylobus flavescens, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 777, n. sp.

Phlæopora lævigata, Panama, *grandis*, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 778, n. spp.

Leptusa ganglbaueri, Austria, Eppelsheim, Wien. ent. Z. vi, p. 230 ; *L.* (*Sipalia*) *microphthalma*, Circassia, Reitter, Deutsche e. Z. xxxi, p. 260 : n. spp.

Ecitochara, n. g., near *Phytosus*, for *E. fusicornis*, n. sp., Blumenau, in nest of *Eciton hamatum* ; Wasmann, Deutsche e. Z. xxxi, p. 404, pl. v, fig. 1.

Silusa pipitzi, Austria, Eppelsheim, Wien. ent. Z. vi, p. 230, n. sp.

Dinarda dentata, habits of ; Wasmann, Deutsche e. Z. xxxi, p. 111.

Lomechusa sibirica, Motsch., note on ; Eppelsheim, Deutsche e. Z. xxxi, p. 430.

L. minor, Central Asia, Reitter, Hor. Ent. Ross. xxi, p. 210, n. sp.

Atemeles : the European species and varieties described ; Wasmann, Deutsche e. Z. xxxi, pp. 97–107 : Structure of maxillary palpi of, and of *Lomechusa* ; *id. t. c.* p. 354.

Oxypoda micans, Kr., note on ; Kraatz, Deutsche e. Z. xxxi, p. 354. *O. referens*, Rey, and *micans*, Kr., are one species, and *Ocyusa* (*Oxypoda*) *carbonaria*, Motsch., and *incrassata*, Rey, are also one ; Eppelsheim, Deutsche e. Z. xxxi, p. 431. *O. attenuata*, Rey, larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 159.

Camponotus, Arrib., queried as only *Euthorax*, auct. ; Fauvel, Rev. d'Ent. vi, p. 230.

Homalota, auct., = (*Heterophæna*, Arrib.) ; Fauvel, Rev. d'Ent. vi, p. 230. *H. minuta*, Arrib., referred to *Oxypoda* ; *id. ibid.* *H. sharpi*, Rye, maintained as valid ; Fowler, Col. Brit. ii, p. 139.

H. ornatula, Panama, Sharp, Biol. Cent. Am. Col. i (2) p. 779 ; *H.* (*Atheta*) *affectans*, Amurland, Eppelsheim, Deutsche e. Z. xxxi, p. 418 : n. spp.

Glossola, n. g., for *Homalota gregaria*, auct. ; Fowler, Col. Brit. ii, p. 66.

Callicerus kaufmanni, Austria, Eppelsheim, Wien. ent. Z. vi, p. 231, n. sp.

Thamiaræa umbonata, Amurland, Eppelsheim, Deutsche e. Z. xxxi, p. 417, n. sp.

Myrmedonia laticollis, Maerk, larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 161.

Agelicous heydeni, Turkestan, Eppelsheim, Deutsche e. Z. xxxi, p. 313, n. sp.

Hoplandria arguta, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 779, n. sp.

Ecitopora, n. g., p. 408, near *Myrmedonia*, for *E. opaca*, n. sp., Blumenau, in nest of *Eciton hamatum*, p. 409, pl. v, fig. 11; WASMANN, Deutsche e. Z. xxxi.

Platyola fusicornis, Rey, larva described; REY, Ann. Soc. L. Lyon, (2) xxxiii, p. 162.

Bolitochara reyi, Shp., = (*eximia*, Eppelsh.); EPPELSHEIM, Deutsche e. Z. xxxi, p. 430.

Meronera, n. n. for *Merona*, Shp.; SHARP, Biol. Centr. Am. Col. i (2) p. 779.

Diestota civica, Mexico, p. 779, *homalotoides*, Panama, p. 780, SHARP, Biol. Centr. Am. Col. i (2), n. sp.

Gyrophæna affinis, Sahlb., larva described; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 163.

G. fusicornis, Amurland, EPPELSHEIM, Deutsche e. Z. xxxi, p. 419; *G. æqualis*, Panama, SHARP, Biol. Centr. Am. Col. i (2) p. 780: n. spp.

Bamona plana, Panama, SHARP, Biol. Centr. Am. Col. i (2) p. 781, n. sp.

Myllæna parvicollis, Kr., and *dilutipes*, Fairm., note on; FAUVEL, Rev. d'Ent. vi, p. 231.

Oligota flavicornis, Lac., larva described; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 165.

Xenocephalini, proposed new family near *Tachyporini*; WASMANN, Deutsche e. Z. xxxi, p. 411.

Xenocephalus, n. g., p. 411, for *X. clypeatus*, n. sp., Blumenau, in nest of *Eciton hamatum*; WASMANN, p. 412, pl. 5, fig. 12, Deutsche e. Z. xxxi.

Tachyporides.

Hypocyptus, mode of cleaning itself; FLACH, S. E. Z. xlviii, p. 362.

H. rubicundus, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 261, n. sp.

Tachinoderus remotus, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 781, n. sp.

Tachinus roborowskyi, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 210, n. sp.

Tachyporus tarsalis, Mexico, SHARP, Biol. Centr. Am. Col. i. (2) p. 782, n. sp.

Megacronus mexicanus, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 782, n. sp.

Staphylinides.

Heterothops discoideus, Fairm., referred to *Quedius*; FAUVEL, Rev. d'Ent. vi, p. 231. *H. binotata*, Er., larva described; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 148.

Acylophorus versicolor, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 783, n. sp.

Quedius brevis, habits; WASMANN, Deutsche e. Z. xxxi, p. 114.

Q. koltzei, Amurland, EPPELSHEIM, Deutsche e. Z. xxxi, p. 420; *Q.*

(*Ediquus*) *przewalskii*, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 211 : n. spp.

Platyprosopus mexicanus, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 783, n. sp.

Gleuus ætimus, *setosus*, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 784, n. spp.

Belonuchus viridipennis, Baudi, = (*dejectus*, Shp.) ; SHARP, Biol. Centr. Am. Col. i (2) p. 789.

B. fossulatus, Blumenau, in nest of *Eciton hamatum* ; WASMANN, Deutsche e. Z. xxxi, p. 414, n. sp.

Philonthus incertus, Solsky, = (*gracilicornis*, Horn) ; SHARP, Biol. Centr. Am. Col. i (2) p. 788. *Philonthus femoralis*, Hoch. = (*pisciformis*, Fauv.) ; EPPELSHEIM, Deutsche e. Z. xxxi, p. 432. *P. flavolimbatus*, Er., = (*apicipennis*, Arrib.) ; FAUVEL, Rev. d'Ent. vi, p. 232. *P. longicornis*, St., var. = (*convexicollis*, Arrib.) ; FAUVEL, Rev. d'Ent. vi, p. 232. *P. discoideus*, p. 144, and *debilis*, Gr., p. 146, larvæ described ; REY, Ann. Soc. L. Lyon (2) xxxiii.

P. purpuripennis, p. 214, *ruficapillus*, p. 216, Central Asia, REITTER, Hor. Ent. Ross. xxi ; *P. rufiventris*, *prescottianus*, p. 787, *iteratus*, *heteropus*, *actocharis*, p. 788, Mexico, SHARP, Biol. Centr. Am. Col. i (2) : n. spp.

Actinus macleayi, Queensland, OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 495, n. sp.

Mysolius chalcopterus, Queensland, OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 497, n. sp.

Cafius labilis, p. 501, *amblyterus*, p. 502, *laeus*, p. 503, Australia and Tasmania, OLLIFF, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Pseudidus filum, Kies, larva described ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 146.

Misantlius rufipennis, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 786, n. sp.

Hesperus pacificus, Lord Howe I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, n. sp.

Actobius mœstus, *adustus*, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 790, n. spp.

Colonia, n. g., p. 493, near *Creophilus*, for *C. regalis*, Australia, n. sp., p. 494 ; OLLIFF, P. Linn. Soc. N.S.W. (2) ii.

Staphylinus macrocephalus, var. *ormayi*, REITTER, Deutsche e. Z. xxxi, p. 261 ; *S. sedatus*, *lupinus*, p. 785, *nudicollis*, p. 786, Mexico, SHARP, Biol. Centr. Am. Col. i (2) : n. spp.

Ocypus ophthalmicus, Scop., var. *baicalensis* ; EPPELSHEIM, Deutsche e. Z. xxxi, p. 422. *O. protensus*, Mén., characters of ; *id. t. c.* pp. 425 & 432. *O. olens*, Müll., = (*Staphylinus tenebricosus*, Gr.) ; *O. macrocephalus* var., = (*S. alpinus*, Gr.) ; *O. alpestris*, var. *brevipennis*, is *S. tenuipennis*, Gr. ; *O. simulator*, Epp., is perhaps *pullus*, Hoch. ; *id. t. c.* pp. 431 & 432. *O. Catoxanthus* Rossi, coupling of ; FLACH, S. E. Z. xlviii, p. 258. *O. similis*, *Agelia* noticed ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 144.

O. testaceipes, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 97 ; *O. semenowi*, p. 213, *eppelsheimi*, p. 214, Central Asia, REITTER, Hor. Ent.

Ross. xxi ; *O. inexpectatus*, p. 422, *graeseri*, p. 424, Amurland, Eppelsheim, Deutsche e. Z. xxxi : n. spp.

Gauropterus fulgidus, F., larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 149.

Saurohypnus nigerrimus, Mexico, Sharp, Biol. Cent. Am. Col. i (2) p. 791, n. sp.

Xantholinus subtilis, Boh., = (*pampeanus*, Arrib.), *subaequalis*, Arrib., being probably only a var. ; Fauvel, Rev. d'Ent. vi, p. 232. *X. azureus*, Arrib., referred to *Scytalinus* ; *id. ibid.* *X. glabratus*, p. 150, *longiventris*, p. 151, larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii.

X. orthodoxus, Australia, Olliff, P. Linn. Soc. N.S.W. (2) ii, p. 484, n. sp.

Leptacinus parumpunctatus, larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 151.

Metoponcus enervus, Tasmania, Olliff, P. Linn. Soc. N.S.W. (2) ii, p. 478, n. sp.

Paederides.

Cryptobium apicale, Arrib., ♂ characters of ; Fauvel, Rev. d'Ent. vi, p. 232.

C. sedatum, *placidum*, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 792, n. spp.

Scimbalium pallidum, Turcomania, Reitter, Deutsche e. Z. xxxi, p. 262, n. sp.

Dolicaon sparsus, Circassia, Reitter, Deutsche e. Z. xxxi, p. 262, n. sp.

Lathrobium fulvipes, Blanchd. (*cf. Pinophilus blanchardi*). *L. assimile*, Arrib., note on ; Fauvel, Rev. d'Ent. vi, p. 232. *L. terminatum* var., = (*atripalpe*, Scriba) ; Eppelsheim, Deutsche e. Z. xxxi, p. 432. *L. multipunctum*, Gr., larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 153.

L. pusillum, *flavidulum*, *durangoense*, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 794, n. spp.

Scopaeus femoralis, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 795, n. sp.

Monista, Shp. : *Apocellus ferrugineus*, Sahl., belongs to this genus, and = (*M. typica*, Shp.) ; Fauvel, Rev. d'Ent. vi, p. 233.

Medon eppelsheimi, n. n. for *M. simoni*, Eppelsh., *nec* Quedenf.; Reitter, Wien. ent. Z. vi, p. 305. *M. dilutus*, Er., *bicolor*, Ol., larvae described; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 155.

Lithocharis curviceps, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 796 ; *L. mülleri*, Blumenau, in nest of *Eciton hamatum*, Wasmann, Deutsche e. Z. xxxi, p. 415 : n. sp.

Trochoderus ovaticeps, Mexico, Sharp, Biol. Centr. Am. Col. i (2) p. 796, n. sp.

Pinophilides.

Pinophilus blanchardi, n. n. for *Lathrobium fulvipes*, Bl. ; Fauvel, Rev. d'Ent. vi, p. 233.

P. fuscipes, *picifrons*, Mexico, Sharp, Biol. Centr. Am. Col. p. 797, n. spp.

Œdodactylus aper, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 798, n. sp.

Stenides.

Euæsthetus granulipennis, Wladiwostok, EPPELSHEIM, Deutsche e. Z. xxxi, p. 430, n. sp.

Edaphus cribricollis, dilutus, p. 109, *sumatrensis*, p. 110, Sumatra, SCHAUFUSS, Hor. Ent. Ross. xxi, n. spp.

Stenus: note on labium of; MEINERT (484). *S. strangulatus*, Casey, *erythropus*, Mels., *juno*, Fab., ♂ characters noticed; BLANCHARD, Ent. Am. iii, p. 85.

S. grossepunctatus, Circassia, REITTER, Deutsche e. Z. xxxi, p. 264; *S. indagator*, Wladiwostok, EPPELSHEIM, *t. c.* p. 428; *S. abscondens*, p. 798, *idoneus*, p. 799, Mexico, SHARP, Biol. Centr. Am. Col. i (2): n. spp.

Oxytelides, Piestides, Phlœocharides, and *Proteinides.*

Oxytelides. In this subfamily SHARP includes the *Piestini*, *Phlœocharini*, and *Proteinini* of Erichson; Biol. Centr. Am. Col. i (2) p. 677.

Megalops guatemalenus, Guatemala, pl. xvii, fig. 22, *panamensis, politus*, p. 673, *vulneratus, basalis*, pl. xvii, fig. 23, Panama, *obscurus*, p. 674, *porcatus*, Guatemala, *peploides*, Panama, pl. xvii, fig. 24, *incultus*, Mexico, Panama, p. 675, *puncticeps*, Guatemala, pl. xvii, fig. 25, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Oxyporus mexicanus figured, pl. xviii, fig. 1, SHARP, Biol. Centr. Am. Col. i (2).

O. flohri, Mexico, pl. xviii, fig. 2, p. 677, *id. t. c.*, n. sp.

Osorius canaliculatus, Solsky, pl. xviii, fig. 3, *mundus*, Shp., fig. 4, figured; SHARP, Biol. Centr. Am. Col. i (2).

O. puncticeps, Mexico, *vicinus*, p. 678, *dubius, boops*, Panama, *lævigatus*, Guatemala, p. 679, *opacifrons*, Mexico, *germanus*, Guatemala, *parcus*, Mexico to Panama, p. 680, *crassus*, Mexico, *debilis*, Panama, p. 681, *salvini*, Guatemala, *micros*, Guatemala to Panama, SHARP, *t. c.*, n. spp.

Holotrochus clavipes, Shp., referred to *Ancœus*; SHARP, Biol. Centr. Am. Col. i (2) p. 718.

H. rufopygus, pl. xviii, fig. 5, *simplex, picescens*, Guatemala, *politus*, Mexico, p. 683, *centralis, marginatus*, fig. 6, Guatemala, *uniformis*, Panama, p. 684, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Bledius lecontei, Mexico, pl. xviii, fig. 7, *inornatus*, Costa Rica, fig. 8, *gregarius*, p. 685, *bifasciatus*, Guatemala, *infantilis*, p. 686, *derasus*, p. 800, Mexico, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Platystethus spiculus, Er., figured; SHARP, Biol. Centr. Am. Col. i (2) pl. xviii, fig. 9.

P. obscurus, Mexico, SHARP, Biol. Centr. Am. Col. i (2) p. 687, n. sp.

Coprophilus striatulus injurious to maize; BOS, Biol. Centralbl. vii, p. 323.

Zonoptilus piceus in Europe; REITTER, Wien. ent. Z. vi, p. 173.

Catoxantha luctuosus, Fairm., = (*affinis*, Czw.); EPPELSHEIM, Deutsche e. *Agelia* Z. xxi, p. 432.

Oxytelus principalis, Guatemala, pl. xviii, fig. 10, p. 688, *derasus*,

Mexico, *lucidus*, Guatemala, Panama, p. 689, *strigosulus*, pl. xviii, fig. 12, *vilis*, Mexico, Guatemala, p. 690, *fragilis*, Guatemala, Panama, *emeritus*, Guatemala, *spinifrons*, pl. xviii, fig. 11, Nicaragua, p. 691, *armatifrons*, *stipes*, p. 692, *latifrons*, Panama, *incilis*, Guatemala, Panama, *exaratus*, Guatemala, p. 693, *externus*, Panama, p. 694, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Apocellus sphæricollis, Say, figured, pl. xviii, fig. 13, Biol. Centr. Am. Col. i (2). *A. ferrugineus*, *cf. Monista*, p. .

A. cognatus, Louisiana to Nicaragua, pl. xviii, fig. 14, *muticus*, Mexico, p. 695, *gracilis*, Mexico, *barbatus*, Panama, *prostans*, Guatemala to Panama, p. 696, *sordidus*, Guatemala, pl. xviii, fig. 15, p. 697, *mœstus*, Mexico, p. 801, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Oxytelus luteipennis, Er., = (*fuscipennis*, Man.); SHARP, Biol. Centr. Am. Col. i (2) p. 688.

Trogophlœus suffusus, *planellus*, pl. xviii, fig. 16, *filarius*, Guatemala, p. 698, *curtulus*, Guatemala, Panama, *nigrellus*, *excellens*, p. 699, *insignellus*, *misellus*, Guatemala, *velutinus*, Panama, p. 700, *punctipennis*, fig. 17, *triangulum*, Guatemala, *centralis*, Guatemala and Panama, p. 701, *mollis*, fig. 18, *vittatus*, fig. 19, Guatemala, p. 702, *argutus*, Mexico, p. 801, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Trogactus, n. g., p. 702, for *T. funebris*, pl. xviii, fig. 20, *godmani*, fig. 21, *championi*, *elegans*, Panama, p. 703, n. spp., SHARP, Biol. Centr. Am. Col. i (2).

Parosus, n. g., near *Oxytelus* and *Trogophlœus*, for *P. hilaris*, n. sp., Panama, pl. xix, fig. 1, SHARP, Biol. Centr. Am. Col. i (2) p. 704.

Thinobius tenuis, pl. xviii, fig. 22, *thripsoides*, p. 705, *curtellus*, *nigricans*, *agilis*, p. 706, Guatemala, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Thinophilus dissimilis, Panama, SHARP, Biol. Centr. Am. Col. i (2) p. 707, n. sp.

Sciotrogus, n. g. (*Thinobiina*) *for S. opacus*, n. sp., Panama, pl. xviii, fig. 23; SHARP, Biol. Centr. Am. Col. i (2) p. 707.

Ecbletus, n. g. (*Phlœocharinæ*) for *E. simplex*, n. sp., Panama, pl. xviii, fig. 24; SHARP, Biol. Centr. Am. Col. i (2) p. 708.

Charhyphus, n. g., near *Eleusis*, for *C. brevicollis*, n. sp., Guatemala, pl. xviii, fig. 25; SHARP, Biol. Centr. Am. Col. i (2) p. 709.

Hypotelus hostilis, Fauv., ♂ characters; SHARP, Biol. Centr. Am. Col. i (2) p. 710.

H. lucidus, Panama, p. 710, *marginatus*, Guatemala, pl. xix, fig. 2, p. 711, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Zirophorus, Dalm., is valid genus; SHARP, Biol. Centr. Am. Col. i (2) p. 711.

Z. planatus, Mexico to Panama, pl. xix, fig. 3, p. 711, *furcatus*, Panama, fig. 4, p. 712, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Piestus mexicanus, Lap., figured, pl. xix, fig. 5, and noticed, p. 714; SHARP, Biol. Centr. Am. Col. i (2).

P. eximus, Mexico, p. 713, *alternans*, p. 714, *chiriquensis*, *costicrassicornis*, pl. xix, fig. 6, p. 716, Panama, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Ancœus brassicornis, pl. xix, fig. 7, p. 716, *porrectus*, *minutus*, p. 717, *politus*, p. 718, Guatemala ; SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Lispinus tardus, Panama, p. 719, *fauveli*, = (*tenellus*, Chev. & Fauv.), Centr. America, &c., p. 720, *sculpturatus*, *dejectus*, *bicolor*, Guatemala, p. 721, *longicornis*, fig. 8, *planellus*, fig. 9, pl. xix, Panama, p. 722, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Glyptoma distinguished from *Thoracophorus*, and nomenclature of the two discussed ; SHARP, Biol. Centr. Am. Col. i (2) p. 723.

G. læviceps, Panama, pl. xix, fig. 10, *longipes*, p. 723, *hirticorne*, fig. 11, *cognatum*, Guatemala, *cribellum*, Guatemala and Panama, p. 724, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Aneucamptus, n. g., for *Thoracophorus excisicollis*, Motsch., SHARP, Biol. Centr. Am. Col. i (2) p. 725.

Thoracophorus sallæi, Mexico and Guatemala, pl. xix, fig. 13, p. 725, *truquii*, Mexico, p. 726, *æqualis*, *discretus*, fig. 14, *pusillus*, p. 727, *pallidus*, *filum*, p. 728, Guatemala, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Eleusinina, new group proposed for *Eleusis* and allies ; SHARP, Biol. Centr. Am. Col. i (2) p. 728.

Eleusis rufula, Panama, p. 729, *fenestrata*, *corvina*, pl. xix, fig. 17, p. 730, *flavipennis*, *scita*, fig 18, *breviceps*, Guatemala, *infima*, Nicaragua, p. 731, *picta*, Mexico, Guatemala, *insignis*, Guatemala, fig. 19, p. 732, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Eumalus, n. g., p. 732, for *E. strigosus*, *nigriceps*, pl. xix, fig. 21, n. spp., Guatemala, p. 733, SHARP, Biol. Centr. Am. Col. i (2).

Leptochirina, new group proposed for *Leptochirus* and allies ; SHARP, Biol. Centr. Am. Col. i (2) p. 733.

Leptochirus extimus, Mexico, *molossus*, Mexico to Panama, pl. xix, fig. 22, p. 735, *angustulus*, Colombia, *edax*, Mexico to Panama, p. 737, *gracilis*, Panama, *serriger*, *punctiger*, p. 738, *quadricollis*, p. 739, *cephalotes*, *ramosus*, p. 740, Mexico, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Priochirus, n. g., to include many of the Old-World species of *Leptochirus*, *L. bicornis*, Fauv., and the following n. spp. : *laxus*, *hæmorrhous*, Guatemala, *dilutus*, p. 741, *divergens*, pl. xix, fig. 23, Panama, *collaris*, *salvini*, Guatemala, *laticornis*, Mexico, p. 742 ; SHARP, Biol. Centr. Am. Col. i (2).

Megarthrus affinis, Mill., larva described ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 156.

M. zanilensis, pl. xix, fig. 15, *solitarius*, Guatemala, p. 743, SHARP, Biol. Centr. Am. Col. i (2), n. spp.

Geodromicus puncticollis, Weise, note on ; EPPELSHEIM, Deutsche e. Z. xxxi, p. 432.

Eudectus, note on the species ; SHARP, Ent. M. M. xxiii, p. 209.

Omalium sordidum, Mexico and Guatemala, p. 744, *anceps*, *triste*, p. 745, *pumilio*, *incultum*, Guatemala, *faustum*, Panama, p. 746, *læticulum*, Guatemala, p. 747, pl. xix, fig. 24, SHARP, Biol. Centr. Am. Col. i (2),

Catoxantha

Agelia ... m bivittatum, Sicily, EPPELSHEIM, Nat. Sicil. vii, p. 45, n. sp.

... nthobium torquatum injurious to plants ; BOS, Biol. Centralbl. vii, p. 323.

Micropeplus fulvus and *caspius* are valid ; REITTER, Wien. ent. Z. vi, p. 226.

M. græcus, Greece, REITTER, Wien. ent. Z. vi, p. 228 ; *M. [illegible]*, Guatemala, pl. xix, fig. 25, p. 747, SHARP, Biol. Centr. Am. Col. i (2) [illegible] n. spp.

PSELAPHIDÆ.

[*Cf.* BRENDEL (91), CASEY (122, 123), RAFFRAY (595), REITTER (620, 622), SCHAUFUSS (670, 671), SHARP (263).]

Chennium paulinoi, Portugal, p. 503, *eppelsheimi*, Modena, p. 504, REITTER, Deutsche e. Z. xxxi, n. spp.

Laphidioderus, n. g., near *Centrotoma*, p. 20, for *L. capensis*, C. Good Hope, p. 21, pl. i, figs. 2 & 3, n. sp. ; RAFFRAY, Rev. d'Ent. vi.

Desimia dispar, Mexico, Guatemala, p. 2, pl. i, fig. 1, SHARP, Biol. Centr. Am. Col. ii (1) ; *D. frontalis*, p. 22, *depilis*, p. 24, Zanzibar, *arabica*, Hedjaz, p. 23, RAFFRAY, Rev. d'Ent. vi : n. spp.

Ephimia crassicornis, Panama, p. 3, pl. i, fig. 2, SHARP, Biol. Centr Am. Col. ii (1), n. sp.

Ctenistes guianensis, S. America, SCHAUFUSS, B. E. Z. xxxi, p. 287 ; *C. canaliculatus*, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 504 ; *C. zanzibaricus*, Zanzibar, p. 24, *australis*, C. Good Hope, p. 25, *parviceps* (with var. ? *arabicus*), Arabia, p. 26, RAFFRAY, Rev. d'Ent. vi : n. spp.

Enoptostomus formicarius, Raff., ♀ described ; RAFFRAY, Rev. d'Ent. vi, p. 21.

E. angusticeps, Ceylon, SCHAUFUSS, B. E. Z. xxxi, p. 289 ; *E. nitidulus*, Arabia, RAFFRAY, Rev. d'Ent. vi, pp. 22 & 61 : n. spp.

Odontalgus palustris, Zanzibar, RAFFRAY, Rev. d'Ent. vi, p. 27, n. sp.

Biotus, n. g., *Ctenistides*, for *B. formicarius*, n. sp., California ; CASEY, Bull. Cal. Ac. Sci. ii, p. 456, pl. xvi, fig. 2.

Tmesiphorus collaris, Raff., ♂ characters ; RAFFRAY, Rev. d'Ent. vi, p. 28. *T. costalis*, Lec., n. var. *rostratus* ; SCHAUFUSS, B. E. Z. xxxi, p. 295.

T. (*Siutectodes*) *crœsus*, Ceylon, SCHAUFUSS, B. E. Z. xxxi, p. 296, n. sp.

Pselaphocerus, n. g., near *Tmesiphorus*, pp. 28 & 61, for *P. peringueyi*, pp. 29 & 61, pl. i, figs. 10 & 11, *heterocerus*, pp. 30 & 62, pl. i, figs. 8 & 9, C. Good Hope, n. spp. ; RAFFRAY, Rev. d'Ent. vi.

Psilocephalus formicetorum, Raff., additional characters ; RAFFRAY, Rev. d'Ent. vi, p. 31.

P. lewisi, Arabia, RAFFRAY, Rev. d'Ent. vi, p. 31, pl. i, fig. 4, n. sp.

Aplodea, notes on the species of, with reference to the views of Schaufuss ; REITTER, Tijdschr. Ent. xxx, pp. 319–332.

Hamotus, Aubé, note on the genus ; SCHAUFUSS, B. E. Z. xxxi, pp. 298 & 320. *H. clavicornis*, *monachus*, *tritomus*, *gracilicornis*, Reitt., discussed ; *id. t. c.* pp. 312–316.

H. badius, p. 300, *claviger*, p. 301, Colombia, *subtilis*, Brazil, p. 303, *barbatus*, p. 304, *brunneus*, p. 305, Colombia, *frater*, Colombia ? [illegible] *ursulus*, Mexico, *appendicularis*, Brazil, p. 307, *robustus*, Venezuela, *furcifer*, Brazil, *brevimarginatus*, Pozuzu, p. 309, SCHAUFUSS, B. E. Z. xxxi ; *H. pubicentris*, Nicaragua, p. 4, *vicinus*, *difficilis*, p. 5, *latipalpis*,

Guatemala, *cartipalpis*, p. 6, *setipes*, pl. i, fig. 3, p. 7, *parvipalpis*, *rostratus*, p. 8, *grandipalpis*, p. 9, pl. i, fig. 4, Panama, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Hamotoïdes, n. subg. (of *Hamotus*) for *H. sanguinipes*, Cayenne, *hilaris*, Colombia, n. spp.; SCHAUFUSS, B. E. Z. xxxi.

Tyrus victoriæ, King, palpi described; SCHAUFUSS, Tijdschr. Ent. xxx, p. 106.

T. histrio, Ceylon, SCHAUFUSS, B. E. Z. xxxi, p. 297; *T. compressicollis*, Chili, p. 104, pl. viii, fig. 2, *calcaratus*, *sexspinosus*, Brazil, p. 105, *id.* Tijdschr. Ent. xxx: n. spp.

Hamotulus, n. g., p. 108, for *P. yaxis chamæleon*, Schauf.; SCHAUFUSS, Tijdschr. Ent. xxx.

Pytna, n. g., *Tyrides*, p. 457, for *P. corticina*, n. sp., California, p. 458; CASEY, Bull. Call. Ac. Sci. ii.

Metopias elegans, Panama, p. 10, pl. i, fig. 10, SHARP, Biol. Centr. Am. Col. ii (1), n. sp.

Tyraphus sharpi, Brazil, RAFFRAY, Rev. d'Ent. vi, p. 32, pl. i, figs. 5 & 6, n. sp.

Centrophthalmus acutispinus, Zanzibar, RAFFRAY, Rev. d'Ent. vi, p. 34, n. sp.

Marellus filipalpis, Zanzibar coast, RAFFRAY, Rev. d'Ent. vi, p. 35, pl. ii, fig. 4, n. sp.

Batrisus: note on the characters of subg. *Arthmius*, p. 10; *B. curvicornis*, Schauf., p. 11, *quadripunctatus*, Schauf., p. 12, *plicicollis*, Reitt., p. 16, noticed; SHARP, Biol. Centr. Am. Col. ii (1). *B. ormayi*, Reitt., ♂ described; REITTER, Wien. ent. Z. vi, p. 214. S. American species tabulated, pp. 140–142; *B. trifoveolatus*, Schauf., = (*luzeræ*, Reitt.), and var. *planifrons*, S. = (*tripunctatus*, R.), pp. 141 & 146 (but *cf.* REITTER, *t. c.* pp. 338 & 339); *B. coronatus*, Westw., and *orion*, Schauf., noted as distinct, p. 141, *carinatus*, Schauf., description amended, p. 145: SCHAUFUSS, Tijdschr. Ent. xxx. *B. nigricans* and *cephalotes*, noticed; BRENDEL, Tr. Am. Ent. Soc. xiv, p. 204.

B. spinifer, N. America, BRENDEL, Tr. Am. Ent. Soc. xiv, p. 205; *B. conophthalmus*, E. Siberia, REITTER, Deutsche e. Z. xxxi, p. 265; *B. cephalotes*, p. 459, *luculentus*, p. 460, *foveicornis*, p. 462, *punctifrons*, p. 463, N. America, CASEY, Bull. Cal. Ac. Sci. ii; *B. dohrni* = (*plicatus*, Motsch.), Burma, p. 137, *custos*, Borneo, p. 138, *quæstus*, Burma, p. 139, *anthicoides*, Brazil, p. 142, *sus*, p. 143, *stultor*, p. 144, *B.* (*Syrbatus*) *trinodulus*, p. 144, Brazil, *asteriscus*, New Grenada, *cinnamomeus*, Brazil, p. 146, SCHAUFUSS, Tijdschr. Ent. xxx; *B. geniculatus*, Mexico, p. 11, *simplicicornis*, p. 12, pl. i, fig. 6, *truncaticeps*, *castaneus*, p. 13, Guatemala, *scaphiger*, Mexico?, *monoceros*, Guatemala, p. 14, *armatellus*, Panama, p. 15, *B.* (*Oxarthrius*) *hamaticollis*, Guatemala, pl. i, fig. 5, *B. crassipes*, p. 17, fig. 7, *lamellipes*, p. 18, Panama, SHARP, Biol. Cent. Am. Col. ii (1): n. spp.

Xybaris (sub *Bryaxis*) *auritula*, Westw., = (*spiniceps*), Reitt.; *Catoxy*-SCHAUFUSS, Tijdschr. Ent. xxx, p. 142 (but *cf.* REITTER, *t. c.* pp. 339 *Agelia tr*

FAIR*Batribraxis inflexa*, Mexico, p. 147, *B.?*, *labialis*, Brazil, p. 148, pl. ix, fig. 5, SCHAUFUSS, Tijdschr. Ent. xxx, n. spp.

Batrisobryaxis, n. subg. for the above *B. labialis* ; Schaufuss, Tijdschr. Ent. xxx, p. 149.

Batrisodes circassicus, Utsch-Dere, Reitter, Deutsche e. Z. xxxi, p. 266, n. sp.

Batoctenus, n. g., p. 18, for *B. simplex*, *puncticollis*, pl. i, fig. 9, n. spp., Panama, p. 19 ; Sharp, Biol. Centr. Am. Col. ii (1).

Cliarthrus bicolor, ♀ characters ; Raffray, Rev. d'Ent. vi, p. 39.

Euphalepsus humeralis, Bogota, Raffray, Rev. d'Ent. vi, p. 39 ; *E. centralis*, Guatemala, p. 20, *reitteri*, Panama, pl. i, fig. 8, p. 21, Sharp, Biol. Centr. Am. Col. ii (1) : n. spp.

Ogmocerus, Raff., additional characters; Raffray, Rev. d'Ent. vi. p. 40.

Ogmocerus agymsibanus, W. Africa, Raffray, Rev. d'Ent. vi, p. 41, pl. i, figs. 12–15, n. sp.

Cryphorinula, n. g., p. 150, for *Bryaxis* (an. nov. gen.) *nodifera*, n. sp , Brazil, p. 149 ; Schaufuss, Tijdschr. Ent. xxx.

Bryaxis convexa, Schauf., note ; Schaufuss, Tijdschr. Ent. xxx, p. 131. *B. rufa*, Schmidt and allies, note on ; *id. t. c.* pp. 336 & 337. *B. reicheana*, n. n. for *B. reichei*, Schauf. ; *id. t. c.* p. 161. *B. texana*, figured, pl. xvi, fig. 5 ; Casey, Bull. Cal. Ac. Sci. ii. *B. rufa*, Schmidt, *baumeisteri*, *cordata*, and *mamilla*, Schauf., noticed and maintained as distinct, pp. 289–292 : *B. sphærica*, Motsch., *siamensis* and *fonensis*, Schauf., noticed, p. 293 ; Schaufuss, B. E. Z. xxxi. *B. gemmifer*, Lec., redescribed ; Brendel, Tr. Am. Ent. Soc. xiv, p. 207.

B. canadensis, N. America, Brendel, Tr. Am. Ent. Soc. xiv, p. 206 ; *B. croissandeaui*, S. France, *editha*, Caucasus, Reitter, Deutsche e. Z. xxxi, p. 267 ; *B. fulva* (Motsch.), India or. p. 292, *inconspicua*, *atomus*, Sumatra, p. 293, Schaufuss, B. E. Z. xxxi ; *B. celata*, Mexico to Nicaragua, *parviceps*, Mexico to Panama, p. 25, *crassipalpis*, *nominata*, Guatemala, p. 26, *sallæi*, Mexico to Panama, p. 27, pl. i, fig. 13, *intacta*, *diversicornis*, Guatemala, *rubecula*, Panama, p. 28, *designata*, Guatemala, *diversa*, pl. i, fig. 14, p. 29, *bythinoides*, Panama, *impressicollis*, Guatemala, p. 30, *vulnerata*, Panama, pl. i, fig. 15, *simulatrix*, p. 31, *trimioides*, fig. 16, *impubis*, p. 32, *œdipus*, p. 33, Guatemala, Sharp, Biol. Centr. Am. Col. ii (1) ; *B. diversa*, *crassipes*, C. Good Hope, Raffray, Rev. d'Ent. vi, p. 36 ; *B. arizonæ*, Casey, Bull. Cal. Ac. Sci. ii, p. 465 ; *B. clara*, *sumatrensis*, p. 113, *extuscurvata*, p. 114, *intuscurvata* (with var. ? *aurita*), *ornatissima*, p. 115, Sumatra, *proportionalis*, Chili, p. 117, *nana*, Amazon, p. 121, *soror*, Mexico, p. 122, *dimissionis*, *corpulenta*, Brazil, p. 123, *macrocephala*, Amazon, p. 124, *unifoveolata*, Cuba, pl. viii, fig. 3, *pentachiroides*, Brazil, p. 125, *B.* (*Pselaptus* ?) *longiclava*, Cuba, p. 126, pl. ix, fig. 1, *sarcinaria*, *biocellata*, Mexico, p. 127, *truncata*, Cuba, pl. ix, fig. 2, *triangulifer*, Brazil, p. 128, *B.* (*Eupines* ?) *separabilis*, (*E.* ?) *adparata*, Yucatan, p. 129, *bisinuata*, Cuba, pl. ix, fig. 3, p. 130, *spuria*, Brazil, *impunctata*, Mexico, p. 132, *semisanguinea*, *dorsopunctata*, Brazil, p. 133, *submitida*, *fluviatilis*, Amazon, p. 134, *hippopotamus*, Brazil, *penita*, Amazon, p. 135, *minor*, Brazil, p. 136, *tenuicornis*, Amazon, p. 137, pl. 9, fig. 4, Sc[illegible] Tijdschr. Ent. xxx : n. spp.

Decarthron brendeli, Texas, Casey, Bull. Cal. Ac. Sci. ii, p. 464 ; *D.*

restitutum, *fallaciosum*, pl. i, fig. 12, Mexico, Guatemala, p. 23, *similare*, Guatemala, p. 24, SHARP, Biol. Centr. Am. Col. ii (1) : n. spp.

Anchylarthron, n. g. for *Decarthron cornutum* and *Bryaxis inornata* (which are sexes of one species) ; BRENDEL, Tr. Am. Ent. Soc. xiv, p. 208.

Pselaptus batrisoides, Guatemala, p. 33, pl. i, fig. 17, SHARP, Biol. Centr. Am. Col. ii (1), n. sp.

Globa, n. g., near *Bryaxis*, p. 37, for *G. longipes*, Bogota, n. sp., p. 38, pl. ii, figs. 2 & 3 ; RAFFRAY, Rev. d'Ent. vi.

Nisaxis cincinnata, p. 466, pl. xvi, fig. 1, *maritima*, p. 468, Texas, CASEY, Bull. Cal. Ac. Sci. ii, n. spp.

Eutrichites zimmermanni, Lec. ?, figured, pl. xvi, fig. 3 ; CASEY, Bull. Cal. Ac. Sci. ii.

Caccoplectus, n. g. anomalous, ? *Bryaxinæ*, for *C. celatus*, n. sp., Guatemala, pl. i, fig. 11, SHARP, Biol. Centr. Am. Col. ii (1) p. 22.

Cylindrembolus, n. g. for *C. marginalis*, n. sp., Amazon ; SCHAUFUSS, Tijdschr. Ent. xxx, p. 103 : REITTER, *t. c.* p. 340, states that this gen. is only *Xybaris*, Reitt.

Eupsenius dominicanus, S. Domingo, SCHAUFUSS, Tijdschr. Ent. xxx, p. 108, n. sp.

Bythinomorpha, n. g., p. 109, for *B. exsculpta*, n. sp., Sumatra, p. 110 ; SCHAUFUSS, Tijdschr. Ent. xxx.

Bythinogaster, n. g., p. 111, for *B. simplex*, n. sp., S. Domingo, SCHAUFUSS, Tijdschr. Ent. xxx ; *B. bispharoides*, Cuba, *id.* B. E. Z. xxxi, p. 297 : n. sp.

Bythinus : note on the species described by Motschoulsky from Europe and the Caucasus ; REITTER, Wien. ent. Z. vi, p. 225.

B. gallicus, S. France, p 268, *koltzei*, E. Siberia, p. 269, REITTER, Deutsche e. Z. xxxi ; *B. fricaldszkyi*, Hungary, *id. t. c.* p. 504 : n. spp.

Macharites argodi, Croiss., referred to *Bythinus* ; REITTER, Deutsche e. Z. xxxi, p. 268.

Tychus monilicornis and *corsicus* are valid ; REITTER, Wien. ent. Z. vi, p. 227. *T. monilicornis* and *corsicus*, note on ; *id. t. c.* p. 305. *T. rufus*, Motsch., n. var. *puncticollis* ; *id.*, Deutsche e. Z. xxxi, p. 505.

T. sonomæ, p. 469, pl. xvi, fig. 6, *bipuncticeps*, p. 470, California, CASEY, Bull. Cal. Ac. Sci. ii, n. spp.

Pselaphus longiceps, Guatemala, p. 34, pl. i, fig. 18, SHARP, Biol. Centr. Am. Col. ii (1) ; *P. longiceps*, Zanzibar, RAFFRAY, Rev. d'Ent. vi. p. 33 ; *P. calopygæus*, p. 294, *bicestitus*, p. 295, Borneo, SCHAUFUSS, B. E. Z. xxxi : n. spp.

Apothinus, n. g. (*Euplectina*), p. 35, for *A. impressifrons*, p. 35, *obscurus*, p. 36, Guatemala, n. spp. ; SHARP, Biol. Centr. Am. Col. ii (1).

Neodeuterus, n. g., next *Zethus*, p. 151, for *N. admirandus*, p. 152, *alter*, p. 153, Sumatra, n spp. ; SCHAUFUSS, Tijdschr. Ent. xxx.

Raffrayia, Reitt., full characters of, with table of the species ; RAFFRAY, Rev. d'Ent. pp. 41–43.

[illegible]majorina, pl. ii, figs. 4 & 5, *pallidula*, p. 44, *longula*, p. 45, *rugosula*, *Catoxantha* [illegible]od Hope, RAFFRAY, Rev. d'Ent. vi, n. spp.

Agelia t[illegible]ximina, n. g., near *Trichonyx*, p. 46, for *D. globulicornis*, C. Good Hope, n. sp., p. 47, pl. ii, figs. 6 & 7 ; RAFFRAY, Rev. d'Ent. vi.

Chætorhopalus, n. g., near *Trichonyx*, p. 48, for *C. unicolor*, Zanzibar, n. sp., p. 49, pl. ii, figs. 8, 9, & 10; RAFFRAY, Rev. d'Ent. vi.

Autoplectus integricollis, Madagascar, RAFFRAY, Rev. d'Ent. vi, p. 50, n. sp.

Zethopsus, Reitt., characters amended; RAFFRAY, Rev. d'Ent. vi, pp. 50 & 51.

Z. crassicornis, p. 52, pl. ii, figs. 11 & 12, *decipiens*, p. 53, Zanzibar, RAFFRAY, Rev. d'Ent. vi, n. spp.

Euplectus brasiliensis, Minas Geraes, SCHAUFUSS, Tijdschr. Ent. xxx, p. 154; *E. californicus*, California, CASEY, Bull. Cal. Ac. Sci. ii, p. 476; *E. guatemalensis*, p. 36, *solitarius*, p. 37, Guatemala, SHARP, Biol. Centr. Am. Col. ii (1); *E. felschei*, Sardinia, REITTER, Deutsche e. Z. xxxi, p. 505; *E.* (*Bibloplectus*) *discicollis*, C. Good Hope, RAFFRAY, Rev. d'Ent. vi, p. 53: n. spp.

Euplectops denticollis, Sumatra, SCHAUFUSS, Tijdschr. Ent. xxx, p. 155, n. sp.

Phthartomicrus, n. g., for *P. externus*, n. sp., Sumatra, SCHAUFUSS, Tijdschr. Ent. xxx, p. 156.

Mechanicus, n. g., for *M. chlamydophorus*, n. sp., Sumatra, SCHAUFUSS, Tijdschr. Ent. xxx, p. 158.

Euplectomorphus elegans, Sumatra, SCHAUFUSS, Tijdschr. Ent. xxx, p. 159, n. sp.

Octomicrus crassipes, Zanzibar, RAFFRAY, Rev. d'Ent. vi, p. 54, pl. ii, figs. 13–15, n. sp.

Periplectus, n. g., near *Trimium*, for *P. nigripennis*, Zanzibar, n. sp., pl. ii, figs. 16 & 17, RAFFRAY, Rev. d'Ent. vi, p. 55.

Trimium königi, Circassia, REITTER, Deutsche e. Z. xxxi, p. 270; *T. concolor*, Guatemala, p. 37, SHARP, Biol. Centr. Am. Col. ii (1): n. spp.

Actium, the characters of the genus; CASEY, Bull. Cal. Ac. Sci. ii, p. 472.

A. pallidum, pl. xvi, fig. 7, *politum*, p. 473, *robustulum*, p. 474, *testaceum*, p. 475, California, CASEY, Bull. Cal. Ac. Sci. ii, n. spp.

Trimiopsis, Reitt., = (*Actium*, Casey); REITTER, Wien. ent. Z. vi, p. 112.

T. minula, *minuta*, pl. i, fig. 20, p. 38, *clavicornis*, *femoralis*, p. 39, Guatemala, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Dalmodes brevicollis, Guatemala, p. 39, pl. i, fig. 21, SHARP, Biol. Centr. Am. Col. ii (1), n. sp.

Oropus interruptus, Casey, figured; CASEY, Bull. Cal. Ac. Sci. ii, pl. xvi, fig. 4.

O. montanus, California, CASEY, Bull. Cal. Ac. Sci. ii, p. 479, n. sp.

Eurhexius, n. g., p. 41, for *Rhexius simonis* and *procerus*, Reitt., and the following n. spp.: *vestitus*, p. 41, pl. i, fig. 22, *parviceps*, *ventralis*, p. 42, Panama, *trimiodes*, Guatemala, p. 43; SHARP, Biol. Centr. Am. Col. ii (1).

Rhexidius, n. g., for *R. granulosus*, n. sp., California, pl. xvi, fig. 8; CASEY, Bull. Cal. Ac. Sci. ii. *Rhexidius*, Casey, is *Eurhexius*, Sharp, REITTER, Wien. ent. Z. vi, p. 248.

Rhexius optatus, Panama, p. 41, pl. i, fig. 23, SHARP, Biol. Centr. Am. Col. ii (1), n. sp.

Faronidius, n. g., p. 381, for *F. africanus*, n. sp., S. Africa, p. 382, woodcut; CASEY, Tr. E. Soc. 1887.

Sagola, Sharp, = (*Sonoma*, Casey); REITTER, Wien. ent. Z. vi, p. 248.

S. corticina, p. 480, pl. xvi, fig. 10, *cavifrons*, p. 481, CASEY, Bull. Cal. [illegible]ci. ii, n. spp.

Goniatocerus communis and *basalis*, note on; REITTER, Tijdschr. Ent. xxx, pp. 317–319.

Cylindrarctus, n. g., p. 91, for *C. americanus*, n. sp., Illinois, p. 92; SCHAUFUSS, Tijdschr. Ent. xxx.

Pyxidicerus, Motsch., species tabulated; SCHAUFUSS, Tijdschr. Ent. xxx, pp. 93–95: note on the genus; REITTER, *t. c.* pp. 332–335.

Pyxidicerus rajah, *triophthalmus*, p. 96, *tythus*, p. 97, *venustus*, p. 98, *cordiger*, *amœnus*, p. 99, Sumatra, SCHAUFUSS, Tijdschr. Ent. xxx, n. spp.

Gamba and *Jubus*, note on; REITTER, Tijdschr. Ent. xxx, pp. 335 & 336. *G. elongata*, pl. vii, fig. 3, *rugicollis*, pl. viii, fig. 1, figured; SCHAUFUSS, Tijdschr. Ent. xxx.

G. brevipennis, Amazon, SCHAUFUSS, Tijdschr. Ent. xxx, p. 100, n. sp.

Jubus spinicollis, fig. 1, *subopacus*, fig. 2, figured, pl. vii, SCHAUFUSS, Tijdschr. Ent. xxx.

J. inermis, Colombia, SCHAUFUSS, Tijdschr. Ent. xxx, p. 101, n. sp.

Duciola scydmænilla, pl. i, fig. 24, *aberrans*, Guatemala, p. 44, *punctata*, Mexico, p. 45, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Endytocera, n. g., p. 45, for *E. vestita*, pl. i, fig. 25, *cognata*, Panama, n. spp., p. 46; SHARP, Biol. Centr. Am. Col. ii (1).

Claviger justinæ, Caucasus, REITTER, Deutsche e. Z. xxxi, p. 264; *C. pyrenæus*, France, RAFFRAY, Rev. d'Ent. vi, p. 19: n. spp.

Commatocerus peringueyi, C. Good Hope, RAFFRAY, Rev. d'Ent. vi, p. 19, pl. i, fig. 7, n. sp.

Articerus foveicollis, Swan River, RAFFRAY, Rev. d'Ent. vi, p. 18, pl. i, fig. 1, n. sp.

PAUSSIDÆ.

[*Cf.* LOMAN (449).]

Account of Raffray's 1886 memoir; FAUVEL, Rev. d'Ent. vi, pp. 201–209.

Observations on Raffray's work, with special remarks on *Paussus cultratus* and *plinii*, *bicolor*, Raff., *sinicus*, W.; DOHRN, S. E. Z. xlviii, pp. 316–318.

Cerapterus 4-*maculatus*, Westw., nature of its explosions, &c.; LOMAN (449).

SCYDMÆNIDÆ.

[*Cf.* ALLARD (6), CROISSANDEAU (146), DODERO (168), REITTER (616, 619, 622), SCHAUFUSS (671, 672), SHARP (263).]

Eumicrus brunneus, Schaum., figured, pl. ii, fig. 21, noticed, p. 65, *commiltonis*, Schauf., fig. 22, and p. 67; SHARP, Biol. Centr. Am. Col. ii (1).

[illegible] *pectoralis*, Guatemala, Nicaragua, *laminatus*, Mexico, *centralis*, *Catoxantha* [illegible] p. 66, *sallæi*, Mexico, p. 67, *brevipes*, Guatemala, *Agelia* [illegible] *concretus*, Guatemala to Panama, fig. 24, p. 68, *palmatus*, *subnudus*, Guatemala, p. 69, SHARP, Biol. Centr. Am. Col. ii (1); *Scydmænus libertus*,

Marocco, p. 143, *scaphium*, Algeria, *approximans*, *vividus*, *expansus*, Marocco, *nudipennis*, Algeria, p. 144, *algerinus*, *nigripennis*, Algeria, *insidiosus*, Spain, p. 145, Reitter, Wien. ent. Z. vi : n. spp.

Scydmænus and allies, synonymy discussed ; Schaufuss, B. E. Z. xxxi, p. 316. *Scydmænus*, use of the name *Cyrtoscydmus*, Reitt., for this rejected; Sharp, Biol. Centr. Am. Col. ii (1) p. 63.

S. brevipes, Guatemala, p. 63, pl. ii, fig. 19, Sharp, Biol. Centr. Am. Col. ii (1) ; *S. murinus*, Colombia, Schaufuss, B. E. Z. xxxi, p. 318 ; *Eumicrus* (Latr., non auct.) *guardanus*, Portugal, Reitter, Deutsche e. Z. xxxi, p. 506 : n. spp.

Homoconnus, n. g. for *Scydmænus spinipes*, Schauf., p. 64, the insect figured, pl. ii, fig. 20 ; Sharp, Biol. Centr. Am. Col. ii (1).

Neuraphes fauveli, Pyrenees, Croissandeau, Rev. d'Ent. vi, p. 122 ; *N. antoniæ*, Paskau, *karystosus*, Eubœa, p. 271, *parviceps*, Caucasus, *fiorii*, Italy, p. 272, *cæcus*, S. Tyrol, p. 273, Reitter, Deutsche e. Z. xxxi : n. spp.

Stenichnus subtilis, Taschkent, Reitter, Deutsche e. Z. xxxi, p. 273, n. sp.

Euconnus, characters of, p. 47 ; Sharp, Biol. Centr. Am. Col. ii (1).

E. torquatus, *subclavatus*, pl. ii, fig. 2, Guatemala, *gravidus*, fig. 1, p. 48, *segnis*, *auritus*, Panama, p. 49, *difficilis*, *oscillans*, fig. 3, *obesus*, Guatemala, p. 50, *indutus*, fig. 4, Panama, *calvus*, Guatemala, Panama, fig. 5, p. 51, *gracilicornis*, Panama, fig. 6, *solitarius*, *mirandillæ*, *giraffa*, fig. 7, p. 52, Guatemala, *excavatus*, Nicaragua, fig. 8, *distans*, Guatemala, p. 53, *mutandus*, Panama, fig. 9, *guatemalenus*, Guatemala and Panama, fig. 10, p. 54, *championi*, *subtilis*, fig. 11, *frontalis*, Guatemala, p. 55, *chiriquensis*, fig. 12, Panama, *germanus*, fig. 13, Guatemala, p. 56, *incultus*, Panama, fig. 14, *pubifer*, Nacaragua, fig. 15, p. 57, *hirculus*, *puncticollis*, *vividus*, fig. 16, p. 58, *armatipes*, *medialis*, fig. 17, p. 59, *fustiger*, fig. 18, *hoplites*, p. 60, *obtusus*, *celatus*, p. 61, *mirandus*, *alticola*, *gibbiodes*, p. 62, *palpalis*, p. 63, Guatemala, Sharp, Biol. Centr. Am. Col. ii (1) ; *E. demissus*, = (*ferrarii*, Reitt. olim.), Monte Viso, *cruentulus*, Taschkent, p. 274, Reitter, Deutsche e. Z. : n. spp.

Leptocharis, n. subg. of *Euconnus*, for *E. revelieri*, Sardinia, n. sp., p. 275 ; *id. t. c.*

Syndicus principulus, Sumatra, Schaufuss, Hor. Ent. Ross. xxi, p. 114, n. sp.

Cephennium breve, North America, Schaufuss, p. 319, B. E. Z. xxxi ; *C. punctithorax*, Carinthia, Reitter, Deutsche e. Z. xxxi, p. 506 ; *C.* (*Geodytes*) *lostiæ*, Sardinia, Dodero, Bull. Ent. Ital. xix, p. 333 ; *C.* (*Geodytes*) *lostiæ*, Sardinia, *id.* Rev. d'Ent. vi, p. 63 : n. spp.

Cephennodes graeseri, E. Siberia, Reitter, Deutsche e. Z. xxxi, p. 270, n. sp.

Hecotus, n. g., p. 70, allied to *Clidicus*, for *H. agilis*, Panama, pl. ii, fig. 25, *mexicanus*, Mexico, n. spp., p. 71 ; Sharp, Biol. Centr. Am. Col. ii (1).

Clidicus, Cast., species tabulated, with *ganglbaueri*, Ja[illegible] Reitter, Wien. ent. Z. vi, p. 64 ; but, *t. c.* p. 304, he states this is *grandis*, Cast.

SILPHIDÆ.

[*Cf.* GANGLBAUER (246), JAKOWLEFF (343, 345), LEWIS (432), MATTHEWS (263), REITTER (622, 624), REY (632), SEIDLITZ (691).]

Reitter's nomenclature of genera of *Silphidæ* discussed and condemned; SEIDLITZ, Deutsche e. Z. xxxi, pp. 81–88.

Necrophorus maculifrons and *4-punctatus*, Kr., noticed; LEWIS, Ann. N. H. (5) xx, p. 340.

N. monticagus, *latifasciatus*, p. 340, *tenuipes*, p. 341, Japan, LEWIS, Ann. N. H. (5) xx; *N. mexicanus*, p. 91, *montezumæ*, *olidus*, p. 92, Mexico, MATTHEWS, Biol. Centr. Am. Col. ii (1); *Silpha* (*Necrophorus*, Fab.) *semenowi*, Central Asia, p. 216, *prædator*, E. Siberia, p. 217, REITTER, Hor. Soc. Ross. xxi; *S.* (*Necrophorus*) *maculiceps*, E. Siberia, *stenophtalma* (*sic*), Turkestan, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 154: n. spp.

Silpha opaca, change of food; BOS, Biol. Centralbl. vii, p. 321. *S. quadripunctata*, L., p. 167, *polita*, p. 170, larvæ described; REY, Ann. Soc. L. Lyon (2) xxxiii. *S. lævigata* inhabited by *Cysticercus tæniæ uncinatæ*; Ent. Nachr. xiii, p. 287. *S.* (*Parasilpha*) *olivieri*, n. n. for *S. granulata*, Ol. *nec* Fab.; BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 196.

Pseudopelta trituberculata, Kirby, correction of locality of; Wien. ent. vi, p. 172.

P. mutilata = (*Silpha capensis*, Boh.), C. Good Hope to Italy, REITTER, Deutsche e. Z. xxxi, p. 283; *P.* (*Silpha*) *roborowskyi*, Central Asia, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 316: n. spp.

Xylodrepa, Thoms. = (*Dendroxena*, Motsch.); REITTER, Wien. ent. Z. vi, p. 107.

Fericeus, Reitt., differential characters from *Drimeotus*, Miller; REITTER, Wien. ent. Z. vi, p. 106.

Blitophaga villosa, Turkestan, REITTER, Deutsche e. Z. xxxi, p. 282, n. sp.

Aclypea pamirensis, Central Asia, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 153, n. sp.

Choleva and *Catops* to be retained as distinct, p. 88, subgenera of the latter tabulated, p. 89, and the species of *Ptomaphagus* tabulated, pp. 90–93; SEIDLITZ, Deutsche e. Z. xxxi.

Catops (*Ptomaphagus*) *sardus*, Sardinia, *pius*, Rome, *vallombrosæ*, Italy, SEIDLITZ, Deutsche e. Z. xxx, p. 92, n. spp.

Ptomaphagus oertzeni, Greece, REITTER, Deutsche e. Z. p. 282, n. sp.

Choleva, notes on the species allied to *C. angustata*, with tabulation of characters; REITTER, Deutsche e. Z. xxxi, pp. 277–281. *C. agilis*, Ill., and allies characters of; *id. t. c.* p. 507.

C. anceyi, Algeria, REITTER, Deutsche e. Z. xxxi, p. 507; *C. lucidicollis*, N. Europe, p. 278, *angistrina*, Island of Angistri, Ægina, p. 279, *id. t. c.*: n. spp.

Leionochæta sibirica, Wladiwostok, REITTER, Deutsche e. Z. xxxi, p. 276.

Catopsicia halbherri, Italy, *sibirica*, Wladiwostok, *thessalica*, Ossa, REITTER, Deutsche e. Z. xxxi, p. 276, n. sp.

Agathidium: MATTHEWS redescribes *oniscoides*, Beauv., *californicum*, Horn, *exiguum*, Melsh.; Biol. Centr. Am. Col. ii (1) pp. 74 & 75.

A. difficile, Mexico, p. 76, *cognatum*, Guatemala, pl. iii, fig. 2, p. 77, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Aglyptus horni, pl. iii, fig. 3, p. 78, *A.* (?) *minor*, p. 79, Guatemala, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Scotocryptus characterised at length; MATTHEWS, Biol. Centr. Am. Col. ii (1), pp. 80 & 81.

S. inquilinus, Guatemala, p. 81, pl. iii, fig. 4, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. sp.

Creagrophorus, n. g., p. 82, for *C. hamatus*, Mexico, Panama, p. 83, *bihamatus*, Panama, p. 84, pl. iii, figs. 1 & 6, n. spp., MATTHEWS, Biol. Centr. Am. Col. ii (1).

Cyrtusa blandissima, Horn, figured, pl. iii, fig. 5, and described, p. 85; MATTHEWS, Biol. Centr. Am. Col. ii (1).

Colenis punctulata, Panama, p. 86, *crassicornis*, Guatemala, p. 87, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Anisotoma podagrica, Guatemala, p. 88, pl. iii, fig. 7, MATTHEWS, Biol. Centr. Am. Col. ii (1); *Liodes ampla*, Abchasia, REITTER, Deutsche e. Z. xxxi, p. 284: n. spp.

Dietta, characters of discussed at length, pp. 83 & 89, *D. sharpi*, Panama, p. 89, pl. iii, fig. 8; MATTHEWS, Biol. Centr. Am. Col. ii (1), n. sp.

Clambus gibbulus, Lec., described in full; MATTHEWS, Biol. Centr. Am. Col. ii (1), p. 73.

C. exiguus, Guatemala, p. 74, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. sp.

Leptoderus, new character for genera allied to; GANGLBAUER, Deutsche e. Z. xxxi, pp. 95 & 96.

TRICHOPTERYGIDÆ, HYDROSCAPHIDÆ, SCAPHIDIIDÆ.

[*Cf.* FLACH (229), REITTER (608, 622).]

Hydroscapha sharpi, Lenkoran, REITTER, Deutsche e. Z. xxxi, p. 508, n. sp.

Ptenidium matthewsi, n. n. for *lævigatum*, Matth., *nec* Gillm.; FLACH, Wien. ent. Z. vi, p. 182.

P. oculum, p. 177, pl. ii, fig. 1, *lederi*, fig. 2, *brenskei*, p. 178, fig. 3, Caspian sea, *obotrites*, fig. 4, Mecklenburg, *heydeni*, Portugal, fig. 5, p. 179, *reitteri*, Dalmatia, p. 180, fig. 6, FLACH, Wien. ent. Z. vi: n. spp.

Ptilium schwarzi, Mecklenburg, p. 180, pl. ii, fig. 7, *reitteri*, Lenkoran, p. 181, pl. ii, fig. 8, FLACH, Wien. ent. Z. vi, n. spp.

Actidium variolatum, Dalmatia, p. 181, *reitteri*, Marocco, p. 182, FLACH, Wien. ent. Z. vi, n. spp.

Scaphisoma turkomanorum, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 507, n. sp.

HISTERIDÆ.

[*Cf.* LEWIS (430), MARSEUL (471, 472), REITTER (622, 624), [illegible] (677), WASMANN (781).]

Phelister gounellei, Minas Geraes, Marseul, Bull. Soc. Ent. Fr. (6) vii, p. cxviii; *P. varicolor*, New Grenada, *erraticus*, Taratilla, p. cxlvii, *salobrius*, Bahia, p. cxlviii, *id. t. c.* : n. spp.

Hister replctus, Lec., position and habits noticed; Blanchard, Ent. Am. iii, p. 85. *H. myrmecophilus*, Muls. & Rey, = (*stigmosus*, Mars.); Rey, Bull. Soc. Ent. Fr. (6) vii, p. lxxxvii. *H. amplicollis*, n. var. *maroccanus*; Schmidt, Ent. Nachr. xiii, p. 353.

Epierus fornicatus, Minas Geraes, Marseul, Bull. Soc. Ent. Fr. (6) vii, p. cxix, n. sp.

Scapomegas aurifer, Minas Geraes, Marseul, Bull. Soc. Ent. Fr. (6) vii, p. cxxv, n. sp.

Hetærius acutangulus, Tangier, Lewis, Ent. M. M. xxiv, p. 164, n. sp.

Dendrophilus pygmæus, its relations with ants; Wasmann, Deutsche e. Z. xxxi, p. 112.

Saprinus tridens, Duv., referred to *Xenonychus*, Woll., ? distinct from *X. fossor*; Schmidt, Ent. Nachr. xiii, p. 354.

S. binævulus, Turcomania, Reitter, Deutsche e. Z. xxxi, p. 287; *S. quedenfeldti*, *schulzei*, Marocco, Schmidt, Ent. Nachr. xiii, p. 355; *S. schmidtianus*, Central Asia, Reitter, Hor. Soc. Ross. xxi, p. 218; *S. pipitzi*, Rio Grande do Sul, Marseul, Bull. Soc. Ent. Fr. (6) vii, p. cxxv : n. spp.

Phalacridæ.

[*Cf.* Fleutiaux (232), Reitter (622).]

Olibrus thoracicus, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 61, n. sp.

Stilbus koltzei, E. Siberia, Reitter, Deutsche e. Z. xxxi, p. 509, n. sp.

Nitidulidæ.

[*Cf.* Fleutiaux (232), Reitter (627), Rey (632), Ulke (764).]

Carpophilus punctatus, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 61, n. sp.

Epuræa guttifera, Sicily, Reitter, Nat. Sicil. vi, p. 83, n. sp.

Amphotis schwarzii, Vancouver's I., Ulke, Ent. Am. iii, p. 77, n. sp.

Meligethes difficilis, Heer, larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 174.

Cryptarcha strigata, n. var. *circassica*; Reitter, Deutsche e. Z. xxxi, p. 287.

Rhizophagus bipustulatus, injurious to bottled wines; Borre, C.R. ent. Belg. 1887, p. xxvii. *R. parallelocollis* in exhumed corpses; Mégnin (483). *R. parallelocollis*, Gyl., larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii.

Ips. [*Cf. Scolytidæ*.]

Trogositidæ.

tricolor, Fairm., habits; Weise, Deutsche e. Z. xxxi, p. 368. Fairmaire, Ann. Soc. L. Belgique; Reitter, Deutsche e. Z. xxxi, p. 284.

Trogosita sp., Cysticercoids of *Tænia* detected in; Ent. Nachr. xiii, p. 303.

Melambia subcyanea, Gerst. = (*cæruleata*, Fairm.); FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 100.

COLYDIIDÆ.

[*Cf.* PASCOE (556), REITTER (622), REY (632).]

Aglenus brunneus, Gyl., larva described; REY, Ann. Soc. L. Lyon (2) xxxiii.

Esarcus (*Entoxylon*) *abeillei*, Ancey, = (*Triphyllus*) *cribratus*, Baudi; REITTER, Wien. ent. Z. vi, p. 77.

E. fiorii, Calabria, *martini*, Algiers, REITTER, Deutsche e. Z. xxxi, p. 285, n. spp.

Tarphius: to this genus is to be referred *Opatrum liliputanum*, Luc., = (*T. fairmairei*, Mars.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 199.

Bothrideres impressus, Grahamstown, PASCOE, Ann. N. H. (5) xx, p. 9, n. sp.

CUCUJIDÆ.

[*Cf.* FAIRMAIRE (205), GROUVELLE (283), POLL (568), REITTER (622), SCHAUFUSS (672).]

Hectarthrum modestum, Fairm., more fully described and figured; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 101, pl. 2, fig. 1. *H. modestum*, Fairm., and *lineicolle*, Reitt., are one species; GROUVELLE, Bull. Soc. Ent. Fr. (6) vii, p. clxxix.

H. harmandi, Cambodia, *id. l. c.*; *H. orientale*, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 115: n. spp.

Prostomis mordax, E. Siberia, REITTER, Deutsche e. Z. xxxi, p. 288, n. sp.

Inopeplus olliffi, Queensland; POLL, Notes Leyd. Mus. ix, p. 140, n. sp.

Læmophlæus emgei, Attica, REITTER, Deutsche e. Z. xxxi, p. 286, n. sp.

CRYPTOPHAGIDÆ.

[*Cf.* REITTER (609), REY (632).]

Classification discussed: *Diphyllus* and *Telmatophilus* included in; REITTER, Best.-Tab. xvi, pp. 11 & 12.

Cryptophagus rufus, Bris., *saginatus*, Sturm, *pubescens*, Sturm, larvæ described; REY, Ann. Soc. L. Lyon (2) xxxiii, pp. 182 & 183.

C. (*Micronomus*) *seriatus*, Europe (?), p. 20, *C. erichsoni*, Lenkoran, *nigritulus*, Europe, p. 22, *dilatipennis*, Caucasus, *subvittatus*, Sarepta, p. 29, REITTER, Best.-Tab. xvi, n. spp.

Micronomidius, n. g., for *Cryptophagus serricollis*, Reitt.; REITTER, Best.-Tab. xvi, p. 35.

Henoticus pilifer, E. Siberia, REITTER, Best.-Tab. xvi, p. 15.

Pteryngium, n. g. for *Cryptophagus crenatus*, REITTER (622, 624), Best.-Tab. xvi, p. 34.

Micrambe, Th., merged in *Cryptophagus*; Reitter, Best.-Tab. xvi, p. 32.

Atomaria punctipennis, Siberia, *sparsutula*, Morea, *punctithorax*, Dalmatia, p. 37, *nigroscutellata*, Siberia, p. 38, *cribrella*, Caucasus, *edithæ*, Siberia, p. 39, *gracilicornis*, Caucasus, *bescidia*, Europe, *peltatula*, Siberia, p. 40, *talyschensis*, Lenkoran, p. 41, *atripennis*, Syria, p. 42, *convexiuscula*, *xeniella*, p. 44, *lateralis*, p. 45, *subapicalis*, p. 46, Siberia, *marginicollis* = (*rubricollis*, Woll.), Madeira, p. 47, *cretica*, Crete, p. 48, *graeseri*, Siberia, p. 49, *basicornis*, Caucasus, p. 51, *impubens*, Turcomania, p. 52, *cephennoides*, Caucasus, p. 53, Reitter, Best.-Tab. xvi, n. spp.

Sternodea grilati, Algeria, Reitter, Best.-Tab. xvi, p. 54, n. sp.

Eurhanius, n. g. near *Diplocælus*, for *E. humeralis*, n. sp., Japan; Reitter, Best.-Tab. xvi, p. 13.

Lathridiidæ.

[*Cf.* Belon (52), Reitter (608, 622).]

Langelandia anophthalma found in potatoes; Wood, Ent. M. M. xxiv, p. 155.

Colovocera punctata, Mærk., characters of; Belon, Rev. d'Ent. vi, p. 216.

Displotera, n. g. for *D. simoni*, W. Africa, n. sp.; Reitter, Best.-Tab. iii, ed. 2, p. 10.

Merophysia madoni and allies, differential characters; Belon, Rev. d'Ent. vi, p. 217.

M. longicornis, *nana*, Syria, Reitter, Best.-Tab. iii, ed. 2, p. 12, n. spp.

Blumenus, n. g., p. 219, for *B. villiger*, n. sp., Brazil, p. 220; Belon, Rev. d'Ent. vi.

Holoparamecus tuberculum and *caularum*, note on; Belon, Rev. d'Ent. vi, p. 221.

Metophthalmus zanzibaricus, Zanzibar, Belon, Rev. d'Ent. vi, p. 221, n. sp.

Lathridius lardarius, De G., variety noticed, *L.* (*Coninomus*) *sculptilis*, Lec., described; Belon, Rev. d'Ent. vi, p. 222.

Enicmus brasiliensis, Mann., p. 223, *foveatus*, Bel., p. 224, noticed; Belon, Rev. d'Ent. vi.

Cartodere bicostata and *argus*, Reitt., *filum*, Aubé, notes on; Belon, Rev. d'Ent. vi, pp. 224 & 226.

C. unicostata, Mexico, Belon, Rev. d'Ent. vi, p. 225; *C. separanda*, Mediterranean region, Reitter, Deutsche e. Z. xxxi, p. 25 : n. spp.

Corticaria sylvicola, Bris., and *longicornis*, Herbst, notes on; Belon, Rev. d'Ent. vi, pp. 226 & 227.

[illegible]icollis, Dolon, Reitter, Deutsche e. Z. xxxi, p. 509, n. sp.

Catoxantha palma signata, Cuba, Belon, Rev. d'Ent. vi, p. 229.

Agelia tricolor, Fairmaire.

Fairmaire, Ann. Soc. E. Ba.

Mycetophagidæ and Thorictidæ.

[*Cf.* Gorham (263, sub *Endomychidæ*), Reitter (622).]

Triphyllus cribratus, Baudi, *cf. Colydiidæ, Esarcus.*

Atritomus filicornis, Algeria, Reitter, Deutsche e. Z. xxxi, p. 288, n. sp.

Symbiotes being preoccupied, *Clemmus*, Hampe, should be used; Champion, Ent. M. M. xxiii, p. 229.

Symbiotes? orbicularis, Japan, Gorham, P. Z. S. 1887, p. 652, n. sp.

Diplocœlus and *Eurhanius, cf. Cryptophagidæ.*

Thorictus bifoveolatus, Indersk, *königi*, Turkestan, Reitter, Deutsche e. Z. xxxi, p. 286, n. spp.

Dermestidæ.

[*Cf.* Fleutiaux (232), Karsch (359), Reitter (608, 624), Rey (632).]

Dermestes, characters and habits of larvæ, european; Karsch, Ent. Nachr. xiii, pp. 279–283. *D. vorax*, note on; Kolbe, Ent. Nachr. xiii, p. 341. *D. lardarius* and its varieties; Reitter, Wien. ent. Z. vi, p. 172. *D. gulo*, Muls., p. 184, *cadaverinus*, F., p. 186, *mustelinus*, Er., p. 187, larvæ described; Rey, Ann. Soc. L. Lyon (2) xxxiii.

Trogoderma maculifasciata, Central Asia, Reitter, Hor. Ent. Ros. xxi, p. 218; *T. cercyonoides*, Egypt, *id.* Best-Tab. iii, ed. 2, p. 62: n. spp.

Megatoma undata, L., larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 191.

Attagenus vigintiguttatus, F., larva described; Rey, Ann. Soc. L. Lyon (2), xxxiii, p. 189.

Telopes leprieuri, Upper Egypt, p. 53, *antennatus*, Algeria, p. 54, Reitter, Best.-Tab. iii, ed. 2, n. spp.

Apprograminе maculosa, Taschkent, p. 55, *graeseri*, E. Siberia, p. 56, Reitter, Best.-Tab. iii, ed. 2, n. spp.

Anthrenus pimpinellæ, F., larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 193.

A. ovalis, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 62; *A. biskrensis*, Algeria, p. 69, *versicolor*, Greece, p. 70, Reitter, Best.-Tab. iii, ed. 2: n. spp.

Byrrhidæ.

[*Cf.* Czwalina (149), Fairmaire (204), Fleutiaux (232).]

Byrrhus montanus, Monte Rosa, p. 495, *dubius*, N. Germany?, p. 496, Czwalina, Deutsche e. Z. xxxi, n. spp.

Cytilus avunculus, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 98, n. sp.

Limnichus pygmæus: *L. variegatus*, Guil., and *auricomus*, Reitter, are varr. of this; Reitter, Wien. ent. Z. vi, p. 104.

Chelonarium hirtum, Annam, Fleutiaux, Ann. [illegible]ter (622, 624), S[illegible] p. 62, n. sp.

PARNIDÆ.

[*Cf.* REITTER (241), SHARP (263).]

Pomatinus angulicollis, Caucasus, REITTER, Deutsche e. Z. xxxi, p. 257, n. sp.

Dryops (*Parnus*), translation into French of Reitter's 1886 table of the species of ; Rev. d'Ent. vi, pp. 10 & 11.

Parnus centralis, major, Panama, SHARP, Biol. Centr. Am. Col. i (2), p. 774, n. spp.

Helmis quadricollis, Taschkent, REITTER, Deutsche e. Z. xxxi, p. 258, n. sp.

Heterelmis longulus, Mexico, SHARP, Biol. Centr. Am. Col. i (2), p. 775, n. sp.

Stenelmis puberulus, Caucasus, *binervosus*, New Guinea, REITTER, Deutsche e. Z. xxxi, p. 259, n. spp.

Macronychus rioloides, p. 259, with var. *flavibasis*, p. 260, Turkestan, REITTER, Deutsche e. Z. xxxi, n. sp.

HETEROCERIDÆ.

[*Cf.* REITTER (622, 624), SHARP (263).]

Heterocerus turanicus, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 502 ; *H. dilutissimus*, Centr. Asia, *id.* Hor. Ent. Ross. xxi, p. 209 ; *H. americanus*, p. 772, *vilis*, N. America and Mexico, *velutinus, cognatus*, Mexico, p. 773, SHARP, Biol. Centr. Am. Col. i (2) : n. spp.

LUCANIDÆ and PASSALIDÆ.

[*Cf.* FAIRMAIRE (203, 204), SCHAUFUSS (672), WATERHOUSE (788, 790, 791).]

Lucanus turcicus, characters of, RICHTER, Soc. Ent. i, p. 181.

L. delavayi, Yunnan, FAIRMAIRE, Bull. Soc. Ent. Fr. (6) vii, p. xxvii, and Ann. Ent. Belg. xxx, p. 98, n. sp.

Cladognathus cinctus, Montr., noticed ; WATERHOUSE, Ann. N. H. (5), xix. pp. 381 & 382.

C. limbatus, Torres Straits, WATERHOUSE, Ann. N. H. (5) xix, p. 381 ; *C. myrmecoleon, patricius*, Macassar, p. 118, SCHAUFUSS, Hor. Ent. Ross. xxi : n. spp.

Odontolabis dalmani, Hope, priodont form, p. 279 ; *celebensis*, Leuth., teledont form described, p. 280 : POLL, Notes Leyd. Mus. ix. *O. duivenbodi*, Deyr, ♀ described ; SCHAUFUSS, Hor. Ent. Ross. xxi, p. 117.

O. femoralis, Perak, WATERHOUSE, Ann. N. H. (5) xix, p. 446, n. sp.

Gnaphaloryx davidis, Pekin, FAIRMAIRE, Rev. d'Ent. vi, p. 314, n. sp.

Ægus semicircularis, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 119, n. sp.

Dorcus suturalis, Westw., ♀ described ; WATERHOUSE, Ann. N. H. (5), xix. p. 289.

Cetoxantus lanowskii, Caucasus, GANGLBAUER, Soc. Ent. i, p. 89, n. sp.

Agelia tricolor, FAIRMAIRE, Fairm., this genus and species redescribed ; FAIRMAIRE, Ann. Soc. Ent. Belg. xxxi, pp. 99.

Scarabæidæ.

[*Cf.* Bates (263, 369), Dokhtouroff (172), Dugès (185), Fairmaire (203, 204, 205, 206), Fleutiaux (232), Hahn (294), Heyden (306, 307), Horn (321, 322, 323), Karsch (360), Lansberge (416, 419, 420), Lewis (440), Macleay (465), Mayet (480), Reitter (615, 621, 622, 624), Rey (632), Ritsema (646), Sandahl (663), Schaufuss (672); also *Cetoniini* p. 127.]

Coprini.

Scarabæus: Fairmaire more fully describes *nepos*, p. 103, *subalbrosipennis*, *opacipennis*, p. 104, *planifrons*, *lævifrons*, p. 106, Ann. Soc. Ent. Fr. (6) vii.

S. corinthius, *stigmaticus*, p. 102, *politifrons*, p. 105, *sericeipennis*, p. 107, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Anachalcos revoili, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 107.

Gymnopleurus infranitens, *sericeifrons*, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 108, n. spp.

Epirhinus tuberifrons, Fairm., redescribed and referred to *Catharsius*; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 109.

Cephalodesmius cornutus, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 220, n. sp.

Merodontus squalidus, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 221, n. sp.

Temnoplectron politulum, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 221, n. sp.

Epilissus globulus, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 222, n. sp.

Megathopa yucateca, Har., fig. 1, *candezei*, Har., fig. 5, figured; Bates' Biol. Centr. Am. Col. ii (2), pl. ii.

Canthon: Bates figures or notices *sallæi*, Har., pl. ii, fig. 2, p. 26, *spinosus*, Har., p. 27, *femoralis*, Har., fig. 7, p. 28, *angustatus*, Har., fig. 4, *viridis*, Beauv., p. 30, *lituratus*, Germ. var., fig. 12, p. 33, *mutabilis*, Luc. var., pl. ii, fig. 11, p. 34, *deyrollei*, Har., p. 34, Biol. Centr. Am. Col. ii (2).

C. moniliatus, Nicaragua, Panama, pl. ii, fig. 3, p. 27, *euryscelis*, Mexico to Panama, fig. 6, p. 28, *lamprimus*, fig. 8, *cælius*, p. 29, *varipilus*, fig. 9, Panama, p. 30, *championi*, Guatemala, *forreri*, fig. 10, *nyctelius*, p. 31, *hidalgoensis*, p. 32, *chlorizans*, p. 34, *ateuchiceps*, p. 35, Mexico, Bates, Biol. Centr. Am. Col. ii (2), n. spp.

Pseudocanthon, n. g., for *Canthon perplexus*, Lec.; Bates, Biol. Centr. Am. Col. ii (2) p. 35.

Deltochilum gibbosum, Mexican var. described; Bates, Biol. Centr. Am. Col. ii (2) p. 36.

D. parile, Mexico, Panama, pl. ii, fig. 14, p. 35, *acropyge*, British Honduras, fig. 15, p. 36, *lobipes*, Mexico, Nicaragua, fig. 13, *amazonis*, are Amazons, p. 37, *scabriusculum*, Mexico, Guatemala, fig. 16, p. [illegible] Biol. Centr. Am. Col. ii (2), n. spp. [illegible]r (622, 624), S[illegible]

Eurysternus claudicans, Kirsch., p. 39, *ma*[illegible]

nel clausus, Kirsch., p. 40, *mexicanus*, *plebeius*, *angustulus*, Hor., fig. 19, p. 41, noticed or figured; BATES, Biol. Centr. Am. Col. ii (2).

E. velutinus, Panama, S. America, pl. ii, fig. 17, p. 39, BATES, Biol. Centr. Am. Col. ii (2), n. sp.

Agamojus, n. g. near *Uroxys*, for *A. lampros*, n. sp., Panama, pl. ii, fig. 20, p. 42; BATES, Biol. Centr. Am. Col. ii (2).

Aphengium semi-nudum, Nicaragua, Panama, pl. ii, fig. 21, p. 42, BATES, Biol. Centr. Am. Col. ii (2), n. sp.

Uroxys micros, Guatemala, p. 2, fig. 22, *aphodiodes*, Nicaragua, p. 43, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Scatimus ovatus, Har., figured, pl. ii, fig. 23; Biol. Centr. Am. Col. ii (2).

Cheridium illæsum, p. 44, *klugi*, Har., p. 45, noticed; BATES, Biol. Centr. Am. Col. ii (2).

C. chrysopyge, p. 44, *guatemalense*, pl. ii, fig. 24, Guatemala, *ampliatum*, fig. 25, Mexico, Nicaragua, p. 45, *poropyge*, Nicaragua, p. 46, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Canthidium haroldi, Borre, pl. iii, fig. 1, p. 47, *puncticolle*, Har., fig. 2, *lætum*, Har., p. 49, figured or noticed; BATES, Biol. Centr. Am. Col. ii (2).

C. aurifex, Panama, pl. iii, fig. 3, *ardens*, Nicaragua, Panama, *rhodopus*, Guatemala, p. 48, *angusticeps*, Nicaragua, Panama, fig. 4 & p. 49, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Ontherus: BATES figures or notices *O. azteca*, Har., *mexicanus*, Har., pl. iii, fig. 5, *didymus*, Er., p. 50, *brevipennis*, Har.; Biol. Centr. Am. Col. ii (2).

Pinotus amplicollis, Har., pl. iii, fig. 10, *colonicus*, Say, figs. 7 & 8, *carolinus*, L., noticed, p. 52; BATES, Biol. Centr. Am. Col. ii (2).

P. yucatanus, Mexico, Nicaragua, pl. iii, fig. 9, p. 51, BATES, Biol. Centr. Am. Col. ii (2), n. sp.

Catharsius bradshawi, Zambesi, LANSBERGE, Notes Leyd. Mus. ix, p. 107, n. sp.

Copris laviceps, pl. iii, fig. 11, *sallæi*, fig. 12, *rebouchei*, fig. 13, *armatus*, Har., fig. 14, *incertus*, Say, fig. 15, figured, the latter noticed p. 55; BATES, Biol. Centr. Am. Col. ii (2).

Phanæus: BATES enumerates 31 Central American species, and notices or figures *P. corythus*, Har., pl. iii, fig. 16, p. 55, *pluto*, Har., fig. 18, *bilas*, fig. 19, *velutinus*, Mur., fig. 21, p. 57, *chrysocollis*, Har., pl. iv, fig. 2, *endymion*, p. 58, *melampus*, pl. iv, fig. 1, *amethystinus*, fig. 3, *damocles*, Har., fig. 4, *quadridens*, Say, fig. 5, *hermes*, Har., fig. 8, p. 60, *adonis*, fig. 9, *daphnis*, fig. 10, p. 61, *tridens*, fig. 11, *nimrod*, fig. 13, p. 62, *sallæi*, fig. 15, *wagneri*, fig. 17, p. 63, *mexicanus*, fig. 18, p. 64, *pilatei*, fig. 20, *damon*, fig. 21; Biol. Centr. Am. Col. ii (2).

P. noctis, Panama, S. America, pl. iii, fig. 20, p. 56, *pyrois*, Nicaragua to S. America, fig. 22, p. 58, *scutifer*, Mexico, pl. iv, fig. 7, p. 60, *furiosus*, pl. iv, fig. 12, p. 61, *eximius*, Brit. Honduras to Nicaragua, p. 62, pl. iv, [illegible] *veltianus*, Nicaragua and Panama, p. 63, fig. 16, *scintillans*, Mexico, *Catoxantha* [illegible] Mexico, p. 65, fig. 22, BATES, Biol. Centr. Am. *Agelia tricolor*, Fairmaire,

FAIRMAIRE, Ann. Soc. [illegible] BA[illegible]

Onthophagus: Bates enumerates 44 Central American species and figures or notices *O. incensus*, Say, p. 66, *marginicollis*, Har., pl. v, fig. 2, p. 67, *acuminatus*, fig. 3, *crinitus*, Har., var. *panamensis*, fig. 4, p. 68, *rhinolophus*, Har., fig. 5, p. 69, *sharpi*, fig. 11, *tapirus*, Shp., fig. 19, p. 74, *nasicornis*, Har., fig. 13, p. 72, *lecontei*, Har., fig. 17, p. 73, *landolti*, fig. 21 p. 75, *anthracinus*, Har., p. 77, *chevrolati*, Har., pl. vi, fig. 4, *retusus*, Har., p. 80; Biol. Centr. Am. Col. ii (2). *O.* (*Phalops*) *ditissimus* more fully described, p. 110, and *O. aurifrons*, Fairm., is a var. of it, p. 111; Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

O. asinimus, p. 301, *bivertex*, p. 302, Wladiwostok, Heyden, Deutsche e. Z. xxxi; *O. turpidus*, Central Asia, Reitter, Hor. Soc. Ross. xxi, p. 219; *O. heynei*, E. Africa, Lansberge, Notes Leyd. Mus. ix, p. 108; *O. castetsi*, E. India, *id. t. c.* p. 163; *O.* (*Phalops*) *guttulatus*, p. 111, *O. nigricornis*, *rufo-castaneus*, p. 112, *exasperatus*, *rufo-basalis*, p. 113, *rugulipennis*, *tetraspilus*, p. 114, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii; *O. sycophanta*, Yunnan, *id.* Ann. Ent. Belg. xxxi, p. 100; *O. froggatti*, p. 222, *walteri*, *parallelicornis*, p. 223, *lobicollis*, *emarginatus*, p. 224, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii; *O. nitidior*, Mexico, p. 67, pl. v, figs. 1 & 1*a*, *nyctopus*, Panama, p. 68, *belorhinus* Guatemala, Nicaragua, p. 69, pl. v, fig. 6, *xanthomerus*, Amazons, p. 69, *canellinus*, Ecuador, p. 70, *praecellens*, Costa Rica, Panama, p. 70, pl. v, fig. 8, *nasicornis*, Mexico, fig. 13, *dicranius*, Panama, fig. 14, *mexicanus*, Mexico, fig. 15, p. 72, *guatemalensis*, Brit. Hond. fig. 16, *iodiellus*, Mexico, p. 73, *championi*, Guatemala, fig. 18, *eulophus*, Mexico, *mirabilis*, Ecuador, p. 74, *orphnoides*, Panama, fig. 20, p. 75, *longimanus*, Mexico, fig. 22, *chryses*, Mexico, Panama, fig. 23, p. 76, *igualensis*, Mexico, p. 77, *gazellinus*, Nicaragua, fig. 25, *rufescens*, pl. vi, fig. 1, *corrosus*, fig. 2, Mexico, p. 78, *cyclographus*, Guatemala, *coscineus*, Panama, *cuboidalis*, Mexico, p. 79, fig. 3, *totonicapamus*, p. 80, fig. 6, Guatemala, p. 80, *aureofuscus*, Mexico, *cyanellus*, Mexico to Panama, pl. vi, fig. 6, p. 81, Bates, Biol. Centr. Am. Col. ii (2): n. spp.

Diastellopalpus infernalis, W. Africa, Lansberge, Notes Leyd. Mus. ix, p. 109, n. sp.

Oniticellus incurvicornis, p. 100, *denticornis*, p. 101, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi; *O. monstrosus*, Mexico, p. 83, pl. vi, fig. 7, Bates, Biol. Centr. Am. Col. ii (2): n. spp.

Aphodiini, monograph of N. American; Horn (321).

Aphodius: Bates enumerates 31 Central American species, and figures or notices *sallei*, Har., pl. 6, fig. 10, *aztecus*, fig. 11, *panamensis*, fig. 16, p. 88, *fuliginosus*, fig. 21, *mexicanus*, p. 91, *luridiventris*, Har., p. 92; Biol. Centr. Am. Col. ii (2).

A. latevittis, Turcomania, Reitter, Deutsche e. Z. xxxi, p. 509; *A. semenowi*, p. 220, *nasutus*, *granulifrons*, p. 221, *longeciliatus*, p. 22., *ignobilis*, p. 223, *A.* (*Melinopterus*) *pallididorsis*, p. 224, *semiluteus*, p. 225, *A.* (*Acrossus*) *postangulus*, p. 225, *przewalskyi*, p. 226, *semiopacus*, p. 227, Central Asia, Reitter, Hor. Ent. Ross. xxi; *A. conspersus*, p. 9, *consociatus*, p. 21, *gentilis*, p. 24, California, *decipiens* [illegible] p. 28, *haldemani* = (*politus*, Horn, olim.), [illegible] (622, 624). [illegible] Arizona, p. 38, *luteolus*, New Mexico, p. 4[illegible]

Cus. Florida, p. 42, *luxatus*, California, p. 46, *inutilis*, Oregon, (2) *ilus*, New Mexico, p. 50, *nanus*, p. 55, *acerbus*, p. 56, *tenuistriatus*, Z.), Texas, Horn, Tr. Am. Ent. Soc. xiv; *A. dugesi*, p. 83, pl. vi, N♂ 9, *fiohri*, *glyptus*, fig. 12, Mexico, *latecrenatus*, fig. 13, p. 86, *leuprosopus*, fig. 14, Guatemala, *duplex*, Mexico to Costa Rica, fig. 15, p. 87, *guatemalensis*, Guatemala, fig. 17, p. 88, *charmionus*, Mexico, fig. 18, *diminutus*, Guatemala, *erythrinus*, p. 89, *xanthus*, fig. 19, Panama, *bifrons*, p. 20, *hügei*, Mexico, p. 90, Bates, Biol. Centr. Am. Col. ii (2); *A.* (*Acrossus*) *binævulus*, Wladiwostok, Heyden, Deutsche e. Z. xxxi, p. 303 : n. spp.

Diaperna, n. subg. of *Aphodius*, to include *validus*, Horn, and *hamatus*, Say; Horn, Tr. Am. Ent. Soc. xiv, p. 4.

Oxycorythus solskyi, Taschkent, Dokhtouroff, Hor. Ent. Ross. xxi, p. 345, n. sp.

Saprosites, Redt., characters noticed; Bates, Biol. Centr. Am. Col. ii (2) p. 92.

S. cossonoides, Mexico to Panama, p. 93, pl. vi, fig. 22, *cancellatus*, p. 92, *corticalis*, p. 93, Ega, Bates, *t. c.*, n. spp.

Euparia tuberculata, Panama, p. 94, pl. vi, fig. 23, Bates, Biol. Centr. Am. Col. ii (2), n. sp.

Ataenius complicatus, Har., p. 97, *carinator*, Har., *abditus*, Hald., *inops*, Horn, p. 101, noticed; Bates, Biol. Centr. Am. Col. ii (2).

A. insculptus, Florida, p. 70, *inops*, p 73, *laeviventris*, p. 74, Texas, *wenzelii*, Florida, p. 77, *inquisitus*, Texas, *californicus*, California, p. 84, Horn, Tr. Am. Ent. Soc. xiv; *A. liogaster*, p. 94, with var. *castaniellus*, p. 95, *cribrithorax*, p. 95, Mexico to Panama, *strigicauda*, Mexico to S. America and Antilles, p. 96, *euglyptus*, p. 97, *setiger*, *limbatus*, p. 98, Mexico, *polyglyptus*, with varr., Mexico to Panama, p. 99, *scalptifrons*, Mexico, Guatemala, pl. vi, fig. 25, p. 100, *mariarum*, Mexico, p. 102, Bates, Biol. Centr. Am. Col. ii (2) : n. spp.

Rhyssemus coluber, Tunis, Mayet, Bull. Soc. Ent. Fr. (6) vii, p. lxxxix; *R. obsoletus*, Central Asia, Reitter, Hor. Ent. Ross. xxi, p. 227; *R. cristatellus*, Mexico, Guatemala, Bates, Biol. Centr. Am. Col. ii (2) p. 102 : n. spp.

Psammodius hydropicus, Georgia, Horn, Tr. Am. Ent. Soc. xiv, p. 97; *P. culminatus*, *veracrucis*, Mexico, *micros*, Guatemala, p. 103, *integer*, Mexico, p. 104, Bates, Biol. Centr. Am. Col. ii (2) : n. spp.

Pleurophorus ventralis, N. America, Horn, Tr. Am. Ent. Soc. xiv, p. 92, n. sp.

Oxyomus porcatus, F., larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii. p. 196.

Ægialia rufescens = (*rufa*, Lec., *nec* Fab.), p. 100, *blanchardi*, *pusilla*, p. 102, *opifex*, p. 104, N. America, Horn, Tr. Am. Ent. Soc. xiv, n. spp.

Stenosternus costatus, Karsch, redescribed: it possesses tarsi and is referred to *Orphnides*; Karsch, B. E. Z. xxxi, pp. 4–6, pl. i, figs.

Catoxantus.

Agelia tricolor, Fairmaire, Westw., varr. *cribratum*, pl. vii, figs. 1 & 2, Fairmaire, Ann. Soc. L; Bates, Biol. Centr. Am. ii (2), p. 105.

Hybosorus curtulus, E. Africa, FAIRMAIRE, Ann. Soc. Ent Fr. (6 p. 115, n. sp.

Ochodæus præsidii, setulosus, pl. vii, fig. 3, Mexico, p. 106, *foliatus*, fig. 2, Panama, fig. 4, p. 107, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Celodes castaneus, Westw., figured, pl. vii, fig. 5; Biol. Centr. Am. Col. ii (2).

Athyreus fissicornis, Har., pl. vii, fig. 7, p. 109, *excavatus*, Kl., of which *mexicanus* and *lanuginosus*, Kl., are varr., p. 110, figured and noticed; BATES, Biol. Centr. Am. Col. ii (2).

Athyreus championi, p. 108, pl. vii, fig. 6, *tridenticeps*, fig. 8, p. 109, Panama, *catherinæ*, Brazil, p. 110, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Bolboceras sallæi, Mexico, pl. vii, fig. 9, *arcuatus*, Mexico to Nicaragua, fig. 10, p. 111, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Geotrupes foveatus, Marsh., note on this "pretended" species; CHALANDE, Bull. Soc. Toulouse, xx, pp. 81–86. *G. fronticornis*, pl. vii, fig. 11, *sturmi*, fig. 12, *mnizechi*, fig. 13, p. 113, *sallæi*, fig. 14, *viridi-obscurus* = (*saundersii*, Jek.), p. 113, *herbeus*, fig. 15, figured and noticed; BATES, Biol. Centr. Am. Col. ii (2).

G. guatemalensis, p. 114, pl. vii, fig. 16, *onitidipes*, Guatemala, fig. 17, *cavicollis*, Mexico, fig. 18, p. 115, BATES, Biol. Centr. Am. Col. ii (2); *G. impressiusculus*, p. 101, *semirugosus, cribripennis*, p. 102, *bicuspiferus, scutellatus, tennestriatus*, p. 103, West China, FAIRMAIRE, Ann. Ent. Belg. xxxi; *G.* (*Ceratophyus*) *sulcicornis*, Sikkim, *id.*, Bull. Soc. Ent. Fr. (6) vii, p. excii; *G.* (*Anoplotrupes*) *castanipennis*, p. 228, *G.* (*Phelotrupes*) *roborowskyi*, p. 229, *semenowi*, p. 230, Central Asia, REITTER, Hor. Ent. Ross. xxi : n. spp.

Trox acanthinus, Har., figured, pl. vii, fig. 19; Biol. Centr. Am. Col. ii (2). *T. insularis*, Chev., = (*foveicollis*, Har.); HORN, Ent. Am. iii, p. 145. *T. gigas*, Har., and other spp. noticed; TEPPER, Tr. R. Soc. S. Austr. ix, p. 12.

T. semmelinki, Java, p. 200, *castelnaui*, Australia, p. 201, LANSBERGE, Notes Leyd. Mus. ix, n. spp.

Pantolasius, n. g., p. 202, for *P. vethi*, n. sp., Sumatra, p. 203, LANSBERGE, Notes Leyd. Mus. ix.

Phœochridius, n. g. for *Liparochrus derasus*, Har.; LANSBERGE, Notes Leyd. Mus. ix, p. 201.

Amides simplicicollis, Costa Rica, p. 118, pl. vii, fig. 20, BATES, Biol. Centr. Am. Col. ii (2), n. sp.

Cleotus globosus, Say, in which are merged (*macleayi*, Perty, *stictieus*, and *antiquus*), and *punctieollis*, Er., *aphodioides*, Ill., p. 119, *metallicus*, Har., p. 124, *nitens*, Guer., p. 125, noticed; BATES, Biol. Centr. Am. Col. ii (2).

C. viridis, Mexico, p. 203, *pustulosus*, New Grenada, p. 204, LANSBERGE, Notes Leyd. Mus. ix; *C. reticularis*, Mexico, p. 120, *infantulus*, Guatemala, *sinuatus*, Mexico, Guatemala, pl. vii, fig. 21, p. 121, *strigilatus*, Mexico, p. 122, *excisus*, Guatemala, *bidens*, Panama, S. Am[illegible] fig. 22, *nasutus*, Mexico, *viridipennis*, Panama, p. 1[illegible] p. 125, BATES, Biol. Centr. Am. Col. ii (2) : n. sp[illegible]ER (622, 624), S[illegible]

Cranthocerus suturalis, Cayenne, p. 205, *brasiliensis*, Brazil, p. 206, (2) *latalus*, p. 207, *clypealis*, p. 208, Peru, LANSBERGE, Notes Leyd. Ts. ix; *A. eulampros*, Nicaragua, Panama, p. 126, pl. vii, fig. 23, *relucens*, Mexico to Panama, fig. 24, *vicarius*, Mexico, Guatemala, p. 127, *micros*, Mexico, *rotundicollis*, Panama, fig. 25, p. 128, BATES, Biol. Centr. Am. Col. ii (2) : n. spp.

Synarmostes aurora, Sumatra, *punctatissimus*, Malacca, p. 209, *striatulus*, Borneo, p. 210, *reticulatus*, Celebes, p. 211, LANSBERGE, Notes Leyd. Mus. ix, n. spp.

Glaphyrini.

Glaphyrus serratulæ, var. *villosipennis* ; QUEDENFELDT, Ent. Nachr. xiii, p. 322.

Aporolaus, n. g., *Aclopidæ*, p. 129, for *A. fimbriatus*, n. sp., Panama, p. 130, pl. viii, fig. 1 ; BATES, Biol. Centr. Am. Col. ii (2).

Chnaunanthus discolor, Burm., figured, p. 130, pl. viii, fig. 2 ; Biol. Centr. Am. Col. ii (2).

Melolonthini.

Eriesthis æquatoria, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 115, n. sp.

Dichelus (*Heterochelus*) *croceipennis*, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 116, n. sp.

Hoplia festiva, pl. viii, fig. 3, p. 131, *squamifera*, fig. 8, p. 134, figured and noticed ; BATES, Biol. Centr. Am. Col. ii (2).

H. gabriellina, *harpagon*, p. 104, *citrinella*, *campestris*, p. 105, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi ; *H. davidis*, p. 314, *semicastanea*, *mediocris*, p. 315, Pekin, *id.*, Rev. d'Ent. vi ; *H. asperula*, Mexico, p. 131, pl. viii, fig. 4, *disparilis*, Guatemala, fig. 5, *cretacea*, fig. 6, p. 132, *teapensis*, *inops*, Mexico, *argyritis*, Nicaragua, Costa Rica, fig. 7, p. 133, *subcostata*, *rotunda*, p. 134, *guatemalensis*, Guatemala, *albisparsa*, Mexico, fig. 9, *surata*, Costa Rica, fig. 10, p. 135, BATES, Biol. Centr. Am. Col. ii (2) : n. spp.

Phyllotocus vittatus, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 225, n. sp.

Serica herzi, Korea, HEYDEN, Hor. Ent. Ross. xxi, p. 264 ; *S. clypeata*, *subtruncata*, Yunnan, p. 109, *lignicolor*, Tchékiang, p. 110, FAIRMAIRE, Ann. Ent. Belg. xxxi : n. spp.

Trochalus seminitens, F., more fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 116.

T. infranitens, E. Africa, p. 117, *id. t. c.*, n. sp.

Anomalophylla, n. g, near *Homaloplia*, p. 231, for *A. tristicula*, n. sp., Central Asia, p. 232, REITTER, Hor. Ent. Ross. xxi.

Homaloplia : the European species tabulated ; REITTER, Wien. ent. Z. 89. p. 135. *H. irideomicans*, Fairm., more fully described ; FAIRMAIRE, *Catoxantha* Ent. Fr. (6) vii, p. 117.

Agelia tricolor, Fairm., p. 138, *diabolica*, Syria, *iris*, Balkan, *minuta*, FAIRMAIRE, Ann. Soc. Ent Wien. ent. Z. vi, n. spp

Camenta castaneipennis, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 118, n. sp.

Astena macilenta, Costa Rica, *opalicauda*, Nicaragua, p. 136, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Platydesmus, n. g. near *Scitala*, for *P. sulcipennis*, *flavipennis*, n. spp., Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 226.

Liogenys macropelma, Panama, pl. ix, fig. 19, *pubisternis*, fig. 20, p. 155, *pubereus*, fig. 21, p. 156, Mexico, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Macrodactylus mexicanus, Burm., p. 139, pl. viii, fig. 17, *lineatus*, Chev., p. 143, fig. 25, *longicollis*, Latr., p. 145, *dimidiatus*, Guer., ♂, *thoracicus*, Kirsch, pl. ix, fig. 7, p. 146, noticed or figured; BATES, Biol. Centr. Am. Col. ii (2).

M. variipes, pl. viii, fig. 16, p. 138, *infuscatus*, p. 139, *nigripes*, *silaonus*, fig. 18, *lineaticollis*, fig. 19, *fulvescens*, fig. 20, p. 140, *ocreatus*, fig. 21, *rhombiferus*, fig. 22, p. 141, Mexico, *zunilensis*, fig. 23, *sericeicollis*, fig. 24, Guatemala, *submarginatus*, p. 142, *impressus*, Mexico, *costulatus*, Guatemala, p. 143, *suavis*, Costa Rica, Panama, pl. ix, fig. 1, *sericinus*, Nicaragua, fig. 2, *sylphis*, Nicaragua and Panama, fig. 3, p. 144, *rufescens*, fig. 4, Mexico and Guatemala, p. 145, *championi*, fig. 5, Guatemala, *ovaticollis*, Panama, fig. 6, p. 146, *circe*, fig. 8, *murinus*, fig. 9, p. 147, Mexico, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Isonychus ocellatus, Burm., and varr. pl. ix, figs. 10–13, p. 148, *pictus*, Shp., fig. 14, figured and noticed; BATES, Biol. Centr. Am. Col. ii (2).

I. hirsutus, Panama, p. 148, *chiriquinus*, Panama, S. America, p. 149, *paradoxus*, Panama, p. 150, pl. ix, fig. 15, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Barybas auritus, Panama, pl. ix, fig. 16, p. 150, *idiota*, Nicaragua, S. America, *oxygenys*, Panama, *sublobatus*, Amazons, p. 151, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Pseudoserica, Guer., and *Philochlœnia*, Burm., synonymy and characters discussed, p. 152; *P. micans*, Kirsch, pl. ix, fig. 17, figured: BATES, Biol. Centr. Am. Col. ii (2).

P. setisparsa, Guatemala, Nicaragua, *amazonica*, Ega, p. 153, *integrata*, Panama, pl. ix, fig. 18, *longitarsis*, Amazons, p. 154, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Dejeania delauneyi, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 62, pl. iv, fig. 3, n. sp.

Faula pilatei, Har., pl. viii, fig. 11, *centralis*, fig. 12, figured, Biol. Centr. Am. Col. ii (2).

F. brunneipennis, Costa Rica, pl. viii, fig. 13, *hispida*, Panama, fig. 14, *velutina*, Mexico, fig. 15, p. 137, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Ancistrosoma buckleyi, n. n. for *A. vittigerum*, Sallé, *nec* Er.; SALLÉ, Bull. Soc. Ent. Fr. (6) vii, p. cxxvii.

Diplotaxis pilifera, pl. ix, fig. 22, *aenea* and *cribraticollis*, Bl., p. 159, *nitidicollis*, Bl., p. 160, noticed or figured by BATES, Biol. Centr. Am. Col. ii (2).

D. clypeata, Mexico, pl. ix, fig. 23, p. 157

(?) co to Costa Rica, fig. 24, p. 159, *nigriventris*, Mexico, *poropygæ*, co to Guatemala, p. 160, Bates, Biol. Centr. Am. Col. ii (2), n. spp.

Rhizonycha variolicollis, Fairm., more fully described; Fairmaire, An. Soc. Ent. Fr. (6) vii, p. 120.

S. caricollis, p. 120, *fulvonitens*, p. 121, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 120; *S. tenebrosa*, *mucorea*, Yunnan, *id.* Ann. Ent. Belg. xxxi, p. 108: n. spp.

Hypopholus setososquamea, Uzagara, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 119, n. sp.

Lepidiota sinuatifrons, Somali-land, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 119; *L. froggatti*, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 227: n. spp.

Proagosternus reichei, Th., is a *Lepidiota*, and = (*L. unicolor*, Lansb.); Borre, C.R. ent. Belg. 1887, p. xi.

Lachnosterna, synonymy of N. American species; Horn (322): revision of N. American; *id.* (323).

L. (*Holotrichia*) *bicolorea*, Korea, Heyden, Hor. Ent. Ross. xxi, p. 265; *Ancylonycha* (*Holotrichia*) *amplipennis*, China, Fairmaire, Ann. Ent. Belg. xxxi, p. 109; *L. hamata*, p. 220, *generosa*, p. 222, *prætermissa*, p. 223, *clemens*, p. 227, *hirtiventris*, p. 231, *postrema*, p. 233, *inversa*, p. 241, *bipartita*, p. 242, *vehemens*, p. 244, *politula*, *barda*, p. 248, *spreta*, p. 250, *infidelis*, p. 253, *luctuosa*, p. 254, *scitula*, p. 256, *implicita*, p. 262, *limula*, p. 264, *delata*, p. 267, *æmula*, *arcta*, p. 271, *vetula*, p. 274, *fucata*, *exorata*, p. 278, *ignava*, p. 280, *inepta*, p. 282, *affabilis*, *boops*, *ecostata*, p. 284, *lenis*, p. 287, *heterodoxa*, p. 289, *tusa*, p. 290, N. America, Horn, Tr. Am. Ent. Soc. xiv: n. spp.

Sophrops, n. g., near *Rhizotrogus*, for *S. parviceps*, n. sp., Yunnan; Fairmaire, Ann. Ent. Belg. xxxi, p. 106.

Metabolus, n. g., near *Lasiopsis*, for *M. tumidifrons*, n. sp., China; Fairmaire, Ann. Ent. Belg. xxxi, p. 107.

M. impressifrons, Pekin, Fairmaire, Rev. d'Ent. vi, p. 316, n. sp.

Granida annamensis, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 63, pl. iv, fig. 4, n. sp.

Melolontha: the European species and varieties tabulated and discussed; Reitter, Deutsche e. Z. xxxi, pp. 529–542, and Kraatz, *t. c.* pp. 543 & 544. *M. afflicta*, Ball., note on; Reitter, Wien. ent. Z. vi, p. 306. *M. vulgaris*, varr. *femoralis* and *extorris* discussed; *id. t. c.* p. 255. *M. hippocastani*, larva, habits; Sandahl (663).

M. fuscotestacea, Parnes, p. 538, *permira*, Circassia, p. 539, *clypeata*, Samarcand, p. 542 (*cf.* Kraatz, p. 544), Reitter, Deutsche e. Z. xxxi. n. spp.

Polyphylla laticollis, Japan, Lewis, Ent. M. M. xxiii, p. 231, n. sp.

Pachypoides limbipennis, Fairm., the genus and species more fully described, p. 122; the latter figured, pl. i, fig. 9: Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

Pachydema anthracina, Fairm., ♂ = (*decipiens*, Fairm.); Bedel, Ann. Ent. Fr. (6) vii, p. 196.

Catoxa: Tunis, Mayet, Bull. Soc. Ent. Fr. (6) vii, p. xciv, n. sp.

Agelia tricolor, Fairm., = (*maltzani*, Heyd.); Fairmaire, Bull. Fairmaire, Ann. Soc. Ent. [illegible]v.

Rutelini.

Rhinyptia subcostata, Somali-land, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 123, n. sp.

Phyllopertha ganglbaueri, Reitt., note on; REITTER, Wien. ent. Z. vi, p. 29.

P. semenowi, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 510; *P. cribricollis*, p. 105, *humeralis*, *suturata*, p. 106, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi : n. spp.

Euchlora concinna and *semipurpurea*, Burm., differentiated; SCHAUFUSS, Hor. Ent. Ross. xxi, p. 121.

Mimela testaceo-viridis, Bl., = (*Anomala surigera*, Heyd.); FAIRMAIRE, Rev. d'Ent. vi, p. 318.

Anomala pekinensis, Heyd., note on; FAIRMAIRE, Rev. d'Ent. vi, p. 318. *A. vitis*, ravages, &c.; JATTA & SAVASTANO (348).

A. ustulatipes, p. 122, *obscuroænea*, p. 123, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii; *A. sieversi*, Korea, HEYDEN, Hor. Ent. Ross. xxi, p. 266; *A. chamæleon*, Pekin, p. 317, FAIRMAIRE, Rev. d'Ent. vi; *A. cruralis*, p. 110, *costulata*, *opalina*, p. 111, *bioculata*, *rufozonula*, p. 112, Yunnan, *id.* Ann. Ent. Belg. xxxi : n. spp.

Spilota (*Amomala*) *acutisterna* and *plagiicollis*, Fairm., noticed; FAIRMAIRE, Rev. d'Ent. vi, pp. 318 & 319.

Callistethus compressidens, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 112, n. sp.

Popilia adamas, Newm., = (*cærulea*, Boh.); HEYDEN, Hor. Ent. Ross. xxi, p. 253.

P. distinguenda, *dorsofasciata*, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 124; *P. flavomaculata*, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 227; *P. cinnabarina*, *metallicollis*, p. 113, *pustulata*, *phylloperthoides*, p. 114, *sexguttata*, p. 115, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi : n. spp.

Adoretopsis, n. g., for *A. tenuitarsis*, Uzagara, n. sp., FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 125.

Adoretus uniformis, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii. p. 126, n. sp.

Parastasia discophora, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 121, n. sp.

Dicaulocephalus, n. g., near *Peperonota*, p. 623, for *D. fœv*, n. sp., Burma, p. 626, woodcut, p. 624; GESTRO, Ann. Mus. Genov. (2) v.

Dynastini.

Heteronychus latiusculus, p. 126, *truncaticeps*, p. 127, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii; *H. lansbergei*, Macassar, SCHAUFUSS, Hor Ent. Ross. xxi, p. 122; *H. bidentulus*, Pekin, FAIRMAIRE, Rev. d'Ent. vi, p. 319; *H. curtulus*, Yunnan, *id.* Ann. Ent. Belg. xxxi, p. 115: n. spp.

Pentodon minutus, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 156, n. sp.

Isodon glabricollis, Queensland, MACLEAY, [illegible] (622, 624), [illegible] p. 228, n. sp.

Chiroplatys inconspicuus, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 229, n. sp.

Temnorhynchus diana, four races distinguished and named; Kolbe, Nova Acta Ac. L.-C. Nat. cur. l, p. 258.

Oryctes nasicornis, structure of alimentary canal; Wertheimer (798).

Dipelicus cantori, note on the presumed ♂ of; Ritsema, Notes Leyd. Mus. ix, p. 214.

Neodipelicus, n. g., for *Dipelicus nasutus*, Bates, and others undescribed; Ritsema, Notes Leyd. Mus. ix, p. 215.

Xylotrupes beckeri, Schauf., noticed; Ritsema, Notes Leyd. Mus. ix, p. 215. *X. beckeri*, var. *metzneri*, Schaufuss, Hor. Ent. Ross. xxi, p. 123.

Chalcosoma atlas, pupa described; Lucas, Bull. Soc. Ent. Fr. (6) vii, p. xci.

Dynastes hyllus, Chevr., larva and pupa; Dugès, Ann. Ent. Belg. xxxi, p. 137, pl. i, figs. 1–5.

Phileurus chinensis, Fald., noticed and referred to *Heteronychus*; Fairmaire, Rev. d'Ent. vi, p. 319.

P. sclateri, British Guiana, Bates, P. Z. S. 1887, p. 490, woodcut, n. sp.

Cetonini.

[*Cf.* Dugès (185), Fairmaire (203, 204, 205), Kraatz (399), Künckel (see *Bothrorrhina*), Lansberge (416, 419), Lewis (438, 439), Nickerl (532), Reitter (622), Schewiroff (673), Waterhouse (791).]

Position of wings during flight; Lucas, Bull. Soc. Ent. Fr. (6) vii, pp. xcvii & xcviii.

Goliathus giganteus, Lam., variation of; Künckel, Bull. Soc. Ent. Fr. (6) vii, p. cxxxiv.

G. atlas, Guinea, Nickerl, S. E. Z. xlviii, p. 174, pl., n. sp.

Prigenia squamosa, Rits., figured; Midden-Sumatra, iv, 6, pl. ii, fig. 4.

Bothrorrhina radama, Madagascar, Künckel, Bull. Soc. Ent. Fr. (6) vii, p. 26, n. sp.

Gymnetis pantherina, Burm., *meleagris*, Burm., *lyncea*, Er., *lutulenta* and *pelochroma*, Kirsch, are all one species; Kraatz, Ent. Nachr. xiii, p. 360.

Clinteria revoili, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 127.

C. valida, E. India, Lansberge, Notes Leyd. Mus. ix, p. 164; *C. serdangensis*, Sumatra, *id. t. c.* p. 110; *C. davidis*, Fokien, Fairmaire, Ann. Ent. Fr. 1887, p. 116 : n. spp.

Mycterophallus, &c., ♂ characters of; Poll, Tijdschr. Ent. xxx, p. civ. "Einige Worte aus Anlass des Aufsatzes von Dr. Kraatz 'Ueber den systematischen Werth der Forceps-Bildung von Mycterophallus'"; Deutsche e. Z. xxxi, pp. 159 & 160.

Ischiopsopha pusilla, Aru Is.; Kraatz, Deutsche e. Z. xxxi, p. 154, n. sp.

Catoxantha semicastanea, p. 153, *prasina*, p. 154, Aru Is.; Kraatz, *Agelia tricolor*, Fairm., ibid.

Fairmaire, Ann. Soc. Ent. Fr. ed; Midden-Sumatra, iv, 6, pl. 2, fig. 5.

Chalcothea virens and *hasseltii*, Rits., figured; Midden-Sumatra, iv, 6, pl. ii, figs. 6 & 7.

Tæniodera crucicollis, p. 165, *oberthüri*, p. 166, *humilis*, p. 167, E. India, Lansberge, Notes Leyd. Mus. ix, n. spp.

Gnorimidia, n. g., near *Macronota*, p. 168, for *G. toya*, n. sp., E. India, p. 169; Lansberge, Notes Leyd. Mus. ix.

Doryscelis humbloti, Comoro Is., n. sp., informally characterized; Oberthür, Bull. Soc. Ent. Fr. (6) vii, p. ccii.

Euchilia quadrata, G. & P., = (*Pygora costifer*, Wat.); Poll, Notes Leyd. Mus. ix, p. 282.

Anochilia scapularis, G. & P., = (*punctatissima*, Wat.); Poll, Notes Leyd. Mus. ix, p. 282.

Coptomia apicalis, Wat., = (*iridoides*, Kr.); *rufo-varia*, Wat., = (*hildebrandti*, Kr.); *marginata*, Wat., = (*Pyrrhopoda mantis* and *P. cyanescens*, Kr.): Poll, Notes Leyd. Mus. ix, p. 282.

Pœcilopharis woodfordi, Solomon Is., Waterhouse, Ann. N. H. (5) xix, p. 289, n. sp.

Platedelosis, Kraatz, = (*Dichrosoma*, Kraatz), and *P. pinguis*, Jans., = (*D. lansbergei*, Kr.); Poll, Notes Leyd. Mus. ix, p. 185.

Elaphinis atomosparsa, Fairm., more fully described; Fairmaire, Ann. Soc. Ent Fr. (6) vii, p. 129.

Euryomia (*Euphoria*) *canescens*, larva and pupa described; Dugès, Ann. Ent. Belg. xxxi, p. 138, pl. i, figs. 6–9.

Anoplochilus limbicollis, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 128, n. sp.

Oxythyrea pantherina, Gory, = (*amina*, Coq.); Oberthür, Bull. Soc. Ent. Fr. (6) vii, p. ccii. *O. stictica*, L., metamorphoses; Schewiroff (673).

Tropinota hirta, larva noticed; Schewiroff (673).

Enoplotarsus deserticola, Luc., = (*costatus*, Luc., *fatima*, Coq., and *niveopicta*, Fairm.); Oberthür, Bull. Soc. Ent. Fr. (6) vii, pp. cci & ccii.

Leucocelis helenæ, Schaum., = (*cinctipennis*, Lansb.); Kraatz, Deutsche e. Z. xxxi, p. 158.

Cetonia crassa, Har., noticed; Fairmaire, Rev. d'Ent. vi, p. 320. *C. floricola*, larvæ of, and their relations to ants; Wassmann, Deutsche e. Z. xxxi, pp. 115–119. *C. trojana*, Gory, var. = (*tincta*, Germ.); Kraatz, Deutsche e. Z. xxxi, p. 157. *C. ciliata*, Ol., ♂ = *porcina*, Wall.); *id. t. c.* p. 158. *C. aurata*, L., mode of entering ants'-nest; Flach, S. E. Z. xlviii, p. 258: a new species of *Oxyuris* found in its alimentary canal; Ent. Nachr. xiii, p. 287. *C. aurata* and *Gnorimus nobilis* in copula; Lucas, Bull. Soc. Ent. Fr. (6) vii, p. clvi.

C. atomaria, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 116, n. sp.

Pachnoda marginella var. *euparypha*, Gerst, note on; Kraatz, Deutsche e. Z. xxxi, p. 156. *P. chionopleura*, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 131.

Glycyphana andamanensis, Jans., = (*Euryomia andamana*, Thoms.), Kraatz, Deutsche e. Z. xxxi, p. 158.

Glycyphana lateriguttata, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 117, n. sp.

[illegible] (622, 624), [illegible] sp.

Diplognatha gagates, Fab., and *silicea*, Macleay, treated as distinct species, with characters; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 131.

D. spinipennis, Tabora, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 132, n. sp.

Macroma ochreipennis, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 117, n. sp.

Callinomes opacus, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 118, n. sp.

Cymophorus sexfoveatus, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 132.

Cœnochilus obscuratus, Zanzibar, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 133, n. sp.

Inca sp., larva noticed; Kolbe, Ent. Nachr. xiii, p. 39.

Gnorimus armeniacus, Erzeroum, Reitter, Deutsche e. Z. xxxi, p. 528; *G. flavitarsis*, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 118 : n. spp.

Trichius viridiopacus, Japan, Lewis, Wien. ent. Z. vi, p. 49, n. sp.

Osmoderma davidis, Pekin, Fairmaire, Rev. d'Ent. vi, p. 321; *O. opica*, Japan, Lewis, Wien. ent. Z. vi, p. 49 : n. spp.

Valgus pilosus and *vethii*, Rits., figured; Midden-Sumatra, iv (6) pl. 2, figs. 8 & 9.

V. fumosus, *tuberculatus*, Japan, Lewis, Ann. N. H. (5) xix, p. 201; *V. albosquamosus*, Tabora, Fairmaire, Ann Soc. Ent. Fr. (6) vii, p. 133 : n. spp.

Buprestidæ.

[*Cf.* Fairmaire (203, 204, 205), Flach (230), Fleischer (231), Heyden (305, 306), Jakowleff (341, 342), Kerremans (371), Künckel (406), Lansberge (417), Poll (567, 569), Reitter (622), Waterhouse (263, 785, 787, 788, 791).]

Sternocera atrovirens, Ancey, = (*viridimicans*, Kerrem.), *revoili*, *foveopubens*, *cariosicollis*, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, pp. 135 & 136.

S. multiimpressa, p. 137, *apicipennis*, p. 138, Brawa, Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Julodis onopardi, tracheal system of; Künckel (406). *J. splendens*, Kl., and *vittipennis*, Fåhr., generic position noticed; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 139.

J. vagevittata, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 138, n. sp.

Amblysterna nyassica, Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 139, n. sp.

Steraspis villosiventris, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 139.

Catoxantha sarasinorum, Ceylon, Flach, S. E. Z. xlviii, p. 321, n. sp.

Agelia tricolor, Fairm., more fully described, p. 140, *obtusicollis*, p. 141, Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

A. morosa, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 141, n. sp.

Chrysapis brunneipennis, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 142.

Chalcophora procera, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 143.

Chrysodema simplex, Christmas I., Waterhouse, P. Z. S. 1887, p. 520, n. sp.

Mixochlorus, n. g., p. 177, near *Pelecopselaphus*, for *M. suturalis*, Honduras, n. sp., p. 178; Waterhouse, Tr. E. Soc. 1887.

Psiloptera pulchella, Luc., habits; Gounelle, Bull. Soc. Ent. Fr. (6) vii, p. cxc. *P. inæqualis*, *confossipennis*, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, pp. 144 & 145.

P. revoili, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 143; *P. monoglypta*, Caffraria, Lansberge, Notes Leyd. Mus. ix, p. 141 : n. spp.

Cæculus fulvocittis, Turcomania, Reitter, Deutsche e. Z. xxxi, p. 511, n. sp.

Pœcilonota davidis, Fokien, Fairmaire, Ann. Ent. Belg. xxxi, p. 120; *P.* (*Lampra*) *provostii*, Pekin, Fairmaire, Rev. d'Ent. vi, p. 321 : n. spp.

Buprestis rustica, L., n. varr. *signaticeps*, *bisornata*; Fleischer, Wien. ent. Z. vi, pp. 233 & 234. *B. hæmorrhoidalis*, Hbst., n. varr. *inframaculata*, *sibirica*; *id. t. c.* pp. 235 & 236; *cf.* Kraatz, *t. c.* p. 310.

Peronæmis, n. g., near *Cinyra*, for *P. thoracicus*, n. sp., Jamaica; Waterhouse, Tr. E. Soc. 1887, p. 178, woodcut p. 179.

Phrixia vittaticollis, Philippine Is., Waterhouse, Ann. N. H. (5) xix, p. 291, n. sp.

Engycera cumingii, Philippine Is., Waterhouse, Ann. N. H. (5) xix, p. 290, n. sp.

Notographus, Thoms., to be used in place of the prior *Notograptus*, Macleay, which is preoccupied; Poll, Notes Leyd. Mus. ix, p. 183.

Philanthaxia dorsalis, Java, Waterhouse, Ann. N. H. (5) xix, p. 290, n. sp.

Anthaxia fritschi, Mogador, Heyden, Deutsche e. Z. xxxi, p. 446; *A. psittacina*, Lower Amur, *id. t. c.* p. 303; *A. canaliculata*, *maculicollis*, Uruguay, Kerremans, C.R. ent. Belg. 1887, p. vi : n. spp.

Conognatha, habits of species of, at Minas Geraes; Gounelle, Bull. Soc. Ent. Fr. (6) vii, p. cxc.

Acmæodera acaciæ, Tunis, Mayet, Bull. Soc. Ent. Fr. (6) vii, p. xcv; *A. picturella*, Uruguay, Kerremans, C.R. ent. Belg. 1887, p. vi : n. spp.

Strobilodera plagifera, Fairm., genus and species more fully described, p. 147; the species figured, pl. ii, fig. 2 : Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

Sphenoptera coræbiformis, Fairm., = (*caroli*, Mars.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 196.

S. speciosa, Caucasus, p. 110, *mixta*, Asia Minor, *adusta*, Akhal-Tekke, p. 111, *dichroa*, Asia Minor, p. 112, *barbata*, Ala-Taou, *montana*, p. 113, and *plana*, Turkestan, p. 114, *mongolica*, N. China, *ærtzeni*, Ægina, p. 115, *pubernla*, Askhabad, p. 116, *vestita*, Caucasus, *wilkinsi*, Turkestan, p. 117, Jakowleff, Rev. d'Ent. vi; *S. sculpticollis*, Caucasus, &c., p. 53, *sphæro-*

cephala, Syria, p. 54, *kraatzi* = (*dubia*, Kr.), Turkestan, p. 56, *incerta*, Caucasus, p. 57, *errata*, p. 62, *mœsta*, p. 64, Persia, *signata*, S. Russia, p. 65, *cœsa*, Sardinia, p. 68, *pilosula*, Carthagena, p. 69, *prolongata*, Asia Minor, p. 76, *strigosa*, Turkestan, p. 71, *christophi*, Persia, p. 73, *parnassica*, Parnassus, p. 74, *crassiceps*, Asia Minor, p. 75, *modesta*, Syria, p. 76, *bicarinata*, Persia, p. 77, *anthracina*, Persia, p. 78, *thoracica*, Caucasus, p. 80, *kruperi*, Parnassus, p. 81, *sieversi*, Caucasus, p. 82, *varia*, Turkestan, p. 83, *signaticollis*, Mesopotamia, p. 85, *id.* Hor. Ent. Ross. xxi : n. spp.

Armenosoma, n. g., p. 292, near *Sphenoptera*, for *A. atrum*, n. sp., C. of Good Hope, p. 293; Waterhouse, Ann. N. H. (5) xix.

Corœbus æneipennis, Vill., = (*fulgidicollis*, Luc.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 196.

Discoderes humeralis, Madagascar, Waterhouse, Ann. N. H. (5) xix, p. 293, n. sp.

Maschalix, n. g., near *Amorphosoma*, p. 293, for *M. latipennis*, n. sp., Queensland, p. 294, Waterhouse, Ann. N. H. (5) xix.

Chalcangium longipenne, Mexico, p. 33, pl. iii, figs. 1 & 1*a*, Waterhouse, Biol. Centr. Am. Col. iii (1), n. sp.

Colobogaster puncticollis, Mexico, Nicaragua, p. 33, pl. iii, fig. 2, Waterhouse, Biol. Centr. Am. Col. iii (1), n. sp.

Chrysobothris: Waterhouse recognizes 36 Central American species, and figures or notices *ichthyomorpha*, Th., pl. iii, fig. 3, *capitata*, Lap. & G., = (*designata*, Th.), p. 36, *nausicaa*, Th., p. 38, *guatemalensis*, Th., p. 40 & fig. 12, *chactas*, Lap. & G., = (*inca* and *inca*, Th.), p. 41, *acutipennis*, Chev., p. 42 & fig. 14 *multistigmosa*, Mann., = (*atabalipa*, Lap. & G.), p. 46, Biol. Centr. Am. Col. iii (1). *C. impressifrons*, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 146. *C. chrysœla*, Ill., metamorphoses, pp. 171 & 172, figure pl. xiv, fig. 8; Hubbard, Ins. Orange.

Chrysobothris pulchripes, Pekin, Fairmaire, Rev. d'Ent. vi, p. 322; *C. sinensis*, Kiang-si, *delavayi*, Yunnan, *id.* Ann. Ent. Belg. xxxi, p. 119; *C. belti*, Nicaragua, p. 35, pl. iii, fig. 4, *astuta*, Mexico, fig. 5, *sallæi*, Mexico, to Nicaragua, fig. 6, p. 37, *convexiuscula*, Nicaragua, Colombia, fig. 7, *juncta*, fig. 8, p. 38, *trisignata*, fig. 9, *socialis*, fig. 10, p. 39, Mexico, *trochilus*, Panama, Para, fig. 11, p. 40, *foveata*, p. 41, *inæqualis*, p. 42, fig. 13, Mexico, *insidiosa*, Panama, fig. 15, *quadriplagiata*, fig. 16, p. 43, *simplex*, fig. 17, *stellifera*, fig. 18, p. 44, Mexico, *costifrons*, N. America, Mexico, p. 45, fig. 19, *modesta*, p. 46, *lateralis*, p. 47, fig. 20, Mexico, Waterhouse, Biol. Centr. Am. Col. iii (1) : n. spp.

Amyia punctipennis, Parana, *cribrata*, Brazil?, Waterhouse, Ann. N. H. (5) xix, p. 447, n. spp.

Aristosoma ? crassum, S. Africa, Waterhouse, Ann. N. H. (5) xix, p. 291, n. sp.

Callipyndax, n. g., near *Amyia*, p. 294, for *C. cupreiventris*, n. sp., Brazil, p. 295, Waterhouse, Ann. N. H. (5) xix.

Amorphosoma penicillatum, Kl., figured, pl. iv, fig. 1; Biol. Centr. Am. Col. iii (1).

Agrilus cavata (sic), Chev., = (*texanus* (sic), Cr.); Horn, Ent. Am. iii, p. 145.

Agrilus coriaceus, Urugnay, p. vi, *foveicollis*, Banda or., p. vii, KERREMANS, C.R. ent. Belg. 1887 : n. spp.

Trypantius, n. g., for *Stenogaster bitæniatus*, Chev., and *T. infrequens*, n. sp., Mexico ; WATERHOUSE, Tr. E. Soc. 1887, p. 179.

Cyphothorax, n. g., for *Stenogaster palleolatus*, Chev. ; WATERHOUSE, Tr. E. Soc. 1887, p. 180.

Antarcontes, n. g., p. 180, for *Agrilus mucoreus*, Klug., and *A. planus*, *pictiventris*, p. 181, Amazons, *abdominalis*, Nicaragua, p. 182, n. spp. ; WATERHOUSE, Tr. E. Soc. 1887.

Stenogaster costifer, Mexico to Nicaragua, p. 48, pl. iv, fig. 2, WATERHOUSE, Biol. Centr. Am. Col. iii (1), n. sp.

Omochyseus, n. g., near *Agrilus*, for *O. humeralis*, Brazil (possibly *Agrilus omocyrius*, Thoms.), p. 182, and *O. terminalis*, Mexico, p. 183, n. spp. ; WATERHOUSE, Tr. E. Soc. 1887.

Paradomorphus, n. g., p. 183, for *P. albicollis*, Jamaica, n. sp., p. 184, and to include *Agrilus frontalis*, Lap. & G., and some others ; WATERHOUSE, Tr. E. Soc. 1887.

Janthe zanzibarica Fairm., redescribed, its locality is Somali-land ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 148.

Brachys æreosa and *ovata*, habits of ; GILLETTE, Canad. Ent. xix, p. 138.

B. tucumana, S. America, KERREMANS, C.R. ent. Belg. 1887, p. vii, n. sp.

Trachys frenchi, Queensland, POLL, Notes Leyd. Mus. ix, p. 125 ; *T. apicalis*, Celebes, *id. t. c.* p. 181 : n. spp.

THROSCIDÆ, EUCNEMIDÆ, and ELATERIDÆ.

[*Cf.* BUYSSON (109), CANDÈZE (118, 119, see also "Corrigenda"), FAIRMAIRE (204, 205), FLEUTIAUX (232), HEYDEN (307), KOLBE (381, 387), KÜNCKEL (406), REITTER (610, 622), REY (632).]

Trixagus exul, Bonv., ♂, = (*aurociliatus*, Reitt.) ; REITTER, Wien. ent. Z. vi, p. 29.

Cerophytum elateroides, Latr., larva described ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 253.

Melanus sculptus, Broun, figured, pl. 174, fig. 4 ; WATERHOUSE, Aid.

Elateridæ, structure of tracheæ, and other distinctions from *Buprestidæ* ; KÜNCKEL (406).

Tabulation of the Swiss *Elateridæ* completed by STIERLIN, Coleoptera helvetiæ, pp. 33–56.

Dubiously *Elateridean* luminous larva described ; JHERING (352).

Agrypnus gattarosus, Fairm., more fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 148.

A. hageni, p. 189, *sobrinus*, p. 190, Sumatra, CANDÈZE, Notes Leyd. Mus. ix, n. spp.

Alaus revoili, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 149, n. sp.

Lacon herzi, Korea, KOENIG, Hor. ent. Ross. xxi, p. 353 ; *L. pallidus*, Sumatra, CANDÈZE, Notes Leyd. Mus. ix, p. 190 ; *L. van de polli*, N. Australia, *id. t. c.* p. 285 : n. spp.

Alaus excavatus, F., ?, larva described ; KOLBE, Ent. Nachr. xiii, pp. 19–22 & 36.

Lycoreus bicarinatus, Quedf., problematic larva discussed ; KOLBE, Ent. Nachr. xiii, pp. 33–36, fig. 1.

Semiotopsis, n. g., near *Semiotus*, for *S. ungulata*, n. sp., Colombia, CANDÈZE, p. 187, Notes Leyd. Mus. ix.

Campsosternus davidis, Fokien, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 120, n. sp.

Tetralobus cavifrons, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 149, n. sp.

Psephus somalius, russatus, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 152 : n. spp.

Ischiodontus contemptus, W. Africa, KOLBE, Nova. Acta Ac. L.-C. Nat. cur. l, p. 274, n. sp.

Monocrepidius tumidus, squalescens, N. Australia, CANDÈZE, p. 286, Notes Leyd. Mus. ix, n. spp.

Æolus sericeus, Turkestan, REITTER, Deutsche e. Z. xxxi, p. 512, n. sp.

Elater pomonæ, Steph., varieties described ; BUYSSON, Bull. Soc. Ent. Fr. (6) vii, p. xc. *E. subdepressus*, Rey, larva described ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 206. *E. ochropterus* and allies ; REITTER, Wien. ent. Z. vi, p. 211. *E. cœnobita*, Costa, = (*ochripennis*, Reitter *infra*) ; *id. t. c.* p. 305.

E. ochripennis, Greece, *circassius*, p. 212, *auranticulus*, Caucasus, *ochrinellus*, Crimea, p. 213, REITTER Wien. ent. Z. vi, n. spp.

Isidus moreli, Rey, ♀ described ; BUYSSON, Bull. Soc. Ent. Fr. (6) vii, p. lxxxix.

Megapenthes fulvescens, Derbent, REITTER, Deutsche e. Z. xxxi, p. 512 ; *M. lituratus, futilis*, N. Australia, CANDÈZE, p. 287, Notes Leyd. Mus. ix : n. spp.

Melanoxanthus granum, Sumatra, CANDÈZE, Notes Leyd. Mus. ix, p. 191, n. sp.

Cryptohypnus consobrinus, Muls., = (*frigidus*, Kies.) ; BUYSSON, Bull. Soc. Ent. Fr. (6) vii, p. ccxiii.

Cardiophorus signatus, Ol., = (*sexmaculatus*, Luc.), p. 196 ; *C. argiolus*, Géné., var. = (*hipponensis*, Desbr.), p. 197, *numida*, Cand., = (*lethierryi*, Desbr.), and *musculus*, Er., = (*ænescens*, Desbr.), p. 197 : BEDEL, Ann. Soc. Ent. Fr. (6) vii.

Melanotus rufipes, Herbst., p. 204, *tenebrosus*, Er., p. 206, larvæ described ; REY, Ann. Soc. L. Lyon. (2) xxxiii.

Cratonychus dichroüs, Er., = (*amplithorax*, Muls.) ; *C. aspericollis*, Muls., noticed ; BUYSSON, Bull. Soc. Ent. Fr. (6) vii, p. cxxxiii.

Limonius quercus, Ol., = (*lythrodes*, Germ.) ; BUYSSON, Bull. Soc. Ent. Fr. (6) vii, p. ccxii. *L. cylindricus*, Payk., p. 202, *nigripes*, Gyll., p. 204, larvæ described ; REY, Ann. Soc. L. Lyon (2) xxxiii.

Athous herbigradus, Muls., var. = (*chamboveti*, Muls.) ; BUYSSON, Bull. Soc. Ent. Fr. (6) vii, p. cxxxii. *A. brevicornis*, Desbr., redescribed, p. xcv : *A. vittatus*, Fabr., var. = (*semipallens*, Muls.), p. xcvii ; *id. t. c.*, *A. difformis*, Lac., larva described, p. 200, *puncticollis*, Kies., larva noticed, p. 202 ; REY, Ann. Soc. L. Lyon (2) xxxiii.

Pyrophorus, larvæ of the genus discussed ; KOLBE, Ent. Nachr. xiii, p. 36.

Liotrichus angustulus, Kies., note on ; Buysson, Bull. Soc. Ent. Fr. (6) vii, p. cxxxiii.

Metanomus, n. subg. for *Corymbites montivagus*, Ros., = (*Athous acutus*, Muls.) ; Buysson, Bull. Soc. Ent. Fr. (6) vii, p. cxxxiii.

Corymbites semicribrosus, Zanzibar, Fairmaire, Ann. Soc. Ent. Fr. (6), vii, p. 153 ; *C.* (*Calosirus*) *melas*, Caucasus, p. 353, *C.* (*Dicanthus*) *paradoxus*, Sergiopol, p. 354, Koenig, Hor. Ent. Ross. xxi : n. spp.

Crepidomenus ovalis, N. Australia, Candèze, Notes Leyd. Mus. ix, p. 288, n. sp.

Hapatesus pretiosus, N. Australia, Candèze, Notes Leyd. Mus. ix, p. 287, n. sp.

Ludius turanicus, Askhabad, p. 513, *taygetanus*, Taygetos, p. 514, Reitter, Deutsche e. Z. xxxi, n. spp.

Doloporus, n. g. near *Ectinus*, p. 289, for *D. aterrimus*, *thoracicus*, n. spp., N. Australia, p. 290, Candèze, Notes Leyd. Mus. ix.

Agonischius delauneyi, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 64, pl. 4, fig. 5 ; *A. semiflavus*, p. 288, *brevis*, p. 289, N. Australia, Candèze, Notes Leyd. Mus. ix ; *A. vittiger*, Korea, Heyden, Hor. Ent. Ross. xxi, p. 267 : n. spp.

Silesis, revision of the European species ; Buysson, Rev. d'Ent. vi, pp. 140–145. *S. rutilipennis*, Ill., = (*Adrastus bicolor*, Lucas) ; Buysson, Bull. Soc. Ent. Fr. (6) vii, p. xcvii.

Dicronychus flabellicornis, p. 150, *bifidicornis*, p. 151, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Cebrionidæ and Rhipidoceridæ.

[*Cf.* Fairmaire (209), Lewis (435).]

Cebriorhipis uniformis, China, Fairmaire, Notes Leyd. Mus. ix, p. 145, n. sp.

Callirhipis maculosa, p. 147, *pinguis*, p. 151, China, *impressicollis*, *scutellata*, p. 148, *laticeps*, p. 150, Sumatra, Fairmaire, Notes Leyd. Mus. ix, n. spp.

Simianus treated as distinct from *Callirhipis* ; Fairmaire, Notes Leyd. Mus. ix, p. 154. *S. terminatus*, Sumatra ; *id. t. c.* p. 155, n. sp.

Hæmorhipis, n. g., p. 152, for *H. croceosellata*, *l. c.*, *mesomelæna*, *usta*, p. 153, n. spp., Sumatra ; Fairmaire, Notes Leyd. Mus. ix.

Sandalus segnis, Japan, Lewis, Ent. xx, p. 315, n. sp.

Dascillidæ.

[*Cf.* Fauconnet (213), Reitter (622), Schaufuss (672).]

The Swiss groups, genera, and species of the family tabulated by Stierlin, Coleoptera helvetiæ, pp. 57–63.

Scirtes pallidus, Macassar, Schaufuss, Hor. Ent. Ross. xxi, p. 125, n. sp.

Microcara baylei (fossil in amber) ; Fauconnet, Mém. Soc. Saône, vi, p. 144.

Eucinetus bicolor, S. Russia, *oertzeni*, Greece, Reitter, Deutsche e. Z. xxxi, p. 514, n. spp.

TELEPHORIDÆ (MALACODERMIDÆ).

[*Cf.* ABEILLE (304, 305), ATKINSON (21), BOURGEOIS (82, 83, 84), DUBOIS (183), FAIRMAIRE (204, 205), KOLBE (386), MACLEAY (465), OLIVIER (536), PASCOE (556), REITTER (624), REY (632), RILEY (643), SCHAUFUSS (672), WEISE (797).]

Number and position of stigmata in larvæ ; HAASE (287).

Lycides.

Lycus sp., larva noticed ; KOLBE, Ent. Nachr. xiii, pp. 37–39.

L. bourgeoisii, Fairm., more fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 153.

L. rectus, Macassar, p. 127, *curvipes*, Atchin, p. 128, SCHAUFUSS, Hor. Ent. Ross. xxi, n. spp.

Metriorrhynchus thoracicus, F., note on, p. 130, SCHAUFUSS, Hor. Ent. Ross. xxi.

M. sericeicollis, Atchin, p. 130, *specularis*, Macassar, p. 131, SCHAUFUSS, Hor. Ent. Ross. xxi ; *M. elongatus*, p. 229, *centralis*, *serraticornis*, *foliatus*, p. 230, *hirtipes*, p. 231, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Xylobanus fumosus, p. 231, *longicornis*, *miniaticollis*, p. 232, *ampliatus*, *ater*, *froggatti*, p. 233, *atripennis*, p. 234, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii ; *X. cinnaberinus*, p. 128, *rusticus*, p. 129, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi : n. spp.

Dictyoptera bella, Macassar, SCHAUFUSS, p. 131, Hor. Ent. Ross. xxi, n. spp.

Calopteron angulicolle, Luc., varr. noticed ; BOURGEOIS, Bull. Soc. Ent. Fr. (6) vii, p. liii.

Emplectus stipatus, Tijuca, BOURGEOIS, Bull. Soc. Ent. Fr. (6) vii, p. lxvi, n. sp.

Cladophorus posticalis, *testaceicollis*, p. 234, *miniatus*, p. 235, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii : n. spp.

Eros basicornis, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 155, n. sp.

Plateros brasiliensis, Luc., varr. described ; BOURGEOIS, Bull. Soc. Ent. Fr. (6) vii, p. liv.

P. ustipennis, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 154, n. sp.

Trichalus angustulus, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 235, n. sp.

Calochromus excellens, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 132, n. sp.

Homalisides are entitled to family value ; BOURGEOIS, C.R. Ass. Sci. Fr. (2) xv, p. 161.

Lampyrides.

Emery's paper (Bull. Ent. Ital. 1886) translated into German, under title of Hochzeitsfackeln der Leuchtkäfer ; S. E. Z. xlviii, pp. 201–206.

Unknown larvæ described ; Lucas, Bull. Soc. Ent. Fr. (6) vii, pp. xxxv & xxxvi.

Lucernuta (sic) *flaviventris, nigro-flava, fumata*, Fairm., referred to *Pyrocælia* ; Fairmaire, Ann. Ent. Belg. xxxi, p. 122.

Pyrocælia analis, Fab. (sub *Lampyris*) = (*foochowensis*, Gorh.) ; Fairmaire, Ann. Ent. Belg. xxxi, p. 121.

Lampyris, luminosity of eggs ; Dubois, (183) and C.R. Ass. Sci. Fr. (2) xv, p. 155.

Lampyris mutabilis, Ol., ♀ described ; Bull. Soc. Ent. Fr. (6) vii, p. cxvii. *L. raymondi*, Muls., p. 211, *bellieri*, Reiche, p. 214, larvæ described ; Rey, Ann. Soc. L. Lyon. (2) xxxiii.

L. rugicollis, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 155 ; *L.? platyptera*, Yunnan, *id.* Ann. Ent. Belg. xxxi, p. 122 : n. spp.

Luciola galactopyga, Fairm., more fully described ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 157.

L. brevicollis, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 156 ; *L. stigmaticollis*, Yunnan, *id.*, Ann. Ent. Belg. xxxi, p. 123; *L. perpetiuscula*, C. of Good Hope, Kolbe, Ent. Nachr. xiii, p. 72 : n. spp.

Photuris aurea, Brazil, Olivier, Bull. Soc. Ent. Fr. (6) vii, p. ccxi, n. sp.

Zarhipis riversii, ♀ noticed ; Riley, Ent. M. M. xxiv, p. 148.

Telephorides.

Phengodes laticollis, Horn, ♀ described, and particulars as to luminosity ; Atkinson (21) : ♀ noticed ; Riley, Ent. M. M. xxiv, p. 148.

Chauliognathus xanthomelas, Perty, = (*disparipennis*, Bourg. *infra*) ; Bourgeois, Bull. Soc. Ent. Fr. (6) vii, p. cxcii.

C. lyciformis, disparipennis, Brazil, Bourgeois, Bull. Soc. Ent. Fr. (6) vii, p. cxxxi, n. spp.

Rhagonycha : table of characters and descriptions of species of France ; Bourgeois, Faune Gall.-rhen. iv, pp. 133–157. *R. pallida*, F., larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 216.

R. bothridera, Fokien, Fairmaire, Ann. Ent. Belg. xxxi, p. 125 ; *R.* (*Absidia*) *discreta*, France, Bourgeois, Faune Gall.-rhen. iv, p. 134 : n. spp.

Telephorus nigroverticalis, p. 123, *metallicipennis*, Yunnan, *gibbicollis*, p. 124, *pluricostatus*, p. 125, Fokien, Fairmaire, Ann. Ent. Belg. xxxi ; *T. mossmanni*, p. 235, *rubriceps, ruficentris*, p. 236, *froggatti*, p. 237, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii : n. sp.

Pygidia : the species of France tabulated and described ; Bourgeois, Faune Gall.-rhen. iv, pp. 151 *et seq.*

Selenurus apicalis, p. 237, *annulatus, viridipennis*, p. 238, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Eusilis, n. g. for *Silis sexdentata*, Mann. ; Reitter, Hor. Ent. Ross. xxi, p. 233.

Malthodes obliquus, Silesia, p. 53, *funditor*, Transylvania, p. 56, *quadrifidus*, Macugnaga, p. 58, Weise, Z. Ent. Bresl. xii, n. spp.

Drilides.

Selasia pulchra, Delagoa Bay, pl. i, fig. 8, *laticeps*, Bombay, Pascoe, p. 11, Ann. N. H. (5) xx, n. spp.

Eugeusis nigripennis, Burmah, Pascoe, Ann. N. H. (5) xx, p. 10, pl. i, fig. 7, n. sp.

Melyrides.

Hapalochrus janthinus, p. 157, *malachioides*, p. 159, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii; *H. flavosellatus*, Tchékiang, *id.*, Ann. Ent Belg. xxxi, p. 126 : n. spp.

Attalus hauseri, Turkestan, Abeille, Deutsche e. Z. xxxi, p. 324; *A. heydeni*, *id. t. c.* p. 447 : n. spp.

Dasytes letzneri, Silesia, Weise, Z. Ent. Bresl. xii, p. 55, n. sp.

Haplocnemus limbipennis, Kies., = (*rufo-marginatus*, Perr.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 197.

Julistus, remarks on the genus, and *J. floralis*, Ol., *memnonius*, Kies.; Weise, Deutsche e. Z. pp. 186 & 187.

Danacaina, n. g. for *D. bicolor*, n. sp., Central Asia; Reitter, Hor. Ent. Ross. xxi, p. 234.

Prionocerus brevicornis, Macassar, *forticornis*, Philippines, Schaufuss, Hor. Ent. Ross. xxi, p. 126, n. spp.

Cleridæ.

[*Cf.* Fairmaire (204, 205, 211), Hoffmann (314).]

Tillus fissicollis, p. 161, *fulvoplagiatus*, p. 162, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Cymatodera balteata, Lec., = (*fallax*, Horn); Horn, Ent. Am. iii, p. 145.

Opilus cyaneopurpureus, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 164.

Cleroides formicarius, n. var. *semifasciatus*; Fleischer, Wien. ent. Z. vi, p. 237.

Mutilloides, n. g., for *M. albido-fasciatus*, n. sp., Natal; Fairmaire, p. 197, Notes Leyd. Mus. ix.

Diplophorus, n. n. for *Diplocladus*, Fairm.; *D. acuticollis*, Fairm., more fully described, p. 160, figured, pl. ii, fig. 4: Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

D. tilloides, Somali-land, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 161, n. sp.

Erymanthus revoili, Uzagara, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 163, n. sp.

Stigmatium delatouchii, Fokien, Fairmaire, Ann. Ent. Belg. xxxi, p. 126, n. sp.

Emmepus, Motsch., = (*Brachyclerus*, Fairm.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 197.

Phymatophæa testacea, fig. 2, and *ignea*, Broun, fig. 3, figured, pl. 174; Waterhouse, Aid.

Agonolia konowi, Fiume, Hoffmann, Deutsche e. Z. xxxi, p. 96, n. sp.

Lymexylonidæ.

[*Cf.* Fairmaire (209).]

Hylecœtus lateritius, Surinam, Fairmaire, Notes Leyd. Mus. ix. p. 156, n. sp.

Ptinidæ.

[*Cf.* Fleutiaux (232), Pascoe (556), Rey (632), Weise (797).]

Bruchus desertorum, n. n. for *B. damascenus*, Reitt. ; *B. damascenus*, Baudi, = (*ganglbaueri*, Reitt. : Reitter, Wien. ent. Z. vi, p. 29.

Episernus granulatus, Silesia, Weise, Z. Ent. Bresl. xii, p. 59, n. sp.

Gibbium scotias, note on ; Kolbe, Ent. Nachr. xiii, p. 341.

Ernobius mulsanti, Kies., = (*anabaptista*, Gozis, and *L. angusticolle*, Muls.) ; *E. angusticolle*, Redt., = (*L. parvicolle*, Muls.) : Rey, Bull. Soc. Ent. Fr. (6) vii, p. lxxiv.

Dorcatoma pilosella, Muls., larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 221.

Lasioderma parallela, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 65, n. sp.

Clada, n. g., near *Ptilinus*, p. 9, for *C. waterhousei*, n. sp., Grahamstown, p. 10, pl. i, fig. 4 ; Pascoe, Ann. N. H. (5) xx.

Bostrichidæ and Cioidæ.

[*Cf.* Reitter (622).]

Apate producta, Imh., = (*semicostata*, Th., and *ludovici*, Fairm.) ; Fairmaire, Bull. Soc. Ent. Fr. (6) vii, p. xxxiv.

Dysides, Perty, = (*Apoleon*, Gorh.) ; Fairmaire, Notes Leyd. Mus. ix, p. 212.

Xylopertha retusa, Ol., = (*sinuata*, Fab.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 197.

Dinoderus substriatus, Payk., = (*quadricollis*, Fairm. & Mars.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 197.

Lyctus unipunctatus, Hbst., note on ; Leesberg, Tijdschr. Ent. xxx, p. xvii.

Cis aurosericeus, E. Siberia, Reitter, Deutsche e. Z. xxxi, p. 515, n. sp.

Trictenotomidæ.

Trictenotoma : neuration of wings is that of *Heteromera* ; Lameere, C.R. ent. Belg. 1887, p. xliii.

Tenebrionidæ and Cistelidæ.

[*Cf.* Allard (4, 6), Aurivillius (25), Ballion (32), Brisout (95), Champion (263), Fairmaire (203, 204, 205), Fleutiaux (232), Heyden (304, 307), Lewis (433, 434), Lindeman (446), Macleay (465, 466), Müller (519), Pascoe (556), Quedenfeldt (587), Reitter (618, 622, 625), Rey (632), Schaufuss (672), Sénac (703), Waterhouse (788).]

Zophosiides, Erodiides, Adesmiides.

Zophosis aciculaticollis, Zambesi, Müller, Tijdschr. Ent. xxx, p. 297 ; *Z. myrmido*, *picipennis*, p. 165, *subcostulata*, p. 166, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii : n. spp.

Arthrodeis laxepunctatus, p. 167, *nitidiventris*, p. 168, more fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

A. cyphonotus, p. 166, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Adesia nigrogemmata, Zanzibar, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 168, n. sp.

Tentyriides.

Carchares, n. g., near *Triorophus*, p. 12, for *C. macer*, n. sp., Ngami, p. 13, pl. i, fig. 3; PASCOE, Ann. N. H. (5) xx.

Anatolica integra, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 355; *A. ebenina*, Pekin, FAIRMAIRE, Rev. d'Ent. vi, p. 323: n. spp.

Scythis humeridens, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 356, n. sp.

Dordanea, n. g., p. 357, near *Pachychila*, for *D. elegans*, n. sp., Central Asia; REITTER, Hor. Ent. Ross. xxi, p. 358.

Pachychila humerosa, Fairm., referred to *Homala*, Esch.; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 197.

Homala agona and *integricollis*, Fairm., more fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 169.

H. marginicollis, *planiuscula*, Somali-land, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 170, n. spp.

Microdera transversicollis, Turcomania, REITTER, Deutsche e. Z. xxxi, p. 517, n. sp.

Tentyria: BEDEL tabulates the Algerian species; *mulsanti*, Luc., = (*oblongipennis*, Fairm.), *longicollis*, Luc., = (*leptidea*, Fairm.), *gibbicollis*, Luc., = (*strauchi*, Kr.), p. 198; *T. transversicollis* and *scuticollis*, Fairm., systematic position queried; Ann. Soc. Ent. Fr. (6) vii, p. 197.

T. fossulata, Algeria, BRISOUT, Bull. Soc. Ent. Fr. (6) vii, p. cxcii; *T. przewalskyi*, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 359: n. spp.

Isonota, n. g., near *Rhytinota*, for *L. opaca*, n. sp., Somali-land, p. 171, pl. ii, fig. 4; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Rhytinota angulicollis, p. 171, *oxyoma*, Fairm., p. 172, more fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Mesostenopa sericea, Fairm., more fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 174.

M. infima, Somali-land, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 173, n. sp.

Micipsa cavifrons, Fairm., = (*gastonis*, Fairm.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 198.

Dengitha, n. g., near *Hegeter*, p. 516, for *D. lutea*, Turcomania, n. sp., p. 517; REITTER, Deutsche e. Z. xxxi.

Nothrocerus, n. g., near *Hyperops*, p. 174, for *N. cylindricornis*, n. sp., E. Africa, p. 175; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Zopherides, Adelostomides, Stenosides.

Phellopsis suberea, Japan and Siberia, LEWIS, Ent. xx, p. 219, n. sp.

Periseptus perforatus, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 176, n. sp.

Eurychora setosula, Zanzibar, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 176, n. sp.

Machlopsis, Pomel, = (*Hidrosis*, Haag); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 199.

Lycanthropa quadrata, Somali-land, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 177, n. sp.

Stenosis fulvipes, Reiche, = (*canaliculata*, Miller); *S. dilutipes*, n. n. for *fulcipes*, Reitt.; REITTER, Wien. ent. Z. vi, p. 77.

Akisides, Blaptides.

Cyphogenia semicarinata, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 360, n. sp.

Akis elegans, Charp., var. described; HEYDEN, Deutsche e. Z. xxxi, p. 441.

Blapimorpha davidea, Pekin, ALLARD (4), n. sp.

Itagonia, n. g., for *I. gnaptorinoides*, n. sp., Turkestan; REITTER, Hor. Ent. Ross. xxi, p. 362.

Gnaptorina, n. g., p. 364, for *G. felicitana*, n. sp., Central Asia, p. 365; REITTER, Hor. Ent. Ross. xxi.

Nalepa, n. subg. of *Blaps*, p. 364, for *B.* (*N.*) *cylindracea*, n. sp., Central Asia, p. 366; REITTER, Hor. Ent. Ross. xxi.

Ablapsis, n. subg. of *Blaps*, p. 364, for *B.* (*A.*) *compressipes*, Central Asia, p. 368; REITTER, Hor. Ent. Ross. xxi.

Blaps: BALLION gives synonymical discussions on the following species: *jägeri*, Hum., *carbo*, Stev., *abbreviata*, Men., *putrida*, Motsch., *striatopunctata*, Motsch., *seriata*, Fisch., *subalpina*, Men., *dorsata*, Fisch., *coriacea*, Fisch., *titanus*, Man., *ominosa*, Men., *pruinosa*, Eversm., *brevis*, *acuminata*, Fisch., *deplanata*, Men., *corrosa*, Fisch., *planicollis*, Motsch., *obliterata*, Men., *variolosa*, Fisch., *granulata*., Gebl., *inflexa*, Lubk., *confusa*, Men., *pterosticha*, Fisch., *clotzeri*, Fisch., *amœna*, Fisch., *mortisaga*, L., *armeniaca*, Fald. Allard; Bull. Mosc. (n.s.) i, pp. 900–923. *B. armeniaca*, Fald. Allard, *hians*, Fisch., *plana*, Sol., synonymy discussed at length; BALLION, Wien. ent. Z. vi, pp. 307–309.

B. cychroides, *gentilis*, p. 127, *dorsogranata*, p. 128, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi; *B.* (*Blapisa*) *przewalskyi*, p. 370, *lobnoriana*, p. 371, Central Asia, REITTER, Hor. Ent. Ross. xxi: n. spp.

Agnaptoria, n. g., for *A. rubripes*, n. sp., Central Asia; REITTER, Hor. Ent. Ross. xxi, p. 372.

Tagonoides ampliatus, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 126, n. sp.

Prosodes pekinensis, China, FAIRMAIRE, Rev. d'Ent. vi, p. 323, n. sp.

Asidides, Pimeliides.

Machla cristata, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 179, n. sp.

Asida dejeani, Sol., p. 223, *sericea*, Ol., p. 224, larva described, p. 297; Ann. Soc. L. Lyon (2) xxxiii. [illegible]a, FAIRMAIRE.

A. lostiæ, Sardinia, ALLARD (4). and Bull. Ent. Ital

Platyope dilatata, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 375, n. sp.

Diesia niana, p. 377, *pustulosa*, p. 378, Central Asia, REITTER, Hor. Ent. Ross. xxi, n. spp.

Trigonoscelis sublævigata, Turkestan, REITTER, Deutsche e. Z. xxxi, p. 519; *T. elegans*, Turkestan, *cordata*, Lenkoran, ALLARD (4): n. spp.

Lasiostola nitens, Asterabad, REITTER, Wien. ent. Z. vi, p. 28, n. sp.

Pterocoma amandana, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 374, n. sp.

Ocnera przewalskyi, Central Asia, REITTER, Hor. Ent. Ross. xxi, p. 380; *O. leprieuri*, Egypt, ALLARD (4): n. spp.

Thriptera bedeli, Algeria, ALLARD (4), n. sp.

Pachyscelodes, n. subg. of *Pachyscelis*, Sol., for *P. malleata*, Woll., *semiasperula*, Fairm., *tuberculifera*, Luc., and *P. henoni*, N. Africa, n. sp., p. 191; SÉNAC, Ann. Soc. Ent. Fr. (6) vii, p. 187, &c.

Uriela, n. g., for *Podhomala fausti*, Kr.; REITTER, Deutsche e. Z. xxxi, p. 518.

Pimelia fairmairei, var. *laxisulcata*; KRAATZ, Deutsche e. Z. xxxi, p. 363.

Molurides.

Oncopterus, n. g., [illegible] r *Oncosoma*, for *O. acanthol[illegible]phus*, n. sp., Uzagara, pl. 2, fig. 7; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 178.

Moluris lateridens, p. 179, pl. 2, fig. 5, *attenuata*, p. 180, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 180, n. spp.

Psammodes acuticosta, Fairm., referred to *Amiantus* and redescribed; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 180.

P. dilaticollis, p. 298, pl. 12, fig. 1, *compressitarsis*, fig. 2, p. 299, Zambesi, MÜLLER, Tijdschr. Ent. xxx, n. spp.

Ethmus plicatus, Zambesi, p. 300, pl. 12, fig. 3, MÜLLER, Tijdschr. Ent. xxx, n. sp.

Physophrynus, Fairm., character and position noticed; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 182.

P. revoili, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, n. sp.

Melanolophus, Fairm., merged in *Amiantus*; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 183.

Amiantus picteti, Haag, = (*Melanolophus sexcostatus*, Fairm.); FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 183.

A. crenatocostatus, Usambara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 181, n. sp.

Phrynocolus transversus, Fairm., more fully described, p. 183, and figured, pl. 2, fig. 6; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

P. undaticostis, p. 183, *crispatus*, p. 184, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Sepidostenus erinaceus, Fairm.: the genus and species more fully described, the species figured, pl. 2, fig. 9; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 185.

Sepidiacis compressa, Fairm.: this genus and species more fully described, p. 185; the latter figured, pl. 2, fig. 8; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Vietomorpha, n. g., near *Sepidium*, for *V. foreipennis*, n. sp., Somaliland, pl. 2, fig. 11 ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 186.

Sepidium aper, Fairm., more fully described : Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 278.

S. hamaticolle, *longehirtum*, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 277, n. spp.

Coniontides, Pedinides, Opatrides, Trachyscelides.

Crypticus dactylispinus, Mars., = (*melancroides*, Fairm.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 199.

C. soricinus, Pekin, Fairmaire, Rev. d'Ent. vi, p. 324, n. sp.

Faustia integra, p. 382, *rufipalpis*, p. 383, *crypticoides*, p. 384, Central Asia, Reitter, Hor. Ent. Ross. xxi, n. spp.

Anchophthalmus modestus, *densaticollis*, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 282, n. spp.

Opatrinus angulicollis, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 283 ; *O. setuliger*, *ater*, pl. xii, fig. 4, Zambesi, Müller, Tijdschr. Ent. xxx, p. 301 : n. spp.

Selinus platessa and *foreipennis*, Fairm., more fully described ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 286.

S. quadricollis, Uzagara, p. 284, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 284, n. sp.

Pedinus femoralis, metamorphoses ; Lindeman, Ent. Nachr. xiii, p. 244.

Heliopates abbreviatus, Ol., larva noticed ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 224.

Gonopus ventricosus, Bert., noticed ; Dohrn, S. E. Z. xlviii, p. 173.

Doryagus, n. g., near *Anomalipalpus*, for *D. talpa*, n. sp., Natal, pl. i, fig. 9 ; Pascoe, p. 12, Ann. N. H. (5) xx.

Opatrum liliputanum, Lucas, referred to *Tarphius* ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 199. *O. pusillum*, Fab., = (*perplexum*, Luc.) ; *id. t. c.* *O. tibiale*, its injuries to fir-trees ; Ent. Nachr. xiii, pp. 283 & 284. *O. verrucosum*, injuries to tobacco, metamorphoses ; Lindeman, Ent. Nachr. xiii, pp. 242–244 & 272.

Usagaria pubens, Ancey, noticed and queried as identical with *G. pilosus*, Er. ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 287.

U. major, E. Africa, p. 287, pl. 3, fig. 1, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. sp.

Gonocephalum subrugulosum, Central Asia, Reitter, Hor. Ent. Ross. xxi, p. 388, n. sp.

Miladion, n. g. (*Opatrinorum*), p. 385, for *M. acuticolle*, n. sp., Central Asia, p. 386 ; Reitter, Hor. Ent. Ross. xxi.

Scleropatrum tuberculatum, Central Asia, Reitter, Hor. Ent. Ross. xxi, p. 388, n. sp.

Penthicus tuberculosus, Turkestan, Heyden, Deutsche e. Z. xxxi, p. 319, n. sp.

Micrositus circassicus, Circassia, Reitter, Deutsche e. Z. xxxi, p. 520, n. sp.

Phylax incertus, Muls. et God., = (*oxyholmus*, Fairm., and *serripes*, Desb.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 199.

Cyclocderes, Muls., is merely a synonym of *Turphius*; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 199.

Anemia sinuatifrons, Central Asia, Reitter, Hor. Ent. Ross. xxi, p. 389, n. sp.

Phaleria encausta, Somali-land, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 288, n. sp.

Empsara flexuosa, Pasc., = (*Phaleria hilgendorfi*, Har.); Lewis, Wien. ent. Z. vi, p. 309.

Bolitophagides, Diaperides, Ulomides.

Bradymerus interstitialis, alternatus, p. 133, *clathratus*, p. 134, Macassar, Schaufuss, Hor. Ent. Ross. xxi, n. spp.

Diaperis niponensis, Japan, Lewis, Ent. xx, p. 217, n. sp.

Platydema (sub *Neomida*) *rufulum*, Motsch., = (*cæsifrons*, Mars.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 199.

Hypophlœus angustus, Luc., referred to *Lyphia*, Muls.; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 199.

pl. xii, [illegible]

Pterolæides.

N. thelæus, revision of; Macleay (466).

Encara lacordairei, Australia, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 519, n. sp.

Pterohelæus pusillus, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 307; *P. cornutus*, p. 522, *riverinæ*, *spinicollis*, *acuticollis*, p. 523, *costatus*, *sinuaticollis*, p. 526, *darwiniensis*, p. 527, *hirtus*, p. 532, *depressiusculus*, p. 533, *squalidus*, *crenulatus*, p. 534, *granuliger*, *subgeminatus*, p. 537, *nitidiusculus*, p. 538, *punctipennis*, *opatroides*, p. 544, *cereus*, p. 545, *peltoides*, p. 546, *glaber*, p. 547, *obliteratus*, p. 548, *dispersus*, *convexiusculus*, p. 549, Australia, Macleay, P. Linn. Soc. N.S.W. (2) ii: n. spp.

Cossyphides.

Cossyphus costulicollis, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 279.

C. limbatus, Cochin-China, p. 13, *pusillus*, Rangoon, p. 14, Pascoe, Ann. N. H. (5) xx, n. spp.

Endustomus plicicollis, Fairm., more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 280.

E. magnicollis, p. 280, *maculosus*, p. 281, Zanzibar, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Eutelides, Tenebrionides, Heterotarsides.

Mechanetes, n. g., near *Diceroderes*, p. 448, for *M. cornutus*, n. sp., Perak, p. 449; Waterhouse, Ann. N. H. (5) xix.

Cyrtotyche quadra, Delagoa Bay, Pascoe, Ann. N. H. (5) xx, p. 14, n. sp.

Nyctobates ocularis, Usambara, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 291; *N. brevicornis*, Macassar, Schaufuss, Hor. Ent. Ross. xxi, p. 134: n. spp.

Derosphærus gibbicollis, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 65, n. sp.

Tenebrio carbo, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 288, n. sp.

Boromorphus opaculus, Turkestan, REITTER, Deutsche e. Z. xxxi, p. 521, n. sp.

Lyprops pilosus, p. 302, *badius*, p. 303, Zambesi, MÜLLER, Tijdschr. Ent. xxx; *L. yunnanus*, China, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 128: n. spp.

Heterotarsus recticollis, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 288, n. sp.

Pycnocerides, Cyphaleides, Cnodalonides.

Platyphanes elongatulus, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 308, n. sp.

Paraphanes, n. g., p. 308, near *Platyphanes*, for *P. nitidus*, n. sp., Queensland, p. 309; MACLEAY, P. Linn. N.S.W. (2) ii.

Chartopteryx glaber, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 310, n. sp.

Decialma striatopunctata, p. 310, *viridipennis*, p. 311, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Cholipus atroviridis, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 311, n. sp.

Catamerus, n. g., near *Pycnocerus*, for *C. recoili*, n. sp, E. Africa, pl. i, fig. 12; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Pycnocerus hercules, Fairm., more fully described, p. 289; *P. passerinii* = (*cæruleatus*, Fairm.), p. 290: FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

P. validus, Zanzibar, FAIRMAIRE, Ann. Soc. Ent. Fr. p. 289, n. sp.

Paramarygmus (sub *Tetraphyllus*) *femoralis*, Imh., = (*nigroæneus*, Qued.); FAIRMAIRE, Bull. Soc. Ent. Fr. (6) vii, p. xxxiv.

Perichilus, Quedf., noticed, p. 291; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

P. violaceipes, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 292, n. sp.

Nannocerus, n. g., near *Perichilus*, p. 292, for *N. cylindrus*, n. sp., Zanzibar, p. 293, pl. 3, fig. 3; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Xanthothopeia laticornis, Uzambara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 300, n. sp.

Chariotheca violacea, Dorey, PASCOE, p. 17, Ann. N. H. (5) xx, n. sp.

Pimplema, n. g., p. 16, ? = (*Hades*, Th.), for *P. ampliata*, Penang, n. sp., p. 17; PASCOE, Ann. N. H. (5) xx.

Helopides and *Helopinides.*

Diplocyrtus, n. g., p. 257, for *D. floccosus*, n. sp., Morocco, p. 258, woodcut; QUEDENFELDT, Ent. Nachr. xiii: note on the genus; REITTER, Wien. ent. Z. vi, p. 303.

Læna ormayi, Herrmannstadt, *justiniæ*, Caucasus, p. 523, *starcki*, Circassia, p. 524, REITTER, Deutsche e. Z. xxxi, n. spp.

Immedia erosa, Bahia, *integra*, Rio Janeiro, PASCOE, p. 15, Ann. N. H. (5) xx, n. spp.

Euphleus, n. g., near *Zophius*, p. 15, for *E. verrucosus*, n. sp., Malabar, p. 16; PASCOE, Ann. N. H. (5) xx.

Helops ecoffeti, Muls., p. 224, *agonus*, Muls., p. 225, larvæ noticed; REY, Soc. L. Lyon (2) xxxiii.

Stenomax vexator, Lenkoran, REITTER, Deutsche e. Z. xxxi, p. 524, n. sp.

Oxidates princeps, pl. xi, fig. 20, *aurichalcheus*, p. 265, *puncticeps*, p. 266, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Isaminas, n. g., p. 266, for *I. gibbipennis*, pl. xi, fig. 21, Nicaragua and Costa Rica, *brevicollis*, Guatemala, p. 267, n. spp.; CHAMPION, Biol. Centr. Am. Col. iv (1).

Hegemona compressus, All., figured, pl. xii, fig. 1; Biol. Centr. Am. Col. iv (1).

Hegemona hondurensis, Brit. Hond., p. 269, *bicaudatus*, pl. xi, fig. 24, p. 270, *lineatus*, fig. 23, *niger*, pl. xii, fig. 2, p. 271, *zunilensis*, pl. xi, fig. 26, *angustatus*, pl. xii, fig. 3, p. 272, Guatemala, *chiriquensis*, fig. 4, Panama, p. 273, *mexicanus*, Mexico, *guatemalensis*, pl. xi, fig. 25, Guatemala, p. 274, *costaricensis*, pl. xii, fig. 5, *interruptus*, fig. 6, Costa Rica, p. 275; CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Nautes, All., characters noticed, p. 277; *N. ferridus*, Pasc., figured, pl. xii, fig. 7; *ovatus*, Bates, = (*elegans*, Bates), p. 279; *belti*, All., figured, pl. xii, fig. 9; CHAMPION, Biol. Centr. Am. Col. iv (1).

N. glabratus, Mexico, p. 278, *tinctus*, Guatemala, pl. xii, fig. 8, p. 279, *splendens*, Panama, p. 280, *varians*, Mexico, fig. 10, *antennatus*, fig. 11, p. 281, *breviceps*, fig. 12, Panama, p. 282, *striatipennis*, Mexico, fig. 13, p. 283, *magnificus*, *versicolor*, fig. 15, Guatemala, *chrysomeloides*, Brit. Honduras, fig. 14, p. 284, *laviventris*, fig. 15 & p. 285, *hilaris*, Guatemala, *nitidissimus*, fig. 17, p. 286, *nodulosus*, fig. 18, *enoplopoides*, fig. 19, Guatemala, p. 287, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Tarpela (sub *Nautes*) *eximia*, Bates, pl. xiii, fig. 1, *atra*, All., fig. 3, *hispidula*, All., fig. 6, *cupreoviridis*, All., fig. 9, figured; *arifera*, All., note on, p. 307; *cisteliformis*, All., figured, fig. 18, redescribed, p. 311; CHAMPION, Biol. Centr. Am. Col. iv (1).

T. tenuicornis, Guatemala, pl. xii, fig. 20, p. 289, *inæqualis*, Panama, fig. 21 & p. 290, *torrida*, fig. 22 & p. 291, *durangoensis*, *corpulenta*, fig. 23, p. 292, Mexico, *thoracica*, fig. 24, Nicaragua, *reticulata*, Honduras, *costata*, fig. 25 & p. 293, *foveipennis*, fig. 26 & p. 294, *sculptilis*, Mexico, *verapacis*, Guatemala, pl. xiii, fig. 2, p. 295, *jalapensis*, p. 296, *hōgei*, *setigera*, fig. 4, p. 297, *contigua*, *oblonga*, p. 298, *socia*, fig. 5, p. 299, *azteca*, *subparallela*, fig. 7, p. 300, *fallax*, fig. 8, p. 301, Mexico, *marginicollis*, Guatemala, p. 302, *sinuaticollis*, Panama, *puncticeps*, p. 303, *tropicalis*, fig. 10, p. 304, *subrittata*, fig. 11, p. 305, Guatemala, *depressa*, fig. 12, *crassipes*, fig. 13, p. 306, *allardi*, fig. 14, p. 307, Mexico, *amabilis*, fig. 15 & p. 308, *silvicola*, fig. 16 & p. 309, Guatemala, *fragilicornis*, Mexico, fig. 17 & p. 309, *suturalis*, p. 310, *totonicapamensis*, fig. 19 & p. 311, Guatemala, *docilis*, Mexico, fig. 20 & p. 312, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Helops: in this CHAMPION merges *Coscinoptilix*, *Stenomax*, and *Diastixus*, All., p. 313; *H. gracilicornis*, pl. xiii, fig. 21, and *sumptuosus*, All., fig. 27, figured; Biol. Centr. Am. Col. iv (1).

H. cavifrons, Guatemala, pl. xiii, fig. 22, p. 313, *longicornis*, Mexico,

exsculptus, fig. 23, p. 314, *rugiceps*, fig. 24 & p. 315, Guatemala, *funebris*, *punctatostriatus*, p. 316, *pueblensis*, *coxalis*, fig. 25, p. 317, *suavis*, p. 318, *cupripennis*, Mexico, *panamensis*, Panama, fig. 26, p. 319, *punctiventris*, Mexico, p. 320, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

*Phœostolus** *grandicornis*, Fairm., genus and species more fully described, pp. 293 & 294 ; the latter figured, pl. 3, fig. 5 ; Ann. Soc. Ent. Fr. (6) vii.

Micrantereus femoratus, Gerst., ♀ = (*luteopubens*, Fairm.), p. 294 ; *M. seriepunctatus*, p. 294, *externecostatus*, pl. 3, fig. 4, *marginipennis*, p. 295, *quadricristatus*, Fairm., p. 296, more fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Drosochrus conspersus, Zambesi, MÜLLER, Tijdschr. Ent. xxx, p. 304, n. sp.

Emyon sucierstrae, Zambesi, MÜLLER, Tijdschr. Ent. xxx, p. 303, pl. xii, fig. 5, n. sp.

Talanides, Megacanthides, Amarygmides, Strongyliides.

Talanus, structure of trophi, p. 321 ; *colombianus*, Mäkl., p. 324, *subexaratus*, Mäkl., p. 325, noticed ; CHAMPION, Biol. Centr. Am. Col. iv (1).

T. neotropicalis, Guatemala to Brazil, pl. xiv, fig. 1, *lævipennis*, Guatemala, p. 322, *subopacus*, Mexico, *lecontei*, p. 323, *interstitialis*, p. 324, Mexico, Guatemala, *laticeps*, Panama, fig. 2, p. 325, *guatemalensis*, fig. 3, Guatemala, p. 326, *ater*, Panama, *æneipennis*, Mexico, p. 327, *longicornis*, Brit. Honduras to Panama, *apterus*, Guatemala, Panama, fig. 4 & p. 328, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Hoplonyx uniformis, Waterh., referred to *Pyanisia* ; CHAMPION, Biol. Centr. Am. Col. iv (1), p. 329. *H. impunctipennis*, Fairm., more fully described, p. 297 ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

H. asperipennis, p. 296, *longipennis*, p. 297, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii ; *H. opacus*, Zambesi, MÜLLER, Tijdschr. Ent. xxx, p. 305, pl. xii, fig. 6 : n. spp.

Asthenochirus nigropunctatus, Fairm., genus and species more fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 298.

Pyanisia longicollis, *fumosa*, Guatemala, p. 331, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Cuphotes, n. n. for *Spheniscus*, Kirby, auct.; CHAMPION, Biol. Centr. Am. Col. iv (1), p. 332.

C. jansoni, pl. xiv, fig. 6, p. 333, *unicolor*, fig. 7, Nicaragua, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Spheniscus kirbyi, Cast., note on ; CHAMPION, Biol. Centr. Am. Col. iv (1), p. 335.

Pacilesthus nigropunctatus, Mexico to Brazil, pl. xiv, fig. 8, p. 336, *variipes*, Nicaragua, fig. 9 & p. 337, *fragilicornis*, Costa Rica and Panama, fig. 11, *latus*, Nicaragua, p. 338, *guatemalensis*, Guatemala, *laticollis*, Mexico, Guatemala, fig. 10, p. 339, *immaculatus*, fig. 13, *læviceps*, fig. 14, Panama, p. 340, *mäklini*, Guatemala, fig. 15, p. 341, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

---

* *Phœostolus*, n. g., FAIRMAIRE, C.R. ent. Belg. 1884, p. clxvi ; for *P. grandicornis*, n. sp., Makdischu, *id. t. c.* p. clxvii. [Omitted in Zool. Rec. xxi.]

Cantrongylium höpfneri figured, pl. xiv, figs. 17 & 18; *scutellare*, *pectorale* n. sp., *lundum*, and *chevrolatii*, Mäkl., are varieties of it, p. 343; *gibbum*, Mäkl., figs. 20 & 20*a*, *sallei*, Mäkl., fig. 23, *semistriatum*, Mäkl., pl. xv, Fr. [illegible] 1, *excavatum*, Mäkl., fig. 2, *viridipes*, Mäkl., fig. 4, *fossifrons*, Mäkl., fig. 8, [illegible] figured; CHAMPION, Biol. Centr. Am. Col. iv (1).

S. maculicolle, Nicaragua, Panama, pl. xiv, fig. 16, p. 342, *chontalense*, Nicaragua, fig. 19 & p. 344, *canaliculatum*, Mexico, Guatemala, pl. xv, fig. 3, p. 346, *crassicorne*, p. 347, *ignitum*, fig. 5, *dentatum*, p. 348, Nicaragua, *tinctipes*, fig. 6 & p. 349, Nicaragua and Panama, *exaratum*, fig. 7 & p. 350, Guatemala, *chiriquense*, p. 351, *variicorne*, fig. 9 & p. 352, Panama, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Eupezus spinicrus, Somali-land, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 299, n. sp.

Plesiophthalmus lentus, Korea, HEYDEN, Hor. Ent. Ross. xxi, p. 268, n. sp.

Praogena sulcata, Congo, AURIVILLIUS Œfv. Ak. Förh. 1887, p. 307; *P. fossulata*, Zambesi, MÜLLER, Tijdschr. Ent. xxx, p. 306, pl. xii, fig. 7; *P. lineigera*, *impressiventris*, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 301; n. spp.

Dysgena villosula, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 299, n. sp.

Leiprobothris, n. g., next *Dysgena*, for *L. attenuata*, n. sp., E. Africa, pl. 3, fig. 6, p. 302; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Cistelides.

Atractus flavipes, *vittipennis*, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 313, n. spp.

Synatractus, n. g., for *S. variabilis*, n. sp., Queensland; MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 312.

Hybrenia subvittata, *laticollis*, p. 314, *angustata*, *sublævis*, p. 315, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Allecula flavicornis, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 316; *A. annamensis*, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 65: n. spp.

Prionychus and *Eryx*: use of these names discussed; CHAMPION, Ent. M. M. xxiii, p. 228.

Cistela capitata, Zambesi, MÜLLER, Tijdschr. Ent. xxx, p. 307, n. sp.

Ectenostoma apicalis, Zambesi, MÜLLER, Tijdschr. Ent. xxx, p. 307, pl. xii, fig. 8, n. sp.

Heliotaurus abdominalis, Fab., = (*hæmorrhoidalis*, Fairm.); *H. maroccanus*, Luc., = (*janthinus*, Raff.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 199.

PYTHIDÆ.

[*Cf.* BEHRENS (48).]

Thalassogeton, n. g., p. 18, for *T. wilkensi*, n. sp., S. Georgia Is., p. 19; BEHRENS, S. E. Z. xlviii.

Chorimerium, n. g., p. 20, for *C. antarcticum*, n. sp., S. Georgia Is., p. 21; BEHRENS, S. E. Z. xlviii.

Melandryidæ.

[*Cf.* Fairmaire (209), Reitter (628).]

Tetratoma: table of specific characters; Reitter, Nat. Sicil. vi, p. 84.

T. tedaldi, Sicily, Reitter, Nat. Sicil. vi, p. 84, n. sp.

Orchesia: translation into French of Reitter's 1886 table of the species; Rev. d'Ent. vi, pp. 9 & 10.

Dapsiloderus, n. g., for *D. costipennis*, n. sp., Sumatra; Fairmaire, p. 157, Notes Leyd. Mus. ix.

Lagriidæ.

[*Cf.* Fairmaire (203, 208, 209), Heyden (307), Macleay, (465), Pascoe (556), Schaufuss (672).]

Lagria nigricollis, Hope, redescribed; Fairmaire, Rev. d'Ent. vi, p. 324.

L. fulvopilosa, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 303; *L. impressifrons*, p. 135, *albopilosa*, *cribratula*, p. 136, Macassar, Schaufuss, Hor. Ent. Ross. xxi; *L. distincticornis*, Korea, Heyden, Hor. Ent. Ross. xxi, p. 269; *L. ruficeps*, *albovillosa*, p. 316, *purpureipennis*, p. 317, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii : n. spp.

Barsenis, n. g., p. 18, for *B. fulvipes*, n. sp., Ega, p. 19, pl. i, fig. 6a, Pascoe, Ann. N. H. (5) xx.

Casnonidea dimidiata, Aru Is., Fairmaire, Notes Leyd. Mus. ix, p. 192; *C. variipennis*, p. 158, *apicicornis*, p. 159, *nucea*, p. 160, Sumatra, *id. t. c.* : n. spp.

Pedilidæ.

Egestria hirtipennis, p. 322, *rubicunda*, p. 323, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Anthicidæ.

[*Cf.* Heyden (304), Reitter (622).]

Anthicus bruleriei, Desb., = (*honestus*, Mars.); *A. dolichocephalus*, Baudi, = (*bonnairei*, Fairm.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 200.

A. semiopacus, Turcomania, Reitter, Deutsche e. Z. xxxi, p. 524, n. sp.

Notoxus quadrimaculatus, Turkestan, Heyden, Deutsche e. Z. xxxi, p. 315, n. sp.

Pyrochroidæ.

[*Cf.* Lewis (431).]

Pyrochroa vestiflua, *laticollis*, p. 169, *brevitarsis*, *peculiaris*, p. 170, *atripennis*, p. 171, Japan, Lewis, Ann. N. H. (5) xx, n. spp.

Schizotus rubricollis, p. 172, *auritus*, *gibbifrons*, p. 173, Japan, Lewis, Ann. N. H. (5) xx, n. spp.

Dendroides niponensis, *ocularis*, Japan, Lewis, p. 174, Ann. N. H. (5) xx, n. spp.

Can
n. sp. [illegible]
Ac

Mordellidæ, Rhipidophoridæ, Stylopidæ.

Fr [illegible]

[*Cf.* Fairmaire (205), Macleay (465), Müller (527), Pascoe (556).]

Mordella pulverulenta, notabilis, p. 317, *ovalisticta, undosa, hamatilis*, p. 318, *nigrans, obscuripennis, flavicans*, p. 319, *subcittata, elongatula*, p. 320, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Aporrhipis, n. g., for *A. flexilis*, n. sp., Pará, pl. i, fig. 1; Pascoe, Ann. N. H. (5) xx.

Rhipiphorus melanurus, Arabia, p. 303, *lugubris*, Zanzibar, p. 304, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Emenadia cucullata, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, p. 321, n. sp.

Pelocotomoides marmoratus, aureotincta, p. 321, *serraticornis*, p. 322, Queensland, Macleay, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Stylopidæ: notes on the sexes, development, and life-history, with tabular characters of the genera, taken from the males; Müller (527).

Cantharidæ.

[*Cf.* Beauregard (40, 41), Brauer (88), Dokhtouroff (171, 172), Fairmaire (203, 205, 209, 210), Heyden (304, 307), Macleay (465), Reitter (622).]

Beauregard (41) describes and figures the male and female genitalia of numerous species.

Larvæ of *Meloidæ*, &c., discussed by Brauer (88).

Meloe carnicus, Radmannsdorf, Katter, Mon. eur. Meloë, p. 41; *M. atrocyaneus*, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 304; *M. pubifer*, Turkestan, Heyden, Deutsche e. Z. xxxi, p. 315; *M. patellicornis*, Pekin, Fairmaire, Rev. d'Ent. vi, p. 325; *M. subcordicollis, modesta*, Yunnan, *id.* Ann. Ent. Belg. xxxi, p. 129: n. spp.

Actenodia amabilis, Somali-land, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 306, n. sp.

Mylabris gilvipes, var. *diffinis*, Ab., = (*lameyi*, Mars.); *tigripennis*, Latr., = (*menthæ*, Kl.): Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 200.

M. lateplagiata, flavosellata, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 305, n. spp.

Zonabris przewalskyi, Central Asia, p. 341, *mongolica*, Mongolia, p. 345, Dokhtouroff, Hor. Ent. Ross. xxi, n. spp.

Eletica ornatipennis, Angola, Lucas, Bull. Soc. Ent. Fr. (6) vii, p. xxvii, n. sp.

Cantharis validicornis, Fairm., p. 307, *testaceipes*, p. 308, redescribed; Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

C. rugulicollis, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 308; *C.* (*Lytta*) *roborowskyi*, Central Asia, Dokhtouroff, Hor. Ent. Ross. xxi, p. 343: n. spp.

Lytta cinerea, ravages of; Bruner, Bull. Dep. Agric. Ent. xiii, p. 34.

Lydus tenuitarsis, Ab., var. *unicolor*, Reitter, Deutsche e. Z. xxxi, p. 525, n. sp.

Zonitis holoxantha, Sumatra, FAIRMAIRE, Notes Leyd. Mus. ix, p. 1[illegible] *Z. macroxantha*, Sumatra, p. 194, *marginiventris*, Batchian, *genicul[illegible]ris*, Celebes, p. 195, *tenuemarginata*, Amboyna, p. 196, *id. t. c.*; *Z. fortuce[illegible]*18, Pekin, *id.* Rev. d'Ent. vi, p. 326; *Z. pallida*, Queensland, MACLEA[illegible]ris, Linn. Soc. N.S.W. (2) ii, p. 325 : n. spp. [illegible] Sieu. vi[illegible], 1881.

Palestrida concolor, p. 323, *flabellicornis*, *nigripennis*, [illegible]land, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp. [illegible]. 324, Queens-

Nemognatha cærulans, *fuscicauda*, E. Africa, p. 309, F[illegible] Soc. Ent. Fr. (6) vii, n. spp. [illegible]RMAIRE, Ann.

OEDEMERIDÆ.

[*Cf.* FAIRMAIRE (209), HEYDEN (304, 305, 306), MACLE[illegible]SEUL (470), OLLIFF (538).]

Ananca sculpticollis, Sumatra, FAIRMAIRE, Notes Leyd. [illegible]AY (465), MAR-

A. lateralis, Queensland, MACLEAY, P. Linn. Soc. N.S.W[illegible] Mus. ix, p. 151; n. spp. [illegible]. (2) ii, p. 325

Ithaca, n. g., near *Nacerdes*, p. 153, for *I. anthina*, [illegible] p. 154; OLLIFF, P. Linn. Soc. N.S.W. (2) ii. [illegible]ia, [illegible]he e. Tasma[illegible]

Ischnomera abdominalis, Amur-land, HEYDEN, Deutsc[illegible] [illegible]xxi, p. 304; *I. hauseri*, Turkestan, *id. t. c.* p. 322 : n. spp.

Oedemera reini, Atlas, HEYDEN, Deutsche e. Z. xxxi, p. 448, n. sp.

Probosca (sub *Callidium*) *virens*, Fab., = (*viridana*, Luc.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 200.

CURCULIONIDÆ.

[*Cf.* AURIVILLIUS (24), BARGAGLI (36), BEDEL (43, 45), BEHRENS (47), DESBROCHERS (155, 156), FAIRMAIRE (203, 204, 205, 207), FAUST (216, 217, 218, 219, 220, 221, 222, 223, 224, 304), HEYDEN (305), JACQUET (340), KUTHY (408), PASCOE (553, 554, 555), PERINGUEY (560), REITTER (617, 622, 623), RETOWSKI (629), ROELOFS (657), SCHAUFUSS (672), SMITH (721), STIERLIN (741), ULANOWSKI (763), WASMANN (783), WATERHOUSE (787, 791).]

Microcerides.

Microcerinæ and *Protomantinæ*, revision of, with figures of the species; AURIVILLIUS (24).

Microcerus dorsofumatus, Fairm., more fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 311.

M. vermiculatus, p. 310, *cavirostris*, *cribellatus*, p. 312, *fissirostris*, p. 313, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii; *M. fossilis* = (*kirschii*, Auriv.), Delagoa Bay, p. 61, pl. vi, figs. 6 & 7, *planifrons*, S. Africa, p. 74, pl. viii, fig. 2, *sulcifrons*, p. 69, S. Africa?, AURIVILLIUS, Sv. Ak. Handl. xxi : n. spp.

Episus tenuis, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 310, n. sp.

Brachyderides, Otiorhynchides, Eremnides, Leptop[illegible], LEWIS,

Cneorrhinus heydeni, Tournier, = (*martini*, Fairm.); HE[illegible] ent. Z. vi, p. 98. [illegible]. N. H. (5)

Cam. grandis, Portugal, STIERLIN, MT. schw. ent. Ges. vii, p. 398, n. sp.

n. sp. *trophosomus puberulus*, Chev., = (*elongatus*, Mart.) ; UHAGON, An. Soc. Esp. xvi, p. 382.

Fr. *Gastrophomorphus irroratus*, Syria, FAUST, Wien. ent. Z. vi, p. 65, n. sp.

Brachyderes scutellaris, Seid., characters of ♀ ; UHAGON, An. Soc. Esp. xvi, p. 382.

Mesagroicus lederi, Turcomania, FAUST, Wien. ent. Z. vi, p. 30 ; *M. superciliatus*, Greece, STIERLIN, MT. schw. ent. Ges. vii, p. 396 : n. spp.

Sitones : nocturnal habits of ; WOOD, Ent. M. M. xxiv, p. 15. *S. flavescens*, All., ravages in N. America ; WEBSTER, in Riley Rep. 1886, pp. 580-582.

S. faillæ, I. of Lampedusa, DESBROCHERS, Nat. Sicil. vi, p. 160; *S. versicolor*, Turkestan, FAUST, S. E. Z. xlviii, p. 180 ; *S. aberrans*, Lower Amur, FAUST, Deutsche e. Z. xxxi, p. 168 : n. spp.

Polydrosus elegans, Greece, REITTER, Deutsche e. Z. xxxi, p. 526 ; *P.* (*Eustolus*) *kiesenwetteri*, Turkestan, FAUST, Deutsche e. Z. xxxi, p. 315 : n. spp.

Phacephorus inuus, Turkestan, FAUST, S. E. Z. xlviii, p. 297, n. sp.

Thylacites exiguus, Algesiras, FAUST, Wien. ent. Z. vi, p. 208 ; *T. massagetus*, Turcomania, *id. t. c.* p. 30 : n. spp.

Tanymecus cinctus, Turkestan, FAUST, S. E. Z. xlviii, p. 304, n. sp.

Sympiezomias, n. g., *Tanymecinorum*, p. 29, for *S. herzi*, n. sp., China, p. 30, and *Piazomias velatus*, Chev., and *lewisi*, Roel. ; FAUST, Hor. Ent. Ross. xxi.

Astycus scintillans, Sumatra, PASCOE, Ann. N. H. (5) xix, p. 370.

Eutinopus heydeni, Turkestan, FAUST, Deutsche e. Z. xxxi, p. 317, n. sp.

Iphisomus naupactoides, p. 313, *physapus*, p. 314, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Dereodus striatopunctatus, Somali-land, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 314, n. sp.

Chærorophanus notabilis, redescribed ; FAUST, S. E. Z. xlviii, p. 297.

Dermatodes micandus, Zanzibar, PASCOE, Ann. N. H. (5) xx, p. 349, n. sp.

Psalidium Ill., = (*Axyrœus*, Kies.) ; REITTER, Wien. ent. Z. vi, p. 107.

Pachyrrhynchides n. *les* separated from *Brachyderides* as distinct group ; BEHRENS, Soc. Z. xlviii, p. 215.

Sphenalcis n. g., n. g., p. 222, for *S. suturalis*, N. Guinea, p. 225, *atra*, Moluccas, p. 226, *pulchra*, N. Guinea, p. 231, n. spp., and to include *Apocyrtus nitidulus* and *wallacei*, Pasc. ; BEHRENS, S. E. Z. xlviii.

Catapsephactus, n. g. (*Pachyrrhynchides*), for *C. æthiops*, n. sp., New Guinea ; BEHRENS, p. 233, S. E. Z. xlviii.

Pachyrrhynchus : the species of the *gemmatus* group revised and described ; BEHRENS, S. E. Z. xlviii, pp. 235–257.

P. dohrni, p. 236, *pulchellus*, p. 238, *modestior*, p. 240, *sarcitis*, p. 246, *smaragdinus*, p. 253, *annulatus*, p. 256, Philippines, BEHRENS, S. E. Z. xlviii, n. sp.

Epizorus, n. g., near *Elytrurus*, for *E. simpsoni*, n. sp., Solomon Is. ; PASCOE, Ann. N. H. (5) xix, p. 371.

Piezonotus discoidalis, Christmas I., Waterhouse, P. Z. S. 1887, p. 8[illegible]ris, woodcut, n. sp. 318,

Trigonops longicollis, Hainan I., Faust, Hor. Ent. Ross. xxi, p. 31, n. s[illegible]ris.

Otiorhynchus turca, Stev., injurious to vine; Ballion, Bull. Mo[illegible] (n.s.) i, pp. 813 & 814 *O. [illegible]anniboli*, Stierl., reputed locality corr[illegible]ected; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 200. *O. velutinus*, Germ., *exilis*, Boh., note on the two; Retowski, Wien. ent. Z. vi, p. 134. *O. caucasicus*, var. *semigranulosus*; *id. t. c.* p. 134. *O. multicostatus*, var. *planirostris*; Stierlin, MT. schw. ent. Ges. vii, p. 399. *O. gibbicollis*, Boh., n. varr. *strongylus* and *theodosianus*, Crimea; Retowski, Wien. ent. Z. vi, p. 133: the former is a distinct species; Reitter, *t. c.*, note.

O. aurosquamulatus, Circassia, Retowski, Wien. ent. Z. vi, p. 132; *O. apfelbecki*, Croatia, p. 390, *atticus*, *longirostris*, p. 391, *emgei*, *rhyncoloides*, p. 392, *O.* (*Aramnichus*) *krüperi*, p. 393, Greece, Stierlin, MT. schw. ent. Ges. vii; *O. felicitanæ*, p. 525, *edithæ*, p. 526, Circassia, Reitter, Deutsche e. Z. xxxi; *O.* (*Tournieria*) *albohirtus*, Turkestan, Faust, S. E. Z. xlviii, p. 177; *O.* (*T.*) *pertinax*, p. 293, *laniger*, p. 294, *conradti*, p. 295, Turkestan, *id. t. c.*; *O.* (*Aramnichus*) *martini*, Algeria, Faust, Wien. ent. Z. vi, p. 207: n. spp.

Diacoderus, n. g., near *Calyptops*, for *D. hamaticollis*, n. sp., E. Africa, p. 315; Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

Systates crenatipennis, Fairm., *fuscoæneus*, p. 316, *setosipennis*, *prolixus*, p. 317, *albidovittatus*, p. 318, *angulithorax*, p. 319, more fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

S. longefemoratus, Uzagara, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 319, n. sp.

Episomus gemmeus, Sumatra, *uniformis*, Andaman, p. 349, *laticollis*, Pachebon, p. 350, Pascoe, Ann. N. H. (5) xx, n. spp.

Holcorhinus scrichispidus, Boh., = (*otiorhynchoides*, Fairm.); Bedel, Ann. Soc. Ent. Fr. (6) vii. p. 200.

Mylacus rotundatus var. *debilis*; Faust, S. E. Z. xlviii, p. 296. 1),

M. oertzeni, Greece, Stierlin, MT. schw. ent. Ges. vii, p. 390, n. [illegible] (787,

Nastus prolixus, *lineatus*, Turkestan, Faust, S. E. Z. xlviii n. spp.

Ptochus græcus, p. 395, *emgei*, p. 396, Greece, Stierlin, M[illegible] Ges. vii; *P. hauseri*, Turkestan, Faust, S. E. Z. xlviii, p[illegible]s of the species;

Trachyphlœus frivaldskyi, Hungary, Kuthy, Teri[illegible]ed; Fairmaire, p. 27, n. sp.

Trachyphilus, n. g. (*Trachyphlœinorum*) for *T. saluber*, [illegible] *ostris*, p. 313, Amur; Faust, Deutsche e. Z. xxxi, p. 164.

Catharmiocerus spalatensis, Dalmatia, Ulanowski, Kosmos [illegible] (*kirschii*, xii, p. 337, n. sp. [illegible], p. 74,

Phyllobius emgei, Greece, Stierlin, MT. schw. ent. Ges. vii, p. 39[illegible]ndl. *P. litoralis*, Lower Amur, Faust, Deutsche e. Z. xxxi, p. 165: n. spp.

Mylloceras fasciatus, Suyfun, Faust, Wien. ent. Z. vi, p. 66; *M. capito*, p. 32, *chlorizans*, p. 33, Pekin, *malignus*, Korea, p. 34, Faust, Hor. Ent. Ross. xxi: n. spp.

Corigetus innocuus, Turkestan, Faust, S. E. Z. xlviii, p. 181; *C. ignarus*, Hainan I., Faust, Hor. Ent. Ross. xxi, p. 35: n. spp.

Camptenolobus, n. g., *Cyphicerinorum*, p. 36, for *L. siccersi*, n. sp., Pekin, n. sp.; FAUST, Hor. Ent. Ross. xxi.

Acantacinops illustris, Greece, STIERLIN, MT. schw. ent. Ges. vii, Fr. (6), n. sp.

Brachycerides.

Brachycerus callosus, Schönh.: the locality should be N. Africa, not S. Africa, and *B. chevrolati*, Fähr., should take this name; BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 200.

B. guineensis, Africa, PÉRINGUEY, S. E. Z. xlviii, p. 407; *B. densegranosus*, pl. 3, fig. 8, *ferox*, p. 320, FAIRMAIRE, Ann. Soc. Ent. Fr.; *B. cinnamomeus*, Zanzibar, p. 8, pl. i, fig. 1, *suturalis*, Algoa Bay, p. 9, pl. i, fig. 2, *eximius*, Cape, p. 9, pl. i, fig. 3, *disjunctus*, Damaraland, pl. i, fig. 4, *capito*, Cape, p. 10, pl. i, fig. 5, *omissus*, pl. i, fig. 6, *rixator*, fig. 7, Damaraland, p. 11, *faustii*, Natal, pl. i, fig. 8, *præcursor*, Cape, fig. 9, p. 12, *phlyctænoides*, Guinea, pl. i, fig. 10, *albicollis*, Natal ?, pl. ii, fig. 1, p. 13, *electilis*, Algoa Bay, pl. ii, fig. 2, *obtusus*, fig. 3, p. 14, *draco*, fig. 4, *turbatus*, fig. 5, p. 15, Natal, *gryphus*, Usambara, fig. 6, *strumosus*, Senegal, fig. 7, p. 16, *mœrens*, Zambesi, fig. 8, p. 17, PASCOE, Tr. E. Soc. 1887: n. spp. [For some doubtful synonymy in connection with these, *cf.* P. E. Soc. 1887, p. xxii.]

Byrsopsides.

Byrsopinæ: the genera tabulated; PASCOE, Tr. E. Soc. 1887, pp. 323 & 324.

Byrsops socia, p. 324, *plumbea*, pl. xi, fig. 7, *scapularis*, p. 325, *mendica*, p. 26, *alveata*, *intermedia*, p. 327, *terrena*, *glaucescens*, p. 328, *encausta*, p. 329, fig. 6, *vittigera*, fig. 4, *vicaria*, p. 330, *tersula*, fig. 8, *eximia*, fig. 5, p. 331, *farinosa*, p. 332, S. Africa, PASCOE, Tr. E. Soc. 1887, n. spp.

Daulaxius, n. g., for *D. stolatus*, Delagoa Bay, n. sp., pl. xi, fig. 11; (PASCOE, Tr. E. Soc. 1887, p. 333.

Chœcera, n. g., for *D. gravida*, Transvaal, n. sp., pl. xi, fig. 9; PASCOE, *Dermæ*. 1887, p. 334.

n. sp. , n. g., for *L. ovis*, Natal, n. sp., pl. xi, fig. 10; PASCOE, Tr. E. *Psalidæ* 335.

Pachyrhinus, n. g., for *O. singularis*, S. Africa, n. sp., pl. xi, fig. 2; BEHRENS E. Soc. 1887, p. 336.

Sphenocerus, n. g., for *P. rugosus*, S. Africa, n. sp., pl. xi, fig. 3; PASCOE, Moluccas 1887, p. 337.

Apocyrtus, n. g., p. 337, for *E. bruchoides*, Cape, n. sp., p. 338, pl. xi, *Catap* PASCOE, Tr. E. Soc. 1887.

Guineecerus infaustus, Transvaal, PASCOE, Tr. E. Soc. 1887, p. 338, *ti*, fig. 12, n. sp.

Rhytirhinus fulvocretosus, Fairm., referred to *Gronops*: *R. asper*, All., = *leuco-fasciculatus*, Desb.; BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 201.

R. dybowskii, Dalmatia, ULANOWSKI, Kosmos Lemberg, xii, p. 336, n. sp.

Cylindrorhinides, Molytides, Tanyrhynchides.

Dichotrachelus paulinoi, Portugal, STIERLIN, MT. schw. ent. Ges. vii. p. 397, n. sp.

Euthycus incisus, India, Pascoe, Ann. N. H. (5) xx, p. 353, n. sp. *Eris*,
Exotoderes, n. g., for *E. scabripennis*, n. sp., Capetown, Pascoe, 318,
N. H. (5) xx, p 354. *Iris*,

Scythropides, Hyperides, Diabathrariides.

Scythropus callizonatus, Fairm., = (*Polydrusus rubrivittis*, Chevr., and *varioni*, Mars.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 200.

Alophus kashgarensis, Turkestan, Faust, S. E. Z. xlviii, p. 296; *A. compressicauda*, Yunnan, Fairmaire, Ann. Ent. Belg. xxxi, p. 129 : n. spp.

Cyriophthalmus, n. g. (*Alophinorum*), p. 166, for *C. inquinatus*, n. sp., Amurland, p. 167 ; Faust, Deutsche e. Z. xxxi.

Phytonomus rumicis injurious to *R. acetosa* ; Decaux, Feuill. Nat. xvii, p. 134.

P. solymitanus, Jerusalem, Faust, Wien. ent. Z. vi, p. 81, n. sp.

Hypera graseri, Amur-land, Faust, Deutsche e. Z. xxxi, p. 169 ; *H. reitteri*, Haifa, p. 67, *audax*, p. 68, *corcyrea*, Corfu, *caucasica*, p. 69, *swanetica*, Caucasus, p. 70, *id.* Wien. ent. Z. vi ; *H. mutatoria*, Turkestan, *id.* S. E. Z. xlviii, p. 182 : n. spp.

Pachydon linearis, Broun, figured, pl. 174, fig. 1 ; Waterhouse, Aid.

Cleonides.

Cleonus (*Mecaspis*) *reitteri*, Caucasus, Retowski, Wien. ent. Z. vi, p. 130 ; *C.* (*M.*) *barbatus*, Syria, Faust, *t. c.* p. 31 ; *Mecaspis baudii*, Beyrout, *id. t. c.* p. 208 ; *Cleonus* (*Coscinoderus*) *lutulentus*, Somali-land, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 321, pl. 3, fig. 7 : n. spp.

Stephanocleonus timidus, Turkestan, Faust, Deutsche e. Z. xxxi, p. 320, n. sp.

Plagiographus saintpierrei, Chev., = (*Cleonus bonnairei*, Fairm.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p 201.

Exochus gigas, Mars., = (*Cleonus ellipticus*, Fairm.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 201.

Gonocleonus heros, Chev., = (*S. munieri*, Bed., and *C. furcifrons*. Mars.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 201.

Larinus mutabilis, n. n. for *L. kirschi*, Cap., 1874 ; *L. kirschi*, Reitter, = (*castaneus*, Cap.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 201. *L. stierlini*, n. n. for *L. longirostris*, Stierl., *nec* Gyll. ; Faust, Wien. ent. Z. vi, p. 32.

L. sanctus, Syria, Faust, Wien. ent. Z. v, p. 32, n. sp.

Lixus cribricollis, Boh., = (*miniatocinctus*, Desb.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 201.

L. scapularis, Syria, Faust, Wien. ent. Z. vi, p. 82 ; *L. morosus*, Cairo, *id. t. c.* p. 209 ; *L. amurensis*, Chabarofka and N. China, *id.* Deutsche e. Z. xxxi, p. 170; *L. dolus*, Turkestan, *id. t. c.* p. 318 ; *L. mogadorus*, Heyden, *t. c.* p. 448 : n. spp.

Hylobiides, Erirhinides, Amalactides.

Hylobius pini, new *Nematode* parasite discovered in ; Ent. Nachr. xiii, p. 350.

Cam[illegible]arrogans, Sumatra, p. 350, *desuetus*, *pumilus*, Sarawak, p. 351, *clath-*
n. sp. [illegible] India, p. 352, Pascoe, Ann. N. H. (5) xx, n. spp.

Acal[illegible]rculio litigiosus, Amur-land, Faust, Deutsche e. Z. xxxi, p. 170, n. sp.

Fr. (C[illegible]*aichus*, n. g., p. 371, for *D. terreus*, n. sp., Tasmania, p. 372, pl. xi,
ng. 7; Pascoe, Ann N. H. (5) xix.

Dirodes[illegible] g., p. 352, for *D. russatus*, n. sp., Sumatra, p. 353; Pascoe,
Ann. N. H. (5) xx.

Echinocnemus, note on the genus and species; Faust, S. E. Z. xlviii,
pp. 188–190.

E. confusus, S. E. Europe, p. 187, *efferus*, Hungary, p. 188, *margelanicus*,
Central Asia, p. 190, *insubidus*, E. India, p. 191, *exsul*, New Caledonia,
p. 192, Faust, S. E. Z. xlviii, n. spp.

Colchis, Tourn., note on; Faust, S. E. Z. xlviii, p. 188.

Eteophilus (*Dorytomus*, auct.), translation into French of Faust's 1882
table of the European species; Rev. d'Ent. vi, pp. 124–128. *E. rufatus*,
n. n. for *E. rufulus*, Bed.; Bedel, Faune Col. Seine, vi, p. 425.

Dorytomus dilaticollis, Pekin, Fairmaire, Rev. d'Ent. vi, p. 327, n. sp.

Bagous caucasicus, n. n. for *B. minutus*, Hoch. *nec* Muls.; Faust, Wien.
ent. Z. vi, p. 85: this change erroneous; Reitter, *t. c.* p. 225.

B. minutissimus, Sarepta, p. 84, *affaber*, Syria, p. 85, Faust, Wien. ent.
Z. vi, n. spp.

Smicronyx brenskei, Morea, p. 83, *syraicus*, Haifa, p. 84, Faust, Wien.
ent. Z. vi, n. spp.

Exarchus, n. g., for *E. hearseyi*, n. sp., Rangoon, Pascoe, Ann. N. H.
(5) xix, p. 372.

Cyladides, Apionides.

Cylas curtipennis, fully described; Fairmaire, Ann. Soc. Ent. Fr. (6)
vii, p. 322.

Apion erraticum, Sm., ♀ = (*estriatum*, Sm.); *obsoletum*, Sm., ♀ =
(*vale*, Sm.); *cribricolle*, Lec., ♂ = (*erythrocerum*, Sm.); *robustum*, Sm.,
Bed. = (*obesum*, Sm.): Smith, Ent. Am. iii, p. 56. *A. fagi*, ravages of;
Ba[illegible]ing, Wien. ent. Z. vi, p. 61.

lineare, *helianthemi*, Lyons, Bedel, Bull. Soc. Ent. Fr. (6) vii, p. cliv; *A.*
B. cribric[illegible] France, *buddebergi*, Nassau, *id.* Faune Col. Seine, vi (2) p. 363;
iii, pp. 87 &[illegible], p. 185, *perspicillum*, p. 186, Turkestan, Faust, S. E. Z. xlviii;

Centrinus sip[illegible] Turkestan, *id. t. c.* p. 303; *A. opacinum*, *oppelsheimi*, p. 179,
vii, p. clxxx, [illegible]180, Amur-land, *id.* Deutsche e. Z. xxxi; *A. lividum*, Florida,

Acythopeus[illegible]. Am. iii, p. 56: n. spp.
Ann. N. H.

Lystroidabides, Rhinomacerides.

Apoderus erythropterus, Gmel., var. *atricolor* described; Faust, Hor.
Ent. Ross. xxi, p. 28.

Attelabus curculionoides (and *A. coryli*), habits noticed; Wassmann,
Tijdschr. Ent. xxx, p. 310. *A. curculionoides*, oviposition and habits;
[illegible] Ent. Med. i, pp. 22–25. *A. curculionides*, n. var. *ater*; Fleischer,
Ent. Ti[illegible] vi, p. 237.

Pachyteria zonipennis[illegible]
vii, p. 66, pl. 4, fig. 6, n. s[illegible], var. *princeps*, Solsky, = (*dacidis*, Fairm.):
[illegible]i, p. 27.

Rhynchites olivaceus, Gyll., var. *pauciseta* described, p. 313, *R. nanus*, p. 318, *uncinatus*, distinctions of, p. 312; Wassmann, Tijdschr. Ent. xxx. [illegible]

Deporaüs and *Rhynchites* differentiated; Faust, Deutsche e. Z. x[illegible] p. 163.

D. affectatus, Amur-land, Faust, Deutsche e. Z. xxxi, p. 163 [illegible] sp.

Magdalinides, Balaninides, Anthonomides.

Magdalis armicollis, Say, ♂ = (*pallida*, Say); Blanchard, Ent. Am. iii, p. 86.

M. violacea, L., and *nitidipennis*, Boh., habits; Weise, Deutsche e. Z. xxxi, p. 368.

Balaninus dieckmanni, Amurland, Faust, Deutsche e. Z. xxxi, p. 178; *B. bimaculatus*, Pekin, Faust, Hor. Ent. Ross. xxi, p. 38: n. spp.

Sphinctocnærus (sub *Anthonomus*) *lethierryi*, Desb., = (*constrictus*, Mars.); Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 202.

Anthonomus pusillus, Lec., habits and sexual distinctions; Blanchard, Ent. Am. iii, p. 87.

A. grouvellei, Alpes-maritimes, Desbrochers, Bull. Soc. Ent. Fr. (6) vii, p. clxi, n. sp.

Ochrinulus, n. g. near *Acalyptus*, for *O. antigæ*, n. sp., Spain; Reitter, Wien. ent. Z. vi, p. 18: but at p. 107, *t. c.*, this is said to be *Derelomus chamæropis*, Fab.

Orchestes: synoptical table of species of France; Guédel, Feuill. Nat. xvii, pp. 114–117.

O. koltzei, *scitus*, p. 171, *pacificus*, *amurensis*, p. 172, Amurland, Faust, Deutsche e. Z. xxxi; *O. mimosus*, Turkestan, Faust, S. E. Z. xlviii, p. 184: n. spp.

Tychiides, Cionides, Alcidides.

Tychius lineellus, Lec., characters of ♂; Blanchard, Ent. Am. [illegible]c. iii, p. 87.

T. variicolor, Fairm., note on; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 2[illegible]rs.);

T. ardea, Tunis, Faust, Wien. ent. Z. vi, p. 86; *T. turanensis*, p. 1 *amandus*, p. 183, Turkestan, Faust, S. E. Z. xlviii: n. spp. [illegible]eitter,

Miccotrogus versicolor, Turkestan, Faust, S. E. Z. xlviii, p. 184 *L. stier-*

Elleschus schönherri, Amurland, Faust, Deutsche e. Z. xx[illegible] ent. Z. vi, n. sp.

Sibinia planiuscula, Desb., = (*heydeni*, Tourn.); Bedel, A[illegible] Fr. (6) vii, p. 202. Ann. Soc.

Stereonychus thoracicus, Lower Amur, Faust, Deutsche e[illegible] p. 176, n. sp.

Nanophyes gallicus, Paris, Bedel, Bull. Soc. Ent. Fr. (6) [illegible] p. clxx; *N.* (*Corimalia*) *gemmarius*, Syria, Faust, Wien. ent. Z. vi, p. 210: n. spp.

Alcides gallus, p. 354, *tetanicus*, Saylee, *censorius*, Ceram, p. 355, *vestitus*, Banda, *nitidus*, Batchian, p. 356, *geminatus*, Java, *oberthurii*, p. 357, *collaris*, p. 358, India, Pascoe, Ann. N. H. (5) xx, n. spp.

[illegible] Ent. Nachr. xiii,

Cryptorhynchides.

Mecocorynus cristatus, Angola, Roelofs, J. [illegible]

Camptorhinus turbatus, Borneo, PASCOE, Ann. N. H. (5) xix. p. 373, n. sp.

Acalles tuberculatus, Ros., = (*brevis*, Tourn.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 202.

A. albopictus, France, JACQUET, Bull. Soc. Ent. Fr. (6) vii, p. clxxviii; *A. cariolosus*, Siebenbürgen, STIERLIN, MT. schw. ent. Ges. vii, p. 399; *A. haraforus*, Hainan I., FAUST, Hor. Ent. Ross. xxi, p. 39 : n. spp.

Cryptorhynchus lapathi, L., in N. America; JUELICH, Ent. Am. iii, p. 123: European parasites and food-plants of; HOWARD, *t. c.* p. 159.

C. verticalis, Amu land, FAUST, Deutsche e. Z. xxxi, p. 174, n. sp.

Systaltopezus, n. g. (*Ithyporinorum*), p. 174, for *S. nodosus*, n. sp., Lower Amur, p. 175; FAUST, Deutsche e. Z. xxxi.

Paromalia vestita, Broun, figured, pl. 174, fig. 7; WATERHOUSE, Aid.

Ceuthorhynchides.

Cœliodes (*Stenocarus*) *fœdus*, Turkestan, FAUST, S. E. Z. xlviii, p. 299, n. sp.

Ceuthorhynchus pallidicornis and *thlaspis*, Bris., habits; Bull. Soc. Ent. Fr. (6) vii, p. cxxvi.

C. (*Nedyus*) *neophytus*, *tolerans*, p. 300, *C. fabrilis*, p. 301, Turkestan, FAUST, S. E. Z. xlviii; *C.* (*N.*) *carinulatus*, p. 177, *nitidulus*, p. 178, Amurland, FAUST, Deutsche e. Z. xxxi : n. spp.

Phytobius omissus, Turkestan, FAUST, S. E. Z. xlviii, p. 298, n. sp.

Baridiides.

Baris nitens, Fab., note on; FAUST, S. E. Z. xlviii, p. 306.

Baris nesapia, Turkestan, FAUST, S. E. Z. xlviii, p. 303; *B. clandestina*, Turkestan, *id. t. c.* p. 306; *B. cœlestis*, Delagoa Bay, *eburifera*, India?, PASCOE, Ann. N. H. (5) xx, p. 359; *Baridius melaleucus*, Trop. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 321, n. spp.

Lissotarsus (sub *Baridius*) *alboguttatus*, Bris., = (*balassogloi*, Faust); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 202.

Barinus, Casey: to this are referred *Barilepton lutescens*, *albescens*, *lineare*, and *bicittatum*, Lec.; *B. albescens* is distinct from *lineare*, Lec., *B. cribricolle*, Lec., = (*squamolineatum*, Casey): BLANCHARD, Ent. Am. iii, pp. 87 & 88; but *cf.* CASEY, *t. c.* p. 125.

Centrinus sipolisii, Minas Geraes, FAIRMAIRE, Bull. Soc. Ent. Fr. (6) vii, p. clxxx, n. sp.

Acythopeus genuinus, Malaisia, p. 359, *funereus*, Tondano, p. 360, PASCOE, Ann. N. H. (5) xx, n. spp.

Lystrus longimanus, Sumatra, PASCOE, Ann. N. H. (5) xx, p. 361, n. sp.

Calandrides.

Macrochirus herveyi, Malacca, WATERHOUSE, Ann. N. H. (5) xix, p. 295, n. sp.

Otidognathus comptus, p. 373, pl. xi, fig. 6, *celatus*, p. 374, Cambodia, Ent. Trans. N. H. (5) xix, n. spp.

Pachyteria zonoptera Sudaman, PASCOE, Ann. N. H. (5) xix, p. 374, vii, p. 66, pl. 4, fig. 6, n. s

Sphenocorynus meleagris, Sarawak, *rufescens*, Tondano, p. 375, *conformis*, Philippines, *ocellatus*, Formosa, p. 376, PASCOE, Ann. N. H. (5) xix, n. spp.

Cercidocerus heros, Penang, PASCOE, Ann. N. H. (5) xix, p. 377, n. sp.

Eugnoristus tristis, Madagascar, PASCOE, Ann. N. H. (5) xix, p. 377, n. sp.

Neoxides, n. g. for *N. bilineatus*, n. sp., Sumatra, pl. xi, fig. 4, PASCOE, Ann. N. H. (5) xix, p. 378.

Laogenio laticollis, Borneo, PASCOE, Ann. N. H. (5) xix, p. 379, pl. xi, fig. 2, n. sp.

Tyndides luctuosus, Borneo, PASCOE, Ann. N. H. (5) xix, p. 379, pl. xi, fig. 5, n. sp.

Prodioctes amœnus, Pasc., generic position queried; PASCOE, Ann. N. H. (5) xix, p. 379.

Megaproctus pygionatus, Pasc., generic position queried; PASCOE, Ann. N. H. (5) xix, p. 380.

Liocalandra? pyialis fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 321.

Sphenophorus alaiensis, Turkestan, FAUST, Deutsche e. Z. xxxi, p. 318, n. sp.

Calandra granaria and *oryzæ*, ravages of, with life-history of *C. oryzæ*; ORMEROD, Rep. xi, pp. 71-77. *C. granaria*, remains of, in an ancient Gallo-Roman cemetery; DOMAISON, Bull. Soc. Ent. Fr. (6) vii, p. cciv.

Sipalides.

Sipalus chinensis, Tchékiang, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 130, n. sp.

Rhina meldolæ, Andaman, PASCOE, Ann. N. H. (5) xix, p. 380, n. sp.

Nassophasis, systematic position queried; PASCOE, Ann. N. H. (5) xix, p. 378.

N. pictipes, Ceylon?, PASCOE, Ann. N. H. (5) xix, pl. xi, fig. 1, n. sp.

Cossonides.

Rhyncholus: the European subgenera and species tabulated; REITTER, Deutsche e. Z. xxxi, pp. 123–127. *R. muricatus*, Sch., = (*simus*, Chev.); BEDEL, Ann. Soc. Ent. Fr. (6) vii, p. 202.

Pentarthrum (an. n. g.) *celebensis*, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 138, n. sp.

SCOLYTIDÆ.

[*Cf.* BEDEL (43), BUGNION (99), DUGÈS (185), REITTER (614), REY (632), SCHREIBER (685), SEITNER (694).]

Hylastinus, n. g., for *Hylastes obscurus*, Marsh; BEDEL, Faune Col. Seine, vi, p. 388.

Phlœosinus thujæ, habits, oviposition, structure of ovaries; BUGNION, Rev. d'Ent. vi, pp. 129–138, pl. iii. *P. impressus*, Ol., larva described; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 230.

P. armatus, Syria, REITTER, Wien. ent. Z. v[illegible], Ent. Nachr. xiii,

Carphoborus henscheli, Smyrna, REITTER, W[illegible]

Hylesinus wachtli, S. France, Reitter, Wien. ent. Z. vi, p. 193, n. sp.

Phlœotribus (sub *Scolytus*) *scarabæoides*, Bernard, = (*oleæ*, Fab.); Bedel, Bull. Soc. Ent. Fr. (6) vii, p. cxci.

Hypothenemus eruditus, West., life-history and figure; Hubbard, Ins. Orange, p. 173, pl. xiv, fig. 1.

Phlœoborus sipolisii, Minas-Geraes, *gaujonii*, Ecuador, Fairmaire, Bull. Soc. Ent. Fr. (6) vii, p. xvi, n spp.

Stephanoderes simoni, p. 194, *albipilis*, p. 195, Syria, Reitter, Wien. ent. Z. vi, n. spp.

Tænioglyptes, n. subg. of *Cryphalus*; Bedel, Faune Col. Seine, vi, p. 398.

Ernoporus schreineri, Eich., is the same as *caucasicus*, Lind.; Bedel, Bull. Soc. Ent. Fr. (6) vii, p. cxci.

Anaretus, n. g. (provisional), p. 141, for *Xyleborus guanajuatensis*, n. sp., Mexico, *l. c.*; metamorphoses described, p. 140, pl. i, figs. 11–22; Dugès, Ann. Ent. Belg. xxxi.

Xyleborus pyri and *obesus* queried as one species; Schwarz, Ent. Am. iii, p. 20.

Dryocœtes nitidicollis, Marocco, Reitter, Wien. ent. Z. vi, p. 197, n. sp.

Pityophthorus heuscheli, Tyrol, Seitner, Wien. ent. Z. vi, p. 44, n. sp.

Bostrychus kaltenbachii, Bach., habits; Schroeder, Soc. Ent. ii, p. 138.

Thamnurgus caucasicus, Caucasus, Reitter, Wien. ent. Z. vi, p. 195, n. sp.

Ips, De Geer, = (*Tomicus*, Latr., auct.); Bedel, Faune Col. Seine, vi, p. 400.

Tomicus bistridentatus, Eich.; n. var. *conjunctus*; Reitter, Wien. ent. Z. vi, p. 196.

Pityogenes, n. g., for *Tomicus*, pars auct.; type, *T. chalcographus*; Bedel, Faune Col. Seine, vi, p. 397.

Tomicus, Latr., = (*Hylastes*, Er.); Bedel, Faune Col. Seine, vi, p. 388.

T. pinicola, n. n. for *H. ater*, auct.; *id.* p. 390.

Xylocleptes biscuspis, Syria, Reitter, Wien. ent. Z. vi, p. 196, n. sp.

Scolytus carinatus, Chap., locality of; Bedel, Bull. Soc. Ent. Fr. (6) vii, p. cxci. *S. ratzeburgi*, Jans., habits and ravages; Schreiber, Ent Nachr. xiii, pp. 220–223. *S. amygdali*, Guer., injurious in Transcaucasus, &c.; Lindeman, Bull. Mosc. (n.s.) i, p. 197.

Brenthidæ.

[*Cf.* Pascoe (556).]

Diurus dispar, Pasc., note on; Pascoe, Ann. N. H. (5) xx, p. 19.

D. sphacelatus, Andaman, Pascoe, Ann. N. H. (5) xx, p. 19, n. sp.

Cediocera, n. g., near *Diurus*, for *C. longicornis*, n. sp., Andaman, pl. i, fig. 5; Pascoe, Ann. N. H. (5) xx, p. 20.

Anthotribidæ.

Ent. Tijdsch.

Pachyteria zonoptera Fuss (672).]

vii, p. 66, pl. 4, fig. 6, n. sp. eria, Faust, Deutsche e. Z. xxxi, p. 162, n. sp.

Hormocerus annulipes, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 138, n. sp.

Cylindroides alboplagiatus, Fairm., = (*Aulodes bifasciatus*, Qued.); FAIRMAIRE, Bull. Soc. Ent. Fr. (6) vii, p. xxxiv.

Choragus galeazzii, Villa, a valid species, characters of; REITTER, Wien. ent. Z. vi, p. 106.

Urodontidæ: revision of the European species; BAUDI, Deutsche e. Z. xxxi, pp. 480–494.

BRUCHIDÆ.

Mylabris spinigera (= *discipennis*, All.), Syria, p. 36, *lamellicornis*, Spain, p. 38, *ochracea*, Syria, p. 50, *anobioides*, Cyprus, p. 62, *parumpunctata*, Syria, p. 73, *mordelloides*, Syria, p. 454, *retusa*, Syria, p. 463, *M.* (*Kytorrhinus*) *tenebrosa*, Siberia, p. 466, BAUDI, Deutsche e. Z. xxxi, n. spp.

CERAMBYCIDÆ.

[*Cf.* AURIVILLIUS (27), FAIRMAIRE (203, 204, 205), FLEUTIAUX (232), GANGLBAUER (248, 250, 251), HEYDEN (304, 306), JAKOWLEFF (343, 345, 346), LAMEERE (414), LANSBERGE (416, 418), MICHARD (494), POLL (566, 570, 571), QUEDENFELDT (588), REY (632), RITSEMA (645, 647), SCHAUFUSS (672), WATERHOUSE (788).]

Prionides.

On *Hypocephalus armatus*; MELVILL, P. Manch. Soc. xxv, pp. 223–229,

Prionus: the Russian species revised, with table and characters, *P. henkei*, Schauf., *asiaticus*, Fald., *hirticollis*, Motsch., *balassogloi*, Jak. *brachypterus*, Gebl., *hemipterus*, Motsch., noticed at length; JAKOWLEFF, Hor. Ent. Ross. xxi, pp. 321–337. *P. laticollis*, Drury, and other species, sexual distinctions; BLANCHARD, Ent. Am. iii, p. 85.

P. delavayi, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 130; *P. vicinus*, Caucasus, p. 325, *schaufussi* = (*besicanus*, Schauf., *nec* Fairm.), Beyrout, p. 326, *angustatus*, Turkestan, p. 328, JAKOWLEFF, Hor. Ent. Ross. xxi, n. spp.

Mesoprionus, n. subg. of *Prionus*, for *P. asiaticus*, Fald., *besicanus*, Fairm., and *henkei*, Schauf.; JAKOWLEFF, Hor. Ent. Ross. xxi, p. 323.

Brachyprionus, n. subg. of *Prionus*, for *P. brachypterus*, Gebl., and *hemipterus*, Motsch; JAKOWLEFF, Hor. Ent. Ross. xxi, p. 324.

Prionoblemma, n. g., p. 318, near *Prionus*, for *P. przewalskyi*, n. sp. Central Asia; JAKOWLEFF, Hor. Ent. Ross. xxi, p. 319.

Polyarthron pluschewskyi, Transcaspian Region, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 157, n. sp.

Pixodarus, n. g., for *Hoplideres nyassæ*, Bates; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 325.

Macrotoma edulis, larva described and figured; KARSCH, P. E. [illegible] pp. 6–8, pl. i, figs. 3–5.

Ægosoma bicoloripes, Rits., figured; Midden[illegible], Ent. Nachr. xiii,

Æ. granuliferum, Sumatra, LANSBERGE, Notes Leyd. Mus. ix, p. 143, n. sp.

Sobarus poggei, Harold, noticed; AURIVILLIUS, Œfv. Ak. Förh. 1887, p. 307.

Cerambycides.

Xystrocera nitidicentris, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 326, n. sp.

Utopia castelnaudii, Thoms., figured; Midden-Sumatra, iv, 6, pl. 3, fig. 2.

Hesperophanes campestris, Fald., = (*rusticus*, Gangl., and *Stromatium turkestanicum*, Heyd.); HEYDEN, Deutsche e. Z. xxxi, p. 295.

H. hylotrypoides, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 327, n. sp.

Chlorida spinosa, Columbia, AURIVILLIUS, Ent. Tidskr. viii, p. 191, n. sp.

Elaphidion villosum, Fabr., habits and instinct; CLARKSON, Canad. Ent. xix, pp. 31–34. *E. inerme*, Newm., and *parallelum*, Newm., metamorphoses; HUBBARD, Ins. Orange, pp. 125–127, figs. 47 & 48; also p. 171, fig. 80. *E. parallelum*, Newm., habits; TOWNSEND, Rep. E. Soc. Ont. xvii, p. 15. *E. parallelum* and *villosum*, habits; HAMILTON, Canad. Ent. xix, pp. 141–145.

Toxotus quercus, note on the varr. of, with new names; KRAATZ, Wien. ent. Z. vi, p. 310. *T. quercus*, n. var. *discolor*; FLEISCHER, Wien. ent. Z. vi, p. 237: this altered to *unicolor*; *t. c.* p. 272.

T. longevittatus, Pekin, FAIRMAIRE, Rev. d'Ent. vi, p. 329, n. sp.

Brachyta koltzei, Amur-land, HEYDEN, Deutsche e. Z. xxxi, p. 304, n. sp.

Pachyta, Argaleus, Brachyta: use of these names discussed; CHAMPION, Ent. M. M. xxiii, p. 229.

Leptura succedanea, Lew., = (*L. rufa*, var. *muliebris*, Heyd.); HEYDEN, Deutsche e. Z. xxxi, p. 295. *L. dubia*, var. *fuliginosa*; WEISE, Z. ent. Bresl. xii, p. 56.

Strangalia nigrocaudata, N. China, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 135, n. sp.

Ephies cardinalis, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 131, n. sp.

Macropsebium ? wahlbergii, N'Gami, AURIVILLIUS, Ent. Tidskr. viii, p. 192, n. sp.

Gymnopterion pallidipenne, Turkestan, HEYDEN, Deutsche e. Z. xxxi, p. 321, n. sp.

Distichocera superba, Australia, POLL, Notes Leyd. Mus. ix, p. 113, n. sp.

Pyresthes hypomelas, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 131, n. sp.

Paradistichocera, n. g., for *Distichocera kirbyi*, Newm.; POLL, Notes Leyd. Mus. ix, p. 115.

Brachytria thoracica, Australia, POLL, Notes Leyd. Mus. ix, p. 283, n. sp.

Typhocesis floccosa, Queensland, POLL, Notes Leyd. Mus. ix, p. 116, n. sp.

Compsomera elegantissima, White, var. *insignis*, n. var.; AURIVILLIUS, Ent. Tidskr. viii, p. 196.

Pachyteria zonopteroides, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 66, pl. 4, fig. 6, n. sp.

Phyllocnema petalophora, fully described ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 332.

P. triangularis, S. Africa, Aurivillius, Ent. Tidskr. viii, p. 193, n. sp.

Hypatium cærulans, fully described ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 331.

Callichroma testaceipenne, Rits., figured ; Midden-Sumatra, iv, 6, pl. 3, fig. 3.

C. provostii, Pekin, Fairmaire, Bull. Soc. Ent. Fr. (6) vii, p. liv, and Rev. d'Ent. vi, p. 328, n. sp.

Xanthospila flavoplagiata, this genus and species fully described ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 333.

Chloridolum klaesii, Sumatra, Poll, Notes Leyd. Mus. ix, p. 127, n. sp.

Polyzonus hexastictus, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 327 ; *P. laurx, cuprarius*, Yunnan, *id.* Ann. Ent. Belg. xxxi, p. 132 : n. spp.

Litopus semiopacus, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 331, n. sp.

Hypocrites pretiosus, p. 328, *janthinicornis, lævipes*, p. 329, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii : n. spp.

Closteromerus argyrothorax fully described, but it is a synonym of *C. insignis*, Gerst. ; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 333.

Rosalia : the genus monographed ; *Eurybatus*, Th., considered a subgenus thereof ; Lameere (414). *R. alpina*, procured in abundance ; Holeczek, Ent. Nachr. xiii, pp. 308 & 310.

R. gravida, Darjeeling, p. 166, pl. iii, fig. 5, *lata*, Java, p. 168, pl. iii, fig. 7, Lameere. Ann. Ent. Belg. xxxi, n. spp.

Callidiides, &c., classification discussed ; Lameere, Ann. Ent. Belg. xxxi, p. 172.

Callidium variabile, L., biological note ; Tijdschr. Ent. xxx, p. xvii.

Clytus arcuatus, L., = (*reichei*, Th.), and *arietis*, L., var., = (*ambigenus*, Chev.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 202.

Neoclytus, synopsis of the N. American species ; Leng, Ent. Am. iii, pp. 4–8.

Clytanthus herzianus, Gangl., var. described ; Ganglbauer, Hor. Ent. Ross. xxi, p. 21.

Aglaophis colobotheoides, Bates, = (*Anaglyptus angustifasciatus*, Heyd.) ; Heyden, Deutsche e. Z. xxxi, p. 295.

Pacilopeplus tardifi, Colombia, Michard, Rev. d'Ent. vi, p. 139, n. sp.

Purpuricenus barbarus, Luc., ♂ = (*dumerili*, Luc.) ; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 202.

Apatophysis sieversi, Pekin, Ganglbauer, Hor. Ent. Ross. xxi, p. 21, n. sp.

Lamiides.

Anexodus aquilus, Pasc., figured, pl. 175, fig. 6 ; Waterhouse, Aid.

Parmena fasciata, de Villers, larva described ; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 233.

Dorcadion mystacinum, Ball., note on, with var. *capreolus* : Heyden, Deutsche e. Z. xxxi, p. 317.

D. komarowi, Transcaspian region, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 155; *D. subcostatum*, Turkestan, HEYDEN, Deutsche e. Z. xxxi, p. 323 : n. spp.

Neodorcadion przewalskyi, Central Asia, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 317, n. sp.

Phantasis occidentalis, W. Africa, LANSBERGE, Notes Leyd. Mus. ix, p. 111, n. sp.

Epicedia wrayi, Perak, WATERHOUSE, Ann. N. H. (5) xix, p. 449, n. sp.

Euoplia argenteo-maculata, Manilla, AURIVILLIUS, Ent. Tijdschr. viii, p. 196, fig. 3, n. sp.

Diochares flavoguttatus, Tchékiang, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 133, n. sp.

Monohammus versteegii, Rits., figured, pl. 3, fig. 4 ; Midden-Sumatra, iv, 6.

Pharsalia albomaculata (de Haan), Java, POLL, Notes Leyd. Mus. ix, p. 117, n. sp.

Rosenbergia megalocephala, ♂ described ; POLL, Notes Leyd. Mus. ix, p. 184.

Iothocera tomentosa, Buq., = (*Aprionа humeralis*, Kaup.) ; POLL, Notes Leyd. Mus. ix, p. 273.

Aprionа straussi, Gestro, referred to *Rosenbergia* ; POLL, Notes Leyd. Mus. ix, p. 271. *A. flavescens* and *deyrollei*, Kaup., noticed; *id. t. c.* p. 273.

Batocera. List of the species, with synonymy; RITSEMA (647). List of the species ; POLL (570), with synonymy, of which the following is the most important part:—*B. armata*, ♀ = (*whitei*, Kaup.), *humeridens*, ♂ = (*wienecki*, Kaup.) ; *B. aphetor* and *rixator*, Newm., are referred to *Apriona* ; *B. ajax*, Dej., = (*numitor*, Newm.), and this species and *titana*, Th., are varieties of one ; *B. armata*, Ol., = (*ammon*, Pasc.) and *orcus*, Pasc., is a var. of it, *celebiana*, Th., = (*metallescens*, Pasc.).

Periaptodes frater, Cape York and New Britain, POLL, Notes Leyd. Mus. ix, p. 119, n. sp.

Calloplophora graafii, Rits., figured ; Midden-Sumatra, iv (6), pl. 3, fig. 5.

Tragocephala modesta, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 341, n. sp.

Zographus alboguttatus fully described : *Z. aulicus*, = (*ferox*, Har.); FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 336.

Anoplostetha pauli, fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 338.

A. nebulosa, Cameroons, QUEDENFELDT, B. E. Z. xxxi, p. 142, n. sp.

Ceroplesis pauli, fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 339.

C. semitrabeata, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 340, n. sp.

Phryneta nigroperlata, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 338; *P. nigrosignata*, Cameroons, QUEDENFELDT, B. E. Z. xxxi, p. 143 : n. spp.

Chreostes oberthuri, Pasc., figured, pl. 175, fig. 8; WATERHOUSE, Aid.

Thylactus longipennis, Pasc., figured, pl. 175, fig. 7; Waterhouse, Aid.

Cymatura mucorea, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 343, n. sp.

Cylindrepomus grammicus, ♂ ♀, pl. 175, figs. 1 & 2; *lætus*, fig. 4, figured: Waterhouse, Aid.

Olenecampus optatus figured, pl. 175, fig. 3; Waterhouse, Aid.

Dichostates compactus, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 337, n. sp.

Crossotus fascicularis, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 337, n. sp.

Mæchotypa davidis, Pekin, Fairmaire, Rev. d'Ent. vi, p. 328, n. sp.

Spodotænia basicornis, the genus and species fully described, the latter figured; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 342, pl. 3, fig. 11.

Oncideres cingulatus, Say, habits and metamorphoses; Hubbard, Ins. Orange, pp. 128 & 129, figs. 49 & 50.

Perma suturalis, chalcogramma, Rio Janeiro, Bates, Ent. M. M. xxiv, p. 63, n. spp.

Stethoperma multivittis, Minas Geraes, Bates, Ent. M. M. xxiv, p. 63, n. sp.

Pogonocherus caroli, Muls., larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 235.

Hyllisia subvirgata, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 344, n. sp.

Tetraglenes pauli, fully described and referred to *Spalacopsis*; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 345.

Tanylamia melanura, Pasc., figured, pl. 175, fig. 5; Waterhouse, Aid.

Leptostylus biustus, Lec., habits, p. 174, pl. xiv, fig. 2; Hubbard, Ins. Orange.

Hyperplatys maculatus, Hald., habits, p. 174, fig., pl. xiv, fig. 3; Hubbard, Ins. Orange.

Liopus caucasicus, Tiflis, Ganglbauer, Hor. Ent. Ross, xxi, p. 25, n. sp.

Saperda scalaris, duration of life; Fallou, Bull. Soc. Ent. Fr (6) vii, p. xvii.

Glenea fortunei, Saund., var. *soluta* described; Ganglbauer, Hor. Ent. Ross. xxi, p. 22.

Volumnia militaris, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 345, n. sp.

Nupserha basipennis, nigricentris, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 346, n. spp.

Phytœcia erythrocnema, Luc., = (*brevis*, Chev.), the locality assigned to the latter being erroneous; Bedel, Ann. Soc. Ent. Fr. (6) vii, p. 202. *P. cylindrica*, L., var. *ferrea* described; Ganglbauer, Hor. Ent. Ross. xxi, p. 22.

P. sellata, Sarafschan, Ganglbauer, Deutsche e. Z. xxxi. p. 296, n. sp.

Mallosia regina, Turkestan, Heyden, Deutsche e. Z. xxxi, p. 319, n. sp.

Oberea herzi, Pekin, Ganglbauer, Hor. Ent. Ross. xxi, p. 23; *O. semivittata*, Yunnan, *seminigra*, Tchékiang. Fairmaire, Ann. Ent. Belg. xxxi, p. 134: n. spp.

Mecas inornata, Say, and *saturnina*, Lec., differences between; BLANCHARD, Ent. Am. iii, p. 86.

Charicsthes richteri, Cameroons, QUEDENFELDT, p. 141, B. E. Z. xxxi, n. sp.

CHRYSOMELIDÆ.

[*Cf.* ALLARD (5), BALY (33, 34), DUGÈS (185), DUVIVIER (186), FAIRMAIRE (203, 204, 205, 206), FLEUTIAUX (232), GÖLDI (266), HEYDEN (304, 307), JACOBY (336, 337, 338), KOLBE (382, 383), LEFÈVRE (422, 423, 424, 425), MARSEUL (470), RAGUSA (599), REY (632), SCHAUFUSS (672), SCHMIDT-SCHWEDT (678), UHAGON (760), WEISE (304, 794, 795, 796).]

Sagrides, Donaciides, Criocerides.

Sagra longefemorata, fully described; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 347.

S. luctuosa, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 347, n. sp.

Donacia crassipes, respiration of larva and pupa; SCHMIDT-SCHWEDT (678). *D. macrocnema*, Fisch., descriptive note; WEISE, Arch. f. Nat. liii, p. 164.

D. bactriana, Turkestan, WEISE, Deutsche e. Z. xxxi, p. 325; *D. transversicollis*, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 135: n. spp.

Lema, Lac., (= *Oulema*, Gozis); WEISE, Deutsche e. Z. xxxi, p. 352.

L. akinini, Turkestan, HEYDEN, Deutsche e. Z. xxxi, p. 323; *L. ceylonensis*, p. 65, *fulvicornis*, *crassicollis*, p. 66, *difficilis*, p. 67, Ceylon, JACOBY, P. Z. S. 1887: n. spp.

Crioceris semipunctata, F., noticed; JACOBY, P. Z. S. 1887, p. 68. *C. 14-punctata*, Scop., var. *sibirica*; WEISE, Arch. f. Nat. liii, p. 165.

C. crassicornis, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 136; *C. sinica*, p. 270, *sieversi*, p. 271, Korea, HEYDEN, Hor. Ent. Ross. xxi: n. spp.

Pœcilomorpha apicata, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 348, n. sp.

Clythrides.

Labidostomis chinensis, Pekin, LEFÈVRE, Bull. Soc. Ent. Fr. (6) vii, p. lv, n. sp.

Clythra (*Diapromorpha*) *trizonata*, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 348; *C.* (*D.*) *cribricollis*, W. Africa, LEFÈVRE, Notes Leyd. Mus. ix, p. 259: n. spp.

Diapromorpha quadripunctata, Ceylon, JACOBY, P. Z. S. 1887, p. 68, n. sp.

Gynandrophthalma rufilabris, *macilenta*, Turkestan, WEISE, Deutsche e. Z. xxxi, p. 326; *G. obscuripes*, E. Siberia, *id.* Arch. f. Nat. liii, p. 165: n. spp.

Coptocephala japonica, var. *immaculata*; HEYDEN, Deutsche e. Z. xxxi, p. 295. *C. unifasciata*, var. *fallax*; WEISE, Z. Ent. Bresl. xii, p. 56.

Cryptocephalus regalis, var. *cyanescens*, p. 166; *C. japanus*, Baly, var. ? 4-*lineatus*, p. 168; WEISE, Arch. f. Nat. liii.

C. hauseri, p. 327, *tarsalis*, p. 328, Turkestan, WEISE, Deutsche e. Z.

xxxi; *C. egregius*, p. 169, *ruralis*, p. 170, *koltzei*, p. 171, E. Siberia, *id.* Arch. f. Nat. liii : n. spp.

Pachybrachys caprea, p. 329, *instabilis*, p. 330, Turkestan, Weise, Deutsche e. Z. xxxi, n. spp.

Thelyterotarsus hauseri, Turkestan, Weise, Deutsche e. Z. xxxi, p. 331, n. sp.

Chlamys pallifrons, Ceylon, Jacoby, P. Z. S. 1887, p. 68, n. sp.

Exema ceylonensis, Ceylon, Jacoby, P. Z. S. 1887, p. 69, n. sp.

Eumolpides.

Chrysodina pilosa, antennata, servula, Panama, Lefevre, p. clv, Bull. Soc. Ent. Fr. (6) vii, n. spp.

Chrysolampra punctatissima, Ceylon, Jacoby, P. Z. S. 1887, p. 73, n. sp.

Dermorrhytis ornatissima, Baly, = (*fasciato-rutilans*, Lefv.), fig. 6; *igneo-fasciata*, Baly, fig. 5, figured; Jacoby, pl. x, P. Z. S. 1887.

D. caprea, ceylonensis, pl. x, fig. 7, p. 81, *lewisi, variabilis*, p. 82, Ceylon, Jacoby, P. Z. S. 1887, n. spp.

Nodostoma flavo-pustulatum and *consimile*, Baly, referred to *Pagria*; Lefevre, Notes Leyd. Mus. ix, p. 260.

N. fabrei, Hindostan, Lefevre, Bull. Soc. Ent. Fr. (6) vii, p. clxxv; *N. bituberculatum, bipunctatum*, p. 76, *impressipenne, lewisi*, p. 77, *fa[illegible]sum*, pl. x, fig. 4, *lefevrei*, p. 78, *clypeatum, longicorne*, p. 79, *fairmairei, obliteratum*, p. 80, Ceylon, Jacoby, P. Z. S. 1887 : n. spp.

Nodina subdilatata, Motsch., redescribed; Jacoby, P. Z. S. 1887, p. 74.

Pagria sumatrensis, Sumatra, Lefevre, Notes Leyd. Mus. ix, p. 260; *P. strigicollis*, Hindostan, *id.* Bull. Soc. Ent. Fr. (6) vii, p. clxxv; *P. costatipennis*, Ceylon, Jacoby, P. Z. S. 1887, p. 73, pl. x, fig. 2 : n. spp.

Scelodonta orientalis, China, Lefevre, Bull. Soc. Ent. Fr. (6) vii, p. lvi; *S. inæqualis*, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 357 : n. spp.

Graphops pubescens, ravages of; Alwood, Bull. Dep. Agric. Ent. xiii, p. 48.

Xanthonia flavopilosa, Ceylon, Jacoby, P. Z. S. 1887, p. 72, n. sp.

Aulexis pallida, Sumatra, Lefevre, Notes Leyd. Mus. ix, p. 260, n. sp.

Demotina semifasciata, pl. x, fig. 1, *thoracica*, p. 70, *lewisi*, p. 71, *ceylonensis*, p. 72, Ceylon, Jacoby, P. Z. S. 1887, n. spp.

Heteraspis occidentalis, Turkestan, Weise, Deutsche e. Z. xxxi, p. 335, n. sp.

Pseudocolaspis janthina, auripes, p. 353, *pachnephora, minutula*, p. 354, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Didalsus, n. g., p. 355, near *Pseudocolaspis*, for *D. latesulcatus*, n. sp., p. 356, E. Africa; Fairmaire, Ann. Soc. Ent. Fr. (6) vii.

Spheropis championi, Pearl Is., Lefevre, Bull. Soc. Ent. Fr. (6) vii, p. clvi, n. sp.

Rhyparida quinquemaculata, pl. x, fig. 2, *lævicollis*, Ceylon, Jacoby, p. 75, P. Z. S. 1887, n. spp.

Colasposoma mutabile, Baly, note on; Lefevre, Notes Leyd. Mus. ix, p. 261.

Colasposoma versicolor, Hindostan, LEFEVRE, Bull. Soc. Ent. Fr. (6) vii, p. clxxiv, n. sp.

C. davidi, Yunnan, LEFEVRE, Bull. Soc. Ent. Fr. (6) vii, p. lv ; *C. varicolor*, p. 349, *densatum*, p. 350, *cyaneocupreum*, p. 352, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii : n. spp.

Euryope cruciata, W. Africa, LEFEVRE, Notes Leyd. Mus. ix, p. 261, n. sp.

Adoxus vitis, Fab., injuries in vineyards ; OLIVIER, Bull. Soc. Ent. Fr. (6) vii, p. cxxvii.

Abirus angustatus, Hindostan, LEFEVRE, Bull. Soc. Ent. Fr. (6) vii, p. clxxv ; *A. hageni*, Sumatra, *id.*, Notes Leyd. Mus. ix, p. 262 : n. spp.

Pachnephorus variegatus, seriatus, Cochin China, LEFEVRE, Bull. Soc. Ent. Fr. (6) vii, p. lvii, n. spp.

Apolepis atra, Sumatra, LEFEVRE, Notes Leyd. Mus. ix, p. 262, n. sp.

Phytorus nigrolimbatus, Sumatra, LEFEVRE, Notes Leyd. Mus. ix, p. 262, n. sp.

Menius tarsalis, W. Africa, LEFEVRE, Notes Leyd. Mus. ix, p. 263, n. sp.

Rhembastus punctatosulcatus, Uzagara, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 357, n. sp.

Cleoring (sub *Nodostoma*) *æneomicans*, Baly, = (*aulica*, Lefv.) ; LEFEVRE, Notes Leyd. Mus. ix, p. 263.

C. fulvitarsis, Sumatra, LEFEVRE, Notes Leyd. Mus. ix, p. 263, n. sp.

Corynodes davidi, Yunnan, LEFEVRE, Bull. Soc. Ent. Fr. (6) vii, p. lvi ; *C. egenus*, Sumatra, *id.*, Notes Leyd. Mus. ix, p. 264 : n. spp.

Colaspoides nigripes, Jac., varr. noticed ; LEFEVRE, Notes Leyd. Mus. ix, p. 264.

C. speciosa, Banka, *hageni*, p. 265, *lævicollis*, p. 266, Sumatra, LEFEVRE, Notes Leyd. Mus. ix, n. spp.

Chrysomelides.

Colaspidema suturella, Pekin, FAIRMAIRE, Rev. d'Ent. vi, p. 330, n. sp.

Colaphus alpinus, Geb., note on ; WEISE, Arch. f. Nat. liii, p. 173.

Gastroidea viridula, habits ; LUCAS, Bull. Soc. Ent. Fr. (6) vii, p. cxlviii.

Sternoplatys fulvipes, Motsch., noticed; WEISE, Arch. f. Nat. liii, p. 188.

Phædon (*Sternoplatys*) *hemisphæricus*, E. Siberia, WEISE, Arch. f. Nat. liii, p. 187, n. sp.

Plagiodera scripta, ravages of ; BRUNER, Bull. Dep. Agric. Ent. xiii, p. 34.

Melasoma cuprea, F., var. *sarmatica*, WEISE, Arch. f. Nat. liii, p 187.

M. divisi, Ceylon, JACOBY, P. Z. S. 1887, p. 83, n. sp.

Orcina : note on the forms that couple, with notices of *peiroleri*, Bassi, and *melanocephala*, Dft. ; CLERK, Soc. Ent. ii, pp. 11 & 22. *O. luctuosa*, n. var. *auricollis*, STIERLIN, Soc. Ent. i, p. 137. *O. plagiata*, Suff., varr. of ; WEISE, Deutsche e. Z. xxxi, p. 185. *O. virgulata*, n. var. *papei* ; *id. t. c.* p. 364.

O. distinctissima, Galicia, Ulanowski, Kosmos Lemberg, xii, p. 340, n. sp.

Chrysomela fastuosa, L., larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 238. Weise specially notices *C. variolosa*, Mann, *adamsi*, Baly, *staphylæa*, L., var. *daurica*, Gebl., *æruginosa*, Fald., *auricha[illegible]*, Mann., with several varr.; Arch. f. Nat. liii, pp. 174–186. *C. purpurascens*, Germ., and *olivacea*, Suff., new varr. of; Weise, Deutsche e. Z. xxxi, p. 185. *C. apicata* fully described; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 358.

C. crebrepunctata, Zanzibar, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 359; *C. brunnicornis*, p. 175, *seriepunctata*, p. 176, *sibirica*, p. 177, *koltzei*, p. 179, Siberia, Weise, Arch. f. Nat. liii; *C. derelicta*, Syria, p. 192, *postviolacea*, Algeria, p. 208, *rufo-marginata*, Mesopotamia, Arabia, p. 235, Marseul, L'Abeille, xxiv; *C. sulcicollis*, p. 330, *pekinensis*, *lobicollis*, p. 331, Pekin, Fairmaire, Rev. d'Ent. vi: n. spp.

Calligrapha piceicollis, Stål, larva described; Dugès, Ann. Ent. Belg. xxxi, p. 146, pl. ii, figs. 14–20.

Leptinotarsa decemlineata, Say, in Germany: Ent. Nachr. xiii, p. 256; Karsch, pp. 323–329, and Will, *t. c.* pp. 380–382.

Doryphora maculata, Luc., = (*pardalina*, Stål), and *D. hieroglyphica*, Luc., = (*Labidomera liturifera*, Stål); Lucas, Bull. Soc. Ent. Fr. (6) vii. p. cx.

Æsernia australica, Queensland, p. 300, *latefasciata*, N. Guinea, p. 301, Jacoby, Notes Leyd. Mus. ix, n. spp.

Timarcha riffensis, Riff mountains, Fairmaire, Bull. Soc. Ent. Fr. (6) vii, p. exciii, n. sp.

Entomoscelis dohrni, Solsky, referred to *Xenomela*; Weise, Deutsche e. Z. xxxi, p. 335.

Anomomera, n. g., near *Gonioctena*, for *A. tenuelimbata*, n. sp., Somaliland; Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 360.

Phyllodecta tibialis, Suff., = (*viennensis*, Weise); Weise, Arch. f. Nat. liii, p. 174.

Phytodecta rufipes, Deg., note on; Weise, Arch. f. Nat. liii, p. 186.

Hydrothassa planiuscula, Spain, Weise, Deutsche e. Z. xxxi, p. 188, n. sp.

Centroscelis coccinella, p. 359, *tripunctata*, p. 360, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Halticides.

Elithia bipunctata, Chili, Allard, Bull. Soc. Ent. Fr. (6) vii, p. cc, n. sp.

Cladocera robusta, *limbata*, *nigrifrons*, *flaviceps*, Zanzibar, Allard, Bull. Soc. Ent. Fr. (6) vii, p. cc, n. spp.

Diamphidia compacta, E. Africa, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 361, n. sp.

Chalcoidea, Foudr.: origin of the name discussed; Weise, Deutsche e. Z. xxxi, p. 352.

C. picipes, E. Siberia, Weise, Arch. f. Nat. liii, p. 192, n. sp.

Erystus clypeatus, Timor, Jacoby, Notes Leyd. Mus. ix, p. 233, n. sp.

Crepidodera hirtipennis, *minuta*, Ceylon, Jacoby, P. Z. S. 1887, p. 90, n. spp

Haltica vittula, Redt., ravages and metamorphoses; Lindeman, Bull. Mosc. (n.s.) i, pp. 193–197. *H. alni*, Harris, ravages and metamorphoses;

P[illard], Bull. Dep. Agric. Ent. xiii, pp. 24 & 25. *H. ampelophaga*, C[ockerell], larva described; Rey, Ann. Soc. L. Lyon (2) xxxiii, p. 242.

odo[n]. semifasc[iatus], E. Siberia, Weise, Arch. f. Nat. liii, p. 195; *H.* (*Grapt[odera]*) *[semifas]ciatus*, Ceylon, Jacoby, P. Z. S. 1887, p. 83: n. spp.

Parlinaticia collaris, Ceylon; Jacoby, P. Z. S. 1887, p. 88.

P. fulva, Ceylon, Jacoby, P. Z. S. 1887, p. 88, n. sp.

Lactica suturalis, Sumatra, Jacoby, Notes Leyd. Mus. ix, p. 229, n. sp.

Longitarsus longicornis, Ceylon, Jacoby, P. Z. S. 1887, p. 87; *L. amurensis*, *straminеus*, p. 205, *aphthonoides*, p. 206, E. Siberia, Weise, Arch. f. Nat. liii; *L. corpulentus*, p. 333, *asperifoliarum*, p. 334, Turkestan, Weise. Deutsche e. Z. xxxi: n. spp.

Thyamis bedelii, Badajoz, Uhagon, An. Soc. Esp. xvi, p. 399, n. sp.

Anthobiodes, n. g., near *Longitarsus*, for *A. simoni*, Syria, n. sp.; Weise, Deutsche e. Z. xxxi, p. 402.

Luperomorpha, n. g., p. 202, for *L. trivialis*, n. sp., E. Siberia, p. 204; Weise, Arch. f. Nat. liii.

Aphthona modesta, p. 200, *tricialis*, p. 201, *interstitialis*, p. 202, E. Siberia, Weise, Arch. f. Nat. liii; *A. ceylonensis*, *lewisi*, *proxima*, p. 85, *vicina*, p. 86, Ceylon, Jacoby, P. Z. S. 1887; *A.* (?) *cyanea*, Sumatra, *id.* Notes Leyd. Mus. ix, p. 230: n. spp.

Eucyclu[s] ceylonensis, Ceylon, Jacoby, P. Z. S. 1887, p. 87, n. sp.

Phyllotreta koltzei, p. 197, *humilis*, p. 198, *sibirica*, p. 200, E. Siberia, Weise, Arch. f. Nat. liii; *P. praticola*, Turkestan, *id.* Deutsche e. Z. xxxi, p. 333; *P. discoidea*, Ceylon, Jacoby, P. Z. S. 1887, p. 84: n. spp.

Clzonica, n. g., near *Licyllus*, for *C. quadriplagiata*, n. sp., Sumatra; Jacoby, p. 233, Notes Leyd. Mus. ix.

Sebaethe amurensis, E. Siberia, Weise, Arch. f. Nat. liii, p. 196; *S. suturalis*, *ceylonensis*, Ceylon, Jacoby, P. Z. S. 1887, p. 91, n. spp.

Plectroscelis splendens, Motsch., noticed and referred to *Chætocnema*, p. 193; *costulata*, *granosa* and *convexa*, Motsch., are all one species, viz., *hortensis*, Fourc., p. 194; Weise, Arch. f. Nat. liii.

Chætocnema schläflini, Strl., = (*persica*, Baly); Heyden, Deutsche e. Z. xxxi, p. 295.

Calotheca, n. n. for *Eutheca*, Baly, *nec* Kies.; Heyden, Wien. ent. Z. vi, p. 98.

Hyphophila violaceipennis, p. 88, *apicipennis*, *rugicollis*, p. 89, Ceylon, Jacoby, P. Z. S. 1887, n. spp.

Manobia apicicornis, Ceylon, Jacoby, P. Z. S. 1887, p. 89, n. sp.

Argopus clypeatus, *orientalis*, Baly, noticed; Weise, Arch. f. Nat. liii, p. 209.

A. substriatus, p. 206, *intermedius*, p. 208, E. Siberia, Weise, Arch. f. Nat. liii, n. spp.

Sphæroderma parvula, Sumatra, Jacoby, Notes Leyd. Mus. ix, p. 231; *S. orientalis*, Ceylon, *id.* P. Z. S. 1887, p. 92: n. spp.

Psylliodes cyanescens, E. Siberia, Weise, Arch. f. Nat. liii, p. 194, n. sp.

Enneamera ceylonensis, Ceylon, Jacoby, P. Z. S. 1887, p. 84, n. sp.

Apophylia semiobscura, Zanzibar, Fairmaire, Ann. Soc. Ent. Fr. (6) vii, p. 365, n. sp.

Chabria, n. g., p. 92, for *C. nigroplagiata*, pl. x, fig. 8, *apicicornis*, fig. 9, n. spp., Ceylon, p. 93 ; JACOBY, P. Z. S. 1887.

Phælota, n. g., for *P. semifasciata*, n. sp., Ceylon, JACOBY, P. Lyon (2)7, p. 94. ...n, *adamsi*, Baly,

Pexodorus, n. g., p. 94, for *P. ceylonensis*, n. sp., *aurichalce*...5, pl. x, fig. 10; JACOBY, P. Z. S. 1887.

Philogeus, n. g., p. 95, for *P. fulvipennis*, n. sp., Ceylon, p. 96 ; JACOBY, P. Z. S. 1887.

Amphimeloides, n. g., for *A. dorsalis*, n. sp., Ceylon ; JACOBY, P. Z. S. 1887, p. 96.

Tegyrius, n. g., for *T. metallicus*, n. sp., Ceylon ; JACOBY, P. Z. S. 1887, p. 97.

Alytus, n. g., for *A. ceylonensis*, n. sp., Ceylon ; JACOBY, P. Z. S. 1887, p. 98.

Thrylea, n. g., p. 98, for *T. variabilis*, n. sp., Ceylon, p. 99 ; JACOBY, P. Z. S. 1887.

Morylus, n. g., for *M. fulvipennis*, n. sp., Ceylon ; JACOBY, P. Z. S. 1887, p. 99.

Icalia, n. g., p. 100, for *I. viridipennis*, pl. x, fig. 12, *metallica*, fig. 11, p. 100, *fulvipennis*, p. 101, n. spp., Ceylon ; JACOBY, P. Z. S. 1887.

Demarchus, n. g., for *D. pubipennis*, n. sp., Ceylon ; ...COBY, P. Z. S. 1887, p. 101.

Sphæropleura, n. g., for *S. tricostata*, n. sp., Ceylon ; JACOBY, P. Z. S. 1887, p. 102.

Galerucides.

Value of closure of anterior coxæ in classification of this group impugned ; BALY, Ent. M. M. xxiii. p. 269.

Arorium revoili, E. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 362, n. sp.

Aulacophora luteicornis, Fab., var. = (*dilatata*, Jac.) ; *A. bicolor*, Web., var. = (*semiopaca*, Jac.) : BALY, Ent. M. M. xxiii, p. 268. *A. stevensi*, Baly, redescribed, p. 102, pl. xi, fig. 1, *nigripeta*, Duv., figs. 2 & 3, figured ; JACOBY, P. Z. S. 1887.

Mombasica, n. n., to replace *Mombasa* ; the genus and *M. armicollis*, p. 363, *subinermis*, p. 364, pl. iii, fig. 12, fully described ; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii.

Pseudocophora bicolor, Ceylon, JACOBY, P. Z. S. 1887, p. 111 ; *P. nitens*, *flava*, Annam, p. cc, *plicata*, Malacca, *præusta*, Java, p. cci, ALLARD, Bull. Soc. Ent. Fr. (6) vii : n. spp.

Phyllobrotica hirtipennis, p. 103, *marginata*, p. 104, Ceylon, JACOBY, P. Z. S. 1887, n. spp.

Triarius, n. g., for *T. mexicanus*, n. sp., Sonora, p. 571 ; JACOBY, Biol. Centr. Am. Col. vi (1).

Neobrotica, n. g., p. 571, for *N. variabilis*, *ornata*, p. 572, *punctatissima*, Mexico, *imitans*, Costa Rica, *cæruleo-lineata*, Mexico, Guatemala, p. 573, *linigera*, Panama, *semicostata*, Mexico, pl. xxxiii, fig. 15, p. 574, *pallescens*, British Honduras, *cæruleo-fasciata*, Panama, p. 575, *vittatipennis*, pl. xxxiii, fig. 13, *inconspicua*, Mexico, *quadriplagiata*, Guatemala, p. 576.

Marensis, pl. xxx, fig. 22, *simulans*, Guatemala, p. 577, *sexmaculata*, [illegible] pl. xxxiii, fig. 12, Mexico, *denticollis*, Guatemala, fig. 11, p. 578, *nodi[illegible]*, *semifasciata-maculata*, *melanocephala*, pl. xxxiii, fig. 14, Mexico, [illegible]497, n. sp. [illegible] include *Diabrotica oberthuri*, Baly; Jacoby, Biol. Centr. *antiqua collaris*, Mex.

Diabrotica: Jacoby figures or notices the following Central-American species:—*regalis*, Baly, pl. xxviii, fig. 18, *morosa*, n. n. for *fraterna*, Baly, Ann. & Mag. Nat. Hist. 1879, *fenestralis*, Jac., fig. 20, *elegantula*, Baly, fig. 21, *gratiosa*, Baly, fig. 22, *duvivieri*, Baly, p. 505, *albosignata*, pl. xxix, fig. 14, p. 506, *pulchella*, Duv., fig. 11, *adelpha*, Har., fig. 8, *circulata*, Har., fig. 5, p. 513, *biannularis*, Har., fig. 7, *nummularis*, Har., fig. 6, *fulvosignata*, pl. xxix, fig. 12, *duodecimnotata*, Har., pl. xxx, fig. 5, *spilota*, Baly, fig. 6, *nigro-lineata*, Jac., fig. 16, *porracea*, Har., pl. xxix, figs. 17 & 18, p. 526, *sexmaculata*, Baly, fig. 16, *fusco-maculata*, fig. 25, p. 528, *balteata* = (*sallæi*), fig. 23, p. 530, *dissimilis*, fig. 19, *corusca*, Har., *fairmairei*, Baly, p. 533, *theimei*, p. 534, *vittata*, Fabr., pl. xxxi, fig. 5, p. 535, *cornuta*, Baly, pl. xxxi, fig. 8, *setosa*, Baly, pl. xxxii, fig. 19, *mediovittata*, Baly, p. 538, *cava*, Say, pl. xxxi, fig. 7, p. 539, *lepida* (sub *Galeruca*), Say, p. 542, *ventricosa*, Jac., pl. xxxii, fig. 25, p. 543, *cinctella*, Har., p. 546, *adonis*, pl. xxxi, fig. 21, *nigrofasciata* (sub *Cerotoma*), Jac., figs. 24 & 25, p. 549, *connexa*, pl. xxxii, fig. 20, *sexplagiata*, Jac., pl. xxxi, figs. 14 & 15, p. 553, *interrupto-fasciata*, pl. xxxi, fig. 13, *jansoni*, fig. 20, *mexicana*, fig. 22, p. 557, *sexpunctata*, Jac., pl. xxx, fig. 19, *octosignata*, Baly, fig. 23, p. 558, *lætabilis*, Baly, p. 562, *nigriceps*, Baly, pl. xxxi, fig. 18, *marginella*, Jac., fig. 12, p. 566, *curtisi*, fig. 10, *fusco-marginata*, Jac., fig. 19, *waterhousei*, Jac., pl. xxx, fig. 24.

D. elongata, Cauca, Duvivier, C.R. ent. Belg. 1887, p. xlvii; *panamensis*, *pygidialis*, pl. xxix, fig. 1, p. 503, *tessellata*, figs. 3 & 4, p. 505, Panama, *paradoxa*, Guatemala, fig. 13, p. 506, *championi*, Nicaragua, Panama, *viridifasciata*, Costa Rica, Panama, fig. 15, *signifera*, pl. xxxi, fig. 3, p. 507, British Honduras to Panama, *dorso-vittata*, Guatemala, *bipartita*, Panama, p. 508, *regularis*, Panama, *rogersi*, Costa Rica, pl. xxviii, figs. 24 & 25, p. 509, *godmani*, Panama, p. 510, *octoplagiata*, Guatemala, Nicaragua, pl. xxx, fig. 17, p. 511, *tibialis*, Mexico, pl. xxix, fig. 9, *brunneo-signata*, Panama, p. 512, *delineata*, Mexico to Guatemala, fig. 10, p. 514, *chontalensis*, Nicaragua, *viridicollis*, Mexico to Panama, pls. xxix, fig. 2, & xxx, fig. 9, p. 515, *militaris*, pl. xxviii, fig. 23, *quadricollis*, pl. xxx, fig. 20, p. 516, Guatemala, *flaviventris*, Mexico, pl. xxix, fig. 20, *tricolor*, Guatemala, pl. xxxi, fig. 16, p. 517, *duplicata*, pl. xxx, fig. 7, *apicicornis*, pl. xxx, fig. 1, p. 519, *fulvicornis*, fig. 2, *palpalis*, p. 520, *semicirculata*, *brevilineata*, pl. xxx, fig. 3, p. 521, Panama, *nigro-signata*, Guatemala, pl. xxx, fig. 10, *trifurcata*, Nicaragua to Panama, fig. 4, p. 522, *semiflava*, Panama, *cyaneo-maculata*, fig. 8, Costa Rica, p. 523, *curvilineata*, Mexico to Panama, fig. 15, *unistriata*, Costa Rica, *unilineata*, Mexico, fig. 14, p. 524, *trilineata*, Guatemala, fig. 13, *högei*, fig. 12, p. 525, *obscura*, Mexico, *olivieri*, Mexico to Nicaragua, p. 526, *variegata*, Mexico, pl. xxxi, fig. 2, p. 527, *selecta*, Guatemala, pl. xxix, fig. 21, p. 528, *scutellata*, *rufo-maculata*, fig. 22, p. 529, *tortuosa*, pl. xxx, fig. 18, p. 530, Mexico, *impressipennis*, pl. xxxi, fig. 17, *piceo-notata*, pl. xxxi, fig. 1, p. 531, Panama, *longicollis*,

Guatemala, p. 534, *obscuro-fasciata*, Mexico, p. 535, *porosa*, Mexic[illegible] fig. 9, Guatemala, pl. xxxi, fig. 9, *difformis*, Guatemala, pl. xxxii, fig. [illegible] E. Lyon (2)[illegible], *horni*, Mexico to Nicaragua, p. 538, *vicina*, *decorata*, pl. x[illegible] *adami*, Baly, *granulata*, fig. 4, Mexico, *maculicollis*, Panama, p. [illegible] sp., *auricha[illegible]* pl. x, *nymphæa*, Panama, *sexlineata*, Mexico, pl. [illegible] *dejeani*, Panama, p. 542, *variabilis*, Mexico to Panama, p. 543, *bifasciata*, pl. xxxii, fig. 23, *funesta*, p. 544, *nigrina*, *bisignata*, *dohrni*, p. 545, *subsignata*, pl. xxxii, fig. 10, p. 546, Panama, *hirta*, Costa Rica, pl. xxxii, fig. 16, *cruciata*, Guatemala, pl. xxxii, fig. 2, p. 547, *festiva*, Panama, *nicaraguensis*, Nicaragua, p. 548, *rufo-fasciata*, Panama, pl. xxx, fig. 21, p. 549, *dorso-plagiata*, Guatemala, pl. xxxii, fig. 24, *lævicollis*, pl. xxxii, fig. 4, p. 550, *suffriani*, fig. 3, Mexico, *figurata*, pl. xxxii, figs. 14 & 15, Guatemala, p. 551, *hirsuta*, *depressa*, Mexico, p. 552, *allardi*, Panama, p. 553, *irregularis*, Guatemala, fig. 21, *bohemani*, Panama, fig. 13, p. 554, *inclusa*, Mexico, *bicolor*, Nicaragua, fig. 6, p. 555, *femorata*, fig. 8, *v[illegible]nigrum*, fig. 18, *septempunctata*, pl. xxxi, fig. 23, Mexico, p. 556, *[illegible]aque-punctata*, Guatemala, p. 557, *subimpressa*, Costa R[illegible] 558, *sobrina*, Panama, *dilatata*, Mexico to Panam[illegible], p. 559, *uniformis*, Nicaragua, Panama, *corallina*, Mexico, pl. xxxii, fig. 17, *luteola*, Panama, p. 560, *lateritia*, Guatemala, pl. xxxii, fig. 12, *flavifrons*, Mexico, fig. 22, p. 561, *mystica*, Mexico, Guatemala, *semicærulea*, Guatemala, p. 562, *satellitia*, Panama, *nitidula*, Guatemala, Panama, p. 563, *opacicollis*, *distinguenda*, pl. xxii, fig. 5, M[illegible] *lineato-punctata*, Mexico, Guatemala, p. 564, *subænea*, *smaragdina*, pl. xxxii, fig. 1, Panama, *geminula*, fig. 7, Costa Rica, p. 565, *semipurpurea*, p. 566, *longitarsis*, pl. xxxi, fig. 11, Guatemala, p. 567, *maculata*, Costa Rica, pl. xxxii, fig. 11, *nigropicta*, Nicaragua, p. 568, *complicata*, Mexico, p. 569, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Microbrotica, n. g., p. 569, for *M. subglabrata*, n. sp., Panama, p. 570, pl. xxxiii, fig. 25; JACOBY, Biol. Centr. Am. Col. vi (1).

Phæstus, n. g., for *P. chiriquensis*, n. sp., Panama, pl. xxxiii, fig. 1, p. 570; JACOBY, Biol. Centr. Am. Col. vi (1).

Pyesia mexicana, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1) p. 580, n. sp.

Malacosoma lævicollis, Nicaragua, Costa Rica, p. 581, *brevicornis*, Mexico, p. 582, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Malacorhinus, n. g., p. 582, for (type) *Diabrotica foveipennis*, Jac., and *tripunctatus*, Jac., figured as *Malacosoma*, pl. xxx, fig. 25, and the following n. spp., *irregularis*, Mexico, pl. xxxiii, fig. 16, p. 583, *antennatus*, fig. 19, Guatemala to Panama, *decempunctatus*, fig. 18, Mexico to Panama, p. 584; JACOBY, Biol. Centr. Am. Col. vi (1).

Asbecesta senegalense, Egypt, *capense*, C. of Good Hope, ALLARD, Bull. Soc. Ent. Fr. (6) vii, p. cc, n. spp.

Cneorane pallida, Ceylon, JACOBY, P. Z. S. 1887, p. 113, n. sp.

Malaxia, Fairm., = (*Glytolus*, Jac.); BALY, Ent. M. M. xxiii, p. 268. *M. flavovirens* noticed; *viridis*, Fairm., = (*viridis*, Jac.) : *id. l. c.*

Mimastra capitata, *robusta*, Ceylon, JACOBY, p. 104, P. Z. S. 1887, n. spp.

Luperus minutus, Joann., note on; WEISE, Arch. f. Nat. liii, p. 189.

L. nigromarginatus, Ceylon, JACOBY, P. Z. S. 1887, p. 112, n. sp.

Monoxia guttulata, Lec.? figured ; JACOBY, Biol. Centr. Am. Col. vi (1), pl. xxvii, fig. 25.

M. semifasciata, Guatemala, JACOBY, Biol. Centr. Am. Col. vi (1), p. 497, n. sp.

Schematiza collaris, Mexico, Guatemala, p. 498, pl. xxviii, fig. 15, *bicolor*, Panama, fig. 14, *chontalensis*, Nicaragua, fig. 17, *lateralis*, Mexico, Panama, fig. 16, p. 499, *sallei*, Mexico, Guatemala, fig. 10, p. 500, *clarki*, Panama, fig. 11, *thoracica*, Mexico to Panama, fig. 12, *suturalis*, Panama, fig. 13, p. 501, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Nadrana and *Candezea*, Chap., note on ; BALY, Ent. M. M. xxiii, p. 269.

Galerucella sagittariæ, var. = (*Galeruca distincta*, Baly) ; WEISE, Arch. f. Nat. liii, p. 189. *G. nymphææ*, L., habits ; *id.*, Deutsche e. Z. xxxi. p. 368.

G. hageni, Sumatra, p. 235, *G.* (?) *funesta*, W. Africa, p. 236, JACOBY, Notes Leyd. Mus. ix ; *G. flavescens*, p. 190, *signaticeps*, p. 191, E. Siberia, WEISE, Arch. f. Nat. liii ; *G. virida*, *ceylonensis*, pl. xi, fig. 12, p. 105, *lateralis*, p. 105, *crotchi*, *marginata*, p. 107, Ceylon, JACOBY, P. Z. S. 1887 : n. spp.

Xenarthra mirabilis, pl. xi, fig. 9, p. 107, *lewisi*, fig. 10 & p. 108, *unicolor*, fig. 11 & p. 109, Ceylon, JACOBY, P. Z. S. 1887, n. spp.

Luperodes quadripustulatus, Motsch., noticed ; JACOBY, P. Z. S. 1887, p. 109.

L. javanensis, Batavia, JACOBY, Notes Leyd. Mus. ix, p. 234 ; *L. pectoralis*, *flavicornis*, p. 110, *multimaculatus*, *ruficollis*, p. 111, Ceylon, JACOBY, P. Z. S. 1887 : n. spp.

Galeruca xanthomelæna, Schr., larva described ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 241.

G. nebrodensis, Sicily, RAGUSA, Nat. Sicil. vi, p. 216 ; *G. heydeni*, Korea, WEISE, Hor. Ent. Ross. xxi, p. 272 : n. spp.

Adimonia rustica, Sch., larva described ; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 240.

Calaina admirabilis, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 139, n. sp.

Haplosonyx smaragdinipennis, Clk., var. *cæruleipennis*, n. var. ; SCHAUFUSS, Hor. Ent. Ross. xxi, p. 141.

Sphenoraia indica, N. India, DUVIVIER, C.R. ent. Belg. 1887, p. xlviii, n. sp.

Cynorta sumatrana, Solok, JACOBY, Notes Leyd. Mus. ix, p. 237, n. sp.

Metrioidea rufipennis, Ceylon, JACOBY, P. Z. S. 1887, p. 114, pl. xi, fig. 8, n. sp.

Antipha nietneri, Baly, figured ; JACOBY, P. Z. S. 1887, pl. xi, fig. 7. *A. capitata*, Jac., and *bimaculata*, Jac., varr. of described ; JACOBY, Notes Leyd. Mus. ix, p. 238.

A. viridipennis, N. India, DUVIVIER, C.R. ent. Belg. 1887, p. xlix ; *A. multicolor*, Java, p. 238, *apicipennis*, Sumatra, p. 239, JACOBY, Notes Leyd. Mus. ix : n. spp.

Monolepta subseriata, E. Siberia, WEISE, Arch. f. Nat. liii, p. 191, n. sp.

P. Z. S. [illegible]*ides*, Jac., = (*Præochralea*, Duv.), *S.* (sub *Galeruca*) *pallicornis*, Panama = (*basalis*, Jac., and *P. antennalis*, Duv.) ; BALY, Ent. M. M. xxiii, pp. 268 & 269.

Ochralea, note on the characters of; Baly, Ent. M. M. xxiii, p. 269. *O. ceylonica*, Har., generic position noticed; Jacoby, P. Z. S. 1887, p. 114.

Hyphxnia flavofemoratus, Motsch., noticed; Jacoby, P. Z. S. 1887, p. 115.

Ozomena (*Theopea*) *variabilis*, Sumatra, Jacoby, Notes Leyd. Mus. lx, p. 240, n. sp.

Doridea (?) *metallica*, Sumatra, Jacoby, Notes Leyd. Mus. ix, p. 241, n. sp.

Ænidea (?) *hirtipennis*, Ceylon, Jacoby, P. Z. S. 1887, p. 113, n. sp.

Doryscus, n. g. (*Galerucinæ*), for *D. testaceus*, n. sp., Ceylon, Jacoby, p. 115, P. Z. S. 1887.

Priapina, n. g., for *P. longicornis*, Ceylon, n. sp.; Jacoby, p. 116, P. Z. S. 1887.

Neochrolea, n. g., for *N. cavifrons*, n. sp., Ceylon, p. 117, pl. xi, fig. 4; Jacoby, P. Z. S. 1887.

Haplotia, n. g., p. 117, for *H. varipennis*, n. sp., Ceylon, p. 118, pl. xi, figs. 5 & 6; Jacoby, P. Z. S. 1887.

Medythia, n. g., for *M. quadrimaculata*, n. sp., Sumatra; Jacoby, Notes Leyd. Mus. ix.

Hispides.

Callispa delauneyi, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 67, n. sp.

Hispodonta plagiata, India, Baly, Ent. M. M. xxiii, p. 270, n. sp.

Oxycephala wallacei, Solomon Is., Baly, Ent. M. M. xxiii, p. 270, n. sp.

Alurnus marginatus, metamorphoses; Göldi (266).

Dorynesia sulcata, *angustata*, Annam, Fleutiaux, Ann. Soc. Ent. Fr. (6) vii, p. 67, n. sp.

Hispa ænescens, Chittagong, Baly, J. A. S. B. lv, p. 412, n. sp.

Cassidides.

Canistra drakei, Paraguay, Kolbe, Ent. Nachr. xiii, p. 27, n. sp.

Pœcilaspis, notes on the genus; Kolbe, Ent. Nachr. xiii, pp. 10–12.

P. miniata, Paraguay, Kolbe, Ent. Nachr. xiii, p. 12, n. sp.

Chelymorpha varians, Bl., larva, &c., described; Philippi, (562) p. 7, pl., fig. 3.

Physonota helianthi, habits; Caulfield, Canad. Ent. xix, pp. 73–76.

Aspidomorpha sanctæ-crucis, at Naples; Costa, Rend. Acc. Nap. (2) i, p. 43.

Cassida russata, Pekin, Fairmaire, Rev. d'Ent. vi, p. 335; *C. incompta*, Turkestan, Weise, Deutsche e. Z. xxxi, p. 334: n. spp.

Coptocycla dubitabilis, Boh., p. 143, pl. ii, figs. 1–10, *opulenta*, figs. 11–13, larvæ described; Dugès, Ann. Ent. Belg. xxxi.

Languriidæ.

[*Cf.* Fairmaire (204), Fleutiaux (232), Fowler (238, 263, 268), Macleay (465).]

89.

The following new genera are proposed in tabular form by GORHAM, op. cit. pp. 361 & 362, P. Z. S. 1887, viz. :—*Metabelus*, *Languriomorpha*, *Neolanguria*, *Cœnolanguria*, *Camptocarpus*, *Dasydactylus*, *Nomotus*, *Chromatosh*, *Anadastus*, *Stenodastus*, *Meristobelus*, *Acropteroxys*, *Barbaropus* : some of these more fully described in Biol. Centr. Am., *ut infra*.

Goniolanguria Cr., characters discussed, pp. 1 & 2; GORHAM, Biol. Centr. Am. Col. vii.

G. (?) *palmata*, Guatemala, Panama, p. 2, GORHAM, Biol. Centr. Am. Col. vii, n. sp.

Trapezidera, Motsch., redefined, p. 3; *T. ænea*, figured and described, pl. i, fig. 3, p. 4; GORHAM, Biol. Centr. Am. Col. vii.

T. semiotina, p. 4, pl. i, fig. 4, *lateralis*, p. 5, Mexico, Guatemala, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Trapezidistes, n. g., for *T. ritsemæ*, n. sp., Sumatra; FOWLER, p. 124, Notes Leyd. Mus. ix.

Camptocarpus, n. g., p. 6, for *Trapezidera longicollis*, Motsch., which is described, p. 6, figured, pl. i, figs. 1 & 2; GORHAM, Biol. Centr. Am. Col. vii.

Meristobelus, n. g., for *M. forcipatus*, n. sp., Mexico; GORHAM, Biol. Centr. Am. Col. vii, p. 7.

Teretilanguria, Crotch., redefined, pp. 7 & 8; *T. panamæ*, Cr., figured; pl. i, figs. 5 & 5*a*; GORHAM, Biol. Centr. Am. Col. vii.

T. metallica, Nicaragua, Costa Rica, p. 8, *nigro-ænea*, Guatemala, *versicolor*, Mexico, Guatemala, pl. i, figs. 6 & 6*a*, p. 9, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Languria læta, Lec., *sanguinicollis*, Chev., p. 10, *cyanipennis*, Crotch, pl. l, fig. [illegible], p. xii, noticed, the latter figured; GORHAM, Biol. Centr. Am. Col. vii.

L. ravassæ, *longicollis*, p. 122, *approximata*, p. 123, Sumatra, FOWLER, Notes Leyd. Mus. ix; *L. australis*, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 326; *L. yunnana*, China, FAIRMAIRE, Ann. Ent. Belg. xxxi, p. 136; *L. capitata*, *aculeata*, pl. i, fig. 17, Mexico, p. 11, GORHAM, Biol. Centr. Am. Col. vii: n. spp.

Acropteroxys, n. g., p. 13, for *A. caudatus*, Mexico, n. sp., *l. c.*, and *Languria gracilis*, New., the latter being noticed, p. 14; and figured, pl. i, figs. 18 & 19; GORHAM, Biol. Centr. Am. Col. vii.

Dasydactylus, n. g., p. 14, for the following n. spp.: *buprestoides*, Mexico, pl. i, fig. 7, *subulatus*, Panama, fig. 13, p. 15, *glabricollis*, Mexico to Panama, p. 16, *lævicollis*, *puncticeps*, p. 17, *nitidus*, *puncticollis*, p. 18, *thoracicus*, *punctisternum*, p. 19, Mexico, *zunilensis*, Guatemala, pl. i, figs. 8 & 9, *longicollis*, Guatemala, Nicaragua, *subtilior*, Mexico, Brit. Hond., p. 20, *cribratus*, Mexico, p. 21, *hondocusis*, Mexico, Guatemala, fig. 10, p. 21, *picipes*, Guatemala, *teredilis*, Mexico, Guatemala, p. 22, *cyanopterus*, Mexico, p. 23, and *D.* (?) *concinnus*, Panama, p. 24 & fig. 12: to include also *Trapezidera chalceus*, Crotch., *Languria sellata*, Cr., pl. i, fig. 14, *ventralis*, Chev., p. 23 & fig. 11; GORHAM, Biol. Centr. Am. Col. vii.

P. Z. S. 1887, n. g., p. 24, for *N. plutonus*, Panama, pl. i, fig. 16, *anescens*, *Panamensis* Guatemala, p. 25, *capetillensis*, Guatemala, p. 26, n. spp. GORHAM, Biol. Centr. Am. Col. vii.

Ortholanguria, addition to characters of, p. 26; GORHAM, Biol. Centr. Am. Col. vii.

O. elongata, Mexico, p. 26, pl. i, fig. 23, *extensa*, Panama, p. 27, GOR Z. [illegible] XX, Biol. Centr. Am. Col. vii, n. spp.

Langurites lineata, Cast., variation described, figured, pl. i, figs. 20–22, 1887; GORHAM, Biol. Centr. Am. Col. vii.

Crotchia, Fowler, characters noticed, pp. 28 & 29; GORHAM, Biol. Centr. Am. Col. vii.

C. proxima, Panama, p. 29, pl. i, fig. 24 (25 on pl.), *angustata*, *curripes*, Panama, *verapacis*, Guatemala, p. 30, *hondurana*, Mexico to Panama, *picea*, *polita*, Panama, p. 31, *pusilla*, *parvula*, Guatemala, p. 32, GORHAM, Biol. Centr. Am. Col. vii; *C. minuta*, Annam, FLEUTIAUX, Ann. Soc. Ent. Fr. (6) vii, p. 68 : n. spp.

EROTYLIDÆ.

[*Cf.* GORHAM (263), LEWIS (436, 437), MACLEAY (465), REITTER (609), SCHAUFUSS (672), WATERHOUSE (789).]

Renana, n. g. (*Encaustini*), for *R. atrocyanea*, n. sp., Japan; LEWIS, Ann. N. H. (5) xx, p. 60.

Encaustes centaurus, Macassar, SCHAUFUSS, Hor. Ent. Ross. xxi, p. 142, n. sp.

Megalodacne quadriguttata, pl. ii, fig. 1, *audouini*, fig. 2, figured; GORHAM, Biol. Centr. Am. Col. vii.

Microsternus, n. g., for *Episcapha perforata*, Lew., and others; LEWIS, Ent. M. M. xxiv, p. 3, woodcuts : characters of; *id.* Ann. N. H. (5) xx, p. 57.

M. crotchi, p. 57, *tricolor*, *higonius*, p. 58, Japan, LEWIS, Ann. N. H. (5) xx, n. spp.

Coptengis curtisii, Batchian, p. 382, *melvilli*, New Guinea, p. 383, WATERHOUSE, Ann. N. H. (5) xix, n. spp.

Episcapha froggatti, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. sp.

Episcaphula gigas, p. 326, *bifasciata*, p. 327, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Thallis bizonata, Queensland, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 328, n. sp.

Dacne zonaria, *fungorum*, Japan, LEWIS, p. 56, Ann. N. H. (5) xx, n. spp.

Pselaphacus pacilosomus, Lac., pl. ii, fig. 4, *curripes*, Guer., = (*distortus*, Cr.), p. 35, figs. 5 & 6, *nicaraguæ*, Cr., fig. 3, *vitticollis*, Cr., fig. 7, *punctipennis*, Guer., fig. 8, *semiclathratus*, Lac., fig. 9, figured; GORHAM, Biol. Centr. Am. Col. vii.

P. conspersus, Panama, p. 35, pl. ii, fig. 10, GORHAM, Biol. Centr. Am. Col. vii, n. sp.

Megischyrus, Crotch : GORHAM figures or notices *mexicanus*, Lac., pl. ii, fig. 11, *nicaraguæ*, Cr., fig. 13 p. 37, *guatemalæ*, Cr., fig. 12, *sanguinolentus*, Lac., fig. 14, *zonalis*, Lac., fig. 16, p. 38, *discipennis*, p. 15, Biol. Centr. Am. Col. vii.

Ischyrus : GORHAM figures or notices *graphicus*, Lac., pl. ii, [illegible]

[illegible]us, Lac., figs. 21 & 22, *insolens*, Cr., fig. 20, *collatinus*, Cr., p. 45, *[illegible]jucundus*, Lac., fig. 23; *I. frontalis*, Lac., = (*agnatus*, Cr.), p. 39; [illegible] Centr. Am. Col. vii.

[illegible] *tetrasticlus*, Panama, pl. iii, fig. 1, *septemsignatus*, Mexico, Guatemala, [illegible]i, fig. 19, *scutellaris*, pl. iii, fig. 2, p. 41, *undulatus*, fig. 3, Panama, *pictus*, Guatemala, fig. 4, p. 42, *ephippiatus*, *quinquepunctatus*, fig. 6, Panama, *chacoja*, fig. 5, p. 43, *episcaphulinus*, fig. 7, Guatemala, *punctipennis*, Mexico, p. 44, Gorham, Biol. Centr. Am. Col. vii, n. spp.

Callischyrus amœnus, Guer., pl. ii, fig. 25, *candezei*, Cr., fig. 24, figured; Gorham, Biol. Centr. Am. Col. vii.

Mycotretus ornatus, Dup., with numerous synonyms, p. 47, pl. iii, fig. 8, *nigropunctatus*, Dup., *tigrinus*, Ol., fig. 9, p. 48, figured and commented on; Gorham, Biol. Centr. Am. Col. vii.

Eudæmonius, n. g., near *Amblyopus*, for *E. tuberculifrons*, n. sp., Japan; Lewis, Ann. N. H. (5) xx, p. 72. *Eutriplax*, n. n., to replace this; *id. t. c.* p. 342, and Wien. ent. Z. vi, p. 309.

Triplax bedeli, *rudis*, Morocco, Reitter, Best.-Tab. xvi, p. 6; *T. devia*, *ainonia*, p. 69, *sufflava*, *letabilis*, *canalicollis*, p. 70, *discicollis*, *atricapilla*, p. 71, Japan, Lewis, Ann. N. H. (5) xx: n. spp.

Neotriplax, n. g., p. 60, to include *Cyrtotriplax lewisii*, Cr., and the following n. spp. from Japan, *atrata*, *biplagiata*, p. 61 *vallidicincta*, p. 62; Lewis, Ann. N. H. (5) xx.

Cyrtotriplax sobrina, *centralis*, p. 62, *pantherina*, *tifasciata*, p. 63, *nigropunctata*, *pallidiventris*, *cenchris*, p. 64, *maculifrons*, *discalis*, *rufipennis*, p. 65, *solivaga*, *circumcincta*, p. 66, *tripartiaria*, *basalis*, *similis*, p. 67, *ruficornis*, *connectens*, p. 68, Japan, Lewis, Ann. N. H. (5) xx: n. spp.

Aulachochilus 4-pustulatus, F., var. *celebensis*, noticed; Schaufuss, Hor. Ent. Ross. xxi, p. 141.

Satelia, n. g., near *Aulacochilus*, for *S. scitula*, n. sp., Japan; Lewis, Ann. N. H. (5) xx.

Endomychidæ.

[*Cf.* Gorham (269), Reitter (622), Schaufuss (672).]

Eumorphus bulbosus, Macassar, Schaufuss, Hor. Ent. Ross. xxi, p. 142, n. sp.

Lycoperdina koltzei, E. Siberia, Reitter, Deutsche e. Z. xxxi, p. 508, n. sp.

Mycetina laticollis, Japan, Gorham, P. Z. S. 1887, p. 644, pl. 53, fig. 2, n. sp.

Stenotarsus honestus, p. 145, *pumilio*, p. 146, Macassar, Schaufuss, Hor. Ent. Ross. xxi; *S. internexus*, pl. 53, fig. 9, *musculus*, Japan, Gorham, p. 645, P. Z. S. 1887: n. spp.

Ectomychus, n. g., for *E. basalis*, n. sp., Japan; Gorham. P. Z. S. 1887 p. 646.

Bolbomorphus, n. g., for *B. gibbosus*, n. sp., Japan, pl. 53, fig. 4; Gorham, P. Z. S. 1887, p. 647.

Panamomus decoratus, p. 648, pl. 53, fig. 10, *brevicornis*, p. 649, Japan; Gorham, P. Z. S. 1887, n. spp.

Phœomychus, n. g., for *Endomychus rufipennis*, Motsch; G[illegible] P. Z. S. 1887, p. 649: the insect figured, p. 53, fig. 3. [illegible]entr.

Cyanauges, members of the genus; GORHAM, P. Z. S. 1887, p. [illegible]Z.; *C. gorhami* figured; *t. c.* pl. 53, fig. 5.

C. plagiatus, p. 650, pl. 53, fig. 6. *quadra*, fig. 8, *nigropiceus*, fig. [illegible], p. 651, Japan, GORHAM, P. Z. S. 1887, n. spp.

Chondria, n. g., p. 651, for *C. lutea*, n. sp., Japan, p. 652; GORHAM, P. Z. S. 1887.

Alexia, Leach, being preoccupied, *Hygrotophila*, Chevr., to be used for it; CHAMPION, Ent. M. M. xxiii, p. 227.

Symbiotes. [*Cf. Mycetophagidæ*.]

COCCINELLIDÆ.

[*Cf.* FAIRMAIRE (205), JANSON (541), REY (632), WEISE (796).]

Adonia mutabilis, Scr., larva described; REY, Ann. Soc. L. Lyon (2) xxxiii, p. 244.

Anisosticta, 19-*punctata*, L., var. *egena*; WEISE, Deutsche e. Z. xxxi, p. 335.

Adalia koltzei, E. Siberia, WEISE, Arch. f. Nat. liii, p. 209, n. sp.

Coccinella, parasitism of *Perilitus* on; MARSHALL, Tr. E. Soc. 1887, p. 72. *C. redimita*, var. *principalis*; WEISE, Deutsche e. Z. xxxi, p. 335. *C. variabilis*, F., p. 245, 14-*pustulata*, L., p. 246, larvæ described; REY, Ann. Soc. L. Lyon (2).

Harmonia impustulata, L., larva described; REY, Ann. Soc. L. L[illegible]WIS, (2) xxxiii, p. 247.

Sospita tigrina, L., larva described; REY, Ann. Soc. L. Lyon (2) xx[illegible]) xx, p. 249.

Halyzia conglobata, L., var. *nigra*, CROISSANDEAU, Rev. d'Ent. vi, p[illegible]H. (5)

Chilomenes tetrasticta, E. Africa, FAIRMAIRE, Ann. Soc. Ent. F[illegible]ER- vii, p. 366, n. sp.

Chilocorus rubidus, Hope, and *similis*, Rossi, and varr. described; WEISE, Arch. f. Nat. liii, pp. 210 & 211.

Exochomus semenowi, E. Siberia, WEISE, Arch. f. Nat. liii, p. 211, n. sp.

Brumus fulciventris, Fairm., note on; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) vii, p. 367.

Hyperaspis japonica, Crotch (sub *Cryptogonus*), varietal note; WEISE, Arch. f. Nat. liii, p. 212.

Hyperaspidius coccidivorus, Ashm., figured, pl. vi, fig. 2, noticed p. 75, and other *Coccinellidæ* destructive of orange *Coccidæ*, noticed and figured, pp. 71–74; HUBBARD, Ins. Orange.

Cœlopterus, Muls., fully defined; WEISE, Deutsche e. Z. xxxi, pp. 183–185.

Scymnus sp., its manner of destroying *Phylloxera*; LEMOINE, Bull. Soc. Ent. Fr. (6) vii, pp. iv & v. *S. testaceus*, Motsch., varr. described; WEISE, Arch. f. Nat. liii. p. 213.

S. koltzei, E. Siberia, WEISE, Arch. f. Nat. liii, p. 213, n. [illegible]entus, Biol. Cent[illegible]; *Rodolia iceryæ*, S. Africa (destroying *Icery[illegible]*) Ormerod, (541) p. 30, note, n. sp.

[illegible]*graphicus*, Lac., pl. ii, [illegible]89,

Dor[illegible]*is cruentatus*, Muls., habits and metamorphoses; WEISE, Deutsche *bz*) [illegible]xxi, pp. 181–183.

Pelvo[illegible]*ophilus subseriatus* and *unicolor*, Reitt., the habitat is probably [illegible]hur[illegible], not Siberia; REITTER, Wien. ent. Z. vi, p. 254.

CORYLOPHIDÆ and PSEUDOCORYLOPHIDÆ.

[*Cf.* MATTHEWS (479).]

MATTHEWS (479) proposes to locate the family near *Silphidæ*, but to separate *Aphanocephalus* as a distinct family, to be called *Pseudocorylophidæ*, and to be placed near *Coccinellidæ*.

Sacium imperiale, Mysol, p. 105, *alutaceum*, Maldonado, p. 106; MATTHEWS, Ann. N. H. (5) xix, n. spp.

Arthrolips rotundatus, Borneo, *suffusus*, China, *bimaculatus*, Burmah, p. 106, *senegalensis*, Senegal, *croceus*, Siam, *semipunctatus*, *flavicollis*, Java, p. 107, *elegans*, Africa, p. 108, MATTHEWS, Ann. N. H. (5) xix, n. spp.

Sericoderus crassus, Chili, *australis*, Tasmania, MATTHEWS, Ann. N. H. (5) xix, p. 108, n. spp.

Peltinus orientalis, Java, MATTHEWS, Ann. N. H. (5) xix, p. 109, n. sp.

Corylophodes glabratus, Rio Janeiro, *unicolor*, Java, *insignis*, Chili, MATTHEWS, Ann. N. H. (5) xix, p. 109, n. spp.

Oligarthrum, n. g., for *O. waterhousii*, n. sp., Chili, MATTHEWS, Ann. N. H. (5) xix, p. 110.

Catoptyx, n. g., p. 111, for *C. bowringii*, n. sp., Java, p. 112; MATTHEWS, Ann. N. H. (5) xix.

Lepadodes, n. gen., p. 112, for *L. chilensis*, n. sp., Chili, p. 113; MATTHEWS, Ann. N. H. (5) xix.

Aphanocephalus impunctatus, Brazil, *quadrimaculatus*, Penang, *vitreus*, p. 114, *dissimilis*, p. 115, China, MATTHEWS, Ann. N. H. (5) xix, n. spp.

Centr.
Z. f
87

(B.) *HYMENOPTERA.*

Trophi; CHATIN (128).—Retarded development in larvæ; NICOLAS (533).—Methods of oviposition in *Hymenoptera*; TOSQUINET, C.R. ent. Belg. 1887, pp. cv-cxxi.—Formation of egg; KORSCHELT (394).—*Hymenoptera* of North America; CRESSON (145).—List of *Hymenoptera* of Porto Rico; GUNDLACH (286).

ACULEATA.

[*Cf.* ADLERZ (1, 2), ANDRÉ (11), BOWER (85), CAMERON (115), COSTA (141, 142, 143), EMERY (196, 197, 198), FOREL (235), FRIESE (241, 242), HANDLIRSCH (296), HOLMBERG (317), KONOW (392), MACLAREN (463), MAGRETTI (467), MARCHAL (468), MAYR (481), MOCSÁRY (509, 510), MORAWITZ (516), PATTEN (557), PEREZ (111), RADOSZKOWSKI (589, 590, 591, 592, 593), SAUSSURE (668), SCHLETTERER (676), SCHULTHESS (686), STEFANI (736, 737, 738), VIALLANES (770, 771, 772).]

Synonymy of many European species; MOCSÁRY (509).

APIDÆ.

Honey-bee, races of; LETT (429).

Epeolus, ♂ characters in; RADOSZKOWSKI, Hor. Ent. Ross. xxi, pp. 294-296.

E. sibiricus, Wladiwostok, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 295, n. sp.

Nomada, habits of species; PERKINS, Ent. M. M. xxiii, p. 273; SAUNDERS, *op. cit.* xxiv, pp. 32 & 33.

Anthidium uncatum, Asia Minor, p. 28, *radoszkovszkyi*, Turkestan, *wästnei*, Syria, p. 29, MOCSÁRY, Term. füzetek, xi, n. spp.

Mesocheira pulchella, Argentine Rep., HOLMBERG, An. Soc. Arg. xxiii, p. 19, n. sp.

Cænoprosopis, n. g., p. 22, for *C. crabronina*, n. sp., Argentine Rep., p. 23; HOLMBERG, An. Soc. Arg. xxiii.

Osiris exulans, Argentine Rep., HOLMBERG, An. Soc. Arg. xxiii, p. 25, n. sp.

Eucera nigrifacies, Lep., var. = (*cornuta*, Stef.) and *E. eucnemidea*, = (*albigena*, Stef.); STEFANI, Nat. Sicil. vi, p. 114.

Eucera bidentata, Syria, PEREZ, Rev. d'Ent. vi, p. 180, n. sp.

Cœlioxys bonaërensis, p. 31, *subtropicalis*, p. 67, *col*[illegible] *abnormis*, p. 71, *pampeana*, p. 72, *correntiphicus*, Lac., pl. ii, [illegible]89, Argentine Rep., HOLMBERG, An. Soc. A[illegible]

Eor[illegible]s variipes, Sicily, STEFANI, Nat. Sicil. vi, p. 113, n. sp.

b2) V[illegible]*ypoda nebrodensis*, p. 212, *canescens*, p. 213, Sicily, STEFANI, Nat. Sicil. vi, n. spp.

Melecta [illegible]

Short[illegible]locopa kalinowski, Japan, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 434, n. sp.

Psithyrus, several species of in nest of *Bombus agrorum*, F.; HÄRTER, Deutsche e. Z. xxxi, p. 224.

Bombus terrestris, L., and others, relation to flowers; LOEW, Ber. deutsch. bot. Ges. 1886, iv, pp. 152–178 [*cf.* Ent. Nachr. xiii, p. 13]. *B. lapidarius*, L., var. *kalinowski*; RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 430.

B. koreensis, Korea, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 428; *B. fairmairei*, Sicily, FRIESE, Bull. Soc. Ent. Fr. (6) vii, p. v, but, according to PEREZ, *t. c.* p. xxxvii, is a var. of *agrorum*, Fab. : n. spp.

Halictus sexcinctus, Kb., nest noticed; RUDOW, Soc. Ent. i, p. 164.

Sphecodes, habits of; PERKINS, Ent. M. M. xxiii, p. 271.

Andrena varians, Rossi, *helvola*, L., *fucata*, Sm., characters and synonymy of; SAUNDERS, Ent. M. M. xxiv, p. 125.

A. octomaculata, Syria, PEREZ, Rev. d'Ent. vi, p. 175; *A. hungarica*, *korleviciana*, p. 21, *liburnica*, *braunsiana*, p. 22, *croatica*, *dragana*, p. 23, *grossa*, *sisymbrii*, p. 24, *atrata*, *niveata*, p. 25, Hungary, FRIESE, Term. füzetek, xi : n. spp.

Chalicodoma cornifrons, Korea, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 430, n. sp.

Osmia: sexual characters of ♂s; RADOSZKOWSKI (592).

O. vankovitzii, Minsk, p. 283, *daurica*, Lake Baikal, p. 284, *taurica*, p. 285, *carneiventris*, p. 286, Crimea, RADOSZKOWSKI, Hor. Ent. Ross. xxi; *O. pruinosa*, *minuta*, Sicily, STEFANI, Nat. Sicil. vi, p. 112; *O. lhotellierei*, Egypt, PEREZ, Rev. d'Ent. vi, p. 178 : n. spp.

VESPIDÆ.

SCHULTHESS describes the Swiss genera and species as far as *Odynerus* part (686).

Vespa: development of eye; PATTEN (557). *V. crabro* and *vulgaris*, anatomy of brain; VIALLANES (770, 771).

V. samsaulica, Samsaul, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 100; *V. koreensis*, Korea, *id. t. c.* p. 432 : n. spp.

Polistes jokahamæ, Japan, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 435, n. sp.

Leptochilus mervensis, Central Asia, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 100, n. sp.

Hoplopus spinipes and *melanocephalus*, note on the nests of; RUDOW, Soc. Ent. i, p. 164.

Polybia sp., note on development of *Symphrasis* in its nests; BRAUER (90).

Odynerus ornatus, André, ♂ noticed; RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 100.

Eumenes unguiculus and *pomiformis*, nests noticed; RUDOW, Soc. Ent. i, p. 157.

Pterochilus meridionalis, Italy; COSTA, Rend. Acc. Nap. (2) i, p. 243.

Sphegides. Centr.

Sphex flavipennis, n. var. *rufo-dorsata* ; STEFANI, Nat. Sicil. vi, Z. ; pl. ii, fig. 8. *S. pennsylvanicus*, note on habits ; HOLLAND, Soc. Et , p. 58. 187

Chalybion violaceum, nest noticed ; RUDOW, Soc. Ent., p. 157.

Chlorion superbus, Askhabad ; RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 89 : redescribed ; MORAWITZ, Hor. Ent. Ross. xi, p. 347 : n. sp. *C. magnificum*, Askhabad, MORAWITZ, Hor. Ent. Ross. xi, p. 350, n. sp. (?).

Pelopœus spirifex, nest noticed ; RUDOW, Soc. Ent., p. 157.

P. argentipilis, Vancouver, PROVANCHER, Add. Hym. Queb. p. 256, n. sp.

Priononyx canadensis, Canada, PROVANCHER, Add. Hym. Queb. p. 258, n. sp.

Ammophila argentata, Lep., ♂ characters described ; RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 41, pl., figs. 1, &c.

A. mervensis, Central Asia, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 89, n. sp.

Parapsammophila retowskii, S. Russia, KONOW, Soc. Ent. ii, p. 137, n. sp.

Larrides.

Larra, Fab. & Smith, application of the name discussed ; SAUSSURE, Soc. Ent. ii, p. 9.

L. confusa, Turkestan, &c., RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 96 ; *L. minor*, Canada, PROVANCHER, Add. Hym. Queb. p. 268 ; *L. betsilea*, *madecassa*, *prismatica*, Madagascar ; SAUSSURE, Soc. Ent. ii, p. 17 : n. spp.

Tachytes argyropis, Madagascar, SAUSSURE, Soc. Ent. ii, p. 18, n. sp.

Notogonia femoralis, *radialis*, *cubitalis*, Madagascar, SAUSSURE, Soc. Ent. ii, p. 17, n. spp.

Liris jocositarsa, Madagascar, SAUSSURE, Soc. Ent. ii, p. 18, n. sp.

Palarus flavipes, Fab., ♂ characters figured ; RADOSZKOWSKI, Hor. Ent. Ross. xx, pl. iii, figs. 7–7*k*.

Stizolarra, n. g., for *S. spinicornis*, *grandidieri*, n. spp., Madagascar, and numerous known species ; SAUSSURE, Soc. Ent. ii, p. 9.

Nyssonides.

Nysson nigripes, Canada, PROVANCHER, Add. Hym. Queb. p. 269 ; *N. dives*, Mexico, p. 309, *braueri*, Algeria, p. 323, *capensis*, "Cape," p. 325, *saussurei*, S. Australia, p. 332, *kolazyi*, Vienna (?), p. 342, *freyi-gessneri*, p. 355, *tuberculatus*, p. 363, N. America, *tomentosus*, Brazil, p. 369, *gerstäckerii*, Rhodes I., p. 384, Centr. Europe, p. 393, HANDLIRSCH, SB. Ak. Wien, xcv : n. spp.

Alyson guignardi, *conicus*, p. 271, *triangulifer*, p. 272, PROVANCHER, Add. Hym. Queb., n. spp.

Gorytes armatus, Canada, PROVANCHER, Add. Hym. Queb. p. 272.

Paraceramius, n. g., p. 432 (position not stated), for *P. koreensis*, n. sp., Korea, p. 433 ; RADOSZKOWSKI, Hor. Ent. Ross. xxi.

Scapheutes, n. g. (without species) ; HANDLIRSCH, SB. Ak. Wien, xcv, p. 278.

Dor[illinæ]

Dorbecides.

Dorbus villosus, Sicily, COSTA, Rend. Acc. Nap. (2) i, p. 242 ; *S. cyanes-*
Central Asia, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 96 ; *S. gran-*
cyanipennis, Madagascar, SAUSSURE, Soc. Ent. ii, p. 9 : n. spp.
Harpactes trinacriensis, Sicily, COSTA, Rend. Acc. Nap. (2) i, p. 242, n. sp.

Philanthides.

Cerceris ornata, habits, instinct, larva, &c. ; MARCHAL (468). *C. klugii*, n. n. for *annulata*, Kl., p. 395, *radoszkowskyi*, n. n. for *hispanica*, Radoszk., p. 423, and other species renamed in Catalogue, pp. 485-506 ; SCHLETTERER, Zool. Jahrb. ii.

C. clypearis, *neniera*, Madagascar, SAUSSURE, Soc. Ent. ii, p. 25 ; *C. sareptana*, S. Russia, p. 386, *dacica*, Hungary, p. 387, *subimpressa*, Egypt, p. 389, *striolata*, Hungary, p. 393, *eucharis*, Syria, p. 394, *odontophora*, Corfu, Crete, p. 398, *stratiotes*, Hungary, &c., p. 402, *melanothorax*, Europe, p. 403, *atlantica*, Algiers, p. 404, *leucozonica*, S.E. Europe, p. 405, *haueri*, Dalmatia, p. 406, *leucochroa*, Kordofan, p. 408, *prisca*, Mediterranean reg., p. 411, *nilotica*, p. 421, *chromatica*, p. 422, Egypt, *kohlii*, Caucasus, p. 447, *adelpha*, p. 447, *pedetes*, p. 449, Corea, *curritarsis*, p. 449, *erythrosoma*, p. 459, *diodonta*, p. 451, *nasidens*, p. 452, Caffraria, *purpurea*, Senegambia, p. 453, *selifera*, E. Africa, p. 454, *affumata*, Brazil, p. 456, *bothriophora*, p. 456, *scapularis*, p. 457, *chrysogastra*, *esau*, p. 458, Mexico, *furcifera*, Paraguay, p. 459, *gratiosa*, Cuba, p. 460, *pollens*, p. 461, *silvana*, p. 462, Brazil, *thermophila*, Mexico, p. 463, SCHLETTERER, Zool. Jahrb. ii : n. spp.

Crabronides.

Passaleucus borealis and *gracilis*, Dhb., nests noticed ; RUDOW, Soc. Ent. ii, p. 122.

Celia troglodytes, nest noticed ; RUDOW, Soc. Ent. ii, p. 131.

Hoplocrabron, n. g., for *H. marathroicus*, n. sp., Sicily ; STEFANI, Nat. Sicil. vi, p. 60, pl. i, fig. 1.

Crabro palmipes and *varius*, characters of ; SAUNDERS, Ent. M. M. xxiv, p. 123. *C. vagans*, L., note on a colony of ; FOKKER, Tijdschr. Ent. xxx, p. xx.

Crossocerus zaidamensis, Central Asia, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 45, n. sp.

Mimesa atra, nest noticed ; RUDOW, Soc. Ent. ii, p. 131.

Pompilides.

Pompilides of Lombardy ; MAGRETTI (467).

Pompilus fuscipennis, Lind., noticed and referred to *Salius* ; RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 50. *P. costæ*, *longobardicus*, Magr., and other species, described at length ; MAGRETTI (467). *P. vulneratus*, n. var. *sanguineus* ; STEFANI, Nat. Sicil. vi, p. 86. *P. kizilkumensis*, Rad., redescribed ; RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 91.

P. handlirchii, p. 92, *mocsarii*, *rogenhoferi*, p. 93, Centr. Asia, RADOWSZKOWSKI, Hor. Ent. Ross. xxi ; *P. curticornis*, p. 59, *crassitarsis*, p. 60, Naples, COSTA, Faun. Nap. Pompilidei ; *P. rufipes*, Sicily, STEFANI, Nat. Sicil. vi, pl. ii, fig. 7 ; *P. jankowskii*, E. Siberia, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 51 ; *P. coquilletti*, California, PROVANCHER, Add. Hym. Queb p. 261 : n. spp.

Lophopompilus, n. subg. (?) of *Pompilus*, p. 42, *L. przewalskii*, Central Asia, p. 43, pl. 2, figs. 3–3c; *L. grandis*, Evers., sexual char of, pp. 43 & 48, figs. 2–2n: Radoszkowski, Hor. Ent. Ross. xxi.

Pompilioides, n. g., p. 94, for *cinereofasciatus*, p. 94, *P. unicolor*, A bad, n. spp., p. 95; Radoszkowski, Hor. Ent. Ross. xxi.

Wesmaelinius, n. g., for *Sphex sanguinolenta*, F ab.; Costa, Faun. Nap. Pompilidei, p. 46.

Salius grandis, Central Asia, Radoszkowski, H Hor. Ent. Ross. xxi, p. 95; *S. tritubereulatus*, Central Asia, *id. t. c.* p. 42: n. spp.

Ceropales cribrata, Salerno, Costa, Faun. N Nap. Pompilidei, p. 43, pl. viii*bis*, fig 3; *C. minima*, Canada, Provancher, Add. Hym. Queb. p. 265: n. spp.

Aporus major, p. 51, pl. viii*bis*, fig. 5, *pumilus*, p. 54, pl. viii*bis*, fig. 8, Costa, Faun. Nap. Pompilidei, n. spp.

Agenia subintermedia, Lombardy, Magretti, Bull. Ent. Ital. xix, p. 217; *A. atrata*, p. 263, *rufigastra*, p. 264, Canada, Provancher, Add. Hym. Queb.: n. spp.

Cyphonyx, divided into subgenera, viz., *Heteronyx* (? n. subg.), with *H. madecassus*, Madagascar, n. sp.; *Schistonyx* (? n. subg.), with *S. insularis, velutinus*, Madagascar, n. spp.; *Diplonyx*, n. subg., with *M. dolosus, campanulatus*, Madagascar, n. spp., and *C. grandidieri*, Madagascar, n. sp.: Saussure, Soc. Ent. ii, p. 3.

Dolichurus hæmorrhous, Naples; Costa, Faun. Nap. Pompilidei, p. 68, pl. viii*bis*, fig. 6.

Scoliides.

Meria nigra, caspica, Askhabad, p. 98, Radoszkowski, Hor. Ent. Ross. xxi, n. spp.

Tiphia minor, Vancouver, Provancher, Add. Hym. Queb. p. 254, n. sp.

Mutillidæ.

Mutilla ephippium, n. var. *sicana*; Stefani, Nat. Sicil. vi, p. 62.

M. intermedia, Italy, Stefani, Nat. Sicil. vii, p. 24; *M. bison*, Sicily, Costa, Rend. Acc. Nap. (2) i, p. 243; *M. canadensis*, Canada, Provancher, Add. Hym. Queb. p. 250: n. spp.

Myrmosa thoracica, Fab., sexes described, ♀ figured; Stefani, Nat. Sicil. vi, p. 61, pl. i, fig. 4.

Sphærophthalma argentipilis, Canada, Provancher, Add. Hym. Queb. p. 251, n. sp.

Agama caspica, Rad., ♀ described; Radoszkowski, Hor. Ent. Ross. xxi, p. 99.

Tricholabiodes asiaticus, Rad., ♀ described; Radoszkowski, Hor. Ent. Ross. xxi, p. 99.

Formicidæ.

The second part of Dr. Forel's "Etudes myrmécologiques" in Bull. Soc. Vaud. xvi, pp. 53–128, pl. i (1879) has been noticed v, p. 447; record in Zool. Rec. xvi. It consists of descriptions of new z.-b. Wien, varieties, but includes no new genus.

Sorties on founding new nests, and on *Tomognathus sublævis* and *Leptothorax acervorum* ; ADLERZ (1). Ants and larvæ of *Lycænidæ* ; AURIVILLIUS (26).

ADLERZ (1), particulars as to the external anatomy of ants, their stings, nervous system, alimentary canal, sexual organs, poison-glands, eggs, larvæ, habits ; and systematic description of Swedish ants.

Catalogue of the Netherlands species ; BOS (80).

Camponotus rubripes, n. race *riograndensis*, p. 364 ; *tenuiscapus* races described with *koseritzi*, n., pp. 365 & 366 : EMERY, Bull. Ent. Ital. xix. *C. nigriceps*, Sm., var. *pallidiceps*, n. var., *lividipes*, n. st., p. 211 ; *sylvaticus*, Ol., races of, note pp. 212 & 213, with *comottoi*, n. st., p. 213 ; *gigas*, Latr., var. *borneensis*, n. var., p. 214 ; *submitidus*, Mayr, noticed with *famelicus*, n. st., p. 214 ; *dorycus*, Sm., note on, with *confusus*, n. st., p. 215, and *coxalis*, Sm., noted as race, p. 216 ; *festinus*, Sm., note on, p. 217, and *angulatus*, Sm., with woodcut, p. 218 : EMERY, Ann. Mus. Genov. (2) iv. *C. festinus*, Sm., and *autrani*, For., noticed ; *id. op. cit.* v, p. 528, and *C. contractus*, Mayr, n. var. *scortechinii*, p. 529. *C. ligniperdus*, note on its nests ; RUDOW, Soc. Ent. ii, p. 33. *C. sexguttatus*, F., race *lespesi*, Forel, considered a distinct species, and worker described, p. 513 ; *trapezoideus*, Mayr, note on, p. 517 ; MAYR, Verh. z.-b. Wien, xxxvii.

C. beccarii, p. 218, *hospes*, p. 219, *korthalsiæ*, p. 220, Sumatra, *albertisi*, N. Guinea, p. 221, EMERY, Ann. Mus. Genov. (2) iv ; *C. alboannulatus*, p. 511, *pallescens*, p. 512, *sericatus*, p. 515, *divergens*, p. 516, *propinquus*, p. 517, *scissus*, p. 518, *tripartitus*, p. 519, Brazil, *quadrilaterus*, Bogota, p. 519, MAYR, Verh. z.-b. Wien. xxxvii ; *C. somalinus*, E. Africa, p. 280, *nossibeensis*, Nossi Bé, *edmondi*, Madagascar, p. 281, *cressoni*, Mexico, p. 282, ANDRÉ, Rev. d'Ent. vi : n. spp.

Polyrhacis : table of the characters of the African species of ; ANDRÉ, Rev. d'Ent. vi, pp. 286–288. EMERY gives descriptive or critical notes on *atropos*, Sm., p. 227, *fervens*, Sm., pp. 228, *labella*, Sm., p. 229, *sumatrensis*, Sm., with *hamulata*, n. st., p. 234, *sexspinosa*, Latr., *bubastes*, Sm., p. 236, *hippomanes*, Sm., with var. *mœsta*, n. var., p. 237, *bellicosa*, Sm., *bihamata*, Drury, p. 238, *rastellata*, Latr., with var. *goramensis*, n. var., p. 239, *lævior*, Rog., with var. *debilis*, n. var., p. 240 ; EMERY, Ann. Mus. Genov. (2) iv.

P. tricuspis, Amboyna, p. 284, *revoili*, Somali-land, p. 285, ANDRÉ, Rev. d'Ent. vi ; *P. gribodoi*, Java, &c., p. 221, *wallacei*, Celebes, *gracilis*, Goram, p. 223, *solmsi*, p. 224, *imbellis*, Java, *inconspicua*, p. 225 (with var. *insularis*, p. 226) Australia, *exarata*, Mysol, *sculpta*, N. Guinea, p. 226, *cryptoceroides*, Celebes, p. 228, *connectens*, N. Guinea, p. 230, with var. *australiæ*, p. 231, *isacantha*, Goram, p. 232, *continua*, Ternate, p. 235, *variolosa*, N. Guinea, p. 236, *ypsilon*, India, p. 239, *albertisi*, N. Guinea, p. 240, EMERY, Ann. Mus. Genov. (2) iv ; *C. modiglianii*, Sumatra, *id. op. cit.* v, p. 529, pl. ix, fig. 1 : n. spp.

Brachymyrmex decedens, p. 521, *pictus*, p. 522, *admotus*, *coactus*, p. 523, *Belonopelta* Brazil, MAYR, Verh. z.-b. Wien, xxxvii, n. spp.

Myopopone sista, Rog., characters of, p. 525 ; *M. mayri*, For., var. *monti*- n. sp. .. p. 526 ; MAYR, Verh. z.-b. Wien. xxxvii.

M. catharinæ, Brazil, p. 527, *gallicola*, Uruguay, p. 528, *nodigera*, [illegible] p. 529, Mayr, Verh. z.-b. Wien, xxxvii ; *M. rogeri*, Cuba, André, [illegible] d'Ent. vi, p. 288 : n. spp.

Lasius alienus, Fœrst., = (*Formica pallitarsis*, Provancher) ; André, Rev. d'Ent. vi, p. 288 : shower of at Nancy ; Samson, Feuill. Nat. xvii, p. 154. *L. fuliginosus*, note on its nests ; Rudow, Soc. Ent. ii, p. 52 : migration of, with guests ; Wasmann, Deutsche e. Z. xxxi, p. 108. *L. niger*, L., relations with *F. sanguinea*, Latr. ; Tijdschr. Ent. xxx, p. cviii.

Formica pratensis, *sanguinea*, *fusca*, migrations of, with guests ; Wasmann, Deutsche e. Z. xxxi, pp. 109–111. *L. rufa*, L., *cinerea*, Mayr, *sanguinea*, Latr., habits ; Tijdschr. Ent. xxx, pp. cix & cx. *F. rufa*, habits, &c. ; MacCook (455).

Colobopsis clerodendri, Borneo, Emery, Ann. Mus. Genov. (2) iv, p. 241, woodcuts, n. sp.

Œcophylla smaragdina, F., varietal note ; Emery, Ann. Mus. Genov. (2) iv, p. 242.

Pseudolasius, n. g., p. 244, for *Lasius familiaris*, Sm., and two n. spp., viz., *P. pheidolinus*, Java, p. 245, *breviceps*, Amboyna, p. 246 ; Emery, Ann. Mus. Genov. (2) iv.

Myrmecocystus iridescens, Australia, p. 247, Emery, Ann. Mus. Genov. (2) iv, n. sp.

Dorymyrmex pyramicus, Rog., forms described ; Emery, Bull. Ent. Ital. xix, p. 362.

Technomyrmex grandis, Sumatra, Emery, p. 249, Ann. Mus. Genov. (2) iv, n. sp.

Iridomyrmex, wing neuration noticed, p. 250, note ; *I. cordatus*, Sm., and *scrutator*, Sm., with woodcut, discussed, pp. 249 & 250 ; Emery, Ann. Mus. Genov. (2) iv.

I. extensus, N. Guinea, *punctatissimus*, Australia, p. 251, Emery, Ann. Mus. Genov. (2) iv, n. spp.

Dolichoderus semirufus, Annam, André, Rev. d'Ent. vi, p. 288 ; *D. doriæ*, Australia, p. 252, *beccarii*, Sumatra, p. 253, *gibbifer*, Java, p. 254, *tuberifer*, p. 255, *furcifer*, p. 256, Sumatra, Emery, Ann. Mus. Genov. (2) iv : n. spp.

Tapinoma boreale, Rog., = (*boreale*, Provancher) ; André, Rev. d'Ent. vi, p. 289. *T. melanocephalum*, F., ♂ noticed ; Emery, Ann. Mus. Genov. (2) iv, p. 249.

T. (*Micromyrma*) *atriceps*, Brazil, Emery, Bull. Ent. Ital. xix, p. 363 ; *T. boreale*, Canada, Provancher, Add. Hym. Queb. p. 238 : n. spp.

Hypoclinea quadripunctata, nests of ; Rudow, Soc. Ent. ii, p. 43.

Thaumatomyrmex, n. g., p. 530, for *T. mutilatus*, n. sp., Brazil, p. 531 ; Mayr, Verh. z.-b. Wien, xxxvii.

Typhlomyrmex, Mayr, characters of ♂ ♀, and of *T. rogenhoferi*, Mayr ; Mayr, Verh. z.-b. Wien, xxxvii, pp. 537 & 538.

Amblyopone, problematic males (? *Myopopone*) described ; Mayr, Verh. z.-b. Wien, p. 546. *A. binodosa*, Prov., *cf. Arotropus* (*Braconides*).

A. lucidens, N. Guinea, Emery, Ann. Mus. Genov. (2) [illegible] ; *A. armigera*, Brazil, *chilensis*, Chili, p. 547, Mayr, Verh. z.-b. Wien, xxxvii : n. spp.

Dorylonopelta punctulata, generic and specific characters of worker; MAYR, *b*) v, z.-b. Wien, pp. 548 & 549.

Pelecanthostichus, n. g., for *Typhlopone serratula*, Sm.; MAYR, Verh. z.-b. Wien, xxxvii, p. 549.

Leptogenys (*Lobogenys*) *Cheracanthus*, Sm., note on the genus and species; EMERY, Ann. Mus. Genov. (2) v, p. 445.

Ectatomma impressum, Mayr., var *purpureum*, n. var., *araneiodes*, Le Guil., var. *strigosum*, n. var.; EMERY, Ann. Mus. Genov. (2) v.

Bothroponera wasmannii, Nossi-Bé, FOREL, MT. schw. ent. Ges. vii, p. 383; *B. sublævis*, p. 442, *mayri*, p. 443, Australia, EMERY, Ann. Mus. Genov. (2) v : n. spp.

Diacamma: the species tabulated, pp. 435 & 436, and some noticed at length, *D. geometricum*, Sm., n. st., *timorense*, p. 439; EMERY, Ann. Mus. Genov. (2) v.

D. cyaneiventre, E. India, ANDRÉ, Rev. d'Ent. vi, p. 293; *D. javanum*, Buitenzorg, p. 439, *celebense*, Celebes, p. 441, EMERY, Ann. Mus. Genov. (2) v : n. spp.

Ponera punctatissima, Rog., var. *trigona*, n. var.; MAYR, Verh. z.-b. Wien, xxxvii.

P. foreli, p. 534, *opaciceps*, p. 536, Brazil, MAYR, Verh. z.-b. Wien, xxxvii; *P. amblyops*, Sumatra, EMERY, Ann. Mus. Genov. (2) v, p. 434; *P. comorensis*, Nossi-Bé, ANDRÉ, Rev. d'Ent. vi, p. 292 : n. spp.

Lobopelta mutabilis, Sm., p. 430, *iridescens*, Sm., p. 431, *kitteli*, Mayr., p. 433, notes on; EMERY, Ann. Mus. Genov. (2) v.

L. peuqueti, Annam, ANDRÉ, Rev. d'Ent. vi, p. 292; *L. distinguenda*, Borneo, p. 430, *myops*, Java, *chalybæa*, Borneo, p. 432; EMERY, Ann. Mus. Genov. (2) v : n. spp.

Odontomachus cephalotes, Sm., note on, p. 428; *O. rixosus*, var. *papuanus*, n. var., p. 429; EMERY, Ann. Mus. Genov. (2) v. *O. hæmatodes*, L., ♂, described; ANDRÉ, Rev. d'Ent. vi, p. 290.

O. imperator, N. Guinea, EMERY, Ann. Mus. Genov. (2) v, p. 429, n. sp.

Ectatomma: the genus discussed, and the following subgenera defined: *Ectatomma*, *Rhytidoponera*, *Acanthoponera*, and *Gnamptogenys*; MAYR, Verh. z.-b. Wien, xxxvii, pp. 538–541. *E. muticum*, Mayr, worker noticed, p. 541; *E.* (*Holcoponera*) *striatulum*, Mayr, sexes and workers noticed, p. 542; *E.* (*Gnamptogenys*) *rimulosa*, Rog., var. *annulata*, n. var., p. 543: *id. t. c.*

Stictoponera, n. subg. of *Ectatomma*, with *E.* (*S.*) *menadensis*, n. sp., Menado; MAYR, Verh. z.-b. Wien, xxxvii, p. 539.

Holcoponera, n. subg. of *Ectatomma*; MAYR, Verh. z.-b. Wien, xxxvii, p. 540.

Ectatomma (*Acanthoponera*) *dentinode*, Brazil, p. 541, *E.* (*Gnamptogenys*) *interruptum*, S. America, p. 543, *continuum*, Brazil, *triangulare*, Uruguay, p. 544, MAYR, Verh. z.-b. Wien, xxxvii, n. spp.

Heteroponera, n. g., p. 532, for *H. carinifrons*, n. sp., Chili, p. 533; MAYR, Verh. z.-b. Wien. xxxvii.

Belonopelta curvata, Brazil, MAYR, Verh. z.-b. Wien, p. 532, n. sp.

Myopopone beccarii, Ternate, EMERY, Ann. Mus. Genov. (2) v, p. 447, n. sp.

Pachycondyla crenata, Rog., = (*mœsta*, Mayr.); MAYR, Verh. z.-b. Centr. Wien, xxxvii, p. 534.

Anochetus, Mayr., = (*Stenomyrmex*, Mayr); *A. africanus*, n. var. *madagascarensis*; FOREL, MT. schw. ent. Ges. vii, p. 382. *A. princeps beccarii*, Emery, workers described; EMERY, Ann. Mus. Genov. (2) v, p. 427.

A. orientalis, Cochin China, ANDRÉ, Rev. d'Ent. vi, p. 291; *A. altisquamis*, Brazil, MAYR, Verh. z.-b. Wien, xxxvii, p. 530: n. spp.

Cylindromyrmex striatus, Mayr., workers and ♂ of the genus and species described; MAYR, Verh. z.-b. Wien, xxxvii, pp. 544 & 545.

Sima sahlbergii, Tamatavé, FOREL, MT. schw. ent. Ges. vii, p. 386, n. sp.

Solenopsis punctaticeps, Mayr., note on the worker; MAYR, Verh. z.-b. Wien, xxxvii, p. 616. *S. xyloni*, Mac Cook, habits and figures; HUBBARD, Ins. Orange, pp. 129–131, fig. 51.

S. nigella, p. 355, *brevicornis*, p. 356, Brazil, EMERY, Bull. Ent. Ital. xix, n. spp.

Atta (*Oecodoma*) *cephalotes*, ravages in Brazil, habits, &c.; Ent. Nachr. xiii, pp. 205–207. *A.* (*Acromyrmex*) *hystrix*, ♀, ♂ and variation described; *lundi*, Rog., second form; EMERY, Bull. Ent. Ital. xix, pp. 357 & 358.

Atta discigera, Brazil, MAYR, Verh. z.-b. Wien, xxxvii, p. 551; *A.* (*Acromyrmex*) *lobicornis*, p. 358, *jheringi*, p. 359, Brazil, EMERY, Bull. Ent. Ital. xix: n. spp.

Pogonomyrmex occidentalis, habits, nest, worker minor described; MACLAREN (463). *P. rastratus*, Mayr, ♂ described, p. 611; *nægelii*, For., sexes, p. 612; *angustus*, Mayr, sexes, p. 613; *coarctatus*, Mayr, ♀ described, p. 614; MAYR, Verh. z.-b. Wien. xxxvii.

P. cunicularis, p. 613, *uruguayensis*, p. 614, Uruguay, MAYR, Verh. z.-b. Wien, xxxvii, n. spp.

Cremastogaster: MAYR notices, pp. 623, 626, several Brazilian species, including *C. victima*, Sm., var. *cisplatinalis*, n. var., p. 624, *distans*, Mayr., var. *corticicola*, n. var. p. 625; Verh. z.-b. Wien, xxxvii. *C. tricolor*, Gerst., ♀ described; FOREL, MT. schw. ent. Ges. vii, p. 388. *C. lineolata*, Say, singular mode of nest-making; ATKINSON, Am. Nat. xxi, p. 770.

C. madagascariensis, Madagascar, ANDRÉ, Rev. d'Ent. vi, p. 297; *C. hova*, p. 387, *ranavalonis*, p. 388, Tamatavé, FOREL, MT. schw. ent. Ges. vii; *C. tetracantha*, N. Guinea, pl. ii, fig. 18, *brevis*, Java, fig. 19, p. 467, *ferrarii*, Sumatra, p. 533; EMERY, Ann. Mus. Genov. (2) v: n. spp.

Aphænogaster (*Ischnomyrmex*) *longipes*, Sm., var. *lævior*, n. var.; EMERY, Ann. Mus. Genov. (2) v, p. 456, with tabulation of allied species, p. 531.

A. (*I.*) *beccarii*, Elefanta I., EMERY, Ann. Mus. Genov. (2) v, p. 531, n. sp.

Holcomyrmex muticus, Burma, EMERY, Ann. Mus. Genov. (2) v, p. 457, n. sp.

Podomyrma micans, Mayr, var. *maculicentris*, n. var.; EMERY, Ann. Mus. Genov. (2) v, p. 459.

P. abdominalis, Ternate, p. 459, *albertisi*, *gracilis*, N. Guinea, p. 460, EMERY, Ann. Mus. Genov. (2) v, n. spp.

Dorparomyrmex, n. g., for *L. gestroi*, n. sp., N. Guinea, pl. ii, figs. 16 & 17; Emery, Ann. Mus. Genov. (2) v, p. 461.

Polyrhachis melvolgermecina sulcata, Celebes, Emery, Ann. Mus. Genov. (2) v, p. 449, n. sp.

Pristomyrmex brevispinosus, Sumatra, p. 451, *parumpunctatus*, N. Guinea, p. 452, Emery, Ann. Mus. Genov. (2) v, n. spp.

Apterostigma, Mayr, note on the genus, p. 553; *A. pilosum*, worker described, p. 554; Mayr, Verh. z.-b. Wien, xxxvii.

A. uncinatum, Brazil, Mayr, Verh. z.-b. Wien, xxxvii, p. 554, n. sp.

Cyphomyrmex, note on the genus and tabulation of characters of workers, pp. 555 & 556; *C. deformis*, Sm., sexes described, = (*C. steinheili*, For., and *minutus*, Mayr.), p. 558; Mayr, Verh. z.-b. Wien, xxxvii.

C. strigatus, p. 558, *auritus*, p. 559, *asper*, p. 561, Mayr, Verh. z.-b. Wien, xxxvii; *C. morschi*, p. 360, *simplex*, p. 361, Brazil, Emery, Bull. Ent. Ital. xix : n. spp.

Procryptocerus, n. g., for part of *Cataulacus*, with "*P. convergens*, Mayr, n. sp., race *regularis*, n. st."; Emery, Bull. Ent. Ital. xix, p. 362.

Procryptocerus, n. g., for *Cataulacus striatus*, Sm., and 8 other American species; Emery, Ann. Mus. Genov. (2) v, p. 470 note.

Crocyptcrus angustus, Mayr., soldier, worker, and sexes described; Mayr, Verh. z.-b. Wien, 1887, p. 565.

Cataulacus hispidulus and *flagitiosus*, Sm., noticed; Emery, Ann. Mus. Genov. (2) v, p. 470. *C.*, male form described, p. 562; Mayr, Verh. z.-b. Wien, xxxvii.

C. adlerzi, p. 562, *convergens*, p. 561, Brazil, Mayr, Verh. z.-b. Wien. xxxvii, n. spp.

Strumigenys, Sm., tabulation of, and allied genera, p. 567; species tabulated, *S. godeffroyi*, Mayr., var., = (*lewisi*, Cam., *vide infra*), pp. 568 & 569; Mayr, Verh. z.-b. Wien, xxxvii : note on the species, &c.; Cameron, P. Manch. Soc. p. 231.

S. lewisi, Japan, Cameron, P. Manch. Soc. p. 229; *S. doriæ*, Amboyna, Emery, Ann. Mus. Genov. (2) v, p. 469, pl. ii, fig. 22; *S. ornata*, N. America, *cultriger*, p. 571, *imitator*, p. 572, Brazil, *cordovensis*, Mexico, p. 573, *saliens*, p. 574, *unidentata*, *subdentata*, p. 575, *denticulata*, p. 576, *crassicornis*, Brazil, p. 577, Mayr, Verh. z. b. Wien, xxxvii : n. spp.

Rhopalothrix jheringi, Brazil, Emery, Bull. Ent. Ital. xix, p. 361; *R. rugifer*, p. 579, *petiolata*, p. 580, Brazil, Mayr, Verh. z.-b. Wien, n. spp.

Ceratobasis convexiceps, *disciger*, Brazil, Mayr, Verh. z.-b. Wien, xxxvii, p. 582, n. spp.

Acanthognathus, n. g., p. 578, for *A. ocellatus*, n. sp., Brazil, p. 579, Mayr, Verh. z.-b. Wien, xxxvii.

Epitritus bauduері, Em., referred to *Strumigenys*; Emery, Ann. Mus. Genov. (2) v, p. 468.

Cephaloxys capitata, Sm., noticed and referred to *Strumigenys*; Emery, Ann. Mus. Genov. (2) v, p. 468.

Pheidole, tabulation of the American species, pp. 582–606; *P. exigua*, and the following, *ata*, n. var., p. 585; *gouldi* var. described, p. 588; Mayr, *binotata*, *alboplicit*, p. 1141

p. 1143, *geniculella*, *retusa*, *fettii*, p. 462, *capellinii*, Java, p. 463, pl. ii, fig. 14,

cavannæ, New Caledonia, p. 464, *P. smithii* = (*quadrispinosa*, Sm.), p. [illegible]entr. *longicornis*, Nias, p. 532, Emery, Ann. Mus. Genov. (2) v; *P. hohen[illegible]* *spielbergi*, Brazil, Emery, Bull. Ent. Ital. xix, p. 354; *P. transversostr[illegible]* Guiana, p. 584, *breviconus*, Brazil, p. 585, *obtusopilosa*, Uruguay, *lignic[illegible]* p. 586, *emeryi*, p. 589, *crassipes*, *gibba*, *partita*, p. 590, Brazil, *spinicoxis*, Buenos Aires, p. 591, *flavida*, Brazil, *bergi*, Uruguay, p. 593, *cameroni*, Ecuador, p. 595, *pubiventris*, pp. 595 & 607, *auropilosa*, pp. 596 & 608, *lævifrons*, p. 598, Brazil, Mayr, Verh. z.-b. Wien, xxxvii : n. spp.

Pheidologeton pygmæus, Ternate, Emery, Ann. Mus. Genov. (2) v, p. 465, n. sp.

Pseudomyrma pilosa, Sm., noticed and referred to *Sima*; Emery, Ann. Mus. Genov. (2) v, p. 449.

P. mutica, Brazil, Mayr, Verh. z.-b. Wien, xxxvii, p. 627, n. sp.

Eciton hamatum, F., beetles in nest of; Wasmann (780).

E. schlechtendali, S. America, Mayr, Verh. z.-b. Wien, xxxvii, p. 552, n. sp.

Tetramorium sigmoideum, Mayr, p. 622, and *auropunctatum*, Rog., p. 623, noticed; Mayr, Verh. z.-b. Wien, xxxvii.

T. reitteri, Brazil, p. 621, Mayr, Verh. z.-b. Wien, xxxvii; *T. blochmannii*, Tamatavé, Forel, MT. schw. ent. Ges. vii, p. 384; *T. papuanum*, p. 452, *punctiventre*, p. 453, N. Guinea, Emery, Ann. Mus. Genov. (2) v; *T. obesum*, E. India, André, Rev. d'Ent. vi, p. 294 : n. spp.

Xiphomyrmex, n. subg. of *Tetramorium*, for *X. kelleri*, n. sp., Madagascar, and to include *T. sigmoideum*, *smithi*, and perhaps *Ochetomyrmex? auropunctatus*, Rog.; Forel, MT. schw. ent. Ges. vii, p. 385.

Vollenhovia subtilis (with var. *affinis*) N. Guinea, Emery, Ann. Mus. Genov. (2) v, p. 454, n. sp.

Myrmicaria dromedarius, Sm., noticed; Emery, Ann. Mus. Genov. (2) v, p. 455.

Monomorium antarcticum, White, worker, = (*fuleum*, Mayr), ♂ described; Emery, Ann. Mus. Genov. (2) v, p. 458.

M. denticulatum, Chili, p. 614, *rastratum*, Brazil, p. 615, *bidentatum*, Chili, p. 616, Mayr, Verh. z.-b. Wien, n. spp.

Calyptomyrmex, n. g., for *C. beccarii*, n. sp., Amboyna, p. 472; Emery, Ann. Mus. Genov. (2) v.

Anagates atratulus noticed; Ent. Tidskr. viii, pp. 2 & 134.

Leptomyrmex, Mayr, ♂ described, p. 289; *L. pallens*, Emery, ♂ described: André, Rev. d'Ent. vi, p. 290.

Cheliomyrmex nortoni, Mayr, second form of neuter described; André, Rev. d'Ent. vi, p. 294.

Leptothorax unifasciatus, Ltr., and *L. acervorum*, Nyl., nest noticed; Rudow, Soc. Ent. ii, p. 100.

L. canadensis, Ottawa, Provancher, Add. Hym. Queb. p. 245 : note on this, André, Rev. d'Ent. vi, p. 295; *L. spininodis*, ? S. America, p. 617, *asper*, p. 618, *vicinus*, *sculptiventris*, p. 620, Brazil, Mayr, Verh. z.-b. Wien : n. spp.

Macromischa cressoni, Mexico, André, Rev. d'Ent. vi, p. 296

Formicoxenus nitidulus, Nyl., habits; Wasmann, *acitis*, N. Guinea, p. 460, pp. 119–122.

Dorylus klugi, Hag., note on, ♂ described; Emery, Ann. Mus. Genov. (2) v, p. 448. *D. helvolus*, L., = (*planifrons*, Mayr); *id. l. c.* p. 449. *D. helvolus*, L., ♀ described and figured; synonymy of it, *D. juvenculus*, Fabr. and *D.* (*Typhlopone*) *lævigata*, Sm.: Emery, Bull. Ent. Ital. i, p. 345 & 349, pl. xi.

Dicthadia is ♀ of *Dorylus*; Emery, *l. c.*

TEREBRANTIA.

[*Cf.* Ashmead (14, 15, 16, 17, 18, 637), Bridgman (92, 93), Buysson (110, 111), Cameron (114, 263), Costa (141), Frey-Gessner (240), Gogorza (265), Kriechbaumer (402, 403), Lindeman (443), Marshall (473), Mocsáry (508, 509), Müller (520), Radoszkowski (589, 590), Riley (634), Saussure (668), Stefani (736), Thomson (749, 750, 751).]

Chrysididæ.

Tables and figures of the specific characters of the Swiss species, detailed localities; Frey-Gessner (240).

Chrysidides of environs of Brussels; Bormans, C.R. ent. Belg. 1887, pp. xx–xxiii. Synonymy of many European species; Mocsáry (509).

Omalus auratus, n. varr. *abdominalis*, *maculatus*; *O. æneus*, n. var. *pygialis*; Buysson, Rev. d'Ent. vi, pp. 169 & 170.

O. politus, Mediterranean region, p. 168, *rudowi*, Greece, p. 169, Buysson, Rev. d'Ent. vi, n. spp.

Philoctetes, n. g., p. 170, for *P. tiberiadis*, n. sp., Syria, p. 171. and to include three or four species of *Holopyga*; Buysson, Rev. d'Ent. vi.

Hedychridium heliophilum, Algeria, p. 172, *buyssoni* (Abeille), Marseilles, *elegantulum*, Montpellier, p. 173, Buysson, Rev. d'Ent. vi. n. spp.

Tetrachrysis przewalskii, p. 46, *keriensis*, p. 47, *spinidens*, p. 48, Central Asia, Radoszkowski, Hor. Ent. Ross. xxi, n. spp.

Chrysis bidentata, L., n. var. *intermedia*; Buysson, Rev. d'Ent. vi, p. 181.

C. humilis, Madrid, p. 174, *desertorum*, Syria, p. 175, *pelopœicida*, Syria, p. 176, *osiris*, Egypt, p. 177, *mocquerysi*, Montpellier, p. 178, *joppensis*, Syria, p. 179, *marqueti*, Greece, p. 180, *peninsularis*, Spain, p. 182, *pellucida*, China and Syria, p. 183, *incisa*, Syria, p. 184, *regina*, *psittacina*, Persia, p. 186, *quadrispina*, Egypt, p. 187, *lætabilis*, Egypt, *peregrina*, N. America, p. 188, *erratica*, Egypt and China, p. 189, *imperatrix*, Russia, p. 190, *viridimargo*, p. 191, *annulata*, p. 192, *mariæ*, p. 193, *mutabilis*, p. 194, *facialis*, p. 196, Syria, *nubica*, Nubia, p. 197, Buysson, Rev. d'Ent. vi; *C. hova*, p. 25, *chrysina*, p. 26, Madagascar, Saussure, Soc. Ent. ii: n. spp.

Chrysaspis, n. g., for *C. grandidieri*, n. sp., Madagascar; Saussure, Soc. Ent. ii, p. 25.

Pyria sakalava, Madagascar, Saussure, Soc. Ent. ii, p. 26; *P. poly-* and the following, Madagascar, Buysson, Rev. d'Ent. vi, p. 199: n. spp.

binotata, *alboplicata*, p. 1141, Madagascar, Saussure, Soc. Ent. ii, p. 26, n. sp. p. 1143, *geniculella*, *retusa*, *fen* Buysson, Rev. d'Ent. vi, p. 198, n. sp.

Elampus perezii, p. 30, *sanzii*, p. 33, Madrid, GOGORZA, An. Soc. Esp. [illegible] *E. puncticollis*, with var. *atratus*, Hanover, MOCSÁRY, Ent. Nachr. xi. p. 291 ; *E. mocsari*, Central Asia, RADOSZKOWSKI, Hor. Ent. Ross. xxi p. 46 : n. spp.

Cleptes afra, Luc., redescribed ; BUYSSON, Rev. d'Ent. vi. p. 7.

C. consimilis, France, BUYSSON, Rev. d'Ent. vi, p. 198 ; *C. abeillei*, France, p. 6, *syriaca*, Syria, p. 8, BUYSSON, Rev. d'Ent. vi : n. spp.

ICHNEUMONIDÆ.

Ichneumonides.

Ichneumon : THOMSON (750) redescribes and notices numerous European species. *I. bohemani*, Hgr., ♂ described ; KRIECHBAUMER, MT. schw. ent. Ges. vii, p. 301.

I. rufidorsatus, Scotland, BRIDGMAN, Tr. E. Soc. 1887, p. 361 ; *I. stenocerus*, *captorius*, p. 7, *neréni* (*raptorius*, Wesm.), *xanthognathus*, p. 8, *subquadratus*, p. 9, Sweden, *quadriannulatus*, Lapland, p. 10, *pallitarsis*, p. 11, *liostylus*, p. 12, *grandiceps*, *stenocarus*, p. 13, Sweden, THOMSON, Ann. Soc. Ent. Fr. (6) vii ; *I. hæmorrhoicus*, Messina, p. 302, *steckii*, Grono, *altipeta*, Zermatt, p. 303, *siculus*, Syracuse, p. 304, *lateralis*, p. 305, *parvulus*, p. 306, *polystictus*, p. 307, Switzerland, KRIECHBAUMER, MT. schw. ent. Ges. vii : n. spp.

Herpestomus distinctus, England, BRIDGMAN, Tr. E. Soc. 1887, p. 362, n. sp.

Trogus bicolor, Korea, RADOSZKOWSKI, Hor. Ent. Ross. xxi, p. 434, n. sp.

Phæogenes grammostoma, Bern ?, KRIECHBAUMER, MT. schw. ent. Ges. vii, p. 309, n. sp.

Amblyteles chalybeatus, Gr., ♂ described ; KRIECHBAUMER, MT. schw. ent. Ges. vii, p. 307. *A. ammonius*, Gr., ♀ noticed and described at length ; JACOBS, C.R. ent. Belg. 1887, pp. xliii–xlvi.

A. isenschmidii, Europe ?, KRIECHBAUMER, MT. schw. ent. Ges. vii, p. 308, n. sp.

Gnathoxys marginellus, Gr., sexual distinctions and variations ; JACOBS, C.R. ent. Belg. 1887, p. xlvi.

Cryptides.

Aptesis hemiptera, Gr., bred from *Catoptria microgramma*, true ♂ described ; BRIDGMAN, Tr. E. Soc. 1887, p. 364.

Hemiteles albomarginatus, England, BRIDGMAN, Tr. E. Soc. 1887, p. 363, n. sp.

Ophionides.

THOMSON (749) divides *Ophionides* into six groups, and describes the European genera and species of one of them, *Campoplegina*.

Campoplex angustatus, *flaviscapus*, p. 1061, *bifidus*, *castanipes*, p. 1063, *splendens*, p. 1064, *latungula*, p. 1065, *genalis*, p. 1070, *pineticola*, p. 1072, *opacus*, p. 1074, *crassipes*, p. 1075, *spinipes*, p. 1076, *stenocerus*, p. 1086, *limnobius*, p. 1088, *luteipes*, p. 1089, *gracilis*, [illegible] E. Guinea, p. 460, Opusc. ent. xi, n. spp.

Sagaritis fasciata, England, Bridgman, Tr. E. Soc. 1887, p. 366 ; *S. brachycera*, p. 1091, *macrocera*, *erythropus*, p. 1093, *varians*, *mucronella*, p. 1095, Europe, Thomson, Opusc. ent. xi : n. spp.

Cymodusa longicalcar, Europe, Thomson, Opusc. ent. xi, p. 1096, n. sp.

Casinaria alboscutellaris, p. 1098, *scabra*, p. 1099, *monticola*, *alpina*, p. 1100, *subglabra*, *ischnogaster*, p. 1101, *protensa*, p. 1102, Europe, Thomson, Opusc. ent. xi, n. spp.

Limneria volubilis, Holm., bred from *Coleophora albicosta*, and *L. elisha*, Bridg., from *C. flavaginella*, Lien. ; Dale, Ent. M. M. xxiii, p. 214. *L. pallipes*, Prov., habits ; Riley, Rep. 1886, p. 532.

L. distincta, England, Bridgman, Tr. E. Soc. 1887, p. 367 ; *L. fuscicarpus*, p. 1104, *pleuralis*, *planiscapus*, p. 1105, *rufifemur*, *crassifemur*, *costalis*, *hyperborea*, p. 1106, *nigritella*, *tegularis*, p. 1107, *pineticola*, p. 1108, Thomson, Opusc. ent. xi : n. spp.

Pyracmon truncicola, *lateralis*, Europe, Thomson, p. 1109, Opusc. ent. xi, n. spp.

Canidia corvina, p. 1111, *rostrata*, p. 1112, *curculionis*, *contracta*, *anura*, p. 1113, *stenostigma*, *trochantella*, p. 1114, Europe, Thomson, Opusc. ent. xi, n. spp.

Synctæris, n. g., p. 1114, for *S. carbonella*, *heteropus*, n. spp., Europe, p. 1115, and *geniculella*, Holmg. ; Thomson, Opusc. ent. xi.

Nepiesta, n. g., p. 1116, for *N. subclavata*, p. 1116, *marginella*, p. 1117, n. spp., Europe, and *aberrans*, Gr. ; Thomson, Opusc. ent. xi.

Nemeritis caudatula, *stenura*, *lativentris*, p. 1119, *convergens*, p. 1120, Europe, Thomson, Opusc. ent. xi, n. spp.

Phobocampa, n. g., p. 1120, for *P. alticollis*, *pulchella*, p. 1121, *confusa*, *flavicincta*, p. 1122, Europe, n. spp., and others ; Thomson, Opusc. ent. xi.

Spudastica, n. g., for *S. petiolaris*, n. sp., Europe ; Thomson, Opusc. ent. xi, p. 1123.

Ecphora, n. g., for *viennensis* (*Campoplex* ?), Gr., and others ; Thomson, Opusc. ent. xi, p. 1124.

Omorga, n. g., p. 1125, for 32 European species, of which the following are n. spp. : *biloba*, p. 1126, *fusciplica*, *ruficoxa*, *exoleta*, p. 1127, *scaposa*, *picticrus*, *lyrata*, p. 1128, *angulata*, p. 1129, *nigridens*, *liogaster*, *coracina*, p. 1130, *striolata*, *forticosta*, *melampus*, p. 1131, *fuscicornis*, *continua*, p. 1132, *litorea*, *hadrocera*, p. 1134 ; Thomson, Opusc. ent. xi.

Lathroplex, n. g., for *L. clypearis*, n. sp., Europe ; Thomson, p. 1135, Opusc. ent. xi.

Callidora, n. g., p. 1135, for *C. annellata*, n. sp., Europe, p. 1136, and *albovincta*, Holmg. ; Thomson, Opusc. ent. xi.

Gonotypa, n. g., p. 1136, for *G. melanostoma*, n. sp., Europe, p. 1137 ; Thomson, Opusc. ent. xi.

Nepiera, n. g., for *concinna*, Holmg. ; Thomson, Opusc. ent. xi, p. 1137.

Tranosema, n. g., p. 1137, for *T. latiuscula*, *arenicola*, p. 1138, n. spp., Europe, and *pedella*, Holmg. ; Thomson, Opusc. ent. xi.

Olesicampa, n. g., p. 1139, to include a few previously known species, and the following n. spp. from Europe : *patellana*, *cavigena*, p. 1140, *binotata*, *alboplica*, p. 1141, *basalis*, *nigroplica*, *flavicornis*, *gracilipes*, p. 1143, *geniculella*, *retusa*, *femorella*, p. 1144, *nigricoxa*, *fulcrans*, p. 1145,

subcallosa, *crassitarsis*, *sternella*, *punctitarsis*, p. 1146, *simplex*, *luteipes*, *radiella*, p. 1147 ; THOMSON, Opusc. ent. xi.

Meloboris hygrobia, *ischnocera*, Europe, THOMSON, p. 1151, Opusc. ent. xi, n. spp.

Lathrostiza, n. g., p. 1152, for *L. sternocera*, p. 1152, *forticanda* (sic), p. 1153, n. spp., Europe ; THOMSON, Opusc. ent. xi.

Angitia annulicrus, *elongata*, *truncata*, p. 1155, *subbuccata*, *sordipes*, *rimator*, p. 1156, *monospila*, *trochanterata*, p. 1157, *tenuipes*, p. 1158, *polyzona*, p. 1159, *holopyga*, *melania*, p. 1160, *claripennis*, p. 1161, *specularis*, *crassiseta*, p. 1162, *lacticrus*, *brevivalvis*, *parvicanda* (sic), p. 1163, *cratægellæ*, *micrura*, *anura*, p. 1164, *latungula*, p. 1165, *macrostoma*, *punctipes*, p. 1166, *monilicornis*, p. 1167, Europe, THOMSON, Opusc. ent. xi, n. spp.

Anilasta, n. g., p. 1168, for 27 European species, of which the following are new : *tenuicosta*, p. 1170, *albicrus*, *longula*, *pectinata*, p. 1171, *ruficrus*, *leucomera*, p. 1172, *varicoxa*, *boops*, *coxator*, p. 1173, *4-notata*, *facialis*, *picticollis*, p. 1174 ; THOMSON, Opusc. ent. xi.

Holocremna, n. g., p. 1176, for 22 European species, of which the following are new : *heterogaster*, *frutetorum*, p. 1178, *annulitarsis*, *curtigena*, p. 1179, *tarsator*, *buccata*, *sinuata*, p. 1180, *melanogaster*, p. 1181, *spiræ*, *bergmanni*, p. 1182 ; THOMSON, Opusc. ent. xi.

Henicospilus meridarius, bred from *Hecatera serena* ; BIGNELL, Ent. xx, p. 19.

Ophion macrurum, bred from *Callosamia promethea* ; WATERHOUSE, P. E. Soc. 1887, p. xxiii.

O. metallicum, Korea, RADOSZKOWSKI, Hor. Ent. Ross, xxi, p. 433, n. sp.

Anomalon tenuicorne, Gr., note on ; BRIDGMAN, Ent. M. M. xxiv, p. 149.

O. nigripes, England, BRIDGMAN, Ent. M. M. xxiv, p. 150, n. sp.

Opheletes glaucopterus, bred from *Cimbex americana*, F. ; Canad. Ent. xix, p. 80.

Paniscus : history, metamorphoses, egg, habits, &c. ; POULTON, Tr. E. Soc. 1887, pp. 303–308.

Euceribanchus, n. g. (? near *Banchus*), for *E. maculipennis*, Sicily ; COSTA, Rend. Acc. Nap. (2) i, p. 243.

Dicolus subtiliventris, Frst., descriptive notice ; BRIDGMAN, Tr. E. Soc. 1887, p. 368.

Tryphonides.

Megastylus multicolor, Tuscany, COSTA, Rend. Acc. Nap. (2) i, p. 244, n. sp.

Bassus punctatus, Scotland, BRIDGMAN, Tr. E. Soc. 1887, p. 375, n. sp.

Perilissus minutus, England, BRIDGMAN, Tr. E. Soc. 1887, p. 370, n. sp.

Mesoleius brevispina, Th., descriptive note on ; BRIDGMAN, Tr. E. Soc. 1887, p. 372.

M. attenuatus, England, BRIDGMAN, Tr. E. Soc. 1887, p. 371, n. sp.

Metopius, Panz., note on the genus and its N. European species ; THOMSON, Deutsche e. Z. xxxi, pp. 193, 194–197.

M. brevispina, p. 195, *clypealis*, *croceicornis*, p. 196, *interruptus*, p. 197, Northern and Central Europe, THOMSON, Deutsche e. Z. xxxi, n. spp.

Tribe *Exochina*, tabulation of genera of ; THOMSON, Deutsche e. Z. xxxi, pp. 197 & 198.

Chorinæus brevicalcar, p. 200, *longicornis*, *longicalcar*, *australis*, p. 201, *nitifrons*, *facialis*, p. 202, Northern and Central Europe, THOMSON, Deutsche e. Z. xxxi, n. spp.

Triclistus areolatus, *lativentris*, p. 203, *nitifrons*, p. 204, *longicalcar*, *pubiventris*, *spiracularis*, *facialis*, p. 205, *albicinctus*, p. 206, Northern and Central Europe, THOMSON, Deutsche e. Z. xxxi, n. spp.

Exochus gravipes, p. 207, *incidens*, p. 208, *nigripalpis*, p. 209, *citripes*, *lincifrons*, p. 213, *longicornis*, p. 214, *annulitarsis*, p. 215, *parvispina*, *signifrons*, p. 216, *anospilus*, p. 217, Northern and Central Europe ; THOMSON, Deutsche e. Z. xxxi, n. spp.

Pimplides.

Atractogaster semisculptus, Kriechb., ♂ noticed ; KRIECHBAUMER, Ent. Nachr. xiii, p. 250.

Rhyssa leucographa, Gr., *austriaca*, Tschek, *curripes* and *obliterata*, Gr., *approximator*, Gr., notes on ; KRIECHBAUMER, Ent. Nachr. xiii, pp. 245–250. *R. approximator*, F., ♀ described ; *id. t. c.* p. 82.

R. linéolata, Switzerland, KRIECHBAUMER, Ent. Nachr. xiii, p. 81, n. sp.

Pimpla graminellæ, auct., p. 83, *scanica*, *alternans*, p. 113, *rufata*, *varicornis*, p. 117, notes on ; KRIECHBAUMER, Ent. Nachr. xiii.

P. fatua, Sicily, STEFANI, Nat. Sicil. vi, p. 88; *P. ratzeburgii*, p. 84, *capulifera*, p. 119, *curticauda*, p. 120, Central Europe, *meridionalis*, Spain, p. 120, KRIECHBAUMER, Ent. Nachr. xiii, n. spp.

Ephialtes ruficollis, Desv., reinstated as valid ; BRIDGMAN, Tr. E. Soc 1887, p. 376. *E. tuberculatus*, Fourc., reared from *Sesia spheciformis* ; AMELANG, Ent. Nachr. xiii, p. 198. *E. mesocentrus*, ♀, and *rex*, Kriechb., *manifestator*, K., confusion about discussed ; KRIECHBAUMER, Ent. Nachr. xiii, pp. 251–253.

E. arundinis, Germany, KRIECHBAUMER, Ent. Nachr. xiii, p. 253, n. sp.

Glypta exophthalmus, Central Europe, KRIECHBAUMER, Ent. Nachr. xiii, p. 85 ; *G. rufata*, England, BRIDGMAN, Tr. E. Soc. 1887, p. 378 : n. spp.

Lissonota formosa, England, BRIDGMAN, Tr. E. Soc. 1887, p. 378, n. sp.

Schizopyga tricingulata, Gr., note on ; KRIECHBAUMER, Ent. Nachr. xiii, p. 87.

S. atra, Europe, KRIECHBAUMER, Ent. Nachr. xiii, p. 87, n. sp.

Thalessa lunator and *atrata*, copulation ; HARRINGTON, Canad. Ent. xix, p. 206.

Polysphincta subrufa, Britain, BRIDGMAN, Tr. E. Soc. 1887, p. 377, n. sp.

BRACONIDÆ.

Perilitus : the 8 British species tabulated and described ; MARSHALL, Tr. E. Soc. 1887, pp. 72 & 81.

P. strenuus, England, MARSHALL, Tr. E. Soc. 1887, p. 74, n. sp.

Microctonus splendidus, p. 83, *xanthocephalus*, p. 84, *testaceus*, *cultus*, p. 85, England, MARSHALL, Tr. E. Soc. 1887, n. spp.

Meteorus: the genus described and discussed, and the 32 British species tabulated and described, pp. 87–131; *M. deceptor*, ♂ fig. 6, ♀ fig. 7, *abdominator*, ♀ fig. 9, *unicolor*, ♀ fig. 10, figured, pl. v; MARSHALL, Tr. E. Soc. 1887.

M. vexator, p. 105, *melanostictus*, p. 115, *tenellus*, p. 125, England, MARSHALL, Tr. E. Soc. 1887; *M. hyphantriæ*, Columbia, N. America, RILEY, Rep. 1886, p. 532, pl. x, fig. 4: n. spp.

Euphorides: the group defined and discussed, and the British genera tabulated and described; MARSHALL, Tr. E. Soc. 1887, pp. 51–53, &c.

Euphorus, Rees: the 12 British species tabulated and described; MARSHALL, Tr. E. Soc. 1887, pp. 54–66.

E. tuberculifer, p. 57, *coactus* = (*Leiophron picipes*, Curt. *nec* Hal.), p. 59, *ornatus*, p. 63, pl. v, fig. 1, MARSHALL, Tr. E. Soc. 1887, n. spp.

Aridelus, n. g. (*Euphorides*), for *A. bucephalus*, Trinidad, n. sp.; MARSHALL, Tr. E. Soc. 1887, p. 66.

Wesmaëlia cremasta, description and figure; MARSHALL, Tr. E. Soc. 1887, p. 67, pl. v, fig. 4.

Eustalocerus clavicornis, Wesm., description; MARSHALL, Tr. E. Soc. 1887, p. 68, pl. v, fig. 3.

Streblocera fulviceps, Westw., pl. v, fig. 2, p. 69, and *macroscapa*, Ruthe, p. 70, described and figured; MARSHALL, Tr. E. Soc. 1887.

Crypturus siculus, Sicily, COSTA, Rend. Acc. Nap. (2) i, p. 244, n. sp.

Agathis cressoni (n. n. for *A. albitarsis*, Cres.), p. 398, figured, pl. xvi, fig. 9; CAMERON, Biol. Centr. Am. Hym.

A. imperialis, Sicily, COSTA, Rend. Acc. Nap. (2) i, p. 244; *A. violaceipennis*, pl. xvi, fig. 8, p. 398, *chiriquensis*, fig. 7, Panama, *albispina*, fig. 10, p. 399, *tibialis*, fig. 13, *ferrugineus*, fig. 11, p. 400, Mexico, CAMERON, Biol. Centr. Am. Hym.: n. spp.

Apanteles glomeratus, habits, brief note; ATWOOD, Bull. Dep. Agric. Ent. xiii, p. 53.

A. hyphantriæ, N. America; RILEY, Rep. 1886, p. 533, n. sp.

Microgaster flavipes, attacks on *Boarmia repondata*; BIGNELL, Rep. Plym. Inst. ix, p. 326, woodcut.

M. mexicanus, Mexico, p. 397, pl. xv, fig. 24, CAMERON, Biol. Centr. Am. Hym., n. sp.

Iphiaulax nigriceps, Br., figured, pl. xiii, fig. 20, *lævis*, Sm. (*Bracon*), figured, pl. xiv, fig. 17, and redescribed, p. 357; CAMERON, Biol. Centr. Am. Hym.

I. pulchripennis, pl. xiii, fig. 23, *rogersi*, fig. 22, p. 330, *exaltatus*, fig. 21, Costa Rica, *dolosus*, Guatemala, Panama, p. 331, *lachrymosus*, Panama, fig. 21 & p. 332, *sciarius*, Costa Rica, p. 333, *eros*, Guatemala, fig. 25 & p. 334, *trochanteratus*, Panama, p. 335, *beatus*, Guatemala, pl. xiv, fig. 18, *janus*, p. 336, *peronatus*, p. 337, Panama, *zapotensis*, Guatemala, Panama, pl. xiv, fig. 2, *pulchripes*, fig. 3, p. 338, *championi*, fig. 4, p. 339, *imitatrix*, fig. 13 & p. 340, *gloriatorius*, fig. 1, *frugalis*, p. 341, *hector*, fig. 5, Panama, *guatemalensis*, fig. 8, p. 342, *calderensis*, fig. 6 & p. 343, *godmani*, fig. 7 & p. 344, *rufo-plagiatus*, p. 344, Guatemala, *brachyura*, *suavis*, Guatemala, Panama, p. 345, *piliventris*, Panama, fig. 9 & p. 346, *persecutor*, Guatemala,

p. 347, *aztecus*, Mexico, p. 348, *argentifrons*, Guatemala, fig. 11, *montezuma*, Mexico, fig. 12, p. 349, *chontalensis*, Nicaragua, *abaculus*, Costa Rica, fig. 23, p. 350, *canescens*, Nicaragua, p. 351, *quadripunctatus*, Panama, fig. 25, p. 352, *basimacula*, Mexico to Panama, pl. xv, figs. 1 & 2, p. 353, *volcanicus*, Panama, *humerosus*, Guatemala, pl. xiv, fig. 14, p. 354, *fuscidens*, Mexico, fig. 19 & p. 355, *verapacis*, Guatemala, fig. 15 & p. 356, *tinctipennis*, Costa Rica, fig. 16 & p. 357, *megaptera*, pl. xv, fig. 5 & p. 358, *abjectus*, *vagabundus*, pl. xiv, fig. 20 & p. 359, *bilineki*, Mexico, *salvini*, Guatemala, fig. 21, p. 360, *infirmus*, Mexico, *fuscipalpis*, p. 361, *gravidus*, Guatemala, fig. 24 (as *capitellensis*), p. 362, *cruentatus*, Costa Rica, pl. xv, fig. 3, *teres*, Mexico, p. 363, *excuratus*, Guatemala, fig. 6 & p. 364, *pugillator*, *paganus*, p. 365, *bifoveatus*, fig. 9 & p. 366, Mexico, *molestus*, pl. xiv, fig. 22 & p. 367, *pilosellus*, pl. xv, fig. 7, Guatemala, *triangulator*, Panama, p. 368, *lacteifasciatus*, Mexico, *divinator*, p. 370, *repentinus*, p. 371, Guatemala, *rixosus*, Nicaragua, *egregius*, p. 372, *sonorensis*, pl. xv, fig. 4, p. 373, *avarus*, fig. 11, *mexicanus*, p. 374, *jucundus*, fig. 10, *bellicosus*, fig. 13, p. 375, *mendicus*, fig. 8 & p. 376, Mexico, and *I.* (?) *multicarinatus*, Nicaragua, fig. 12, p. 377, CAMERON, Biol. Centr. Am. Hym., n. spp.

Spathius tinctipennis, pl. xv, fig. 14, p. 379, *ornaticornis*, fig. 18, *fuscipes*, p. 381, and *striatifrons*, p. 382, Panama, CAMERON, Biol. Centr. Am. Hym., n. spp.

Doryctes stronggloyaster, pl. xv, fig. 21 & p. 382, *pertinax*, p. 383, Panama, CAMERON, Biol. Centr. Am. Hym., n. spp.

Odontobracon, n. g., p. 384, for the following n. spp. : *montanus*, Costa Rica, pl. xv, fig. 17, p. 384, *crassicentris*, fig. 15, *nigriceps*, fig. 16, Guatemala, p. 385 ; CAMERON, Biol. Centr. Am. Hym.

Clinocentrus rugulosus, Guatemala, CAMERON, Biol. Centr. Am. Hym. p. 386, n. sp.

Yelicones, n. g. (*Rhogadinæ*), p. 387, for the following n. spp. : *violaceipennis*, pl. xv, fig. 19 & p. 387, *crassicornis*, *melanocephalus*, fig. 20, p. 388, Panama ; CAMERON, Biol. Centr. Am. Hym.

Rhogas fumipennis, *mexicanus*, pl. xv, fig. 22, p. 389, *sonorensis*, pl. xvi, fig. 1, p. 390, *melanocephalus*, Mexico, *bugabensis*, Panama, pl. xv, fig. 23, p. 391, CAMERON, Biol. Centr. Am. Hym., n. spp.

Leluthia, n. g., for *L. mexicana*, Mexico, pl. xvi, fig. 2, *fuscinervis*, Guatemala, fig. 3, n. spp. ; CAMERON, Biol. Centr. Am. Hym. p. 392.

Chelonus quadrimaculatus, Mexico, pl. xvi, fig. 5, p. 393, *basimacula*, Panama, fig. 6, p. 394, *sonorensis*, Mexico, fig. 4, *annulipes*, Guatemala, Panama, p. 395, CAMERON, Biol. Centr. Am. Hym., n. spp.

Ascogaster bugabensis, Panama, CAMERON, Biol. Centr. Am. Hym. p. 396, n. sp.

Earinus and *Microdus*, their distinction queried ; CAMERON, Biol. Centr. Am. Hym. p. 400.

Earinus erythropoda, Mexico, p. 400, pl. xvi, fig. 20, CAMERON, Biol. Centr. Am. Hym., n. sp.

Microdus melanostoma, pl. xvi, fig. 15, p. 401, *pulchripennis*, Panama, *championi*, Guatemala, fig. 12, p. 402, *peronatus*, fig. 16, *coxalis*, Panama, p. 403, *maculipes*, Guatemala, *femoratus*, fig. 17, p. 404, *basimacula*, fig. 19, Mexico, *simulatrix*, Guatemala, fig. 14, p. 405, *albitarsis*, *melanocephalus*,

p. 406, *montivagus*, fig. 18, p. 407, Mexico, CAMERON, Biol. Centr. Am. Hym., n. spp.

Macrocentrus delicatus, Cres., figured, pl. xvii, fig. 5, described, p. 408; CAMERON, Biol. Centr. Am. Hym.

**Zele fuscicornis*, Guatemala, p. 409, pl. xvii, fig. 4, CAMERON, Biol. Centr. Am. Hym., n. sp.

Opius mexicanus, Mexico, p. 409, pl. xvii, fig. 14, CAMERON, Biol. Centr. Am. Hym., n. sp.

Pygostolus (?) *sonorensis*, Mexico, CAMERON, Biol. Centr. Am. Hym. p. 410, n. sp.

Toxoneuron seminigrum, Cres., figured, pl. xvii, fig. 7, noticed, p. 411; CAMERON, Biol. Centr. Am. Hym.

T. croceum, Panama, p. 412, pl. xvii, fig. 8, CAMERON, Biol. Centr. Am. Hym., n. sp.

Olixon, n. g. (*Polymorphi*), p. 412, for *O. testaceum*, n. sp., Panama, p. 413, pl. xvi, fig. 21; CAMERON, Biol. Centr. Am. Hym.

Alysia pulchripennis, pl. xvi, fig. 24, *xanthoptera*, fig. 23, p. 413, *longicornis*, fig. 22, *erythrogaster*, fig. 25, Panama, *championi*, Mexico, pl. xvii, fig. 3, p. 414, *melanocephala*, *bugabensis*, p. 415, *chiriquensis*, Panama, *chontalensis*, Nicaragua, p. 416, CAMERON, Biol. Centr. Am. Hym., n. spp.

Cenocœlius filicornis, pl. xvii, fig. 9, *nigripes*, fig. 13, Panama, p. 417, *chontalensis*, Nicaragua, fig. 12, *pulcher*, fig. 10, *ornatipennis*, fig. 11, Panama, p. 418, CAMERON, Biol. Centr. Am. Hym., n. spp.

Arotropus binodosus, Prov., redescribed, figured, and referred to *Amblypone* (*Formicidæ*); PROVANCHER, Add. Hym. Queb. pp. 240 & 241.

EVANIIDÆ and STEPHANIDÆ.

Stephanidæ distinguished from *Evaniidæ*; CAMERON, Biol. Centr. Am. Hym. p. 419.

Megischus annulator, Br., figured, pl. xviii, figs. 7 & 8, ♂ described, p. 419; *niger*, Sm., figured, fig. 19; CAMERON, Biol. Centr. Am. Hym.

Megischus ruficeps, pl. xviii, fig. 9, p. 420, *erythrocephalus*, p. 421, Panama, CAMERON, Biol. Centr. Am. Hym., n. spp.

Monomachus ruficeps, Panama, pl. xviii, fig. 6, p. 422, CAMERON, Biol. Centr. Am. Hym., n. sp.

Aulacus ruficollis, Guatemala, p. 423, pl. xviii, fig. 10, CAMERON, Biol. Centr. Am. Hym., n. sp.

Gasteruption maculicorne, pl. xviii, fig. 5, *sericeum*, figs. 3 & 4, Guatemala, p. 424, CAMERON, Biol. Centr. Am. Hym., n. spp.

Evania tinctipennis, Costa Rica, Panama, pl. xvii, fig. 16, p. 425, *albofacialis*, fig. 17, p. 426, *albispina*, fig. 18, *rugifrons*, fig. 19, p. 428, *ornaticornis*, fig. 20, p. 429, Panama, *marginata*, fig. 20, Guatemala, *varicornis* Panama, fig. 22, p. 430, *trochanterata*, fig. 23, *nitida*, pl. xviii, fig. 1, *bilineata*, fig. 7 & *rugosa*, Guatemala, pl. xvii, fig. 25, p. 432, CAMERON, Biol. Centr. Am. Hym., n. spp. *suavis*, Guatemala, *persecutor*, Guatemala.

CHALCIDIDÆ.

Chalcis robusta, figured and noticed ; HUBBARD, Ins. Orange, p. 139.

Smicra montana, carolina, p. 183, N. America, ASHMEAD, Tr. Am. Ent. Soc. xviii, n. spp.

Halticella maculipennis, Sicily, STEFANI, Nat. Sicil. vi, p. 89 ; *H. viridis*, Canada, PROVANCHER, Add. Hym. Queb. p. 192 ; *H. longicornis*, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 185 : n. spp.

Phasgonophora elegans, Canada, PROVANCHER, Add. Hym. Queb. p. 191, n. sp.

Eupelmus mirabilis, Walsh., ♂ ♀ figured, pl. ix, figs. 2 & 2*a* ; HUBBARD, Ins. Orange.

E. karschii, Russia, LINDEMAN, Bull. Mosc. (n.s.) i, p. 187, n. sp.

Lochites punctata, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 185, n. sp.

Megastigma ficigeræ, cecidomyiæ, p. 185, *canadensis*, p. 186, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, n. spp.

Diomorus biorhizæ, Canada, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 186, n. sp.

Oligosthenus stigma, Fab., = (*Monodontomerus viridiæneus*, Prov.); ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 186.

O. bimaculatus, Canada, PROVANCHER, Add. Hym. Queb. p. 196, n. sp.

Syntomaspis brodiei, dryophantæ, albihirta, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 187, n. spp.

S. splendens, Canada, PROVANCHER, Add. Hym. Queb. p. 196, n. sp.

Torymus bedeguaris, L., = (*Callimome magnifica*, O.-S.) ; *brevicauda* O.-S., = (*brevicaudissima*, Ashm.): ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 188.

T. omnivoræ, neuroterus, p. 188, *anthomyiæ*, p. 189, ASHMEAD, Tr. Am. Ent. Soc. xiv, n. spp.

Ormyrus brunneipes, Canada, PROVANCHER, Add. Hym. Queb. p. 198 ; *O. vacciniicola, ventricosus, minutus*, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 189 : n. spp.

Perilampus aciculatus, lævis, Canada, PROVANCHER, Add. Hym. Queb. p. 199, n. spp.

Lamprostylus (?) *floridanus*, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 193, n. sp.

Eurytoma gigantea, Walsh., ♂ characters, = (*Callimome duckeri*, Brodie, and *Ormyrus elongatus*, Prov.), p. 194 ; *E. studiosa*, synonymy discussed, p. 195 : ASHMEAD, Tr. Am. Ent. Soc. xiv.

E. californica, sculpta, p. 195, *solenozopheriæ*, p. 196, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv ; *E. nigricoxa, conica*, Canada, PROVANCHER, Add. Hym. Queb. p. 193 : n. spp.

Decatoma maculipes, Ashm., referred to *Eurytoma*, p. 195 ; *querci-lanæ*, Fitch, synonymy and variation discussed, pp. 196–198 : ASHMEAD, Tr. Am. Ent. Soc. xiv.

Isosoma hordei, Harr., = (*Decatoma basilaris*, Prov.) ; *I. gigantea*, Ashm., generic position queried : ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 198.

Isosoma hordei, Harr., ravages, = (*nigrum*, Cook); *I. tritici* and *grande*, Riley, are dimorphic forms of one species, to be called *tritici*, ravages, habits, &c.: RILEY, Rep. 1886, pp. 539–546; *cf.* also WEBSTER, *t. c.* p. 573.

Metastenus (?) *acanthocini*, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 198, n. sp.

Spalangia syrphi, Ashm., referred to *Pachyneuron*; ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 193.

S. drosophilæ, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 199; *S. æneæ*, Canada, PROVANCHER, Add. Hym. Queb. p. 200: n. spp.

Pachyneuron syrphicola, n. n. for "*Spalangia syrphi*, Ashm., last summer," *nec olim*; ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 193.

P. anthomyiæ, Florida, HOWARD in Hubbard, Ins. Orange, p. 217; *P. aphidivora*, p. 14, from *Aphis brassicæ*, *allograptæ*, p. 15, from *Allograpta obliqua*, in Florida, ASHMEAD, Bull. Dep. Agric. Ent. xiv: n. spp.

Tetrastichus eudemus, Walk., bred from *Coleophora trifolii*, Curt.; Ent. M. M. xxiii, p. 214. *T. flavipes*, *flaviceps*, and *lecanii*, Ashm., referred to *Ceranisus*, p. 202, ASHMEAD, Tr. Am. Ent. Soc. xiv.

T. floridanus, *californicus*, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv; *T. cecidomyæ*, Sicily, STEFANI, Nat. Sicil. vi, p. 110; *T. rileyi*, Russia, LINDEMAN, Bull. Mosc. (n.s.) i, p. 183: n. spp.

Semiotellus (?) *nigripes*, Russia, LINDEMAN, Bull. Mosc. (n.s.) i, p. 185, n. sp.

Merisus intermedius, Russia, LINDEMAN, Bull. Mosc. (n.s.) i, p. 179, n. sp.

Pteromalus puparum, note on; ALWOOD, Bull. Dep. Agric. Ent. xiii, p. 52. *P. 4-maculatæ*, Ashm., referred to *Encyrtus*; ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 191.

Platygaster minutus, Russia, LINDEMAN, Bull. Mosc. (n.s.) i, p. 188, n. sp.

Euryscapus saltator, Russia, LINDEMAN, Bull. Mosc. (n.s.) i, p. 190, n. sp.

Encyrtus aphidiphagus, p. 14, from *Aphis brassicæ*; *anasæ*, from eggs of *Anasa tristis*, p. 23; *E.? megouræ*, from *Megoura solani*, p. 19, Florida; ASHMEAD, Bull. Dep. Agric. Ent. xiv, p. 14: n. spp.

Isodromus, n. g. (*Encyrtinæ*), for *I. icerya*, n. sp., destroying *Icerya purchasi* in California; HOWARD, in Riley Rep. 1886, n. sp.

Cerapterocerus floridanus, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 190, n. sp.

Homalotylus obscurus, Howd., figured and noticed, p. 74, fig. 35; HUBBARD, Ins. Orange.

H. similis, Florida, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 190, n. sp.

Leptomastix tineævora, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 191, n. sp.

Chiloneurus maculatipennis, Canada, PROVANCHER, Add. Hym. Queb. p. 203, n. sp.

Copidosoma pallipes, Canada, PROVANCHER, Add. Hym. Queb. p. 205, n. sp.

Coccophagus brunneus, p. 205, *compressicornis*, *pallipes*, p. 206, Canada, PROVANCHER, Add. Hym. Queb., n. spp.

Eutelus scymnæ, Shimer, referred to *Homalotylus*; Ashmead, Tr. Am. Ent. Soc. xiv, p. 191.

Megorismus nubilipennis, Canada, Ashmead, Tr. Am. Ent. Soc. xiv, p. 192, n. sp.

Halticoptera brodiei, Canada, Ashmead, Tr. Am. Ent. Soc. xiv, p. 192, n. sp.

Trigonoderus ægeriæ, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 192, n. sp.

Pachycrepis lachni, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 193, n. sp.

Metacolus conicus, Canada, Provancher, Add. Hym. Queb. p. 200, n. sp.

Dinotus acutus, Canada, Provancher, Add. Hym. Queb. p. 201, n. sp.

Roptrocerus rectus, Canada, Provancher, Add. Hym. Queb. p. 202, n. sp.

Charitopus facialis, Canada, Provancher, Add. Hym. Queb. p. 203, n. sp.

Elachistus flavipes, Ashm., referred to *Holcopelte*; Ashmead, Tr. Am. Ent. Soc. xiv, p. 200.

Miotropis platynotæ, Florida, Howard, in Ins. Orange, p. 217; *M. nebulosa*, Canada, Provancher, Add. Hym. Queb. p. 208 : n. spp.

Stenomesius harrisinæ, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 200, n. sp.

Euplectrus mellipes, lucens, veridæneus (sic), Canada, Provancher, Add. Hym. Queb. p. 207, n. sp.

Eulophus tricladus, Canada, Provancher, Add. Hym. Queb. p. 208, n. sp.

Chrysocharis viridis, Canada, Provancher, Add. Hym. Queb. p. 209, n. sp.

Trichasius, n. g., for *T. clavatus*, n. sp., Canada; Provancher, p. 209, Add. Hym. Queb.

Holcopelte albipes, Canada, Provancher, Add. Hym. Queb. p. 210; *H. violacea*, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 200 : n. spp.

Astichus auratus, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 200, n. sp.

Entedon aphidiphagus, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 201, n. sp.

Euderus elongatus, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 201, n. sp.

Ceranisus flavopictus, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 202, n. sp.

Baryscapus centricolæ, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 202, n. sp.

Hyperteles blastophagi, p. 202, *neuroteri, flocci*, p. 203, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, n. spp.

Critogaster, *Tetragonaspis*, &c., their possible connections noticed; Müller, Ent. Nachr. pp. 162 & 163.

Critogaster piliventris, göldiana, Rio de Janeiro, Müller, Ent. Nachr. xiii, p. 161, n. spp.

Proctotrupidæ.

Gonatopus decipiens, Canada, Provancher, Add. Hym. Queb. p. 179, n. sp.

Labeo incertus, Florida, Ashmead, Ent. Am. iii, p. 74, n. sp.

Mystrophorus americanus, Florida, Ashmead, Ent. Am. iii, p. 128, n. sp.

Goniozus hubbardi, Florida, Howard, in Hubbard Ins. Orange, p. 217; *G. foveolatus, grandis*, Florida, Ashmead, Ent. Am. iii, p. 76 : n. spp.

Isobrachium floridanum, Florida, Ashmead, Ent. Am. iii, p. 76, n. sp.

Aphelopus americanus, Florida, Ashmead, Ent. Am. iii, p. 74, n. sp.

Embolemus nasutus, Florida, Ashmead, Ent. Am. iii, p. 75, n. sp.

Sierola maculipennis, Florida, Ashmead, Ent. Am. iii, p. 75, n. sp.

Sclerochroa gallicola, cynipsiphila, macrogaster, Florida, Ashmead, Ent. Am. iii, p. 75, n. spp.

Perisemus floridanus, mellipes, Florida, Ashmead, Ent. Am. iii, p. 76, n. spp.

Bethylus formicoides, Canada, Provancher, Add. Hym. Queb. p. 179, n. sp.

Ateleopterus nubilipennis, Florida, Ashmead, Ent. Am. iii, p. 97, n. sp.

Holopedina polypori, Först., bred from *Cis vestitus*; Horner, P. E. Soc. 1887, p. xxxii.

H. nubilipennis, Florida, Ashmead, Ent. Am. iii, p. 97, n. sp.

Ceraphron macroneurus, Florida, Ashmead, Ent. Am. iii, p. 97, n. sp.

Trichosteresis floridanus, Florida, Ent. Am. iii, p. 98, n. sp.

Atritomus ruficentris, Florida, Ashmead, Ent. Am. iii, p. 98, n. sp.

Megaspilus hyalinipennis, Florida, Ashmead, Ent. Am. iii, p. 98, n. sp.

Proctotrupes melliventris, Florida, Ashmead, Ent. Am. iii, p. 99, n. sp.

Thoron pallipes, Florida, Ashmead, Ent. Am. iii, p. 99, n. sp.

Acolus rubriclavus, Florida, Ashmead, Ent. Am. iii, p. 99, n. sp.

Baconeura cinctiventris, floridana, Florida, Ashmead, Ent. Am. iii, p. 99, n. sp.

Xenomerus rubicola, Florida, Ashmead, Ent. Am. iii, p. 100, n. sp.

Teleas sphingis, Florida, from egg of *Sphinx carolina*, Ashmead, Bull. Dep. Agric. Ent. xiv, p. 18; *T. dolichocerus, infuscatipes*, Florida, Ashmead, Ent. Am. iii, p. 100 : n. spp.

Telenomus orgyiæ, Fitch, referred to *Teleas*; Ashmead, Ent. Am. iii, p. 100.

T. bifidus, eggs of *Hyphantria cunea*, Columbia, N. America, Riley, Rep. 1886, p. 531; *T. anasæ*, Florida, from eggs of *Anasa tristis*, Ashmead, Bull. Dep. Agric. Ent. xiv, p. 23; *T. stygicus*, Canada, Provancher, Add. Hym. Queb. p. 180 : n. spp.

Prosacantha mandibularis, macrocera, fuscipennis, minutissima, Florida, p. 117, Ashmead, Ent. Am. iii, n. spp.

Trisacantha, n. g., for *T. americana*, Florida, n. sp.; Ashmead, Ent. Am. iii, p. 117.

Anteris elongata, Florida, Ashmead, Ent. Am. iii, p. 118, n. sp.

Baryconus floridanus, Florida, Ashmead, Ent. Am. iii, p. 118, n. sp.

Cheirocerus floridanus, Ashm., referred to *Lygocerus*; ASHMEAD, Ent. Am. iii, p. 98.

Scelio ovivora, Riley, note on ; ASHMEAD, Ent. Am. iii, p. 119.

S. hyalinipennis, fuscipennis, Florida, ASHMEAD, Ent. Am. iii, p. 119, n. spp.

Hadronotus floridanus, Florida, ASHMEAD, Ent. Am. iii, p. 118; *H. leptocoriæ*, Florida, HOWARD, in Hubbard Ins. Orange, p. 215 : n. spp.

Allotropa americana, Florida, ASHMEAD, Canad. Ent. xix, p. 125, n. sp.

Metaclisis belonocnemæ, Florida, ASHMEAD, Canad. Ent. xix, p. 125, n. sp.

Monocrita melanostropha, Florida, *canadensis*, Canada, ASHMEAD, Canad. Ent. xix, p. 126, n. spp.

Isostasius musculus, Florida, ASHMEAD, Canad. Ent. xix, p. 126; *I. arietinus*, Canada, PROVANCHER, Add. Hym. Queb. p. 183 : n. spp.

Inostemma horni, p. 126, *cressoni, rileyi, packardi*, p. 127, Florida, ASHMEAD, Canad. Ent. xix, n. spp.

Acerota opaca, Canada, PROVANCHER, Add. Hym. Queb. p. 184; *A. caryæ, floridana*, Florida, p. 128, ASHMEAD, Canad. Ent. xix : n. spp.

Catillus maculipes, Florida, ASHMEAD, Canad. Ent. xix, p. 128, n. sp.

Xestonotus andriciphilus, Florida, ASHMEAD, Canad. Ent. xix, p. 128, n. sp.

Aimblyaspis longipes, p. 128, *americana*, p. 129, Florida, ASHMEAD, Canad. Ent. xix, n. spp.

Leptacis cynipsiphila, Florida, ASHMEAD, Canad. Ent. xix, p. 129, n. sp.

Isorhombus hyalinipennis, Florida, ASHMEAD, Canad. Ent. xix, p. 129, n. sp.

Epimeces, Westd., = (*Ectadius*, Forst.), ASHMEAD, Canad. Ent. xix, p. 130.

E. americanus, Florida, ASHMEAD, Canad. Ent. xix, p. 129, n. sp.

Sactogaster anomaliventris, Florida, ASHMEAD, Canad. Ent. xix, p. 130, n. sp.

Synopeas melanocera, Florida, ASHMEAD, Canad. Ent. xix, p. 130, n. sp.

Anopedias incertus, Florida, ASHMEAD, Canad. Ent. xix, p. 130, n. sp.

Isocybus longiventris, Florida, ASHMEAD, Canad. Ent. xix, p. 130, n. sp.

Trichacis brunneipes, Florida, ASHMEAD, Canad. Ent. xix, p. 131, n. sp.

Hypocampsis pluto, Florida, ASHMEAD, Canad. Ent. xix, p. 131, n. sp.

Polygnotus solidaginis, p. 131, *baccharicola*, p. 132, Florida, ASHMEAD, Canad. Ent. xix, n. spp.

Platygaster floridensis, gracilis, Florida, ASHMEAD, Canad. Ent. xix, p. 132, n. spp.

Aneurhynchus inermis, aneurus, Canada, PROVANCHER, Add. Hym. Queb. p. 176, n. spp.

Spilomicrus foveatus, Canada, PROVANCHER, Add. Hym. Queb. p. 176, n. sp.

Platymischus torquatus, Canada, PROVANCHER, Add. Hym. Queb. p. 182, n. sp.

Cinetus nasutus, Canada, PROVANCHER, Add. Hym. Queb. p. 178, n. sp.

Gonatocerus dolichocerus, nigritarsis, Florida, ASHMEAD, Canad. Ent. xix, p. 192, n. spp.

Ooctonus longipes, Florida, Ashmead, Canad. Ent. xix, p. 192, n. sp.
Litus armatus, Florida, Ashmead, Canad. Ent. xix, p. 193, n. sp.
Alaptus pallipes, Florida, Ashmead, Canad. Ent. xix, p. 193, n. sp.
Eustochus xanthothorax, Florida, Ashmead, Canad. Ent. xix, p. 193, n. sp.
Cosmocoma howardii, n. n. for *elegans*, How., *nec* Foerst.; Ashmead, Canad. Ent. xix, p. 194. *C. maculipes*, Florida, *l. c.*, n. sp.
Monelata mellicollis, N. America, Ashmead, Canad. Ent. xix, p. 197, n. sp.
Anaphes mellicornis, Florida, Ashmead, Canad. Ent. xix, p. 194, n. sp.
Galesus floridensis, Florida, Ashmead, Canad. Ent. xix, p. 195, n. sp.
Cephalonomia hirticollis, p. 195, *floridana*, p. 196, Florida, Ashmead, Canad. Ent. xix, n. spp.
Hemilexis mellipetiola, Florida, Ashmead, Canad. Ent. xix, p. 196, n. sp.
Diapria erythrothorax, Florida, Ashmead, Canad. Ent. xix, p. 196, n. sp.
Psilomma americana, Florida, Ashmead, Canad. Ent. xix, p. 197, n. sp.
Anectata hirtifrons, Florida, Ashmead, Canad. Ent. xix, p. 198, n. sp.

Cynipidæ.

Andricus topiarius, *stropus*, *vaccinii*, p. 136, *cinnamomeus*, *A.* (?) *floridanus*, p. 137, *femoratus*, *calycicola*, p. 141, *difficilis*, *blastophagus*, p. 143, *infuscatus*, p. 144, *cryptus*, p. 145, Ashmead, Tr. Am. Ent. Soc. xiv, n. spp.
"*Andricus* (*Trisolenia*, n. g.) *saltatus*, n. sp." (sic), N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 142.
Dryophanta cinereæ, p. 144, *carolina*, *texana*, p. 145, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, n. spp.
Callirhytis parvifoliæ, p. 138, *cellæ*, p. 141, *aquaticæ*, p. 144, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, n. spp.
Biorhiza mellea, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 138, n. sp.
Neuroterus longipennis, *laurifoliæ*, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 140, n. spp.
Acraspis lanæglobuli, p. 139, *echini*, p. 140, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, n. spp.
Amphibolips spinosa, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 141, n. sp.
Bassettia, n. g., p. 146, for *B. floridana*, n. sp., Florida, p. 147, and including *Cynips tenuicornis*, Bass.; Ashmead, Tr. Am. Ent. Soc. xiv.
Eumayria, n. g., for *E. floridana*, n. sp., Florida; Ashmead, Tr. Am. Ent. Soc. xiv, p 147.
Rhodites carolina, N. America, Ashmead, Tr. Am. Ent. Soc. xiv, p. 148, n. sp.
Solenozopheria, n. g., for *S. vaccinii*, n. sp., N. America; Ashmead, Tr. Am. Ent. Soc. xiv, p. 149.
Dimicrosthopis, n. g., p. 172, for *D. ruficornis*, n. sp., Canada, p. 173; Ashmead, in Provancher Add. Hym. Queb.

Aulax hypochœridis, Bitsch, KIEFFER, Verh. z.-b. Wien xxxvii, p. 205 ; *A. harringtoni*, Canada, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 146 : n. spp.

Allotria brassicæ, p. 14, from *Aphis brassicæ*, *megourœ*, p. 19, from *Megoura solani*, Florida, ASHMEAD, Bull. Dep. Agric. Ent. i, p. 14, n. spp.

Copterencoila, n. g., p. 151, for *C. americana*, n. sp., N. America, p. 152 ; ASHMEAD, Tr. Am. Ent. Soc. xiv.

Kleidotoma americana, Canada, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 152, n. sp.

Hexapiasta maculipes, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 152, n. sp.

Dimicrostrophis, n. g., p. 152, for *D. ruficornis*, Canada, p. 152, *xystiformis*, Florida, p. 153, n. spp. ; ASHMEAD, Tr. Am. Ent. Soc. xiv.

Macrocereucoila, n. g., for *M. longicornis*, n. sp., N. America ; ASHMEAD, Tr. Am. Ent. Soc. xiv.

Eucoila siphonophoræ, Florida, from *Siphonophora cucurbitæ*, Midd., ASHMEAD, Bull. Dep. Agric. Ent. xiv, p. 21 ; *E. rubripes*, N. America, *id.* Tr. Am. Ent. Soc. xiv, p. 153 : n. spp.

Eucoilidea, n. g., for *E. longicornis*, *canadensis*, N. America, n. spp. ; ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 154.

Thyreocera, n. g. ; p. 154, for *T. nigrifemora*, n. sp., Canada, p. 155 ; ASHMEAD, Tr. Am. Ent. Soc. xiv.

Omalaspis floridanus, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 155, n. sp.

Figites floridanus, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 155; *F. laeviscutum*, Canada, PROVANCHER, Add. Hym. Queb. p. 170 : n. spp.

Solenaspis, n. g., pp. 151 & 155, for *S. hyalinipennis*, n. sp., N. America, p. 155 ; ASHMEAD, Tr. Am. Ent. Soc. xiv.

Aspicera albihirta, *similis*, N. America, p. 156, ASHMEAD, Tr. Am. Ent. Soc. xiv, n. spp.

Acothyreus, n. g., for *A. osceola*, n. sp., N. America; ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 157.

Ægilips bicolorata, England, CAMERON, Ent. M. M. xxiii, p. 194, n. sp.

Anacharis melanoneura, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 158 ; *A. marginata*, p. 168, *pediculata*, p. 169, Canada, PROVANCHER, Add. Hym. Queb. : n. spp.

Callaspidia provancheri, Canada, ASHMEAD, in Provancher Add. Hym. Queb. p. 167, n. sp.

Onychia inermis, Canada, PROVANCHER, Add. Hym. Queb. p. 171, n. sp.

Lonchidia hirta, Canada, PROVANCHER, Add. Hym. Queb. p. 170, n. sp.

Melanips iowensis, N. America, ASHMEAD, Tr. Am. Ent. Soc. xiv, p. 158, n. sp.

SESSILIVENTRES.

[*Cf.* BEYERINCK (61, 62), HEYDEN (308), JAKOWLEW (347), KONOW 388, 389, 390, 391), SCHÖYEN (683), STEIN (739).]

SIRICIDÆ.

... sayi, and N. American species, note on ; HARRINGTON, Canad. Ent. xix, pp. 81–86.

Tenthredinidæ.

[N.B.—The arrangement of genera is alphabetical.]

Table of the genera of Scandinavian phytophagous *Hymenoptera*; Schöyen (683).

Parthenogenesis in *Tenthredinidæ*; Brischke (94).

Synonomy of some European species; Mocsáry (509).

Abia: table of the species; Konow, Rev. d'Ent. vi, p. 1.

Abia candens, Central Europe, Konow, Rev. d'Ent. vi, pp. 2 & 123, n. sp.

Allantus annulatus, Klug., = (*excellens*, Knw.); Stein, Ent. Nachr. xiii, p. 165. *A. dahli*, Kl., and *longipes*, Kon., differential note; Konow, Wien. ent. Z. vi, p. 27.

A. roborowskyi, Central Asia, Jakowlew, Hor. Ent. Ross. xxi, p. 160, n. sp.

Arge thoracica, Spin., = (*sanguinicollis*, André), ♂ described; Konow, Wien. ent. Z. vi, p. 19. *A. josephi*, locality queried; *id. t. c.* p. 26, note.

Arge aetolica, *debilis*, p. 19, *simulatrix*, p. 20, Greece, Konow, Wien. ent. Z. vi: n. spp.

Athalia przewalskyi, Central Asia, Jakowlew, Hor. Ent. Ross. xxi, p. 161, n. sp.

Blennocampa luteicentris, Kl., and *Phyllotoma fuscipennis*, Fall., are distinct, the two discussed fully; Stein, Ent. Nachr. xiii, pp. 166–168.

Cephus pygmæus, Curt., ravages in Britain in 1887; Ormerod, Rep. xi, pp. 59–63.

Dineura virididorsata, Retz., use of this name maintained; Stein, Ent. Nachr. xiii, p. 169.

Dolerus æriceps, Th., = (*mandibularis*, Knw.), *D. palmatus*, Kl., = (*trigeminus*, Knw.), p. 170; *D. rugosus*, Knw., *steini*, Knw., *triplicatus*, Kl., discussed, p. 171; Stein, Ent. Nachr. xiii. *D. picipes*, Kl., = (*leucopterus*, Zad.); Konow, Wien. ent. Z. vi, p. 28.

D. schulthessi, Switzerland, Konow, Wien. ent. Z. vi, p. 283 (with tabulation of and notes on allied species); *D. oertzeni*, Greece, *id. t. c.* p. 27: n. spp.

Emphytus patellatus, Kl., and *Tenthredo tenera*, Fall., are not the same; Stein, Ent. Nachr. xiii, p. 210. *E. truncatus*, Kl., synonymy and characters discussed at length; *id. t. c.* pp. 211–213.

Eriocampa annulipes, parthenogenesis in; Cameron, Ent. M. M. xxiii, p. 195.

E. dorpatica, Livonia, Konow, Wien. ent. Z. vi, p. 25, n. sp.

Fenella nigrita, Westw., habits of; Konow, Wien. ent. Z. vi, p. 276.

Leptopus, Hartig, though preoccupied, to be used instead of *Camponiscus*, Newm.; Stein, Ent. Nachr. xiii, p. 168.

Hylotoma dulciaria, Say, note on; Fyles, Canad. Ent. xix, p. 59.

Lophyrus, sp. ?, ravages in Durham; Ormerod, Rep. xi, pp. 93–95.

Lyda lethierryi, France, Konow, Rev. d'Ent. vi, p. 4, n. sp.

Macrophya, Dlbm., table of species of one of the groups of; on *M. tenella*, Mocs., *crassula*, ♂, Klg., *carinthiaca*, Htg., *pal*[illegible] p. 173; Konow, Wien. ent. Z. vi, pp. 277 & 280.

M. rühli, Switzerland, Konow, Soc. Ent. ii, p. 143, n. sp.

Monophadnus monticola, Htg., note on ; Konow, Wien. ent. Z. vi, p. 275.

Nematus laricis, Htg., = (*oblongus*, Cam.) ; *pallipes*, Fall., *fagi*, Zad., *laricivorus*, Zad., notes on ; Cameron, Ent. M. M. xxiii, pp. 193 & 194. *N. umbrinus*, Zadd., hermaphrodite described ; Konow, Soc. Ent. ii, pp. 97 & 98. *N. erichsonii*, ravages of, in America ; Ent. Am. iii, p. 121. *N. capreæ*, structure of gall ; Beijerinck, (61, 62).

Periclista albipennis, Zadd., note on ; Konow, Wien. ent. Z. vi, p. 273.

Pœcilosoma luteola, Klg., n. var. *analis* ; Konow, Wien. ent. Z. vi, p. 281.

Rhadinoceræa heydeni, Helvetia, Konow, Wien. ent. Z. vi, p. 273, n. sp.

Rhogogastera, Knw., analytical table of species ; Konow, Wien. ent. Z. vi, p. 276.

Schizocera peletieri, de Vill., ♂ described ; Konow, Rev. d'Ent. vi, p. 3.

Sciapteryx virescens, Central Asia, Jakowlew, Hor. Ent. Ross. xxi, p. 163, n. sp.

Selandria coronata, Kl., ♂ described ; Konow, Wien. ent. Z. vi, p. 25.

S. oertzeni, Crete, Konow, Wien. ent. Z. vi, p. 25, n. sp.

Stromboceros albilabris, *gracilicornis*, and *tibialis*, Kon., localities of queried ; Konow, Wien. ent. Z. vi, p. 26, note.

Strongylogaster cretensis, Crete, Konow, Wien. ent. Z. vi, p. 26, n. sp.

Tenthrêdo cerasi, L., ravages in England in 1887 ; Ormerod, Rep. xi, pp. 90–92. *T. pallipes*, Spin., = (*Emphytus grossulariæ*, Kl.) ; Stein, Ent. Nachr. xiii, p. 209.

T. punctulata, France, Konow, Rev. d'Ent. vi, p. 4, n. sp.

Tenthredopsis thomsoni, Knw., n. var. ♀, *concolor* ; Konow, Wien. ent. Z. vi, p. 281. *T. pavida*, F., *friesei*, Kon., *albonotata*, Kl., notes on ; *id. t. c.* pp. 20–24.

T. gibberosa, Helvetia, p. 21, *korlovici*, Croatia, p. 22, *opulenta*, Carinthia, p. 23, Konow, Wien. ent. Z. vi, n. spp.

Tomostethus punctatus, Germany, Konow, Wien. ent. Z. vi, p. 274, n. sp.

(c.) *LEPIDOPTERA.*

Means of distribution of *Lepidoptera* ; Meyrick, P. E. Soc. 1887, pp. xxix & xxx.—Scales ; Smith (722).—Legs of caterpillars ; Goossens (267).—Brief notes on scent-apparatus in German *Lepidoptera* ; Bertkau, Verh. Ver. Rheinl. xliv, pp. 118 & 119.—Malpighian vessels ; Cholodkovsky (130).—Ovaries ; Korschelt (393).—Formation of egg ; *id.* (394).—Spermatozoa ; St. George (740).—Digestive system during metamorphosis ; Casagrande (121).

Report on the Lepidopterous Insects bred in the Insect-house of the Zoological Society ; P. Z. S. 1887, pp. 51–53.

RHOPALOCERA.

[*Cf.* Alpheraky (659), Aurivillius (23, 25), Baker (30), Butler (100, 101, 102, 103), Crowley (147), Dewitz (158, 159), Distant & Pryer (166), Druce (180), Edwards (189, 192), Elwes (193, 194), Elwes & Nicéville (195), Fixsen (659), Fromholz (243), Godman & Salvin (263), Grumm-Grshimailo (659), Holland (316), Honrath (319, 320), Kirby (374, 375), Kolbe (387), Kühn (404), Leech (421), Mabille (274), Mathew (478), Moore (515), Nicéville (530), Nicéville & Wood-Mason (531), Oberthur (534), Poulton (575, 576, 577), Pryer (583), Ribbe (633), Röber (648), Schatz (669), Scudder (687, 688, 689), Semper (702), Sintenis (704), Smith (706, 707, 708, 709, 710, 711), Smith & Kirby (712), Snellen (723, 724), South (727), Staudinger (659, 731, 733), Trimen & Bowker (754), Weymer (799).]

Classification ; Scudder (688).

Wing-neuration discussed ; Schatz, (669) pp. 33–35.

Mimicry ; Swinhoe (743).

Maynard's Butterflies of New England reviewed by Edwards, Canad. Ent. xix, pp. 34–40.

Papilionidæ.

Family characters and table of the genera ; Schatz, (669) pp. 38–40 : characters of the genera, pp. 40–51, pls. ii & iii.

Ornithoptera victoriæ, Gray, ♂ described ; Salvin, P. Z. S. 1887, p. 190, and Smith, Ann. N. H. (5) xix, p. 445 : ♂ described, p. 1, ♂ ♀ figured, pl. i ; Smith, Rhop. ex. i.

Papilio : generic characters, and groups of the species, Schatz, Exot. Schmett. pp. 42–47, pl. ii : the Japanese species, p. 173 ; Pryer, Rhop. Nih. *P. machaon*, colour of pupæ ; Poulton (5

aberration described; Honrath, B. E. Z. xxxi, p. xxxviii: larvæ of varr. *asiatica* and *hippocrates*, described; Leech, P. Z. S. 1887, p. 404. *P. maackii*, Mén., *xuthus*, L., *machaon*, L., in Corea, note on; Fixsen, in Rom. Mém. iii, pp. 253–255. *P. rutulus*, var. *ammoni*; Behrens, Canad. Ent. xix, p. 199. *P. policenes*, Cram., pupa figured, pl. ii, fig. 4; *nireus*, L., larva and pupa, figs. 5 & 5*a*; Trimen, S. Afr. Butt. i. *P.* (*Panosmia*) *nevilli*, W.-M., figured, pl. xv, figs. 2 & 2*a*; Nicéville, J. A. S. B. lv. *P. cresphontes*, food-plant, &c.; Shannon, Canad. Ent. xix, p. 180: metamorphoses figured, pls. x & xi, figs. 1 & 2, life-history, &c., noticed, pp. 137–140; Hubbard, Ins. Orange. *P. gundlachianus*, Feld., habits and metamorphoses; Honrath, B. E. Z. xxxi, p. 321, pl. v*a*. *P. pammon*, ♂ reared from *P.* (*Laertias*) *romulus*; Moore, Lep. Ceyl. iii, p. 532. *P. agamemnon*, L., n. var. *neopommerania*; Honrath, B. E. Z. xxxi, p. 350, pl. vi, fig. 4. *P. gigon*, Feld., larva described and figured; Kükn, CB. Iris, i, p. 179, pl. vi, figs. 1 & 2. *P. forbesi*, Sm., figs. 1 & 2, *diophantus*, Sm., figs. 3 & 4. figured; Smith, Rhop. ex. Papilio, pl. i.

P. mikado, Japan, Leech, P. Z. S. 1887, p. 406, pl. xxxv, fig. 1; *P. acheron*, p. 432, *stratiotes* (also described and figured by Honrath, B. E. Z. xxxi, p. 349, pl. vi, fig. 3), *procles*, p. 433, *macaristus*, p. 434, Borneo, Smith, Ann. N. H. (5) xx; *P. bicolor*, New Guinea, Kirby, Ann. N. H. (5) xix, p. 361; *P. polydæmon*, p. 48, *polypemon*, p. 49, Solomon Is., Mathew, Tr. E. Soc. 1887; *P.* (*Laertes*) *pitmanii*, Tavoy, p. 434, pl. xx, fig. 1, *P.* (*Byasa*) *minercoides*, Tenasserim, p. 435, pl. xx, figs. 2, 2*b*, & 3, Elwes, J. A. S. B. lv: n. spp.

Euplœopsis, n. subg. of *Papilio*; Nicéville, J. A. S. B. lv, p. 433.

Menamopsis, n. subg. of *Papilio*; Nicéville, J. A. S. B. lv, p. 433.

Panosmiopsis, n. subg. (undefined) of *Papilio*; Nicéville, J. A. S. B. lv, p. 374.

Pangeranopsis, n. subg. (undefined) of *Papilio*; Nicéville, J. A. S. B. lv, p. 374.

Panosmia, n. subg. (undefined) of *Papilio*; Nicéville, J. A. S. B. lv, p. 374.

Paranticopsis, n. subg. (undefined) of *Papilio*; Nicéville, J. A. S. B. lv, p. 376.

Menelaides jophon, Moore, larva figured, pl. 210, fig. 6; Moore, Lep. Ceyl. iii.

Sericinus telamon, Don., and *telmona*, Gray, variation of, in Corea, with n. var. *koreana* of *telamon*, and figure, pl. xiii, fig. 1, of *telmona* var. ♂ *greyi*, Brem. & Grey; Fixsen, in Rom. Mém. iii, pp. 257–262.

Parnassius apollo, copulation, &c., noticed; Aurivillius, Ent. Tidskr. viii, p. 180: aberration noticed; Thiele, B. E. Z. xxxi, p. xlii. *P. apollonius*, Ev., var. *alpinus*; Staudinger, S. E. Z. xlviii, p. 49. *P. delius*, varietal note; B. E. Z. xxxi, pp. x & xi. *P. delphius*, n. var. *cardinal*, Central Asia; Grumm-Grshimailo in Rom. Mém. iii, p. 397. *P. cardinal*, Gr.-Gr., and *delphius* noticed; Honrath, B. E. Z. xxxi, p. xi. *P. romanovi*, *charltonius*, &c.; *id. t. c.* p. xiii. *P. charltonius*, Gray, n. var. *princeps*; *id. t. c.* p. 351. *P. glacialis*, Butl., figured, pl. iii, fig. 5; Pryer, Rhop. Nih. *P. stubbendorfi*, Mén., variation of, in Corea; Fixsen, in Rom. Mém. iii, p. 263.

P. przewalskii, Thibet, ALPHERAKY, in Rom. Mém. iii, p. 403, n. sp.

Lühdorfia puziloi, Ersch., note on its sheath; PRYER, Ent. M. M. xxiv, p. 66: figured, pl. i, fig. 10; *id.* Rhop. Nih.

PIERIDÆ.

Classification and characters of the genera; *Mesapia* and *Davidina* referred to it: SCHATZ, Exot. Schmett. pp. 52–74.

Elodina dispar, Celebes, RÖBER, C.B. Iris, i, p. 185, pl. viii, figs. 7 & 8, n. sp.

Eurema tondana, Feld., larva noticed and figured; KÜHN, C.B. Iris, i, p. 180, pl. vi, figs. 3*a–c*.

Terias bethesba, *hecabe*, and others, probably only one species; PRYER, Ent. M. M. xxiv, p. 157. *T. multiformis*: PRYER, Rhop. Nih., unites under this name *T. hecabe* and *T. mandarina*, auct. *T. nise*, Cr., note on: SNELLEN, Tijdschr. Ent. xxx, p. 26. *T. hecabe*, L., figured; Midden-Sumatra, iv, 8, pl. ii, figs. 12 & 13.

T. ada, Borneo, DISTANT, Ann. N. H. (5) xix, p. 271; *T. amplexa*, Christmas I., BUTLER, P. Z. S. 1887, p. 523, woodcut: n. spp.

Appias lalassis, Burmah, SMITH, Ann. N. H. (5) xx, p. 265; *A. whiteheadi*, Borneo, *id. t. c.* p. 434: n. spp.

Glutophrissa, n. g., for *Appias poeyi*, Butl., and eight others; BUTLER, Ent. M. M. xxiii, p. 248.

Pieris and its subgenera discussed; SCHATZ, Exot. Schmett. pp. 60 & 61. *P. napi*, spermatocysts; ST. GEORGE, Arch. mikr. Anat. xxx, p. 428, pl. xxv, figs. 3–5: odour of male; SELYS, Ent. M. M. xxiv, p. 40, and PERKINS, *t. c.* p. 11. *P. brassicæ* and *rapæ*, great abundance in England in 1887; *t. c.* pp. 84, 112, & 130: observations on coloration of pupæ; POULTON (576). *P. brassicæ*, loss of weight in chrysalis; URECH (765). *P. rapæ*, its spread in N. America; the validity of *P. oleracea* and *venosa* discussed: SCUDDER (687). *P. panda*, Godt., figured; Midden-Sumatra, iv, 8, pl. ii, figs. 6–11. *P. agathina*, Cram., larva and pupa figured; TRIMEN, S. Afr. Butt. i, pl. ii, figs. 3 & 3*a*. *P. rapæ*, L., var. *orientalis*, Obth., *melete*, Men., *canidia*, Sparm., *sinapis*, L., in Corea, noticed; FIXSEN, in Rom. Mém. iii, pp. 264–266. *P. melete*, n. var. *veris*, Amur river; STAUDINGER, in Rom. Mém. iii, p. 126, pl. xvi, figs. 1 & 2. *P. saba*, varr. described and figured; MABILLE, Lep. Mad. i, pp. 261 & 262, pl. xxxvi. *P. occidentalis*, Reakt., chrysalis described; EDWARDS, Ent. Am. iii, p. 162.

P. roborowskii, Thibet, ALPHERAKY, in Rom. Mém. iii, p. 404; *P. subflavescens*, New Granada, KIRBY, Ann. N. H. (5) xix, p. 362; *L. gallenga*, Delagoa Bay, SMITH, *t. c.* p. 62; *P. discolor*, Solomon Is., MATHEW, Tr. E. Soc. 1887, p. 47: n. spp.

Metaporia sorex, Afghanistan, SMITH, Ann. N. H. (5) xx, p. 129, n. sp.

Aporia crataegi, migration of, discussed; TUTT, Ent. M. M. xxiv, pp. 36–38, and DALE, *t. c.* p. 38.

A. lama, Thibet, ALPHERAKY, in Rom. Mém. iii, p. 404, n. sp.

Phrissura, members of the genus; BUTLER, P. Z. S. 1887, p. 573.

Mylothris asphodelus, W. Africa, Butler, P. Z. S. 1887, p. 572, n. sp.

Tachyris indigis, E. India, Weymer, S. E. Z. xlviii, p. 11, pl. i, fig. 3, n. sp.

Daptonura limbata, Ecuador, Kirby, Ann. N. H. (5) xix, p. 361, n. sp.

Delias agoranis, Burmah, Smith, Ann. N. H. (5) xx, p. 266; *D. lucina*, Borneo, Distant, *op. cit.* xix, p. 270 : n. spp.

Prioneris hypsipyle, Sumatra, Weymer, S. E. Z. xlviii, p. 12, pl. i, fig. 1, n. sp.

Callidryas : *hilaria*, Cr., is prior to *pomona*, Don., but the two are distinct; Capronnier, C.R. ent. Belg. 1887, p. lxxiv. *C. philea*, L., chrysalis described; Edwards, Ent. Am. iii, p. 162.

Gonepteryx clorinde, Godt., chrysalis described; Edwards, Ent. Am. iii, p. 163.

Colias hyale, L., copula between Japanese forms of; Leech, P. Z. S. 1887, p. 409. *C. hyale*, L., var. *poliographus*, Motsch., in Corea, noticed; Fixsen, in Rom. Mém. iii, p. 266. *C. aurorina*, var. *transcaspica*; Christoph, S. E. Z. xlviii, p. 162. *C. eogene*, Feld., var. *stoliczkana* (?), Moore, described; Alpheraky, in Rom. Mém. iii, p. 404. *C. eurydice*, metamorphoses described and figured; varr. *amorpha* and *bernardina* figured; *C. harfordii* and var. *barbara* figured, with metamorphoses; Edwards, Entt. N. Am. iii. *C. alexandra*, Edw., preparatory stages; *id.* Canad. Ent. xix, pp. 226–230. *C. elis*, *christina*, &c., note on; Geddes, *t. c.* pp. 166–170. *C. hagenii*, Edw., is form of *eurytheme*; Edwards, *t. c.* pp. 171–175 & 218–220.

C. sieversi, p. 397, *regia*, *romanovi*, p. 398, Central Asia, Grumm-Grshimailo, in Rom. Mém. iii, n. spp.

Styx, Stgr., characters discussed at length; Schatz, Exot. Schmett. p. 56.

Ixias meipona, Burmah, Smith, Ann. N. H. (5) xix, p. 296; *I. pyritis*, Sumatra, Weymer, S. E. Z. xlviii, p. 13, pl. i, fig. 4 : n. spp.

Idmais dubia and allies, characters of; Swinhoe, J. Bomb. N. H. Soc. ii, p. 276.

Teracolus nothus, Madagascar, Mabille, Lep. Mad. i, p. 290, pl. xxxvi A, figs. 2 & 2*a*, n. sp.

Anthocharis ausonia and *belia*, noticed, as seasonal forms; Breignet, Bull. Soc. Ent. Fr. (6) vii, p. cxx.

Euchloë cardamines, retarded emergence of; Haylock & Chitty, Ent. xx, p. 63.

Synchloe janais, Drury, chrysalis described; Edwards, Ent. Am. iii, p. 161.

S. johnstonii, Kilimanjaro, Crowley, Tr. E. Soc. 1887, p. 35, pl. iii, figs. 1–3, n. sp.

Phyllocharis, n. g., near *Anthocharis*, for *P. tagis*, Hubn., and 9 other European and N. American species; Schatz, Exot. Schmett. p. 71, pl. viii, pt.

Danaidæ and Neotropidæ.

The characters of the family and its genera given, 7 only being accepted; Schatz, Exot. Schmett. pp. 75–84, pl. ix.

Hestia malabarica, metamorphoses; MACPHERSON, J. Bomb. N. H. Soc. ii, p. 164, pl.; *cf.* NICEVILLE, *t. c.* p. 242.

H. kuhni, Island Bangkei, RÖBER, CB. Iris, *i*, p. 185; larva and pupa described and figured, KÜHN, *t. c.* p. 181, pl. vi, figs. 4, *a–c*, & 5: n. sp.

Salpinx negleyana, Hainan I., HOLLAND, Tr. Am. Ent. Soc. xiv, p. 112, pl. i, fig. 2, n. sp.

Calliplæa ledereri, n. var. *hainana*, HOLLAND, Tr. Am. Ent. Soc. xiv, p. 113.

Mangalisa timorica, Timor, SMITH, Ann. N. H. (5) xix, p. 369, n. sp.

Amauris bulbifera, Cameroons, SMITH, Ann. N. H. (5) xix, p. 369, n. sp.

Euplœa klugii, variation noticed; NICÉVILLE, J. A. S. B. lv, p. 346. *E. ochsenheimeri*, Luc., figured; Midden-Sumatra, iv (8), pl. ii, figs. 1 & 2. *E. coracina*, Hopff., note on, with figures; RÖBER, CB. Iris, i, p. 189, pl. vii, figs. 2 & 3, pl. viii, fig. 1.

E. nechos, Solomon Is., MATHEW, Tr. E. Soc. 1887, p. 37; *E. wiskotti*, Bangkei, p. 186, pl. viii, fig. 3, *ribbei*, Celebes, p. 187, pl. vii, fig. 1, *melanopa*, New Guinea, p. 190, pl. viii, fig. 2, RÖBER, CB. Iris, i: n. spp.

Ideopsis ribbei, Bangkei, RÖBER, CB. Iris, i, p. 186, pl. viii, fig. 4, n. sp.

Neotropidæ: new family established on materials from *Danaidæ* and *Heliconiidæ*, and its genera, 19 in number, tabulated and characterised; SCHATZ, Exot. Schmett. pp. 85–100, pls. x–xii.

Heteroscada, n. g., *Neotropidæ*, near *Scada*, for *H. gazoria*, Godt., and *fenella*, Hew.; SCHATZ, Exot. Schmett. p. 94, pl. xi.

ACRÆIDÆ.

The family and its genera defined; SCHATZ, Exot. Schmett. pp. 101–104, pl. xiii.

Planema esebria, Hew., larva and pupa, figs. 2 & 2*a*, *aganice*, Hew., fig. 3, figured; TRIMEN, S. Afr. butt. pl. i.

Acræa. MABILLE arranges the Madagascar species in five groups (? subgenera), to three of which he gives new names, viz., *Solenites*, p. 82, *Phanopeltis*, p. 84, *Aphanopeltis*, p. 85, Lep. Mad. i. *A. vesta*, Fab., figured; Midden-Sumatra, iv, 8, pl. ii, figs. 3–5. *A. acara*, Hew., larva and pupa figured; TRIMEN, S. Afr. butt. i, pl. i, figs. 1 & 1*a*. *A. barberi*, Trimen, figs. 1 & 1*a*, *stenobæa*, Wallengr., fig. 2, *aglonice*, Westw., fig. 3, *violarum*, Boisd., fig. 4, figured; *id. t. c.* pl. iii.

A. machequena, Delagoa Bay, *salambo*, Congo, SMITH, Ann. N. H. (5) xix, p. 62, n. spp.

Pardopsis, n. g., for *Acræa punctatissima*, Boisd.; TRIMEN, S. Afr. butt. i, p. 182.

HELICONIIDÆ.

The family and genera discussed; SCHATZ, Exot. Schmett. pp. 105–107, pl. xiii.

Eueides aliphera, God., from Curaçoa, note on; SNELLEN, Tijdschr. Ent. xxx, p. 16.

Heliconia mutabilis, Butl., figured, pl. i, fig. 2, *melpomene*, L., varietal note, p. 15; SNELLEN, Tijdschr. Ent. xxx.

Mechanitis polymnia, L., noticed; SNELLEN, Tijdschr. Ent. xxx, p. 13.

Tithorea harmonia, Cr., note on p. 14, var. figured, pl. i, fig. 1, SNELLEN, Tijdschr. Ent. xxx.

NYMPHALIDÆ.

The family characters discussed and the genera arranged in 12 groups, pp. 108–112: the genera defined, pp. 113–116, pls. xiv–xx; SCHATZ, Exot. Schmett.

Agraulis vanillæ, L., from Curaçoa, and note on; SNELLEN, Tijdschr. Ent. xxx, p. 20.

Cethosia thebava, Burmah, SMITH, Ann. N. H. (5) xix, p. 296, n. sp.

Cirrochroa sibylla, Celebes, pl. vii, fig. 7, *similiana*, Bangkei, fig. 8, RÖBER, p. 191, CB. Iris, i, n. spp.

Terinos phalaris, Borneo, WEYMER, S. E. Z. xlviii, p. 3, pl. 2, fig. 1, n. sp.

Cynthia orahilia; KHEIL, ♀ figured, S. E. Z. xlviii, pl. ii, fig. 3. *C. deione*, Er., n. var. *hainana*; HOLLAND, Tr. Am. Ent. Soc. xiv, p. 116.

Lachnoptera ayresii, Trim., ♂ ♀ figured; TRIMEN, S. Afr. butt. i, pl. iii, figs. 5 & 5a. *L. iole*, var. *afzelii*, n. var.; AURIVILLIUS, Œfv. Ak. Förh. 1887, p. 309.

Messaras dapatana, Philippine Is., SMITH, Ann. N. H. (5) xx, p. 267; *M. melichrysos*, p. 39, *tredecia*, p. 40, pl. iv, fig. 2, Solomon Is., MATHEW, Tr. E. Soc. 1887: n. spp.

Atella madagascariensis, Madagascar, MABILLE, Lep. Mad. i, p. 120, pl. xiii, fig. 1, n. sp.

Paduca flavobrunnea, Burmah, p. 267, *myrsa*, Celebes, p. 268, SMITH, Ann. N. H. (5) xx, n. spp.

Argynnis: notes on species whilst alive in the imago state; GEDDES, Canad. Ent. xix, pp. 230–235. *A.* sp. from Arctic Asia, note on, with fig. of larva; AURIVILLIUS, Veg. exp. Vet. iv, pp. 77, pl. i, fig. 3. *A. selene*, Schiff., *oscarus*, Ev., *daphne*, Schiff., *aglaia*, L., *adippe*, L., with ab. *xanthodippe*, p. 307, *laodice*, Pall., *anadyomene*, Feld., and *sagana*, Dbld., variation of, in Corea; FIXSEN, in Rom. Mém. iii, pp. 303–309. *A. nitocris*, I, *lais*, II, *coronis*, IV, described and figured; *callippe*, habits noticed; *liliana*, III, described and figured; *egleis* and var. described and figured with metamorphoses, IX: EDWARDS, Butt. N. Am. iii. *A. bellona*, Fab., chrysalis described; EDWARDS, Ent. Am. iii, p. 162. *A. niphe*, L., larva described; LEECH, P. Z. S. 1887, p. 422. *A. ino*, n. var. *amurensis*; STAUDINGER, in Rom. Mém. iii, p. 146.

Melitæa: Italian varieties; KANE, Ent. M. M. xxiv, p. 153. *M. aurinia*, var. *alexandrina*, p. 52, *asteroida*, Stgr., var. *clara*, p. 55; STAUDINGER, S. E. Z. xlviii. *M. baroni*, Edw., described and figured, with var. and metamorphosis, I; EDWARDS, Butt. N. Am. iii. *M. phœbe*, Kn., *protomedia*, Mén., p. 298, pl. xiv, fig. 2, with ab. *argentea*, p. 301, pl. xiv, fig. 3, *athalia*, Rott., and *parthenie*, Bkh., variation of, in Corea; FIXSEN, in Rom. Mém. iii, pp. 296–302. *M. cynthia*, ♂, and *Erebia lappona* in copula; RÜHL, Soc. Ent. ii, p. 73.

M. pamira, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 53 ; *M. dodgsoni*, Afghanistan, SMITH, Ann. N. H. (5) xx, p. 130 ; *M. expressa*, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 401 : n. spp.

Hypanartia commixta, Butl., note on this name ; TRIMEN, S. Afr. butt. i, p. 207.

Eurema schœneia, Trim., figured, pl. iv, fig. 1 ; TRIMEN, S. Afr. butt. i.

Grapta c-album and *faunus*, note on ; EDWARDS, Canad. Ent. xix, pp. 2–4.

Vanessa polychloros, varietal note ; MAYER, B. E. Z. xxxi, p. xxxix. *V. antiopa*, note on ; GROVE, J. N. Y. Micr. Soc. iii, pp. 59-62 : hybernation in Denmark ; SANDAHL, Ent. Tidskr. viii, p. 4 : colour of its border ; FERNALD, Ent. xx, p. 228. *V. urticæ, io, atalanta*, experiments on coloration of pupæ ; POULTON (576). *V. io*, "the compound eye" of RIEDERER, J. N. Y. Micr. Soc. iii, pp. 27–29, pl. viii.

V. thomsonii, British Honduras (or Guiana), BUTLER, Ann. N. H. (5) xix, p. 104, n. sp.

Vanessula, n. g., p. 145, for *V. buchneri*, Central Africa, n. sp., p. 146, figs., p. 145 ; DEWITZ, Ent. Nachr. xiii.

Junonia velleda, occurrence in N. Zealand ; HUDSON, Tr. N. Z. Inst. xix, p. 201. *J. boopis*, Trim., figured, pl. iv, fig. 2 ; *cebrene*, Trim., larva figured, pl. i, fig. 4 : TRIMEN, S. Afr. butt. i.

Precis sesamus, n. n. for *amestris* pars olim., p. 231 ; *sesamus*, fig. 3 ; *sesamus* and *octavia*, hybrid, fig. 4 ; *tugela*, Trim., fig. 5, figured pl. iv : TRIMEN, S. Afr. butt. i.

Salamis nebulosus, Trim., figured ; TRIMEN, S. Afr. butt. i, pl. iv, fig. 6.

Rhinopalpa pavonia, Solomon Is., MATHEW, Tr. E. Soc. 1887, p. 41, pl. iv, fig. 1, n. sp.

Eurytela narinda, Ward, note on it and *dryope* ; TRIMEN, S. Afr. butt. i, p. 262. *E. hiarbas*, Dru., figured, fig. 5, pl. v ; *id. op. cit.* ii. *E. ethosea*, Dr., figured ; DEWITZ, Nova Acta Ac. L.-C. Nat. cur. l, pl. xvii, fig. 1.

Anartia jatrophæ, L., note on, from Curaçao ; SNELLEN, Tijdschr. Ent. xxx, p. 21.

Ergolis taxiata, Feld., pl. xii, figs. 11–13, *adelpha*, Feld., figs. 9 & 10, *luzonia*, Feld., pl. xiii, figs. 1–4, figured and noticed, pp. 65 & 66 ; SEMPER, Reisen Philipp. ii, v.

E. maculata, Philippine Is., p. 66, pl. xiii, figs. 5 & 6, SEMPER, Reisen Philipp. ii, v, n. spp.

Hypanis ilithyia, Dru., figured, fig. 4, pl. v ; TRIMEN, S. Afr. butt. i.

Crenis natalensis, Bois., fig. 1, *boisduvali*, Wallengr., figs. 2 & 2*a*, *morantii*, Trim., fig. 3, figured ; TRIMEN, S. Afr. butt. i, pl. v. *C. pechueli* figured ; DEWITZ, Nova Acta Ac. L.-C. Nat. cur. l, pl. xvii, fig. 2.

Cyrestis whitmei, Butl., fig. 1, *irmæ*, Forbes, fig. 2, *achates*, fig. 3, and *sericeus*, Butl., fig. 4, figured, pl. 176 ; WATERHOUSE, Aid.

C. solomonis, p. 42, *nitida*, p. 43, pl. iv, fig. 5, Solomon Is., MATHEW, Tr. E. Soc. 1887 ; *C. parthenia*, Bangkei, RÖBER, CB. Iris, i, p. 191, pl. vii, fig. 6 : n. spp.

Euralia wahlbergi, Wallengr., figured, pl. vi, fig. 2, *decep[illegible]*, fig. 3 ; TRIMEN, S. Afr. butt. i.

Diadema misippus, L., pupa figured ; TRIMEN, S. Afr. butt. i, pl. i, fig. 5.

Diadema fuliginescens, Solomon Is., Mathew, Tr. E. Soc. 1887, p. 44, pl. iv, fig. 6, n. sp.

Euripus, Westw., position discussed, p. 82; *E. clytia*, Feld., pl. xv, figs. 9 & 10, *cinnamomeus*, W.-M., fig. 8, figured; Semper, Reisen Philipp. ii, v.

E. zgreanus, Gensan, Leech, P. Z. S. 1887, p. 418, pl. xxxvi, fig. 1; *E. borneensis*, Borneo, Distant, Ann. N. H. (5) xix, p. 54; *E. ankœus*, p. 83, pl. xv, figs. 6 & 7, *nysia*, figs. 11–13, *lucasioïdes*, figs. 4 & 5, p. 84, Semper, Reisen Philipp. ii, v: n. spp.

Pseudacrea imitator, Trim., figured, pl. vi, fig. 1; Trimen, S. Afr. butt. i.

H. delagoæ, Delagoa Bay, Trimen, S. Afr. butt. i, p. 291, ? n. sp.

Parthenos: note on the use of this name; Snellen, Tijdschr. Ent. xxx, p. 87.

P. thesaurus, Solomon Is., Mathew, Tr. E. Soc. 1887, p. 45, n. sp.

Limenitis populi n. var. *ussuriensis*, p. 143, and *sibilla* n. var. *angustata*, p. 144, Amur-land; Staudinger, in Rom. Mém. iii. *L. homeyeri*, Tancré, figured; *t. c.* pl. vii, figs. 2*a* & *b*. *L. sidyi*, Ld., var. *latefasciata*, Mén., *amphyssa*, Mén., and *hellmanni*, Led., noticed in Corea; Fixsen, in Rom. Mém. iii, p. 293.

L. albomarginata, Sumatra, Weymer, S. E. Z. xlviii, p. 5, pl. ii, fig. 2, n. sp.

Neptis goochi, Trim., figured, pl. v, fig. 6; Trimen, S. Afr. butt. i. *N. hordonia*, Stoll, and *plagiosa* and *rihodona*, Moore, noticed as probably one species; Holland, Tr. Am. Ent. Soc. xiv, p. 118.

N. micromegethes, Hainan I., Holland, Tr. Am. Ent. Soc. xiv, p. 118; *N. speyeri*, p. 145, pl. vii, figs. 3*a* & *b*, *philyroides*, p. 146, Amur-land, Staudinger, in Rom. Mém. iii, and Fixsen, *t. c.* p. 294, pl. xiv, figs. 1*a* & *b*: n. spp.

Athyma zeroca, Moore, ♂ figured; Nicéville, pl. xvi, fig. 6, J. A. S. B. lv.

Euryphene elpinice, Camaroons, Smith, Ann. N. H. (5) xix, p. 63, n. sp.

Euphædra johnstoni, W. Africa, Butler, P. Z. S. 1887, p. 569, n. sp.

Romaleosoma medon, L., figured; Dewitz, Nova Actâ Ac. L.-C. Nat. cur. l, pl. xvii, figs. 3–5.

Harma hecatæa, Hew., note on; Butler, Ent. M. M. xxiv, p. 86. *H. egesta*, Cr., figured; Dewitz, Nova Acta Ac. L.-C. Nat. cur. l, pl. xvii, figs. 6 & 7.

H. herminia, p. 63, *haimodia*, p. 64, Camaroons, Smith, Ann. N. H. (5) xix, n. spp.

Cymothoe coccinata, Hew., = (*sangaris*, Stgr.); Aurivillius, Œfv. Ak. Förh. 1887, p. 311.

C. confusa, Congo, Aurivillius, Œfv. Ak. Förh. 1887, p. 310, n. sp.

Euthalia lepidea, Butler, ♂ character noticed; Elwes, J. A. S. B. lv, p. 426. *E. jahnu*, Moore, pl. xvi, fig. 5, *jama*, Feld., figs. 3 & 4, figured; Nicéville, J. A. S. B. lv.

E. cordata, Nias I., Weymer, S. E. Z. xlviii, p. 6, pl. i, fig. 2; *E. djata*, Borneo, Distant, Ann. N. H. (5) xix, p. 53: n. spp.

Tanaëcia phintia, p. 7, pl. i, fig. 6, *martigena*, p. 8, pl. i, fig. 7, Sumatra, Weymer, S. E. Z. xlviii, n. spp.

Apatura cauta, Corea, Leech, P. Z. S. 1887, p. 417, pl. xxxv, n. sp.,

but, according to note, it is the same as *princeps*, Fixs.; *A. princeps*, Corea, Fixsen, in Rom. Mem. iii, p. 289, pl. xiii, figs. 7 *a* & *b*, n. sp.

Rohana (sub *Apatura*) *rhea*, Feld., figured and noticed; Semper, Reisen Philipp. ii, v, pp. 82, pl. xv, figs. 2 & 3.

Agrias: habits of species in French Guiana; Honrath, B. E. Z. xxxi, pp. 147-152.

Charaxes imperialis, ♀ described; Butler, P. Z. S. 1887, p. 570. *C. jasius* reared on *Euonymus japonicus*, *t. c.* p. 52. *C. alladinis*, Butl., figs. 8 & 9, *ephyra*, God., var., figs. 10 & 11, *hamatus*, Dew., fig. 12, figured; Dewitz, pl. xvii, Nova Acta Ac. L.-C. Nat. cur. l. *C. violetta*, Smith, figured, figs. 1-3, *nicholii* (*nymphalis*), Sm., figs. 1 & 2, *nepenthes*, figs. 3 & 4, pl. ii, *porthos*, Sm., figs. 1-4, pl. i; Smith, Rhop. Ex. *C. candiope*, Godt., figured, pl. vi, fig. 4, *C. varanes*, Cram., larva figured, pl. i, fig. 6; Trimen, S. Afr. butt. i. *C. antonius*, Semp., figs. 6-8, *amycus*, Feld., figs. 3-5, figured, pl. xiv, noticed, p. 80; Semper, Reisen Philipp. ii, v.

Prothoë calydonia, Hew., ♀ noticed; Honrath, B. E. Z. xxxi, p. 353. *P. semperi*, Honr., figured, pl. xv, fig. i; Semper, Reisen Philipp. ii, v. *P. franckii*, Godt., *mulderi*, Voll., figured, pl. 60; Staudinger, Exot. Schmett.

Mynes calydonia, Hew., figured, plate 60; Staudinger, Exot. Schmett.

M. plateni, Batchian, pl. 60, *schencki*, hab. ?, Staudinger, Exot. Schmett. p. 175, n. spp.

Hypna clytemnestra, Cram., figured and discussed; Staudinger, Exot. Schmett. pl. 61, p. 176.

Anæa: Staudinger figures *nessus*, Latr., *phidile*, Hübn., *electra*, Westw., *panariste*, Hew., *morvus*, Fab., n. var., *morpheus*, p. 180, *arginussa*, Hübn., n. var., *onophides*, p. 181, *glauce*, Feld., *xenocrates*, West., *falcata*, Hopf., pl. 61, *pasibule*, Dubl. & Hew., *opalina*, S. & G., pl. 62, Exot. Schmett.

A. drucei, Upper Amazons (? *morvus* var.), *glaucina*, Lower Amazons (? *glauce* var.), *vicinia*, Pebas, Staudinger, Exot. Schmett. p. 181, n. spp.

Polygrapha cyanea, Salv. & God., figured, pl. 62; Staudinger, Exot. Schmett.

Siderone: the synonymy and variation of the species discussed and catalogued, pp. 182-185. *S. nemesis*, Ill., var. *confluens*, Stgr., *isidora*, Cram., figured, pl. 62; Staudinger, Exot. Schmett.

Cœnophlebia archidona, Hew., figured, pl. 62; Staudinger, Exot. Schmett.

Protogonius: synonymy of the species discussed, some new varieties named, pp. 185 & 186, *drurii*, Butl., and var. or ab. *butleri*, Stgr., figured, pl. 62; Staudinger, Exot. Schmett.

Morphidæ.

Composition of the subfamily discussed [illegible] Trimen, S. Afr. butt. i, pl. i, fig. 3; ii, v, p. 67.

Amathusia: STAUDINGER proposes as n. subgg. *Amathuxidia*, *Zeuxamathusia*, *Amaxidia*; discusses the varieties of the species, pp. 187 & 188, figures *A. phidippus*, L., pl. 63, Exot. Schmett.

Amathusia phidippus, L., = (*pollicaris*, Butl.), p. 71, *porthaon*, Feld., figured, pl. xiii, fig. 7; SEMPER, Reisen Philipp. ii, v. *A. phidippus*, L., n. var. *perakana*, p. 348, pl. vi, fig. 2; HONRATH, B. E. Z. xxxi.

A. schönbergi, p. 347, pl. vi, fig. 1, *ochraceo-fusca*, p. 348, Malacca, HONRATH, B. E. Z. xxxi, n. spp.

Zeuxidia, Hub., generic characters noticed, wing-neuration figured; SEMPER, Reisen Philipp. ii, v, p. 72: the species of, discussed and reduced in number, pp. 188 & 189. *Z. amethystus*, Butl., figured, pl. lxiii; STAUDINGER, Exot. Schmett.

Amaxidia (*Zeuxidia*) *aurelius*, Cr., ♀ described; HONRATH, B. E. Z. xxxi, p. 352.

Hyantis hodeva, Hew., figured, pl. lxiii; STAUDINGER, Exot. Schmett.

Discophora: SEMPER figures, Reisen Philipp., *zal*, Westw., pl. xiii, figs. 10 & 11, *ogina*, Hub., figs. 8 & 9, *menetho*, Don., pl. xiv, figs. 1 & 2. *D. tullia*, Cram., *celinde*, Stoll., figured, pl. lxiii, and with others discussed, pp. 189 & 190; STAUDINGER, Exot. Schmett.

Enispe euthymius, Doub., figured, pl. xv, fig. 1; NICÉVILLE, J. A. S. B. lv, and STAUDINGER, Exot. Schmett. pl. lxiii.

Tenaris: STAUDINGER revises the species and varieties at length, pp. 191–202; catalogue, p. 192; figures *onolaus*, Kirsch, *bioculatus*, Guer.; *butleri*, Oberth., pl. lxiv, Exot. Schmett.

T. honrathi, Waigiou, p. 195, pl. lxiv, *kirschi*, Pt. Moresby, p. 199, *scylla*, New Guinea, p. 200, STAUDINGER, Exot. Schmett., n. spp.

Clerome: SEMPER figures or notices, Reisen Philip. ii, v, *phaon*, Westw., p. 68, *lurida*, Feld., pl. viii, figs. 19 & 20, *leucis*, Feld., p. 69, *sappho*, Semp., figs. 15 & 16, *klcis*, Semp., figs. 17 & 18. *C. arcesilaus*, Fab., *chitone*, Hew., *faunula*, Westw., figured, pl. lxv; STAUDINGER, Exot. Schmett.

Æmona lena, Atk., figured, pl. lxv; STAUDINGER, Exot. Schmett.

Thaumantis odana, Godt., *aliris* (pl. lxiv), *camadeva* and *howqua*, Westw., figured, pl. lxv; STAUDINGER, Exot. Schmett.

Morpho: habits of species in French Guiana; HONRATH, B. E. Z. xxxi, pp. 147–152. STAUDINGER, Exot. Schmett., catalogues, p. 210, discusses, pp. 204–211, the following species and varieties, figs., pls. lxvi–lxx: *hecuba*, L., var. *phanodemus*, Hew., *hercules*, Dalm., *catenarius*, Perry, *adonis*, Cram., *æga*, Hübn., *sulkowskyi*, Koll., *aurora*, Westw., *rhetenor*, Cr., with var. *cacica*, Stgr., *cypris*, Westw., *anaxibia*, Esp., *menelaus*, var. *melacheilus*, Stgr., *didius*, Hopf., *achilles*, L., *peleides*, Koll., *deidamia*, Hübn, var. *neoptolemus*, Wood.

BRASSOLIDÆ.

Brassolis sophoræ, L., *astyra*, Godt., figured, pl. lxxi; STAUDINGER, Exot. Schmett.

figured on [illegible] *sulcius*, Santa Catherina, p. 212, *camena*, Cauca, p. 213, *Ragad*[illegible], STAUDINGER, Exot. Schmett., n. spp.

R. *cassiope*, Cram., n. var. *cassiopeia*, Stgr., *arsippe*, Hopf., *syme*, Hübn.,

berecynthus, Cram., var. *berecynthina*, Hopf. (as var. *vercingetonyx*, Stgr. *tamarindi*, Feld., *cassiæ*, L., *boisduvalii*, Doubl., Hew., figured, pls. lxxi lxxii ; STAUDINGER, Exot. Schmett.

Dynastor napoleon, Doubl., Hew., pl. lxxii, *darius*, Fab., pl. lxxii, figured ; STAUDINGER, Exot. Schmett.

Penetes pamphanis, Doubl., Hew., figured, pl. lxxii ; STAUDINGER, Exot. Schmett.

Caligo demosthenes, Perry, *atreus*, Koll., pl. lxxv, *idomeneus*, L., var. *rhætus*, Stgr., pl. lxxiv, *ilioneus*, Cram., *martia*, Godt., pl. lxxiii, *arisbe*, pl. lxxvi, figured ; *C. placidianus*, almost a distinct species, ? var. of *oileus*, Feld., p. 216 ; STAUDINGER, Exot. Schmett.

C. livius, Chiriqui to Pebas, pl. lxxiv, p. 215, *menoetius*, Lower Amazons, p. 216, STAUDINGER, Exot. Schmett., n. spp.

Eryphanis automedon, Cram., *æsacus*, H. S., figured, pl. lxxvi ; STAUDINGER, Exot. Schmett.

E. opimus, Cauca Valley, p. 217, STAUDINGER, Exot. Schmett., n. sp.

Dasyophthalma rusina, Godt., *creusa*, Hübn., figured, pl. lxxvi ; STAUDINGER, Exot. Schmett.

Narope cyllastros, Doubl., Hew., figured, pl. lxxvi ; STAUDINGER, Exot. Schmett.

N. sarastro, Cauca Valley, pl. lxxvi, *stygius*, Fonteboa ?, *testacea*, S. & G. var. ; STAUDINGER, Exot. Schmett. p. 218, n. spp.

SATYRIDÆ.

Cithaerias aurora, Feld., *polita*, Hew., figured, pl. lxxvii ; STAUDINGER, Exot. Schmett.

Hætera hypaesia, Hew., figured, pl. lxxvii ; STAUDINGER, Exot. Schmett.

Pierella nereis, Dru., *astyoche*, Er., var. *albomaculata*, Stgr., *dracontis*, Hübn., *hortona*, Hew., figured, pl. lxxvii ; STAUDINGER, Exot. Schmett.

P. lesbia, p. 219, *hymettia*, p. 220, pl. lxxvii, Colombia, STAUDINGER, Exot. Schmett., n. spp.

Antirrhæa archaea, Hübn., *hela*, Feld., figured, pl. lxxvii ; STAUDINGER, Exot. Schmett.

A. murena, Lower Amazons, STAUDINGER, Exot. Schmett. p. 220, pl. lxxvii, n. sp.

Caerois chorinæus, Fab., figured, pl. lxxvii ; STAUDINGER, Exot. Schmett.

Zophoessa goalpara and *baladeva*, Moore, figured, pl. lxxviii ; STAUDINGER, Exot. Schmett.

Z. mölleri, Sikkim, ELWES, P. Z. S. 1887, p. 445, n. sp.

Lethe indosa, Trim., figured, pl. vii, fig. 1 ; TRIMEN, S. Afr. butt. ii. *L. brisanda*, figured ; NICÉVILLE, P. Z. S. 1887, pl. xxxix, fig. 8. *L. europa*, Fab., *sidonis*, Hew., *scanda* and *kansa*, Moore, *dendrophilus*, Trim., var. *albomaculatus*, Stgr., figured, pl. lxxviii ; STAUDINGER, Exot. Schmett. *L. neelgherriensis*, Moore, pl. 210, fig. 4, *drypetes*, fig. 5, larvæ figured ; MOORE, Lep. Ceyl. iii.

L. tristigmata, Sikkim, ELWES, P. Z. S. 1887, p. 444 ; *L. [illegible]*, p. 448, pl. xxxix, fig. 5, *tamuna*, Nicobar, p. 449, fig. 6, *gulniha*, p. 450, fig. 7, NICÉVILLE, P. Z. S. ; n. spp.

Debis? dataensis, Philippine Is., SEMPER, Reisen Philipp. ii, v, p. 57, pl. xi, fig. 4, n. sp.

Blanaida bhadra, Moore, figured, pl. lxxviii ; STAUDINGER, Exot. Schmett.

Ptychandra lorquinii, Feld., figured, pl. lxxxviii ; STAUDINGER, Exot. Schmett : figured, pl. xi, fig. 5, described, pp. 58 & 59 ; SEMPER, Reisen Philipp. ii, v.

P. schadenbergi, Philippine Is., SEMPER, Reisen Philipp. ii, v, p. 59, pl. xi, figs. 6 & 7, n. sp.

Guophodes parmeno, Doubl., Hew., figured, pl. lxxviii ; STAUDINGER, Exot. Schmett.

Melanitis bethami, dimorphic forms described, with suggestions as to other species ; NICÉVILLE, P. Z. S. 1887, pp. 451–453. *M. bankia*, Fab., *suyudana* and *suradeva*, Moore, figured, pl. lxxix ; STAUDINGER, Exot. Schmett.

M. ribbei, Celebes, pl. ix, figs. 1 & 2, *pyrrha*, Bangkei, pl. viii, figs. 9 & 10, RÖBER, p. 192, CB. Iris, i, n. spp.

Cyllogenes janetæ, Indía, NICÉVILLE, P. Z. S. 1887, p. 453, n. sp.

Coelites euptychioides, Feld., figured, pl. lxxix ; STAUDINGER, Exot. Schmett.

Orinoma damaris, Gray, figured, pl. lxxix ; STAUDINGER, Exot. Schmett.

Euptychimima, n. g., for *Zethera diamedoides*, Moore ; HOLLAND, Tr. Am. Ent. Soc. xiv, p. 113 : a n. var. of the species figured as var. *hearici*, pl. i, fig. 1, *t. c.*

Zethera pimplea, Er., ♂ ♀ figured, pl. lxxix ; STAUDINGER, Exot. Schmett.

Neonympha gemma and *henshawi* described, figured with metamorphoses, i ; EDWARDS, Butt. N. Am. iii.

N. thelete, Curaçao, SNELLEN, Tijdschr. Ent. xxx, p. 18, pl. i, fig. 3, n. sp.

Neorina lowii, Doubl., Hew., figured, pl. lxxix ; STAUDINGER, Exot. Schmett.

Anadebis himachala, Moore, figured, pl. lxxix ; STAUDINGER, Exot. Schmett.

Tisiphone maculata, Hopff., figured, pl. lxxx ; STAUDINGER, Exot. Schmett.

Oressinoma typhla, Doubl., Hew., figured, pl. lxxx ; STAUDINGER, Exot. Schmett.

Bicyclus italus, Hew., figured, pl. lxxx ; STAUDINGER, Exot. Schmett.

Euptychia : STAUDINGER figures on pl. lxxx, *hesione*, Sulz., var., *itonis*, Hew., *autonoë*, Cram., *fulgora*, Butl., *cephus*, Fab., *agatha*, Butl., *nortia*, Hew., *paygnis*, Godt. ; on pl. lxxxi, *erigone*, Butl., *camerta*, Cram., *renata*, Cram., *marmorata*, Butl., *cluena*, Dru., *quantius*, Godt., *erichtho*, Butl., *argentella*, Butl., *byses*, Godt., *hedemanni*, Feld. ; Exot. Schmett.

E. hemileuca, Colombia, *mollis*, p. 224, *confusa*, Chiriqui, *catharina*, Upper Amazons, p. 225, *lesbia*, Amazons, *juani*, Colombia, p. 226, all figured on pl. lxxx, STAUDINGER, Exot. Schmett., n. spp.

Ragadia luzonia, Feld., figured, pl. lxxxi ; STAUDINGER, Exot. Schmett.

R. annulata, Borneo, SMITH, Ann. N. H. (5) xx, p. 435, n. sp.

Leptoneura: note on application of name; MABILLE, Lep. Mad. i, p. 10. *L. oxylus*, Trim., figured, pl. vi, fig. 5; TRIMEN, S. Afr. butt. i. *L. clytus*, L., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Callerebia orixa, Moore, figured as *C. ophthalmica*, on pl. lxxxi, STAUDINGER, Exot. Schmett.

Erebia, the Pyrenean species and varieties discussed; ELWES, Tr. E. Soc. 1887, pp. 396–399. *E. eriphyle*, Roth., variation noticed with var. *intermedia*; FREY, Soc. Ent. i, p. 161. *E. mopsos*, Stgr., var. *alexandra* and *issyka*, p. 55, *jordana*, Stgr., var. *fasciata*, p. 57; STAUDINGER, S. E. Z. xlviii. *E. rossi*, Curt., note on, with fig. of ♂ characters; AURIVILLIUS, Veg. exp. Vet. iv, p. 75, pl. i, fig. 4. *E. euryale* and *ligea*, note on; STRECKFUSS, B. E. Z. xxxi, p. xxxvii.

E. roxane, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 401; *E. tundra*, Amur-land, STAUDINGER, *t. c.* p. 148, pl. viii, fig. 1: n. spp.

Oeneis crambis, Fr., note on; AURIVILLIUS, Veg. exp. Vet. iv, p. 76, pl. i, figs. 1, 5, & 6.

O. hulda, Amur-land, STAUDINGER, in Rom. Mém. iii, p. 149, pl. xvi, fig. 8; *O. walkyria*, Corea, FIXSEN, *t. c.* pp. 310 & 355, pl. xiv, fig. 4: n. spp.

Chionobas semidea, Say, note on; WEEKS, Ent. Am. iii, p. 12.

Melanargia halimede, Mén., and var. ? *meridionalis*, Feld., figured and discussed; STAUDINGER, in Rom. Mém. iii, p. 147, pl. xvi, figs. 9 & 10.

Pararge epimenides, Mén., n. var. ? *epaminondas*, Amur-land, described and figured; STAUDINGER, in Rom. Mém. iii, p. 150, pl. xvii, figs. 1 & 2.

Satyrus parisatis, var. *lata*; CHRISTOPH, S. E. Z. xlviii, p. 162. *S. sieversi*, Chr., var. *obscurior*, p. 57, *regeli*, Alph., var. *regulus*, p. 59; STAUDINGER, S. E. Z. xlviii.

S. mercurius, p. 58, *pamirus*, p. 61, Central Asia, STAUDINGER, S. E. Z. xlviii; *S. stheno*, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 401: n. spp.

Maniola: note on application of the name; MABILLE, Lep. Mad. i, p. 10. *M. panda*, Boisd., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Raphicera satricus, Doubl., Hew., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Xenica achanta, Don., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Epinephele abeona, Don., *glaucope*, Feld., as *friedenreichi*, Stgr., figured, pl. lxxxi; STAUDINGER, Exot. Schmett. *E. haberhaueri*, Stgr., var. *germana*; *id.* S. E. Z. xlviii, p. 62.

E. rueckbeili, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 63, n. sp.

Heteronympha merope, Fab., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Elina vanessoides, Blanch., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

Hipparchia saraswati, Koll., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

Pseudonympha neita, Wallengr., figured, pl. vii, fig. 2; TRIMEN, S. Afr. butt. ii.

P. goudotii, Madagascar, MABILLE, Lep. Mad. i, p. 9, pl. iii, figs. 1–3; *P. d'urbani*, p. 80, *vigilans*, p. 84, S. Africa, TRIMEN, S. Afr. butt. i: n. spp.

Strabena, n. g., to include 14 spp. of Madagascar *Satyridæ*, with *S. tanjuca*, p. 25, pl. iv, figs. 11 & 12, *andriana*, p. 26, pl. iv, figs. 1 & 2, *triophthalma*, p. 28, pl. iv, fig. 8, MABILLE, Lep. Mad. i, n. spp.

Callyphthima, merged in *Strabena*; MABILLE, Lep. Mad. i, p. 35.

Mycalesis: SEMPER, figures in Reisen Philipp. ii, v, pl. x, *blasius*, F., figs. 9 & 10, *mineus*, L., figs. 11 & 12, *drusia*, Cr., figs. 13 & 14, *justinella*, Butl., figs. 15 & 16, *igoleta*, Feld., figs. 17 & 18, *cæsonia*, Wall., figs. 19 & 20. *M. asochis*, Hew., *perseus*, Fab., var. *visala*, Moore, *mineus*, L., *medus*, Fab., *anaxias*, *messene* and *mucia*, Hew., *duponchelii*, Guér., *patnia*, Moore, figured, pl. lxxxii; STAUDINGER, Exot. Schmett. *M. suaveolens*, Nicév., figured and described, p. 349, pl. xvi, fig. 1; NICÉVILLE, J. A. S. B. lv. *M. strigula*, Mab., = (*Pseudonympha subsimilis*, Butl.); MABILLE, Lep. Mad. i, p. 68. *M. asochis*, Hew.: Hewitson's supposed females of this are another species; BUTLER, Ent. M. M. xxiv, p. 29.

M. sara, fig. 3, *splendens*, fig. 4, pl. iv, p. 38. Solomon Is., MATHEW, Tr. E. Soc. 1887; *M. phalanthus*, W. Africa, *maevius*, Transvaal, STAUDINGER, Exot. Schmett. p. 229, pl. lxxxii; *M. haasei*, Bangkei, p. 193, pl. viii, fig. 6, *atrata*, Batchian, p. 194, pl. viii, fig. 5, RÖBER, CB. Iris, i: n. spp.

Mydosama: SEMPER, Reisen Philipp. ii, v, notices, pp. 53 & 54, and figures, pl. x, *megamede*, Hew., figs. 3 & 4, *felderi*, Butl., figs. 5 & 6, *ita*, Feld., figs. 7 & 8.

Nebdara bisaya, Feld., figs. 2 & 3, pl. x, *tagala*, Feld. var., pl. xi, fig. 1; SEMPER, Reisen Philipp. ii, v.

Erites falcipennis, ♂ figured and described; NICÉVILLE, J. A. S. B. lv, p. 351, pl. xvi, fig. 2. *E. elegans*, Butl., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

Coenyra hebe, Trim., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

Xois sesara, Hew., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

Yphthima loryma and *ceylonica*, Hew., *stellera*, Esch., figured, pl. lxxxiii; STAUDINGER, Exot. Schmett. *Y. stellera*, Esch., variation noticed, p. 48, *sempera*, Feld., figured, figs. 1 & 2, pl. x; SEMPER, Reisen Philipp. ii, v. *Y. zodia*, Butl., ♀ noticed; HOLLAND, Tr. Am. Ent. Soc. xiv, p. 115.

Y. micrommatus, Hainan I., HOLLAND, Tr. Am. Ent. Soc. xiv, pl. ii, fig. 3; *Y. savara*, Burmah, SMITH, Ann. N. H. (5) xx, p. 267: n. spp.

Coenonympha ampelos, Edw., preparatory stages described; EDWARDS, Canad. Ent. xix, pp. 41–44. *C. hero*, L., variation in Corea; FIXSEN, in Rom. Mém. iii, p. 313.

C. semenovi, Thibet, ALPHERAKY, in Rom. Mém. iii, p. 405, n. sp.

Acrophthalmia artemis, Feld., figured, fig. 10 ♂, fig. 11 ♀; SEMPER, Reisen Philipp. ii, v, pl. viii. *A. chione*, Feld., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

A. leto, pl. viii, figs. 12 & 14 ♂, 13 ♀, *ochine*, Philippine Is., SEMPER, Reisen Philipp. ii, v, p. 47, n. spp.

Hypocysta osyris, Boisd., *hygea*, Hew., *irius*, Fab., figured, pl. lxxxiii; STAUDINGER, Exot. Schmett.

Etcone tisiphone, Boisd., figured, pl. lxxxiii; STAUDINGER, Exot. Schmett.

Leptoneura: note on application of name; MABILLE, Lep. Mad. i, p. 10. *L. oxylus*, Trim., figured, pl. vi, fig. 5; TRIMEN, S. Afr. butt. i. *L. clytus*, L., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Callerebia orixa, Moore, figured as *C. ophthalmica*, on pl. lxxxi, STAUDINGER, Exot. Schmett.

Erebia, the Pyrenean species and varieties discussed; ELWES, Tr. E. Soc. 1887, pp. 396–399. *E. eriphyle*, Roth., variation noticed with var. *intermedia*; FREY, Soc. Ent. i, p. 161. *E. mopsos*, Stgr., var. *alexandra* and *issyka*, p. 55, *jordana*, Stgr., var. *fasciata*, p. 57; STAUDINGER, S. E. Z. xlviii. *E. rossi*, Curt., note on, with fig. of ♂ characters; AURIVILLIUS, Veg. exp. Vet. iv, p. 75, pl. i, fig. 4. *E. euryale* and *ligea*, note on; STRECKFUSS, B. E. Z. xxxi, p. xxxvii.

E. roxane, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 401; *E. tundra*, Amur-land, STAUDINGER, *t. c.* p. 148, pl. viii, fig. 1: n. spp.

Oeneis crambis, Fr., note on; AURIVILLIUS, Veg. exp. Vet. iv, p. 76, pl. i, figs. 1, 5, & 6.

O. hulda, Amur-land, STAUDINGER, in Rom. Mém. iii, p. 149, pl. xvi, fig. 8; *O. walkyria*, Corea, FIXSEN, *t. c.* pp. 310 & 355, pl. xiv, fig. 4: n. spp.

Chionobas semidea, Say, note on; WEEKS, Ent. Am. iii, p. 12.

Melanargia halimede, Mén., and var. ? *meridionalis*, Feld., figured and discussed; STAUDINGER, in Rom. Mém. iii, p. 147, pl. xvi, figs. 9 & 10.

Pararge epimenides, Mén., n. var. ? *epaminondas*, Amur-land, described and figured; STAUDINGER, in Rom. Mém. iii, p. 150, pl. xvii, figs. 1 & 2.

Satyrus parisatis, var. *læta*; CHRISTOPH, S. E. Z. xlviii, p. 162. *S. sieversi*, Chr., var. *obscurior*, p. 57, *regeli*, Alph., var. *regulus*, p. 59; STAUDINGER, S. E. Z. xlviii.

S. mercurius, p. 58, *pamirus*, p. 61, Central Asia, STAUDINGER, S. E. Z. xlviii; *S. stheno*, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 401: n. spp.

Maniola: note on application of the name; MABILLE, Lep. Mad. i, p. 10. *M. panda*, Boisd., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Raphicera satricus, Doubl., Hew., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Xenica achanta, Don., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Epinephele abeona, Don., *glaucope*, Feld., as *friedenreichi*, Stgr., figured, pl. lxxxi; STAUDINGER, Exot. Schmett. *E. haberhaueri*, Stgr., var. *germana*; *id.* S. E. Z. xlviii, p. 62.

E. rueckbeili, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 63, n. sp.

Heteronympha merope, Fab., figured, pl. lxxxi; STAUDINGER, Exot. Schmett.

Elina vanessoides, Blanch., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

Hipparchia saraswati, Koll., figured, pl. lxxxii; STAUDINGER, Exot. Schmett.

Pseudonympha neila, Wallengr., figured, pl. vii, fig. 2; TRIMEN, S. Afr. butt. ii.

P. goudotii, Madagascar, MABILLE, Lep. Mad. i, p. 8; *P. d'urbani*, p. 80, *vigilans*, p. 84, S. Africa, TRIMEN, S. Afr. butt. i, pl. iii, figs. 1–3: n. spp.

Strabena, n. g., to include 14 spp. of Madagascar *Satyridæ*, with *S. tanjuca*, p. 25, pl. iv, figs. 11 & 12, *andriana*, p. 26, pl. iv, figs. 1 & 2, *triophthalma*, p. 28, pl. iv, fig. 8, Mabille, Lep. Mad. i, n. spp.

Callyphthima, merged in *Strabena*; Mabille, Lep. Mad. i, p. 35.

Mycalesis: Semper, figures in Reisen Philipp. ii, v, pl. x, *blasius*, F., figs. 9 & 10, *mineus*, L., figs. 11 & 12, *drusia*, Cr., figs. 13 & 14, *justinella*, Butl., figs. 15 & 16, *igoleta*, Feld., figs. 17 & 18, *cæsonia*, Wall., figs. 19 & 20. *M. asochis*, Hew., *perseus*, Fab., var. *visala*, Moore, *mineus*, L., *medus*, Fab., *anaxias*, *messene* and *mucia*, Hew., *duponchelii*, Guér., *patnia*, Moore, figured, pl. lxxxii; Staudinger, Exot. Schmett. *M. suaveolens*, Nicév., figured and described, p. 349, pl. xvi, fig. 1; Nicéville, J. A. S. B. lv. *M. strigula*, Mab., = (*Pseudonympha subsimilis*, Butl.); Mabille, Lep. Mad. i, p. 68. *M. asochis*, Hew.: Hewitson's supposed females of this are another species; Butler, Ent. M. M. xxiv, p. 29.

M. sara, fig. 3, *splendens*, fig. 4, pl. iv, p. 38, Solomon Is., Mathew, Tr. E. Soc. 1887; *M. phalanthus*, W. Africa, *maevius*, Transvaal, Staudinger, Exot. Schmett. p. 229, pl. lxxxii; *M. huasei*, Bangkei, p. 193, pl. viii, fig. 6, *atrata*, Batchian, p. 194, pl. viii, fig. 5, Röber, CB. Iris, i: n. spp.

Mydosama: Semper, Reisen Philipp. ii, v, notices, pp. 53 & 54, and figures, pl. x, *megamede*, Hew., figs. 3 & 4, *felderi*, Butl., figs. 5 & 6, *ita*, Feld., figs. 7 & 8.

Nebdara bisaya, Feld., figs. 2 & 3, pl. x, *tagala*, Feld. var., pl. xi, fig. 1; Semper, Reisen Philipp. ii, v.

Erites falcipennis, ♂ figured and described; Nicéville, J. A. S. B. lv, p. 351, pl. xvi, fig. 2. *E. elegans*, Butl., figured, pl. lxxxii; Staudinger, Exot. Schmett.

Cenyra hebe, Trim., figured, pl. lxxxii; Staudinger, Exot. Schmett.

Xois sesara, Hew., figured, pl. lxxxii; Staudinger, Exot. Schmett.

Yphthima loryma and *ceylonica*, Hew., *stellera*, Esch., figured, pl. lxxxiii; Staudinger, Exot. Schmett. *Y. stellera*, Esch., variation noticed, p. 48, *sempera*, Feld., figured, figs. 1 & 2, pl. x; Semper, Reisen Philipp. ii, v. *Y. zodia*, Butl., ♀ noticed; Holland, Tr. Am. Ent. Soc. xiv, p. 115.

Y. micrommatus, Hainan I., Holland, Tr. Am. Ent. Soc. xiv, pl. ii, fig. 3; *Y. savara*, Burmah, Smith, Ann. N. H. (5) xx, p. 267: n. spp.

Coenonympha ampelos, Edw., preparatory stages described; Edwards, Canad. Ent. xix, pp. 41–44. *C. hero*, L., variation in Corea; Fixsen, in Rom. Mém. iii, p. 313.

C. semenovi, Thibet, Alpheraky, in Rom. Mém. iii, p. 405, n. sp.

Acrophthalmia artemis, Feld., figured, fig. 10 ♂, fig. 11 ♀; Semper, Reisen Philipp. ii, v, pl. viii. *A. chione*, Feld., figured, pl. lxxxii; Staudinger, Exot. Schmett.

A. leto, pl. viii, figs. 12 & 14 ♂, 13 ♀, *ochine*, Philippine Is., Semper, Reisen Philipp. ii, v, p. 47, n. spp.

Hypocysta osyris, Boisd., *hygea*, Hew., *irius*, Fab., figured, pl. lxxxiii; Staudinger, Exot. Schmett.

Eteone tisiphone, Boisd., figured, pl. lxxxiii; Staudinger, Exot. Schmett.

Lymanopoda cæruleata, S. & G., *labda* and *albocincta*, Hew., figured, pl. lxxxiii ; STAUDINGER, Exot. Schmett.

L. nivea, Quito, STAUDINGER, Exot. Schmett. p. 232, pl. lxxxiii, n. sp.

Idioneura erebioides figured, pl. lxxxiii ; STAUDINGER, Exot. Schmett.

Calisto zangis, Fab., figured, pl. lxxxiii ; STAUDINGER, Exot. Schmett.

Zipœtis scylax, Hew., figured, pl. lxxxiii ; STAUDINGER, Exot. Schmett.

Steroma superba, Butl., figured, pl. lxxxiii ; STAUDINGER, Exot. Schmett.

Pedaliodes poesia, *pedacia*, pl. lxxxiii, *pallantis*, *physcoa*, Hew., pl. lxxxiv, figured ; STAUDINGER, Exot. Schmett.

P. catargyrea (*phyllalia* on plate), *antioquia*, *juba*, Quito, *hopfferi*, Chanchamayo, STAUDINGER, Exot. Schmett. p. 233, pl. lxxxiii, n. spp.

Gyrocheilus patrobas, Hew., figured, pl. lxxxiv ; STAUDINGER, Exot. Schmett.

Oxeoschistus simplex, Butl., *cothon*, Salv., *leucospilos*, Stgr., *thammi*, Stgr., figured, pl. lxxxiv ; STAUDINGER, Exot. Schmett.

Lasiophila circe, Feld., figured, pl. lxxxiv ; STAUDINGER, Exot. Schmett.

Dædalma dinias, Hew., *dorinda*, Feld., figured, pl. lxxxiv ; STAUDINGER, Exot. Schmett.

D. pholoë, Colombia, STAUDINGER, Exot. Schmett. p. 234, pl. lxxxiv, n. sp.

ELYMNIIDÆ.

Biblidæ treated as separate subfamily ; SEMPER, Reisen Philipp. ii, v, p. 65, note.

Elymnias and *Dyctis* discussed, p. 60, note ; *E. casiphone*, Hub., pl. xi, fig. 11 & 12, *melias*, Feld., pl. xii, fig. 1, *beza*, Hew., fig. 5, *egialina*, Feld., figs. 7 & 8, figured ; SEMPER, Reisen Philipp. ii, v.

E. dara, Borneo, DISTANT, Ann. N. H. (5) xix, p. 50 ; *E. congruens*, p. 61, pl. xi, figs. 8–10, *malis*, p. 62, pl. xii, figs. 2 & 3, *kochi*, p. 63, pl. xii, fig. 4, SEMPER, Reisen Philipp. ii, v : n. spp.

ERYCINIDÆ.

Libythea laius, Trim., figured ; TRIMEN, S. Afr. butt. ii, pl. vii, fig. 3.

Dodona henorici, Hainan I., HOLLAND, Tr. Am. Ent. Soc. xiv, p. 119, pl. ii, fig. 2, n. sp.

Lymnas jarbres, F., var. *herellus*, Curaçao ; SNELLEN, Tijdschr. Ent. xxx, p. 22.

Ourocnemis, n. g., for *Anteros axiochus*, Hew., the species described and figured, pl. ix ; BAKER, Tr. E. Soc. 1887, p. 175.

LYCÆNIDÆ.

[N.B.—The arrangement of genera is alphabetical.]

Lycænidæ, larvæ and ants ; AURIVILLIUS (26).

Note on the group *Eumæidi* ; SCUDDER, Biol. Centr. Am. Rhop. ii, p. 110.

Eumæus: the structural characters and position discussed, pp. 5 & 6; *E. mingas*, Hübn., figured, pl. xlviii, figs. 1-3; Godman & Salvin, Biol. Centr. Am. Rhop. ii.

Aphnæus nubilus, Ceylon, p. 530, pl. 210, figs. 1 & 1*b*, Moore, Lep. Ceyl. iii; *A. hutchinsonii*, S. Africa, Trimen, S. Afr. butt. ii, p. 148: n. spp.

Amblypodia japonica, Murray, fig. 14, *turbata*, Butl., fig. 16, figured; Pryer, Rhop. Nih.

A. loomisi, Japan, Pryer, Rhop. Nih. p. 11, pl. ii, fig. 15; *A. arracana*, *tounguva*, Burmah, p. 268, Smith, Ann. N. H. (5) xx; *A. yendava*, Burmah, *id. op. cit.* xix, p. 297; *A. sophax*, Solomon Is, Mathew, Tr. E. Soc. 1887, p. 47; *A. superba*, Batchian, pl. ix, fig. 3, *viola*, Bangkei, fig. 4, *polita*, Ceram, fig. 14, p. 199, *kühni*, figs. 5 & 8, *viviana*, figs. 13 & 11, *tristis*, fig. 9, p. 200, Bangkei, Röber, C.B. Iris, i: n. spp.

Arrugia brachycera, Trim., fig. 7, *basuta*, Wallengr., figs. 8 & 8*a*, pl. ix, figured; Trimen, S. Afr. butt. ii.

Azanus occidentalis, W. Africa, Butler, P. Z. S. 1887, p. 571, n. sp.

Capys alphæus, Cram., figured, pl. vii, fig. 5; Trimen, S. Afr. butt. ii.

Catapœcilma elegans, Druce (sub *Hypochrysops*), figured, pl. xv, fig. 6; Nicéville, J. A. S. B. lv.

Cheritrella, n. g., near Ticherra, for *C. truncipennis*, n. sp., Sikkim, pl. xxxix, figs. 3 & 4; Nicéville, P. Z. S. 1887, p. 456.

Chilades sinensis, Ningpo, C. (?) *pontis*, Sikkim, Elwes, P. Z. S. 1887, p. 446, n. spp.

Chrysophanus xanthoides, Bois., egg described; Edwards, Ent. Am. iii, p. 162.

Chrysophanus? pyrrhias, Guatemala, p. 101, pl. lviii, figs. 26 & 27, Godman & Salvin, Biol. Centr. Am. Rhop., n. sp.

Chrysorychia amanga, Westw., pl. ix, fig. i, figured; Trimen, S. Afr. butt. ii.

Citrinophila, n. g., p. 367, for *C. marginalis*, *limbata*, n. spp., W. Africa, p. 368: Kirby, Ann. N. H. (5) xix.

Curetis acuta, Moore, ♀ described; Leech, P. Z. S. 1887, p. 410: figured; Pryer, Rhop. Nih. pl. iv, figs. 1 & 2.

C. minima, Borneo, Distant, Ann. N. H. (5) xix, p. 265; *C. eos*, Celebes, Röber, CB. Iris, i, p. 198, pl. vii, fig. 9: n. spp.

Deudorix diocles, Hew., figured, pl. vii, fig. 6; Trimen, S. Afr. butt. ii.

Deudorix dinomenes, Delagoa Bay, Smith, Ann. N. H. (5) xix, p. 65; *D. odana*, Cameroon Mts., Druce, Ent. M. M. xxiii, p. 205: n. spp.

Dipsas flamen, Corea, Leech, P. Z. S. 1887, p. 410, pl. xxxvii, fig. 2, n. sp.

Drupadia cæsarea, Nias I., Weymer, S. E. Z xlviii, p. 9, pl. ii, fig. 4, n. sp.

Durbania aslauga, Trim., figured, pl. ix, figs. 9 & 9*a*; Trimen, S. Afr. butt. ii. *D. amakosa*, Trim., larva and pupa figured; *id. op. cit.* i, pl. ii, figs. 2 & 2*a*.

D. limbata, S. Africa, Trimen, S. Afr. butt. ii, p. 217, n. sp.

Epitola urania, p. 441, *dewitzi*, p. 442, *dunia*, *marginata*, p. 443, *versicolor*, *badia*, p. 444, *uniformis*, p. 445, Cameroons, Kirby, Ann. N. H. (5) xix, n. spp.

Gerydus petronius, Borneo, DISTANT, Ann. N. H. (5) xix, p. 266, n. sp.

Hypolycæna nilgirica, Moore, figured, pl. 210, figs. 3–3*b*; MOORE, Lep. Ceyl. iii. *H. lara*, L., larva and pupa figured; TRIMEN, S. Afr. butt. i, pl. ii, figs. 1 & 1*a*.

H. maryra, Madagascar, MABILLE, Lep. Mad. i, p. 230, pl. xxx A, figs. 1 & 1*a*; *H. virgo*, Sikkim, ELWES, P. Z. S. 1887, p. 446; *H. elias*, Borneo, SMITH, Ann. N. H. (5) xix, p. 268; *H. cloella*, Nias I., WEYMER, S. E. Z. xlviii, pl. ii, fig. 5; n. spp.

Iolaus trimeni, Wallengr., figured, pl. vii, fig. 4; TRIMEN, S. Afr. butt. ii. *I. silas*, Westw., larva and pupa figured; *id. op. cit.* i, pl. i, figs. 8 & 8*a*.

I. cervinus, pl. ix, fig. 10, *kühni*, pl. ix, fig. 12, p. 195, *sapphirhinus*, pl. vii, figs. 4 & 5, p. 196, Bangkei, RÖBER, CB. Iris, i, n. spp.

Jamides petunia, Fiji Is., DRUCE, Ent. M. M. xxiii, p. 203, n. sp.

Keraunogramma, n. g., p. 196, near *Catopœcilma*, for *K. helena*, n. sp., Bangkei, p. 197, pl. ix, fig. 6; RÖBER, CB. Iris, i.

Lachnocnemenea, n. g., p. 233, for *Papilio bibulus*, Fab., and *L. d'urbani*, n. sp., S. Africa, p. 236; TRIMEN, S. Afr. butt. ii.

Lampides cærulina, Solomon Is., MATHEW, Tr. E. Soc. 1887, p. 46, n. sp.

Larinopoda muhata, Dew. (sub *Pentila*), figs. 1–4, *varipes*, Kirby, figs. 5 & 6, figured; SMITH, Rhop. ex. African *Lycænidæ*, pl. ii.

L. varipes, Ashanti, KIRBY, Ann. N. H. (5) xix, p. 363, n. sp.

Lehera skinneri, Cachar, NICÉVILLE, J. A. S. B. lv, p. 369, pl. xv, fig. 3, n. sp.

Liphyra brassolis, larva probably aphidivorous; HOLLAND, Canad. Ent. xix, p. 61.

Liptæna acræa, Westw., figured; SMITH, Rhop. ex. African *Lycænidæ*, pl. i, figs. 5 & 6, and *sanguinea*, figs. 1 & 4.

L. parva, Cameroons, KIRBY, Ann. N. H. (5) xix, p. 362, n. sp.

Logania obscura, Borneo, DISTANT, Ann. N. H. (5) xix, p. 266, n. sp.

Lucia (?) *brunnea*, W. Africa (?), KIRBY, Ann. N. H. (5) xix, p. 368, n. sp.

Lycæna: the Central American species described, and neuration, &c., of *L. exilis* and *comyntas* noticed, p. 102; *L. isola*, Reak, pl. lviii, figs. 33–35, *zachæina* (*Lampides*), Butl. & Druce, figs. 36–38, *exilis*, Boisd., figs. 30–32, figured; GODMAN & SALVIN, Biol. Centr. Am. Rhop. ii. TRIMEN figures, S. Afr. butt. ii, pl. viii, *L. hintza*, Trim., figs. 1 & 1*a*, *thespis*, L., figs. 2 & 2*a*, *asteris*, Godt., figs. 3 & 3*a*, *punctiicilia*, Trim., fig. 4, *moriqua*, Wallengr., figs. 5 & 5*a*, *notobia*, Trim., figs. 6 & 6*a*, *tsomo*, Trim., fig. 7. *L.* (?) *ogasawaraensis*, Pryer, figured, pl. ii, fig. 13; PRYER, Rhop. Nih. *L. orbitulus*, Prun., its varieties; ELWES, Tr. E. Soc. 1887, pp. 392 & 393. *L. argiades*, Pall., and 6 others, in Corea, variation, &c., noticed; FIXSEN, in Rom. Mém. iii, pp. 283–289. *L. prosecusa*, Ersch., n. var. *duplex*, Thibet; ALPHERAKY, *t. c.* p. 405. *L. erschoffi*, var. *tekkeana*, described and figured; CHRISTOPH, *t. c.* p. 52, pl. iii, fig. 1. *L. cyllarus*, Rott., var. *blachieri*; MILLIÈRE, Ann. Soc. Ent. Fr. (6) vii, p. 215, pl. v, figs. 8 & 9. *L. telicanus*, var. described; MATHEW, P. E. Soc. 1887, p. ii. *L. icarus*, Rott., variation of; SOUTH, Ent. xx, pp. 73–77, pl. ii. *L. corydon*, varia-

tion of; *id. t. c.* pp. 1–8 & 49–52, pl. i. *L. bellargus*, Rott., varietal note; *id. t. c.* pp. 78–82. *L. hylas*, varietal note; *id. t. c.* pp. 82–84. *L. escheri*, Hüb., varietal note; *id. t. c.* p. 84. *L. eros*, O., variation of; *id. t. c.* pp. 121–127. *L. bellargus* and *corydon*, discussion on presumed hybrids of; Ent. xx, pp. 253, &c. *L. japonica*, Murray, and *alope*, Fenton, referred to *L. argia*; Leech, P. Z. S. 1887, p. 415. *L. ægon* and *argus*, synonymical note on; Rühl, Soc. Ent. i, p. 147.

L. scylla, p. 139, pl. xvi, fig. 7 (this in note said to be *lycormas*, Butl.), *arionides*, p. 141, pl. vii, figs. 1, *a*, *b*, *c*, *euphemia*, ? *euphemus*, Hb., var., p. 142, Amur-land, Staudinger, in Rom. Mém. iii; *L. magnifica*, *muzaffar*, *oberthüri*, p. 399, *dschagatai*, *roxane*, p. 400, Central Asia, Grumm-Grshimailo, *t. c.*; *L. divina*, Corea, Fixsen, *t. c.* p. 286, pl. xiii, figs. 5 *a* & *b*; *L. patricia*, p. 20, *glauca*, p. 21, *caffrariæ*, p. 23, *ortygia*, p. 26, *hypopolia*, p. 30, *tantalus*, p. 38, *ignota*, p. 39, *dolorosa*, p. 41, *noquasa*, p. 64, *natalensis*, p. 77, *melæna*, p. 82, *griqua*, p. 84, S. Africa, Trimen, S. Afr. butt. ii; *L. alaina*, p. 50, *superba*, p. 51, Central Asia, Staudinger, S. E. Z. xlviii; *L. tulliola*, Mexico to S. America, Godman & Salvin, Biol. Centr. Am. Rhop. ii, p. 108, pl. lviii, figs. 28 & 29: n. spp.

Lycænesthes livida, Trim., figured, pl. vii, figs. 7 & 7*a*, *otacilia*, fig. 8; Trimen, S. Afr. butt. ii.

L. docilis, W. Africa, Butler, P. Z. S. 1887, p. 571; *L. mahota*, Delagoa Bay, Smith, Ann. N. H. (5) xix, p. 65: n. spp.

Miletus hamada, Druce, figured, pl. ii, fig. 12; Pryer, Rhop. Nih.

Myrina ficedula, Trimen, larva and pupa figured; Trimen, S. Afr. butt. i, pl. i, figs. 7 & 7*a*.

Nacaduba cœlestis, Nicév., pl. xvii, fig. 11, *macrophthalma*, Feld., fig. 13, *viola*, Moore, fig. 12, figured; Nicéville, J. A. S. B. lv; *N. ardates* habits noticed; Moore, p. 530, Lep. Ceyl. iii.

N. dexamene, Delagoa Bay, p. 203, *gemmata*, Fiji Is., p. 204, Druce, Ent. M. M. xxiii, n. spp.

Nilasera wimberleyi, Andaman Is., Nicéville, P. Z. S. 1887, p. 462, n. sp.

Paragerydus fabius, Borneo, Distant, Ann. N. H. (5) xix, p. 266, n. sp.

Pathalia malaya, varietal note; Nicéville, J. A. S. B. lv, p. 364.

Pentila undularis, Hew. (sub *Liptena*), fig. 13, *evanescens*, Kirby, figs. 11 & 12, figured; Smith, Rhop. ex. African *Lycænidæ*, pl. ii.

P. evanescens, Cameroons, Kirby, Ann. N. H. (5) xix, p. 364, n. sp.

Plebeius fasciatus, Bangkej, Röber, CB. Iris, i, p. 194, pl. ix, fig. 15, n. sp.

Polyommatus phœnicurus, var. *scintillans*; Christoph, S. E. Z. xlviii, p. 162. *P. dispar*, Hew., and *phlæas*, L., in Corea, noticed; Fixsen, in Rom. Mém. iii, p. 283.

P. auratus, Corea, Leech, P. Z. S. 1887, p. 414, pl. xxxv, fig. 3, n. sp.

Poritia pellonia, Borneo, Distant, Ann. N. H. (5) xix, p. 265, n. sp.

Pratapa deva, Moore, figured, pl. ccx, figs. 2 & 2*a*; Moore, Lep. Ceyl. x.

Pseuderesia catalina, Cameroons, Smith, Rhop. ex. African *Lycænidæ*, pl. i, figs. 7 & 8, n. sp.

Pseudodipsas helena, N. Guinea, Snellen, Notes Leyd. Mus. ix, p. 217, n. sp.

Ropala distorta, Sikkim, Nicéville, P. Z. S. 1887, p. 461, pl. xl, fig. 6, n. sp.

Sithon fumatus, Bangkei, Röber, CB. Iris, i, p. 196, pl. ix, fig. 7; *S. chromis*, Solomon Is., Mathew, Tr. E. Soc. 1887, p. 47 : n. spp.

Tajuria istroidea, p. 458, pl. xl, fig. 3, *albiplaga*, p. 459, pl. xxxix, figs. 1 & 2, *melastigma*, p. 460, pl. xl, fig. 1, Sikkim, Nicéville, P. Z. S. 1887, n. spp.

Teriomima, n. g., p. 364, for the following n. spp. from W. Africa : *subpunctata*, p. 364, *puella*, *tenera*, p. 365, *similis*, *erasmus*, *flavcola*, p. 366, *dispar*, and *T.* (?) *hildegarda*, p. 367; Kirby, Ann. N. H. (5) xix.

Thecla, F. The palæarctic species arranged in eleven groups, pp. 267–270, 356; *T. spini*, Schiff., with n. var. *latior*, and *w-album*, Knoch, with n. var. *eximia*, pl. xiii, fig. 2, noticed, p. 271; *taxila*, Brém., synonymy discussed, differentiated from *fasciata*, Jans., pp. 273–277, n. var. *ultramarina*, Fixs., p. 278; *pruni*, L., var., p. 279, *saphirina*, Stgr., *arata*, Brém., pl. xiii, fig. 3, and others from Corea noticed: Fixsen, in Rom. Mém. iii. *T. taxila*, Brém., *fasciata*, Janson, *japonica*, Murray, *diamantina*, Oberth., and *orientalis*, Murray, discussed; Staudinger, in Rom. Mém. iii, pp. 132–135. *T. rubi*, L., var. described; Millière, Ann. Soc. Ent. Fr. (6) vii, p. 216. *T. strephon*, F., and *sichæus*, Cr., note on; Snellen, Tijdschr. Ent. xxx, p. 24. Godman & Salvin notice at length the structural characters (pp. 1–5), and recognise 213 Central American species (p. 9); these are described, and the following known species figured :—*coronata*, Hew., pl. xlviii, figs. 7–9, *teresina*, Hew., figs. 10, 11, 14, *temathea*, Hew., figs. 17–19, *nobilis*, H.-S., figs. 20–22, *imperialis*, Cr., figs. 15 & 16, *cypria*, Geyer, = *paphia*, Feld., p. 13, figs. 12 & 13, *damo*, Druce, pl. xlix, figs. 1–3, *angustula*, Kby., pl. l, figs. 21 & 22, *hemon*, Cr., pl. xlix, figs. 7 & 8, *polybe*, L., figs. 12 & 13, *inachus*, Cr., figs. 14–16, *carpophora*, Hew., fig. 17, *carpasia*, Hew., figs. 18 & 19, *atys*, Cr., fig. 23, *aufidena*, Hew., pl. l, figs. 1–3, *phaleros*, L., figs. 4–6, *carthæa*, Hew., figs. 10–12, *caranus*, Cr., figs. 13–15, *neora*, Hew., figs. 16–18, *erybathis*, Hew., figs. 28 & 29, *cadmus*, Feld., pl. li, figs. 8–10, *petelina*, Hew., figs. 11 & 12, *parthenia*, Hew., figs. 17 & 18, *theia*, Hew., figs. 19–21, *barajo*, Reak., figs. 22–24, *togarna*, Hew., pl. lii, figs. 1 & 2, *herodotus*, Fab., figs. 3–5, *pastor*, Butl. & Druce, figs. 8–10, *agricolor*, *iid.*, figs. 11 & 12, *jada*, Hew., figs. 13 & 14, *janias*, Cr., fig. 15, *talayra*, Hew., figs. 16 & 17, *atesa*, Hew., figs. 18 & 19, *janthina*, Hew., figs. 22 & 23, *orgia*, Hew., figs. 24–26, *ortygnus*, Cr., pl. liii, figs. 1 & 2, *phœnissa*, Hew., figs. 3 & 4, *jebus*, Godt., figs. 5–7, *brescia*, Hew., = (*thoana*, Hew.), figs. 8–10, *ribidia*, Hew., figs. 13 & 14, *ligurina*, Hew., figs. 15 & 16, *azurinus*, Butl. & Druce, figs. 18 & 19, *erema*, Hew., figs. 23 & 24, *terentia*, Hew., pl. liv, figs. 1 & 2, *rhodope*, auct. ?, figs. 3 & 4, *ocrisia*, Hew., = (*zora*, Hew.), p. 49, and figs. 5 & 6, *keila*, Hew., = (*parasia*, Hew.), p. 50, and figs. 7–9, *volupia*, Hew., figs. 19 & 20, *lausus*, Cr., fig. 23, *ambrax*, Westw. & Hew., pl. lv, figs. 5 & 6, *syedra*, Hew., figs. 7 & 8, *ericeta*, Hew., = (*munatia*, Hew.), p. 58, figs. 3 & 4, *gadira*, Hew., figs. 13 & 14, *orobia*, Hew., figs. 29 & 30, *crolinus*, Butl. & Druce, p. 63, figs. 31–33; *T. colicolor*, Butl. & Druce, = (*hena*, Hew.), p. 66; *myrsina*, Hew., pl. lvi, fig. 10, *orcidia*, Hew., figs. 11–13, *dodaca*, Hew., figs. 28 & 29, *endela*, Hew., figs. 30 & 31; *T. hesperitis*, Butl. & Druce, =

(*lugubris*, Möschl.), p. 72; *beon*, Cr., pl. lvii, figs. 4–6, and = (*isobeon*, Butl. & Druce, and *bactra*, Hew.), p. 74; *amplia*, Hew., figs. 7 & 8, *autoclea*, Hew., figs. 9 & 10; *denarius*, Butl. & Druce, = (*calena*, Hew.), p. 77, and *camissa*, Hew., = (*charichlorus* and *respianus*, Butl. & Druce), p. 78, *cestri*, Reak., pl. lviii, figs. 12 & 13; Godman & Salvin, Biol. Centr. Am. R[illegible] ., ii. *T. augustus*, descriptive note; Fyles, Canad. Ent. xix, p. 147. *T. falacer* and *inornata*, synonymical note; Grote, Canad. Ent. xix, p. 179. *T. favonius*, Sm. & Ab., metamorphoses; Packard, Bull. Dep. Agric. Ent. xiii, p. 31. *T. halesus*, Cr., chrysalis described; Edwards, Ent. Am. iii, p. 162.

T. betulina, Suyfun, p. 127, pl. xvi, fig. 6, *prunoides*, Wladiwostok, p. 129, pl. vi, figs. 1, *a*, *b*, *brillantina*, Suyfun & Askold I., p. 130, pl. vi, figs. 3, *a*, *b*, *c*, *saphirina*, Askold I., p. 135, pl. xvi, figs. 3–5, *quercivora*, p. 137, pl. vi, figs. 2, *a*, *b*, *oberthüri*, Amurland, Staudinger, in Rom. Mém. iii, p. 138, pl. vi. figs. 4, *a*, *b*; *T. phœnicoparyphus*, Hainan I., Holland, Tr. Am. Ent. Soc. xiv, pl. ii, fig. 1; *T. herzi*, Corea, Fixsen, in Rom. Mém. iii, p. 279, pl. xiii, fig. 4; *T. nepia*, p. 16, pl. l, figs. 19 & 20, *hisbon*, p. 17, pl. xlix, figs. 4–6, Guatemala to Panama, *cynara*, Mexico, p. 19, pl. xlix, figs. 9–11, *bacis*, Panama, p. 21, figs. 20–22, *coccineifrons*, Nicaragua, p. 23, pl. l, figs. 7–9, *oceia*, Costa Rica, p. 25, figs. 23–25, *laothoë*, Guatemala, p. 25, figs. 26 & 27, *busa*, Guatemala to Costa Rica, p. 26, pl. li, figs. 1 & 2, *perpenna*, Panama, figs. 3 & 4, *hyas*, Mexico to Panama, figs. 5–7, p. 27, *furina*, Mexico, Guatemala, figs. 13 & 14, *cyda*, Costa Rica, figs. 15 & 16, p. 28, *cunus*, Guatemala to Venezuela, p. 30, figs. 25 & 26, *phœnna*, Honduras, Nicaragua, p. 31, *phara*, Costa Rica to Panama, p. 32, figs. 27–29, *fusius*, Mexico to Panama, p. 34, pl. lii, figs. 6 & 7, *hypsea*, Panama, p. 38, figs. 20 & 21, *epytus*, Panama, p. 40, figs. 27–29, *orses*, Guatemala, p. 43, pl. liii, figs. 11 & 12, *lyde*, Guatemala to Panama, p. 44, fig. 17, *mycon*, Mexico to Colombia, p. 46, figs. 20–22, *primno*, Panama, figs. 25 & 26, *phobe*, Guatemala, figs. 27–29, p. 47, *arpoxais*, Panama, p. 49, pl. lv, figs. 25 & 26, *orios*, Guatemala, p. 51, pl. liv, figs. 10 & 11, *praxis*, Panama, Colombia, figs. 12 & 13, *ortalus*, Mexico, figs. 14 & 15, p. 52, *cambes*, Mexico, p. 53, figs. 16–18, *epidius*, Panama, Colombia, p. 54, and figs. 21 & 22, *ochus*, Guatemala, p. 55, and figs. 24–27, *pion*, Guatemala, Panama, figs. 28–30, *oppia*, Mexico, pl. lv, figs. 1 & 2, p. 56, *latagus*, Panama, p. 58, figs. 9 & 10, *orasus*, Guatemala, figs. 11 & 12, *norax*, Guatemala, figs. 17 & 18, p. 59, *minthe*, Mexico, figs. 15 & 16, *aura*, Costa Rica, Panama, figs. 21 & 22, *attalion*, Mexico, figs. 19 & 20, p. 60, *ares*, Guatemala, Amazons, p. 61, and figs. 23 & 24, *tanais*, Panama, p. 62, and figs. 27 & 28, *proba*, Panama, p. 64, and pl. lvi, figs. 1–3, *iopas*, Nicaragua, figs. 4 & 5, *balius*, Guatemala, Colombia, figs. 6 & 7, p. 65, *nisæe*, Panama, Colombia, p. 67, figs. 8 & 9, *tabena*, Mexico, Guatemala, figs. 14 & 15, *tarpa*, Mexico, figs. 16 & 17, p. 68, *paralus*, Guatemala, p. 69, and figs. 18 & 19, *odinus*, Panama, figs. 20 & 21, *mavonis*, Mexico, Guatemala, figs. 22 & 23, *paron*, Guatemala, figs. 24 & 25, p. 70, *heraclides*, Costa Rica, p. 71, figs. 26 & 27, *sergius*, Venezuela, p. 71, note, *origo*, Panama, Amazons, p. 73, and figs. 32 & 33, *nitetis*, Mexico, p. 74, pl. lvii, figs. 1–3, *nortia*, Guatemala, p. 76, pl. lvii, figs. 11–13, *sethon*, Mexico to Costa Rica, figs. 14 & 15, *plusios*, Mexico to Panama,

p. 77, *tamos*, Costa Rica, Panama, p. 79, and figs. 16 & 17, *matho*, Guiana, p. 80, *mimas*, Panama to Amazons, p. 81, figs. 18 & 19, *gabina*, Mexico to Amazons, figs. 20 & 21, *myron*, Costa Rica, Panama, p. 82, *lampetia*, Costa Rica, *milto*, Panama, figs. 22 & 23, p. 83, *pisis*, Guatemala to Panama, figs. 24 & 25, *puppius*, Guiana, p. 84, *lollia*, Guatemala, Costa Rica, p. 85, and figs. 26 & 27, *iambe*, Costa Rica, figs. 28 & 29, *lucagus*, Mexico, figs. 30 & 31, p. 86, *hesychia*, Costa Rica, figs. 32 & 33, *hicetas*, Mexico, figs. 34 & 35, *pætus*, Panama, pl. lviii, figs. 1 & 2, p. 87, *inoa*, Mexico, p. 88, and figs. 18 & 19, *mævia*, Mexico to Costa Rica, figs. 3 & 4, *scopas*, Mexico, Nicaragua, fig. 5, p. 89, *sesara*, Colombia, p. 90, note, *syllis*, Mexico to Nicaragua, p. 92, and figs. 6 & 7, *serapio*, Mexico, Panama, p. 93, and figs. 8 & 9, *alea*, Mexico, p. 95, and figs. 10 & 11, *hecate*, figs. 15–17, *semones*, figs. 20 & 21, *schausi*, figs. 22 & 23, p. 98, *insignis*, Panama, *miranda*, Upper Amazons, p. 99, GODMAN & SALVIN, Biol. Centr. Am. Rhop. ii : n. spp.

Theclopsis, n. g., p. 99, to include *Thecla lebena* and *demea*, Hew., and *T. cæus*, n. sp., Panama, p. 101, pl. lviii, figs. 24 & 25 ; GODMAN & SALVIN, Biol. Centr. Am. Rhop. ii.

Theorema, neuration noticed, p. 8, *T. eumenia*, Hew., figured, pl. xlviii, figs. 4–6 ; GODMAN & SALVIN, Biol. Centr. Am. Rhop. ii.

Ticherra, n. g., near *Cheritra*, for *Myrina acte*, Moore, NICÉVILLE, P. Z. S. 1887, p. 457 : the insect figured ; *t. c.* pl. xl, fig. 5.

Tingra tropicalis, Boisd., figs. 9 & 10, *torrida*, Kirby, figs. 7 & 8, figured ; SMITH, Rhop. ex., African *Lycænidæ*, pl. ii.

Tingra maculata, Cameroons, p. 363, *torrida*, Gaboon, p. 364 ; KIRBY, Ann. N. H. (5) xix : n. spp.

Vadebra macleari, Christmas I., BUTLER, P. Z. S. 1887, p. 522, wood-cut, n. sp.

Zephyrus pavo, India, NICÉVILLE, P. Z. S. 1887, p. 460, pl. xl, fig. 11, n. sp.

Zeritis chrysaor, Trim., pl. ix, fig. 2, *lyncurium*, figs. 3 & 3*a*, *thyra*, fig. 5, *pierus*, fig. 6, figured ; TRIMEN, S. Afr. butt. ii.

Z. æthon, p. 176, pl. 9, fig. 4, *wallengrenii*, p. 192, S. Africa, TRIMEN, S. Afr. butt. ii, n. spp.

HESPERIIDÆ.

Goniuris pilatus, Plötz., varr., pl. ii, figs. 1 & 1*a*, *eurycles*, Latr., figs. 2 & 2*a*, from Curaçao ; SNELLEN, Tijdschr. Ent. xxx, p. 27.

Ismene imperialis, Plötz, larva described and figured ; KÜHN, CB. Iris, i, p. 181, pl. vi, figs. 6, *a–e*. *I. iphis*, Dru., larva described ; KOLBE, Ent. Nachr. xiii, p. 17. *I. œdipodea*, Moore, larva described ; MOORE, Lep. Ceyl. ii, p. 533, figured pl. cexi, fig. 2.

Bibasis sena, Moore, larva figured, pl. cexi, fig. 4 ; MOORE, Lep. Ceyl. iii.

Rhopalocampta florestan, Cram., larva and pupa figured ; TRIMEN, S. Afr. butt. i, pl. ii, figs. 6 & 6*a*.

Baoris distictus, Hainan I., HOLLAND, Tr. Am. Ent. Soc. xiv, p. 123, pl. ii, fig. 4, n. sp.

Pamphila ethlius, Cr., chrysalis described; EDWARDS, Ent. Am. iii, p. 163.

P. albigutta, p. 357, pl. liv, fig. 2 & 2*a*, *albirostris*, p. 361, pl. lvi A, fig. 4 & 4*a*, Madagascar; MABILLE, Lep. Mad. i, n. spp.

Thymelicus leonina, Butl., p. 151, pl. viii, fig. 2, *pellucida*, Murray, p. 152, pl. viii, fig. 3, figured and discussed; STAUDINGER, in Rom. Mém. iii.

Syrichthus mohammed, Algeria, OBERTHUR, Bull. Soc. Ent. Fr. (6) vii, p. xlviii; *S. lutulentus*, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 401: n. spp.

Pyrgus (*Syrichthus*) *adepta*, Plötz, figured; SNELLEN, Tijdschr. Ent. xxx, pl. ii, fig. 4.

Scelothrix speyeri, Amur-land, STAUDINGER, in Rom. Mém. iii, p. 153, pl. viii, figs. 5, *a* & *b*, n. sp.

Hesperia ormenes, p. 16, pl. ii, fig. 6, and *parthenope*, Plötz, p. 17, pl. ii, fig. 8, described and figured; WEYMER, S. E. Z. xlviii. *H.* (*Pamphila*) *venata*, Brém., ♀ described and figured, p. 315, pl. xiv, fig. 5, *subhyalinea*, Brém, noticed, p. 316, *dara*, Koll., synonymy and variation, p. 318; FIXSEN, in Rom. Mém. iii.

H. curassovica, Curaçao, SNELLEN, Tijdschr. Ent. xxx, p. 28, pl. i, figs. 3 & 3*a*, n. sp.

Systole, n. g., for *Hesperia amygdalis*, Mab.; MABILLE, Lep. Mad. i, p. 330.

Hasora coulteri, Cachar, NICÉVILLE, J. A. S. B. lv, p. 378, pl. xviii, figs. 8, *a* & *b*, n. sp.

Baracus septentrionum, Cachar, NICÉVILLE, J. A. S. B. lv, p. 379, pl. xviii, figs. 4 & 4*a*, n. sp.

Astictopterus butleri redescribed, p. 380, *A. subfasciatus*, Moore, pl. xviii, figs. 1 & 1*a*, *olivascens*, Moore, figs. 2 & 2*a*, figured; NICÉVILLE, J. A. S. B. lv.

A. johnstoni, W. Africa, BUTLER, P. Z. S. 1887, p. 573, n. sp.

Satarupa phisara, Moore, figured, pl. xvii, fig. 4; NICÉVILLE, J. A. S. B. lv.

Plesioneura restricta, Moore, figured, pl. xvii, fig. 5; NICÉVILLE, J. A. S. B. lv. *P. spilothyrus*, Moore, larva figured, pl. ccxi, fig. 3; MOORE, Lep. Ceyl. iii. *P. chimæra*, habit; KÜHN (404).

P. flavocincta, India, NICÉVILLE, P. Z. S. 1887, p. 464, pl. xl, fig. 9; *P. monteithi*, Cachar, *id.* J. A. S. B. lv, p. 391, pl. xviii, figs. 3 & 3*a*: n. spp.

Trapezites paræchus, Madagascar, MABILLE, Lep. Mad. i, p. 334, pl. lii, figs. 1, 2, & 2*a*, n. sp.

Cyclopides henrici, Hainan I., HOLLAND, Tr. Am. Ent. Soc. xiv, p. 124, pl. ii, fig. 5; *C. mirza*, Madagascar, MABILLE, Lep. Mad. i, p. 342: n. spp.

Acleros, n. g., for *Cyclopides leucopyga*, Mab.; MABILLE, Lep. Mad. i, p. 347.

Parnara assamensis redescribed, p. 382, figured, pls. xviii, figs. 5 & 5*a*, & xvii, figs. 7 & 7*a*, *ornata*, Feld., pl. xviii, figs. 7 & 7*a*, *eltola*, Hew., figs. 6 & 6*a*, figured; NICÉVILLE, J. A. S. B. lv.

P. pagana, p. 465, pl. xl, fig. 7, *plebeia*, p. 466, fig. 2, Sikkim, NICÉVILLE, P. Z. S. 1887, n. spp.

Telicota augias, L., figured, pl. xvii, fig. 1 ; Nicéville, J. A. S. B. lv.

Taractrocera mævius, F., figured, pl. xvii, fig. 2 ; Nicéville, J. A. S. B. lv.

Isoteinon flavalum, Sikkim, Nicéville, P. Z. S. 1887, p. 463, pl. xl, fig. 10 ; *I. microstictum*, Cachar, *id.* J. A. S. B. lv, p. 385, pl. xvii, figs. 3 & 3*a* ; *I. indrasana*, fig. 5, *masoni*, fig. 4, Tavoy, Elwes, pl. xx, p. 441, J. A. S. B. lv : n. spp.

Pithauriopsis, n. g., for *P. aitchisoni*, n. sp., Cachar, pl. xv, fig. 4 ; Nicéville, J. A. S. B. lv.

Pithauria stramineipennis, Cachar, Nicéville, J. A. S. B. lv, p. 388, pl. xv, fig. 5, n. sp.

Tagiades nymphalis, Speyer, figured ; Staudinger, in Rom. Mém. iii, p. 153. *T. atticus*, F., pl. xvii, fig. 10, *obscurus*, Mab., fig. 9, figured ; Nicéville, J. A. S. B. lv.

T. smithii, Madagascar, Mabille, Lep. Mad. i, p. 354, pl. lvi A, figs. 3 & 3*a* ; *T. gracilentus*, New Britain, p. 14, pl. ii, fig. 7, *niphates*, Sumatra, p. 15, pl. i, fig. 5, Weymer, S. E. Z. xlviii : n. spp.

Halpe honorei, India, Nicéville, P. Z. S. 1888, p. 464, pl. xl, fig. 8, n. sp.

Pirdana rudolphii, Tavoy, Elwes, J. A. S. B. lv, p. 438, pl. xx, fig. 6, n. sp.

Zea martini, Borneo, Distant, Ann. N. H. (5) xix, p. 274, n. sp.

Atrytone kumskaka, Iowa, Scudder, Canad. Ent. xix, p. 45, n. sp.

HETEROCERA.

Catalogue of Moths of India ; Cotes & Swinhoe (144).—Pedigree moth breeding ; P. E. Soc. 1887, pp. lviii–lxii.—Points of biological interest in connection with larvæ ; Poulton (574).—Young larvæ of *Lepidoptera*, Knatz (377).

Sphingidæ.

[*Cf.* Buckler (98), Distant (164), Edwards (191, 192), Grote (279), Moore (515), Poulton (574), Smith (720), Staudinger (659, 733).

Spots of *Sphingidæ* (and other) larvæ ; White, P. E. Soc. 1887, pp. xxiv–xxvii.

Ambulyx, list of species of, geographically arranged ; Distant, Ann. N. H. (5) xx, p. 272.

A. pryeri, Borneo, Distant, Ann. N. H. (5) xx, p. 271, n. sp.

Ampelophaga rubiginosa, Brem., = (*Deilephila romanovi*, Stgr.), figured and discussed ; Staudinger, in Rom. Mém. iii, p. 158, pl. ix, figs. 1 *a* & *b*.

Diludia, G. & R., miscellaneous notes on ; Smith, Ent. Am. iii, p. 154.

D. lanuginosa, Mexico, Edwards, Ent. Am. iii, p. 89, n. sp.

Protoparce dilucida, Mexico, Edwards, Ent. Am. iii, p. 89, n. sp.

Isognathus inclitus, Mexico, Edwards, Ent. Am. iii, p. 90, n. sp.

Charocampa erotus, Cr., scent organs of ; Haase, CB. Iris, i, p. 161.

C. tersa, L., pupa described ; Edwards, Ent. Am. iii, p. 164. *C. celerio*,

elpenor, *porcellus*, larvæ figured, pls xxv & xxvi, pt.; BUCKLER, Larv. brit. ii.

C. turbata, Mexico, EDWARDS, Ent Am. iii, p. 89, n. sp.

Leiolonche, n. g.? for *Chærocampa tersa*, L.; GROTE, Hawkmoths N. America, p. 30.

Deilephila euphorbiæ, L., var. *centralasiæ*; STAUDINGER, S. E. Z. xlviii, p. 64. *D. komarovi*, Chr., = (*Chærocampa stipularis*, Swinh.); CHRISTOPH, in Rom. Mém. iii, p. 54. *D. euphorbiæ*, *galii*, *livornica*, larvæ figured, pls. xxiii, xxiv, & xxv, fig. 1; BUCKLER, Larv. brit. ii.

Dolbina, n. g., near *Dolba*, for *D. tancrei*, West Amurland, pl. xvii, fig. 8, n. sp., STAUDINGER, in Rom. Mém. iii, p. 155.

Sphingulus, n. g., p. 156, for *S. mus*, Suyfun, n. sp., p. 157, pl. xvii, fig. 9; STAUDINGER, in Rom. Mém. iii.

Sphinx cupressi, Bdv., note on; EDWARDS, Canad. Ent. xix, p. 146. *S. carolina*, L., metamorphoses, &c.; ASHMEAD, Bull. Dep. Agric. Ent. xiv, pp. 17 & 18. *Sphinx*, sp.?, larva from Celebes figured and discussed; POULTON, Tr. E. Soc. 1887, pp. 288–291, pl. x, fig. 3. *S. convolvuli*, *ligustri*, *pinastri*, larvæ figured, pl. xxii; BUCKLER, Larv. brit. ii. *S. ligustri*, spermatocysts; ST. GEORGE, Arch. mikr. Anat. xxx, p. 428, pl. xxv, fig. 6 & 7.

S. coloradus, N. America, SMITH, Ent. Am. iii, p. 153, n. sp.

Xenotrochrysalis, n. g., for *Sphinx streckeri*, Stgr. (of which *S. davidis*, Oberth., is a synonym); STAUDINGER, in Rom. Mém. iii, p. 157.

Acherontia: scent-organs of ♂; HAASE, CB. Iris, i, p. 160. *A. atropos*, larva figured, pl. xxi, fig. 1; BUCKLER, Larv. brit. ii: larva feeding on shoots of ash; HENTZ, Bull. Soc. Ent. Fr. (6) vii, p. vii: aberration described; THIELE, B. E. Z. xxxi, p. xlii.

Cressonia, note on the genus; SMITH, Soc. Ent. ii, p. 3.

C. juglandis, structure of ♂ antennæ; SMITH, Ent. Am. iii, p. 2.

Hemaris uniformis, synonymical note; GROTE, Canad. Ent. xix, p. 30. *H. diffinis*, Boisd., note on; *id. t. c.* p. 79.

Macroglossa temiri, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 401, n. sp.

Macroglossa stellatarum, larva figured, pl. xxvi, fig. 2; BUCKLER, Larv. brit.

M. ducalis, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 66, n. sp.

Smerinthus populi, notes upon the young larvæ of, and upon the red spots in Smerinthus larvæ: spotted var. of *S. populi* figured, pl. x, figs. 1 & 2; POULTON, Tr. E. Soc. 1887, pp. 281–288. *S. populi*, L., var. *populetorum*; STAUDINGER, S. E. Z. xlviii, p. 65. *S. ocellatus*, *populi*, *tiliæ*, larvæ figured, pl. xx; BUCKLER, Larv. brit. ii.

S. carstanjeni, ? *roseipennis*, Butl., var., p. 159, pl. ix, figs. 2, *a* & *b*, *christophi*, p. 162, pl. ix, fig. 3, *a* & *b*, pl. xi, fig. 1, Amur-land, STAUDINGER, in Rom. Mém. iii, n. spp.

Macrosila quinquemaculata destroyed by *Apanteles congregatus*; ALWOOD, Bull. Dep. Agric. Ent. xiii, p. 53.

Daphnis ernestina, ♀ described, p. 534, figured, pl. ccxi, fig. 1; MOORE Lep. Ceyl. iii.

Copismerinthus, n. ? subg. of *Smerinthus*; GROTE, Hawkmoths N America, p. 35.

Atreus, n. g. ?, for *Hyloicus plebeius*, F.; GROTE, Hawkmoths N. America, p. 41.

Œllopus tantalus, L., pupa described; EDWARDS, Ent. Am. iii, p. 163.

Cautethia grotei, Edw., pupa described; EDWARDS, Ent. Am. iii, p. 164.

Amphonyx antæus, Drury, pupa described; EDWARDS, Ent. Am. iii, p. 164.

Phlegethontius rusticus, Cr., pupa described; EDWARDS, Ent. Am. iii, p. 164.

Philampelus vitis, Dr., pupa described; EDWARDS, Ent. Am. iii, p. 1

Pseudosphinx tetrio, L., pupa described; EDWARDS, Ent. Am. iii, p. 165.

Anceryx edwardsii, Butl., larval stages, p. 165, *ello*, L., larval stages a. pupa, p. 166, described; EDWARDS, Ent. Am. iii.

Ellema coniferarum, Abb. & Sm., pupa described; EDWARDS, Ent. Am. iii, p. 167.

ÆGERIIDÆ.

[*Cf.* AMELANG (10), BUCKLER (98), EDWARDS (190), FIXSEN (659), MOORE, (515), STAUDINGER (659, 732, 733).]

Sesia palariformis, Led., n. var. *rubrescens*; STAUDINGER, B. E. Z. xxx, p. 29. *S. spheciformis*, biological note; AMELANG, Ent. Nachr. xiii, pp. 193–198. *S. ichneumoniformis*, habits noticed; Ent. Nachr. xiii, p. 359. *S. leucopsiformis*, Esp., habits; WAGNER, Soc. Ent. ii, p. 82. *S. fuciformis, bombyliformis*, larvæ figured, pl. xxvi, figs. 3 & 4; BUCKLER, Larv. brit. ii.

S. pechi, Algeria, STAUDINGER, B. E. Z. xxxi, p. 30; *S. mutilata*, Central Asia, *id.* S. E. Z. xlviii, p. 67; *S. velox*, Corea, FIXSEN, in Rom. Mém. iii, p. 323, pl. xv, fig. 5; *S. bicingulata*, p. 165, pl. ix, fig. 5, *deserta*, p. 166, pl. ix, fig. 6, Amur River, STAUDINGER, in Rom. Mém. iii: n. spp.

Sphecia apiformis, bembeciformis, larvæ figured, pl. xxvii, pt.; BUCKLER, Larv. brit. ii.

Bembecia pectinata, Wladiwostok, p. 167, pl. ix, fig. 4, STAUDINGER, in Rom. Mém. iii: n. spp.

Trochilium: the larvæ of British species figured; BUCKLER, Larv. brit. ii, pls. xxvii–xxix.

Ægeria flavicaudata, Ceylon, p. 559, pl. ccxi, fig. 12, MOORE, Lep. Ceyl. iii, n. sp.

Fatua palmii, Florida, EDWARDS, Canad. Ent. xix, p. 145, n. sp.

URANIIDÆ and CASTNIIDÆ.

Alcidis aruus, Feld., scent-organ of ♂; HAASE, CB. Iris, i, p. 164.

Lyssidia mutata, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 241, n. sp. n. sp.

Nyctalemon patroclus, L., larva and pupa described and figured; KÜHN, CB. Iris, i, p. 183, pl. vi, fig. 9, *a–c*.

Euscirrhopterus gloveri, Gr., life-history; POPENOE, Ent. Am. iii, p. 178.

Cocytiidæ.

Cocytia d'urvillei, scent organs of; Haase, CB. Iris, i, p. 162. *C. durvillii*, larva and pupa described and figured; Kühn, CB. Iris, i, p. 182, pl. vi, figs. 7, *a–c*.

Agaristidæ.

[*Cf.* Butler (106), Druce (179), Edwards (191).]

Baputa, Walk., referred to *Geometridæ*; Haase, CB. Iris, i, p. 178. *B. dichroa*, Kirsch, scent-organ of ♂; *id. t. c.*

Agarista, *Eusemia*, and *Burgena*, scent-organs of ♂ noticed; Haase, CB. Iris, i, p. 166.

Eusemia perdix, *pentelia*, E. Africa, Druce, P. Z. S. 1887, p. 668; *E. splendida*, p. 214, *woodfordii*, p. 215, Solomon Is., Butler, Ann. N. H. (5) xix; *E. schausii*, Mexico, Edwards, Ent. Am. iii, p. 90: n. spp.

Ophthalmis aluensis, Solomon Is., *zelleri*, Ternate, Butler, Ann. N. H. (5) xix, p. 215, n. spp.

Ctenuchidæ and Chalcosiidæ.

[*Cf.* Butler (105), Edwards (191), Graef (272).]

Ctenucha vaxitata, *scepsiformis*, Mexico, Edwards, Ent. Am. iii, p. 91, n. spp.

Lycomorpha augusta, Mexico, Edwards, Ent. Am. iii, p. 91, n. sp.

Harrisina nigrina, Texas, Graef, Ent. Am. iii, p. 41, n. sp.

Chalcosiidæ, scent-organs in several genera of, mentioned: Haase, CB. Iris, i, p. 165.

Atossa nelcymma, Moore, noticed, p. 192, and, under the name of *Chalcosia palæarctica*, figured, pl. xi, fig. 3; Staudinger, in Rom. Mém. iii.

Semioptila, n. g., near *Pedoptila*, p. 180, for *S. torta*, n. sp., Congo, p. 181, woodcut; Butler, Ann. N. H. (5) xx.

Zygænidæ.

[*Cf.* Buckler (98), Butler (106), Christoph (132), Edwards (191, 192), Graef (272), Grumm-Grshimailo (659), Röber (648), Staudinger (659, 732, 733).]

Zygæna pilosella, Esp., n. var. *diaphana*, p. 31, *favonia*, Frr., = (*cedri*, Bruand), n. var., *vitrina*, p. 32, *achilleæ*, Esp., n. var., *arragonensis*, *antiochena*, *phœnicea*, p. 34, *dorycnii*, Ochs., n. var., *senescens*, p. 36, *hilaris*, Ochs., n. var., *mauretanica*, *faustula*, p. 37, *carniolica*, Scop., varr. and abb. discussed and catalogued, pp. 39–42; Staudinger, B. E. Z. xxxi. *Z. pilosellæ*, Esp., note on varieties of; Bohr, Soc. Ent. i, p. 155. *Z. loniceræ*, E., ab. *citrina*, habits and locality; Speyer, S. E. Z. xlviii, pp. 334 & 338. *Z. sogdiana*, Ersch., var. *separata*; Staudinger, S. E. Z. xlviii, p. 74. *Z. genevensis*, larva described and figured; Millière, Ann. Soc. Ent. Fr (6) vii, pp. 216 & 217, pl. 5, figs. 4–6.

Z. thevestis, Algeria, p. 33, *lydia*, Malatia, p. 36, Staudinger, B. E. Z. xxxi; *Z. christophi*, Amur-river, *id.* in Rom. Mém. iii, p. 173, pl. viii.

fig. 9; *Z. huguenini*, p. 73, *erschoffi*, p. 76, Central Asia, *id.* S. E. Z. xlviii; *Z. kacrigini*, Central Asia, GRUMM-GRSHIMAILO, in Rom. Mém. iii, p. 402 : n. spp.

Anthrocera minos, var. *nubigena*, pl. xviii, fig. 4, *exulans*, *trifolii*, *loniceræ*, *filipendulæ*, pl. xix. larvæ figured; BUCKLER, Larv. brit. ii.

Acoloithus falsarius, habits and ravages; MURTFELDT, Bull. Dep. Agric. Ent. xiii, p. 62.

Procris statices, *globulariæ*, *geryon*, larvæ figured; BUCKLER, Larv. brit. ii, pl. xviii.

Ino cognata, Rbr., var.? *suspecta*, p. 71, *subsolana*, Stgr., var.? *solana*, p. 72, *budensis* var. *asiatica*, p. 73; STAUDINGER, S. E. Z. xlviii.

I. splendens, *subtristis*, p. 68, *dolosa*, p. 69, *amaura*, p. 70, *ambigua*, p. 71, *incerta* (*globulariæ*, var.?), p. 72, Central Asia, STAUDINGER, S. E. Z. xlviii; *I. paupera*, Tekke, CHRISTOPH, *t. c.* p. 162 : n. spp.

Northia is a subg. of *Ino*; *N. tenuis*, Butl., var., = (*Ino khasiana*, Moore), figured and discussed; STAUDINGER, in Rom. Mém. iii, p. 168, pl. viii, fig. 8.

N. (*Ino*) *hyalina*, Wladiwostok, STAUDINGER, in Rom. Mém. iii, p. 169, pl. viii, fig. 7, n. sp.

Inope, n. g., between *Ino* and *Aglaope*, for *I. heterogyna*, n. sp., Wladiwostok; STAUDINGER, in Rom. Mém. iii, p. 170.

Aglaino, n. g., for *A. maerens* (sic), n. sp., N. China and Amur; STAUDINGER, in Rom. Mém. iii, p. 171.

Amuria, n. g., near *Ino* and *Artona*, for *A. cyclops*, Wladiwostok, pl. viii, fig. 6; STAUDINGER, in Rom. Mém. iii, p. 172.

Hyalythea, n. g., for *H. woodfordii*, n. sp., Solomon Is.; BUTLER, Ann. N. H. (5) xix, p. 216.

Euchromia gemmata, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 216, n. sp.

Glaucopis polymena, larva and pupa described and figured; KÜKN, CB. Iris, i, p. 182, pl. vi, figs. 7*a–g*. *G. polymena*, var *butleri*; RÖBER, *t. c.* p. 202.

G. pagenstecheri, pl. vii, fig. 10, *dubia*, fig. 12, Ceram, p. 201, *paula*, Celebes, fig. 11, p. 202, RÖBER, CB. Iris, i, n. spp.

Triprocris basalis, Mexico, EDWARDS, Ent. Am. iii, p. 91, n. sp.

Alypia gracilenta, Texas, GRAEF, Ent. Am. iii, p. 41, n. sp.

Lycomorpha, *cf. Ctenuchidæ*.

Scepsis, *cf. Lithosiidæ*.

PERICOPIDÆ and EUSCHEMIDÆ.

[*Cf.* BUTLER (107).]

Celerena chrysauge, Feld., scent-organ of ♂; HAASE, CB. Iris, i, p. 177.

Euschema: MOORE figures, pl. clxxxix, *transversa*, fig. 3, larva, fig. 3*a*, *prunicolor*, fig. 2, *bellissima*, figs. 1 & 1*a*, larva, 1*b*; Lep. Ceyl. iii.

E. pilosa, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 240, n. sp.

Ctimene excellens, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 241, n. sp.

Cusuma vilis fig. 4, *limbata*, fig. 5, figured, pl. 189; MOORE, Lep. Ceyl. iii.

ARCTIIDÆ.

[*Cf.* BUTLER (106), DONITZ (175), DRUCE (179), EDWARDS (191, 192), FIXSEN (659), GRAEF (272), LYMAN (454), MOORE (515), PHILIPPI (562), SMITH (713, 714, 715, 716, 717, 719), STAUDINGER (659, 733).]

The classification of this and other families discussed, under the heading "*Bombycidæ*"; GROTE (281).

Crocota diminutiva, *opelloides*, *intermedia*, Texas, GRAEF, Ent. Am iii, p. 42, n. spp.

Euchætes immaculata, Florida, *murina*, p. 42, *scepsiformis*, Texas, p. 43, GRAEF, Ent. Am. iii, n. spp.

Hypercompa histrio, Walk., noticed and figured; FIXSEN, in Rom. Mém. iii, p. 333, pl. xv, fig. 3.

Callimorpha: the N. American species described and figured; LYMAN (454). The N. American species revised; SMITH, P. U. S. Nat. Mus. x.

C. lactata, Texas, p. 345, *suffusa*, N. America, p. 347, SMITH, P. U. S. Nat. Mus. x; *C. lactata*, *suffusa* = (*reversa*, Stretch), N. America, *id.* Ent. Am. iii, p. 25; *C. confusa*, N. America, LYMAN, Canad. Ent. xix, p. 185, pl., figs. 7–9: n. spp.

Phragmatobia rubricosa, Harr., larval stage; EDWARDS, Ent. Am. iii, p. 168. *P. fuliginosa*, spermatocysts; ST. GEORGE, Arch. mikr. Anat. xx, p. 428, pl. xxv, figs. 8 & 9.

Axiopœna maura, Eichw., = (*fluviatilis*, Swinh.); CHRISTOPH, in Rom. Mém. iii, p. 55.

Ocnogyna diva, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 84, n. sp.

Arctia: variation and synonymy of the N. American species discussed; SMITH, Ent. Am. iii, pp. 109–112. *A. purpurata*, L., var. from Corea described; FIXSEN, in Rom. Mém. iii, pp. 334. *A. spectabilis*, var. *annellata*, described, p. 55, figured, pl. iii, fig. 2; CHRISTOPH, in Rom. Mém. iii. *A. caja*, aberration described; HANELD, B. E. Z. xxxi, p. 42. *A. mendica*, variation in Ireland; P. E. Soc. 1887, pp. xii & 1; also HUTCHINSON, Ent. M. M. xxiii, p. 187. *A. maculosa*, var. *reticulata*; CHRISTOPH, S. E. Z. xlviii, p. 163. *A. saundersii*, synonymical note; GROTE, Canad. Ent. xix, p. 31. *A. hebe*, L., on rearing varieties of; BERGMANN, Soc. Ent. i, p. 165. *A. hebe* var. *sartha*, *erschoffi* var. *ferghana*; STAUDINGER, S. E. Z. xlviii, p. 82. *A. flavia*, on rearing its larva: RUHL, Soc. Ent. ii, p. 10. *A. zatima*, on rearing of; KRANCHER, Soc. Ent. ii, pp. 26–28.

A. pretiosa, Amur-river, STAUDINGER, in Rom. Mém. iii, p. 192, pl. xi, fig. 4; *A. tancrei*, Central Asia, *id.* S. E. Z. xlviii, p. 81: n. spp.

Euarctia, n. g., p. 79, for *E. proserpina*, n. sp., Central Asia, p. 80, STAUDINGER, S. E. Z. xlviii.

Nemeophila russula, var. *mortua*; STAUDINGER, S. E. Z. xlviii, p. 78.

Spilosoma virginica, melanic var.; DRUCE, Ent. Am. iii, p. 140.

S. nigroflava Texas, GRAEF, Ent. Am. iii, p. 43; *S. puella*, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 85: n. spp.

Spilarctia imparilis, Butl., ♀ described; FIXSEN, in Rom. Mém. iii, p. 334.

Hyphantria cunea, Drury, broods, eggs, pl. x, fig. 3*a*; larvæ, pl. x, figs. 2, &c.; pupa, cocoon, pl. x, figs. 2*d* & 2*e*; perfect insect, figs. 1*a–j* & 2*f*;

injuries to plants and trees, enemies, fungus-disease, parasites, primary and secondary, &c.: RILEY, Rep. 1886, pp. 518–539, pls. x & xi.

Euerythra: characters of the genus; SMITH, P. U. S. Nat. Mus. x, p. 335, pl. xiii.

E. trimaculata, Texas, SMITH, P. U. S. Nat. Mus. p. 336, and *Ent. Am.* iii, p. 17, n. sp.

Pelochyta fennia, lupia, Trop. Africa, DRUCE, P. Z. S. 1887, p. 669, n. spp.

Anace herona, p. 669, *A.? herpa*, p. 670, pl. lv, fig. 12, W. Africa, DRUCE, P. Z. S. 1887, n. spp.

Areas moloneyi, W. Africa, DRUCE, P. Z. S. 1887, p. 670, pl. lv, fig. 4; *A. semirosea*, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 217: n. spp.

Attatha regalis, figured, pl. ccxii, fig. 4; MOORE, Lep. Ceyl. iii.

Euhalisidota lurida, Mexico, EDWARDS, Ent. Am. iii, p. 91, n. sp.

Cerathosia, n. g., for *C. tricolor*, n. sp., Texas; SMITH, Ent. Am. iii, p. 79.

Dionychopus niveus, Men., stridulation; DÖNITZ, B. E. Z. xxxi, pp. 9 & 10, woodcuts.

Laora latior, Butl., varietal and descriptive notice; PHILIPPI (562), p. 4.

L. variabilis, Chili, PHILIPPI, (562) p. 3, pl., fig. 2, n. sp.

Euphanessa mendica, Walk., note on its systematic position; Ent. Am. ii, p. 221, and HULST, *op. cit.* iii, p. 176.

LITHOSIIDÆ.

[*Cf.* BUTLER (106), DRUCE (179), HAASE (228), MOORE (515), PACKARD (549), SNELLEN (724), STAUDINGER (659, 733).]

Euphanessa, cf. Arctiidæ.

Cydosia nobilitata, Cr. = (*Prays? hilarella*, Snell.); SNELLEN, Tijdschr. Ent. xxx, p. 65.

Deiopeia pulchella, L., variation in Achal-Tekke; CHRISTOPH, in Rom. Mém. iii, p. 55: occurrence in New Zealand; HUDSON, Tr. N. Z. Inst. xix, p. 201.

Aemene taeniata, Corea, FIXSEN, in Rom. Mém. iii, p. 327, pl. xv, fig. 6, n. sp.

Aganais, Boisd., scent-organ in ♂ species of; HAASE, CB. Iris, i, pp. 166 & 167.

Bizone, Walk., scent-organ of ♂; HAASE, CB. Iris, i, p. 168.

B. adelina, Wladiwostok, STAUDINGER, in Rom. Mém. iii, p. 191, pl. x, fig. 14, n. sp.

Argina cribraria, scent-organ of ♂; HAASE, CB. Iris, i, p. 168.

Caryatis hersilia, W. Africa, DRUCE, P. Z. S. 1887, p. 670, n. sp.

Sphragidium, n. g., for *S. miles*, n. sp., Solomon Is.; BUTLER, Ann. N. H. (5) xix, p. 218.

Miltochrista flavida, avernalis, Solomon Is.; BUTLER, Ann. N. H. (5) xix, p. 219, n. spp.

Katha fraterna, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 220, n. sp.

Halisidota rhodogaster, Curaçao, SNELLEN, Tijdschr. Ent. xxx, p. 31, pl. iii, figs. 1 & 1*a*, n. sp.

Lithosia complana and *L. luridcola*, on the true distinction between; BUTLER, Ent. M. M. xxiv, pp. 106 & 107. *L. formosa*, Montr., noticed; *id.* Ann. N. H. (5) xix, p. 215.

L. rubropicta, N. America, PACKARD, Ent. Am. iii, p. 52; *L. cribrata*, p. 189, pl. x, fig. 11, *debilis*, p. 190, pl. x, fig. 12, Amur-river, STAUDINGER, in Rom. Mém. iii; *L.* (*Paidina*) *ramosula*, Amur-river, *id. t. c.* p. 184, p. x, fig. 13 : n. spp.

Paidina, n. n. proposed for what may be only *Lithosia*, or a subgenus, or a new genus, including *Lithosia muscerda*, &c.; STAUDINGER, in Rom. Mém. iii, p. 184.

Paida angusta, p. 182, pl. x, fig. 7, *obtrita*, p. 183, pl. x, fig. 8, Amur-river, STAUDINGER, in Rom. Mém. iii, n. spp.

Nudaria muscula, p. 185, pl. x, fig. 9, *a* & *b*, *nubilosa*, p. 186, pl. x, fig. 10, Amur-river, STAUDINGER, in Rom. Mém. iii, n. sp.

Calligenia pulchra, Butl., n. var., *pulcherrima*, STAUDINGER, in Rom. Mém. iii, p. 187.

C. lutea, Ussuri, STAUDINGER, in Rom. Mém. iii, p. 188, n. sp.

Padenia trifasciata, female described p. 534, figured pl. ccxi, fig. 14; MOORE, Lep. Ceyl. iii.

Diduga, n. g., for *D. costata*, n. sp., Ceylon, p. 535, pl. ccxi, figs. 8 & 9: MOORE, Lep. Ceyl. iii.

Narosodes, n. g., p. 535, for *Tespitis punctana*, Walk., the insect figured, pl. ccxi, fig. 7; MOORE, Lep. Ceyl. iii.

Homopsyche nympha, Ceylon, p. 536, pl. ccxi, fig. 11, MOORE, Lep. Ceyl. iii, n. sp.

Hemonia orliferana, Walk., figured, pl. ccxi, fig. 6; MOORE, Lep. Ceyl. iii.

Repa cana, Walk., = (*Clemensia albata*, Packd.); BUTLER, Ent. Am. iii, p. 120.

Scepsis edwardsii, Grote, larva described; EDWARDS, Ent. Am. iii, p. 167.

Hazis cyane, Cr., scent-organ of ♂; HAASE, CB. Iris, i, p. 177.

Nola minuscula, Z., = (*fuscula*, Gr.); BUTLER, Ent. Am. iii, p. 120.

Nola turanica, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 77; *N. leodura*, p. 178, pl. x, fig. 2, *costalis*, p. 179, pl. x, fig. 3, *strigulosa*, p. 180, pl. x, fig. 4, *bryophilalis*, p. 181, pl. x, fig. 5, *costimacula*, p. 182, pl. x, fig. 6, Amur-river, *maculata*, Amasia, p. 180, STAUDINGER, in Rom. Mém. iii : n. spp.

HYPSIDÆ.

[*Cf.* BUTLER (106).]

Hypsa semifusca, *diana*, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 220, n. spp.

Cleis nigrescens, *biplagiata*, p. 221, *hypoleuca*, p. 222, Solomon Is., BUTLER, Ann. N. H. (5) xix, n. spp.

Nycteolidæ and Nyctemeridæ.

[*Cf.* Butler (106), Druce (179), Moore (515), Staudinger (659).]

Earias chromataria, fig. 5, *speiplena*, Walk., fig. 6, figured, pl. ccviii, in Moore, Lep. Ceyl. iii.

E. sulphuraria, Ceylon, p. 490, pl. ccviii, fig. 10, Moore, Lep. Ceyl. iii; *E. pudicana*, p. 174, pl. viii, fig. 10, *pupillana*, *ochroleucana*, pl. viii, fig. 11, p. 176, Amur-river, Staudinger, in Rom. Mém. iii : n. spp.

Chloeophora celsiana, Amur-river, Staudinger, in Rom. Mém. iii, p. 177, pl. x, fig. 1, n. sp.

Nycthemera, Hb., scent-organ of ♂ ; Haase, CB. Iris, i, p. 166.

N. aluensis, Solomon Is., Butler, Ann. N. H. (5) xix, p. 222, n. sp.

Aletis cunaxa, W. Africa, Druce, P. Z. S. 1887, p. 671, pl. lv, fig. 9, n. sp.

Terina niphanda, *eurynassa*, Trop. Africa, Druce, P. Z. S. 188., p. 671, n. spp.

Secusio mania, E. Africa, Druce, P. Z. S. 1887, p. 672, n. sp.

Girpa octogesa, W. Africa, Druce, P. Z. S. 1887, p. 672, pl. lv, fig. 1, n. sp.

Hylemera dexithea, *neæra*, W. Africa, Druce, P. Z. S. 1887, p. 672, n. spp.

Leptosoma sexmaculatum, Solomon Is., Butler, Ann. N. H. (5) xi.., p. 222, n. sp.

Pitasila disrupta, Solomon Is., Butler, Ann. N. H. (5) xix, p. 223, n. sp.

Callidulidæ.

[*Cf.* Pagenstecher (551).]

Callidulidæ, grouping of; Ent. Nachr. xiii, p. 359.

Tyndaris latifica, scent-organs of ♂ ; Haase, CB. Iris, i, p. 163.

Agonis lycænoides, Feld.; scent-organ of ♂ ; Haase, CB. Iris, i, p. 164.

Damias lata, Batchian, p. 223, pl. i, fig. 3, *clavata*, Ceram, p. 229, pl. i, fig. 12, Pagenstecher, JB. nass. Ver. xl, n. spp.

Callidula batjanensis, p. 231, pl. ii, fig. 20, *sumatrensis*, fig. 17, *celebensis*, fig. 19, *niasica*, fig. 18, and pl. iii, fig. 5, p. 232, described as "forms"; Pagenstecher, JB. nass. Ver. xl.

C. luzonica, pl. ii, fig. 15, p. 233, *similis*, fig. 16, and p. 234, *mindanensis*, fig. 14, and p. 325, Philippines, Pagenstecher, JB. nass. Ver. xl, n. spp.

Datanga flavovittata = (*Callidula flavovittata*, Moore, *in lit.*, and *C. erycinoides*, Walk.), without locality, Pagenstecher, JB. nass. Ver. xl, p. 237, pl. ii, fig. 21, n. sp.

Pterodecta anchora (*Callidula anchora*, Moore, *in lit.*), N. India, Pagenstecher, JB. nass. Ver. xl, p. 238, pl. ii, fig. 24, n. sp.

Liparidæ.

[*Cf.* Baker (29), Butler (106), Christoph (659), Druce (179), Moore (515), Poulton (574), Staudinger (659, 733).]

Eversible glands in larvæ general in the family; POULTON, Tr. E. Soc. 1887, p. 300.

Liparis monacha, ravages of in Thuringia; FÖRSTER, Soc. Ent. ii, p. 74. *L. dispar*, hermaphrodite described; GOOSSENS, Bull. Soc. Ent. Fr. (6) vii, p. clxvi: hermaphrodites; BELLIER, *t. c.* pp. clxxxii & clxxxiii. *L. auriflua*, eversible glands of larvæ; POULTON, Tr. E. Soc. 1887, p. 299.

Ocneria dispar, aberration noticed; THIELE, B. E. Z. xxxi, p. xlii.

O. grisescens (but? the same sp. as *albescens*, Moore), Askold I, STAUDINGER, in Rom. Mém. iii, p. 209, pl. xii, fig. 4, n. sp.

Dasychira rossii, Curt., note on; AURIVILLIUS, Veg. exp. Vet. iv, p. 78, pl. i, fig. 2. *D. fascelina*, var. *nivalis*; STAUDINGER, S. E. Z. xlviii, p. 97. *D. pudica*, ♀ figured; MOORE, Lep. Ceyl. iii, pl. cexi, fig. 5. *D. aceronycta*, Oberth., is probably two species; STAUDINGER, in Rom. Mém. iii, p. 203. *D. pudibunda*, ravages of on the I. of Rügen; RÜHL, Soc. Ent. ii, pp. 30, &c.

D. solitaria, p. 202, pl. xii, fig. 1, *pudica*, p. 204, *amata*, p. 206, pl. xii, fig. 2, Amur-river and Askold I., STAUDINGER, in Rom. Mém. iii; *D. cangia*, p. 674, *D.? remota*, p. 675, Trop. Africa, DRUCE, P. Z. S. 1887; *D.* (*Dasorgyia*) *selenophora*, STAUDINGER, S. E. Z. xlviii, p. 96: n. spp.

Orgyia antiqua, peculiarities of its moulting; CHAPMAN, Ent. M. M. xxiii, pp. 224–227, and RILEY, p. 274: its double broodedness queried; CHAPMAN, Ent. M. M. xxiv, p. 114. *O. nova*, Fitch, early stages of; EDWARDS, Ent. Am. iii, p. 146.

O. prisca (*corsica* var.?), Central Asia, STAUDINGER, S. E. Z. xlviii, p. 95; *O. amabilis*, Achal-Tekke, CHRISTOPH, in Rom. Mém. iii, p. 60, pl. iii, fig. 8: n. spp.

Parorgyia clintonii, notes on; GROTE, Canad. Ent. xix, pp. 55 & 113. *P. parallela*, Grote, metamorphoses and variations; SEIFERT, Ent. Am. iii, pp. 93–96.

Numenes disparilis, Wladiwostok and Amur-river; STAUDINGER, in Rom. Mém. iii, p. 200, pl. xi, figs. 2 *a* & *b*: n. sp.

Pseudomesa quadriplagiata, Walk., referred to *Numenes*, Moore; STAUDINGER, in Rom. Mém. iii, p. 200.

Porthesia subnobilis, Snellen, = (*Artaxia simulans*, Butl.); SNELLEN, Tijdschr. Ent. xxx, p. 87.

P. snelleni, p. 207, pl. xii, fig. 3, *raddei*, p. 207 (and FIXS., p. 343), pl. xiii, fig. 3, Amur-river, STAUDINGER, in Rom. Mém. iii, p. 207, n. spp.

Panthea cœnobita, note on; PABST, CB. Iris, i, pp. 115–118: metamorphoses; *id.* Insekten-Welt. iv, p. 41.

Carama, figs. of heads of several species, pl. vi; BAKER, Tr. E. Soc. 1887.

C. butleri, Corrientes, BAKER, Tr. E. Soc. 1887, p. 133, pl. vi, figs. 1–3, n. sp.

Artaxa inepta, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 223, n. sp.

Aloa cometaris, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 223, n. sp.

Cypra nyses, W. Africa, DRUCE, P. Z. S. 1887, p. 673, n. sp.

Anaphe carteri, Walsm., ♀ described; DRUCE, P. Z. S. 1887, p. 674.

A. moloneyi, W. Africa, DRUCE, P. Z. S. 1887, p. 673, pl. lv, fig. 5, n. sp.

Chœrotriche orestes, W. Africa, DRUCE, P. Z. S. 1887, p. 674, n. sp.

Psychidæ.

[*Cf.* Druce (179, 263), Heylaerts (309, 310), Packard (549).]

Psyche : two spp. ? noticed ; Hubbard, Ins. Orange, pp. 148 & 149, fig. 68. *P. helicinella*, H.-S., descriptive note ; Heylaerts, Tijdschr. Ent. xxx, p. 3, pl. x, figs. 1-3. *P. opacella*, H.-S., p. 13, *viciella*, S. V., p. 29, *hirsutella*, Hb., p. 53, *muscella*, S. V., p. 60, *unicolor*, Hfn., p. 69, habits and description ; Rühl, Soc. Ent. ii. *P. atra*, copula, &c., noticed ; Calberla, CB. Iris, p. 152. *P. unicolor* var. *asiatica* ; Staudinger, S. E. Z. xlviij, p. 94. *P. confederata*, Grote, larva and pupa described ; Edwards, Ent. Am. iii, p. 168.

P. carbonaria, Texas, Packard, Ent. Am. iii, p. 51, n. sp.

Acanthopsyche (*Amicta*) *grummi*, Central Asia, Heylaerts, C.R. ent. Belg. 1887, p. lxxxv, n. sp.

Animula sumatrensis, Sumatra, Heylaerts, C.R. ent. Belg. 1887, p. lxxxvi, n. sp.

Oiketicus abbotii, Grote, habits, formation of sac, &c. ; Hubbard, Ins. Orange, pp. 144–147, pl. xii, fig. 2.

O. riemsdyki, Sumatra, Heylaerts, C.R. ent. Belg. 1887, p. lxxxvi, n. sp.

Pentophora morio, L., n. var. *caucasica* ; Heylaerts, C.R. ent. Belg. 1887, p. lxxxviii.

Platæceticus gloverii, note on characters of ; Packard, Ent. Am. iii, p. 51. *P. cassiæ*, Weyenb., redescribed ; Heylaerts, C.R. ent. Belg. 1887, p. viii.

Apterona, = (*Cochliophanes*, Stgr.), the characters and position of the genus ; *A. crenulella* and var. *helix*, V. Sieb., noticed ; Heylaerts, Tijdschr. Ent. xxx, pp. 5 & 6, pl. x, figs. 4–9.

Cochliophanes helix, Sieb., habits, &c. ; Rühl, Soc. Ent. i, p. 182.

Aprata thwaitesii, note on, with fig. of case, pl. x, fig. 10 ; Heylaerts, Tijdschr. Ent. xxx, p. 6.

Cochlophora valvata, Gerst., case of ; Heylaerts, Tijdschr. Ent. xxx, p. 7, pl. x, figs. 11 & 12.

Diabasis helicinoides, Heyl., note on the genus and species ; Heylaerts, Tijdschr. Ent. xxx, p. 7, pl. x, figs. 13 & 14.

Epichnopteryx reticella, Newm., ♀ and case; Heylaerts, Tijdschr. Ent. xxx, pl. x, figs. 15–18.

Eumeta cervina, W. Africa, Druce, P. Z. S. 1887, p. 684, n. sp.

Fumea intermediella, Bruand, habits noticed ; Rühl, Soc. Ent i, p. 171.

Thyridopteryx ephemeriformis, note on; Thomson, P. Z S. 1887, p. 53. Riley's figs. of ♂ genitalia reproduced ; Hubbard, Ins. Orange, p. 214, fig. 95 : foodplants of ; Beutemmueller, Ent. Am. iii, pp. 157–159.

Typhonia (?) *naxa*, Guatemala, p. 229, Druce, Biol. Centr. Am. Heter. i, n. sp.

Notodontidæ.

[*Cf.* Buckler (98), Druce (179, 263), Edwards (191, 192), Fixsen (659), Staudinger (659, 733).]

Stauropus fagi, ein Beitrag zur Naturgeschichte des, Z. Ent. Bresl. xii,

p. 65 : food-plants of, Millière, Nat. Sicil. vi, p. 127 : eggs laid in pupa, &c. ; Thiele, B. E. Z. xxxi, p. xliii : larva figured, pl. xxxiii, fig. 1 ; Buckler, Larv. brit. ii.

Harpyia fagi, rearing of larva; Poujade, Bull. Soc. Ent. Fr. (6) vii, p. clxiv.

Dicranura vinula, its defensive structures, eversible gland described and figured, pl. x, fig. 7 ; the flagellum figured, fig. 8 ; its minute structure, fig. 9 ; the larva figured in its terrifying attitude, fig. 6 : Poulton, Tr. E. Soc. 1887, pp. 295–297, and *cf.* P. E. Soc. 1887, pp. xix & xx : formic acid obtained from larva of ; *id. t. c.* p. xxxvi.

Cerura bicuspis, furcula, bifida, vinula, larvæ figured, pl. xxxii ; Buckler, Larv. brit. ii.

Harpyia bicuspis, Hb., var.? *infumata*, described ; Staudinger, in Rom. Mém. iii, p. 214, but is *H. lanigera*, Butl. ; Fixsen, *op. cit.* p. 350.

Notodonta tremula, Cl., and *dictæoides*, Esp., distinctions of ; Salen, Soc. Ent. i, p. 180. *N. dromedarius, tritophus, ziczac*, figured, pl. xxxiii, figs. 2–4 ; Buckler, Larv. brit. ii. *N. trimacula*, Esp., var. *dodonides* ; Staudinger, in Rom. Mém. iii, p. 220.

N. (*Urodonta*, n. subg., p. 219) *albimacula*, Wladiwostok, p. 217, pl. xii, figs. 7*a*, *b*, *N.* (*Lophocosma*) *atriplaga*, Wladiwostok and Askold I., *N.* (*Allodonta*) *grotis*, Askold I., p. 223, pl. xiii, fig. 7, Staudinger, in Rom. Mém. iii, n. spp.

Allodonta "neuen (Unter-) Gattung" of *Notodonta* ; Staudinger, in Rom. Mém. iii, p. 224.

Lophocosma, n. g. (but treated as subg. of *Notodonta*) ; Staudinger, in Rom. Mém. iii, p. 222.

Cnethodonta, n. g., p. 215, for *C. grisescens*, Wladiwostok, n. sp. (of which *Dasychira acronycta*, ♀, Oberth., is probably ♀), p. 214, pl. xii, fig. 11 ; Staudinger, in Rom. Mém. iii.

Pygæra anachoreta var. *pallida*, p. 101, *pigra* var. *obscurior*, p. 102 ; Staudinger, S. E. Z. xlviii. *P. anastomosis*, L., var. *orientalis*, described ; Fixsen, Rom. Mém. iii, p. 350.

Pygopteryx, n. g., near *Pygæra*, for *P. suava*, Wladiwostok, n. sp., pl. xiii, fig. 4 ; Staudinger, in Rom. Mém. iii, p. 230.

Lophopteryx camelina, cucullina, carmelita, larvæ figured, pl. xxxv, figs. 3–5 ; Buckler, Larv. brit. ii.

L. admirabilis, Askold I., Staudinger, in Rom. Mém. iii, p. 224, pl. xii, fig. 9, n. sp.

Odontosia (*Lophopteryx*) *cuculus*, Amur-river ; Staudinger, in Rom. Mém. iii, p. 226, pl. xiii, fig. 5.

Heterocampa unicolor, Pack., larva described ; Edwards, Ent. Am. iii, p. 168.

H. dardania, Mexico, pl. xxv, fig. 4, *sylla*, Panama, fig. 5, *manethusa*, Costa Rica, fig. 6, p. 237, *lupia, alector*, fig. 7, Mexico, *punctata*, Guatemala, Panama, p. 238, Druce, Biol. Centr. Am. Heter. i, n. spp.

Pterostoma palpina, larva figured, pl. xxxiv, fig. 1 ; Buckler, Larv. brit. ii. *Ptilodontis palpina* captured at sugar ; Klein, Ent. M. M. xxiii, p. 234.

Ptilophora, larva, varieties ; SMITH, Ent. xx, pp. 91–93. *P. plumigera*, larva figured, pl. xxxiv, fig. 2 ; BUCKLER, Larv. brit. ii.

Drymonia chaonia, dodonæa, larvæ figured, pl. xxxiv, figs. 3 & 4 ; BUCKLER, Larv. brit. ii.

Microdonta bicolora, larva figured, pl. xxxiv, fig. 5 ; BUCKLER, Larv. brit. ii.

Gluphisia crenata, larva figured, pl. xxxiv, fig. 6 ; BUCKLER, Larv. brit. ii.

Leiocampa dictæa, dictæoides, larvæ figured, pl. xxxv, figs. 1 & 2 ; BUCKLER, Larv. brit. ii.

Datana perspicua, G. & R., egg and larval stages described ; EDWARDS, Ent. Am. iii, p. 170.

Hyparpax aurora, Abb., Sm., larval stages ; EDWARDS, Ent. Am. iii, p. 169.

Antheura carteri, W. Africa, Druce, P. Z. S. 1887, p. 685, n. sp.

Gonodonta primulina, Guatemala, p. 255, pl. xxv, fig. 15, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Comidava albulana, Mexico, p. 252, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Rhuda splendens, Panama, p. 247, pl. xxv, fig. 13, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Salamboria, Walk., merged in *Hemiceras* ; DRUCE, Biol. Centr. Am. Heter. i, p. 250.

Hemiceras mora, Mexico, p. 251, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Œdemasia concinna, food-plants of ; BEUTENMULLER, Ent. Am. iii, p. 157.

Œ. seriata, Mexico, Panama, p. 235, pl. xxv, fig. 1, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Edema mandela, Mexico, p. 235, pl. xxv, fig. 3, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Lochmæus albosigma, Guatemala, p. 236, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Symmerista pinna, p. 239, pl. xxv, fig. 9, *lineata*, fig. 11, p. 240, Panama, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Rosema æthra, Guatemala, p. 241, pl. xxv, fig. 12, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Phya, n. n. for *Janassa*, Walk. ; DRUCE, Biol. Centr. Am. Heter. i, p. 242.

Hapigia ribbei, Panama, p. 244, pl. xxv, fig. 8, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Lirimiris albo-lineata, Panama, p. 245, pl. xxv, fig. 10, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Crinodes guatemalena, Guatemala, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Ophitis cyllota, Panama, p. 247, pl. xxv, fig. 14, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Icthyura strigosa, Grote, metamorphoses ; PACKARD, Bull. Dep. Agric. Ent. xiii, p. 30.

Apatelodes diffidens, Mexico, EDWARDS, Ent. Am. iii, p. 92 ; *A. ardeola*, Panama and Amazons, pl. xxii, fig. 9, *adrastia*, Mexico to Panama, fig. 8, p. 208, *heptaloba*, Guatemala, p. 209, fig. 10, DRUCE, Biol. Centr. Am. Heter. i : n. spp.

Hemicropteryx, n. g., connecting *Notodontidæ* with *Geometridæ*, for *H. miraculosa*, Amur-river ; STAUDINGER, in Rom. Mém. iii, p. 228, pl. xii, fig. 10.

LIMACODIDÆ.

[*Cf.* DRUCE (179, 263), EDWARDS (190), FIXSEN (659), MOORE (515), PACKARD (549), PEARSALL (559), STAUDINGER (659).]

Parasa fraterna, Gr., larva described ; EDWARDS, Ent. Am. iii, p. 169.

P. urda, W. Africa, DRUCE, P. Z. S. 1887, p. 681, pl. lv, fig. 7; *P. laranda*, Guatemala, pl. xxiii, figs. 1 & 2, *imitata*, Costa Rica, Panama, figs. 3 & 4, *laonome*, Panama, fig. 5, p. 215, *id.* Biol. Centr. Am. Heter. i : n. spp.

Euclea elliotii, N. America, PEARSALL, Ent. Am. ii, p. 209 ; *E. urba*, Costa Rica, pl. xxiii, fig. 6, *determinata*, Guatemala, *zygia*, Guatemala to Panama, fig. 7, p. 216, DRUCE, Biol. Centr. Am. Heter. i : n. spp.

Vipsania, n. g., for *V. anticlea*, Mexico, Guatemala, n. sp., pl. xxiii, figs. 8 & 9, p. 217 ; DRUCE, Biol. Centr. Am. Heter. i.

Eupalia, Walk., = (*Neomiresa*, Butl.), p. 217, *E. trimacula*, Sepp., note on, p. 218 ; DRUCE, Biol. Centr. Am. Heter. i.

E. argentea, Mexico, Panama, p. 218, pl. xxiii, fig. 10, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Perola daona, Costa Rica, pl. xxiii, fig. 11, *dora*, fig. 12, *caria*, fig. 13, *clæa*, fig. 14, Panama, *ceres*, fig. 15, Mexico, p. 219, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Semyra diversa, Guatemala, Panama, pl. xxiii, fig. 16, *S.* (?) *diana* Panama, fig. 17, p. 220, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Zanola harpis, Mexico, p. 222, pl. xxiii, fig. 18, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Tarchon felderi, Panama, p. 222, pl. xxiii, figs. 19 & 20, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Rhamnosa, n. g., for *R.* (?) *angulata*, n. sp., Corea, p. 339, figured, pl. xv, fig. 1, as *Ramesa angulata* ; FIXSEN, in Rom. Mém. iii.

Heterogenea (*Miresa*, *Limacodes*?) (sic) *conjuncta*, Walk., noticed and figured; FIXSEN, in Rom. Mém. iii, p. 338, pl. xv, fig. 1.

Heterogenea (*Miresa*) *flavidorsalis*, p. 195, pl. xi, fig. 7, and var. *fuscicostalis*, Fixs., p. 337, pl. xv, fig. 10; *H. nobilis*, p. 196, pl. xi, fig. 8, *uncula*, pl. xi, fig. 9, and *hilarula*, p. 197, Wladiwostok, *hilarata*, Amur-river, p. 198, *princeps*, Ussuri, p. 199, and Fixs., *op. cod.* p. 341, pl. xv, fig. 7, STAUDINGER, in Rom. Mém. iii.

Limacodes-beutenmuelleri, Florida, EDWARDS, Canad. Ent. xix, p. 146, n. sp.

[illegible] cinerata, G. & R., larva described; HULST, Ent. Am. iii, p. 66.

B. habitus, Me[illegible]*uncta*, Natal, DRUCE, P. Z. S. 1887, p. 682, pl. lv, fig. 2,

Crateronyx taraxaci, re[illegible]

dumi, L., note on habits; .

Cosuma polana, E. Africa, DRUCE, P. Z. S. 1887, p. 682, pl. lv. fig. 8, n. sp.

Miresa hilda, W. Africa, DRUCE, P. Z. S. 1887, p. 682, n. sp.

Natada julia, p. 682, *undina*, *elsa*, p. 683, W. Africa, DRUCE, P. Z. S. 1887, n. spp.

Alpis alydda, p. 210, pl. xxii, fig. 13, *salacia*, fig. 14, p. 211, Costa Rica, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Sibine norba, Panama, p. 211, pl. xxii, fig. 15, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Echedorus nanus, Mexico, p. 212, pl. xxii, fig. 16, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Dalcera alba, Mexico, Guatemala, *mesoa*, Panama, p. 213, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Lagoa opercularis, Sm. & Abb., metamorphoses ; HUBBARD, Ins. Orange, pp. 140 & 141, figs. 57–59. *L. crispata*, Pack., food-plants of ; BEUTENMULLER, Ent. Am. iii, p. 180.

L. ornata, *affinis*, *ravida*, pl. xxii, fig. 17, p. 214, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Nagoda, n. g., for *N. nigricans*, n. sp., p. 542, pl. ccxi, fig. 10 ; MOORE, Lep. Ceyl. iii.

Empretia stimulea, Cl., metamorphoses; Hubbard, Ins. Orange, pp. 141 & 142, figs. 60 & 61, and pl. xi, fig. 3.

Phobetron pithecium, Sm. & Abb., metamorphoses and instinct noticed; HUBBARD, Ins. Orange, p. 142, figs. 62 & 63.

Lithacodia grœfi, Texas, PACKARD, Ent. Am. iii, p. 52, n. sp.

DREPANULIDÆ.

[*Cf.* BUTLER (106), DRUCE (263), FIXSEN (659), MOORE (515).]

Drepana scabiosa, Butl., ♀ described ; FIXSEN, in Rom. Mém. iii, p. 347.

D. chaonia, Costa Rica, p. 228, pl. xxiv, fig. 7, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Callidrepana lunulata, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 224, n. sp.

Teldenia nivea, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 224, n. sp.

Dryopteris rosea, Wlk., notes on larva ; GROTE, Canad. Ent. xix, p. 50.

Perophora hegewischi, Mexico, pl. xxiv, fig. 3, *P.* (?) *fabia*, Panama, fig. 2, p. 227, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Problepsis deliaria, Walk. (sub *Argyris*), p. 202, fig. 6, *extrusata*, Walk. (sub *Ephyra*), fig. 7, figured ; MOORE, Lep. Ceyl. iii.

P. discophora, Corea, FIXSEN, in Rom. Mém. iii, p. 348, pl. xv, fig. 4, n. sp.

Somatina purpurasceus, Ceylon, MOORE, p. 540, pl. ccii, figs. 2 & 2*a*, n. sp.

Phalacra vidhisaria, pl. cci, fig. 1, larva, fig. 1*a*, figured ; MOORE, Lep. Ceyl. iii.

Drapetodes fratercula, Ceylon, p. 541, pl. cc, fig. 1, Lep. Ceyl. iii, n. sp.

SATURNIIDÆ.

[*Cf.* ELWES (194), STAUDINGER (659).]

Saturnia carpini, hereditary transmission of pink tubercules on its larvæ; POULTON, Tr. E. Soc. 1887, pp. 310-312. *S. pavonia*, L., structure of cocoon; CALBERLA, CB. Iris, p. 156. *S. bauhinia*, Guer., rearing of; SIMUNICH, Soc. Ent. i, p. 140. *S. jamamai*, rearing of; BRAUN, Soc. Ent. ii, pp. 34, &c. *S. boisduvalii*, Eversm., = (*Caligula jonasii*, Butl.); SNELLEN, Tijdschr. Ent. xxx, p. 88.

S. royi, Sikkim, ELWES, P. Z. S. 1887, p. 447, n. sp.

Attacus yama-mai, mode of distinguishing sexes of the larvæ; WENIGER, Ent xx, pp. 87 & 88. *A. pernyi*, rearing of at Antibes; NAUDIN, Bull. Soc. Acclim. (4) iv, p. 716: rearing of; STEINLEN, Soc. Ent. i, pp. 145 & 153. *A. atlas*, food-plant of; P. Z. S. 1887, p. 52.

Samia promethea, rearing of; AEBERLI, Soc. Ent. ii, p. 76.

Actias luna, on rearing of; BERNERT, Soc. Ent. ii, p. 58.

Actia selene, rearing of; BÖTTGER, Soc. Ent. ii, p. 89.

Hemileuca yavapai, Neum., larva described; EDWARDS, Ent. Am. iii, p. 167.

Mira, n. g. (*Saturniidæ*), for *M. christophi*, Wladiwostok, n. sp.; STAUDINGER, in Rom. Mém. iii, p. 212, pl. xii, fig. 6.

CERATOCAMPIDÆ, BOMBYCIDÆ, LASIOCAMPIDÆ.

[*Cf.* DRUCE (179, 263), EDWARDS (192), FIXSEN (659), MOORE (515), STAUDINGER (659, 733).]

Dryocampa rubicunda, Fab., note on larva; GROTE, Canad. Ent. xix, p. 52.

Anisota stigma, Fab., and *virginiensis*, Dru., notes on larva; GROTE, Canad. Ent. xix, pp. 51 & 52.

Bombyx mori, aorta; SELVATICO (695, 696): stigmata; VERSON (768, 769): digestive system during metamorphosis; CASAGRANDE (121). New parasite of silkworm; MONIEZ (512).

Trilocha ianthe, W. Africa, DRUCE, P. Z. S. 1887, p. 683, n. sp.

Norasuma kolga, W. Africa, DRUCE, P. Z. S. 1887, p. 684, n. sp.

Hygrochroa casnonia, Panama, pl. xxiii, fig. 25 (as *Anthocroca*, c.), *rutila*, Nicaragua, p. 224, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Carthara veca, p. 224, pl. xxiii, figs. 21 & 22, *lividia*, p. 225, figs. 23 & 24, Panama, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Anticla ortygia, p. 225, pl. xxiii, fig. 26, *carya*, p. 226, fig. 27, Panama, DRUCE, Biol. Centr. Am. Heter. i, n. spp.

Asthenidia tranversaria, Nicaragua to Colombia, p. 226, pl. xxiv, fig. 1, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Bombyx alpicola, Stgr., var. *prima*, p. 97, *neustria* var. *parallela*, p. 98, *eversmannii*, Frr., var. *nana*, p. 99; STAUDINGER, S. E. Z. xlviii.

B. habitus, Mexico, EDWARDS, Ent. Am. iii, p. 91, n. sp.

Crateronyx taraxaci, rearing of; DOLESCHALL, Soc. Ent. i. p. 155. *C. dumi*, L., note on habits; MISCHE, *t. c.* p. 149.

C. sardanapalus, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 99, n. sp.

Rondotia lurida, Corea, p. 346, and as *Eggonia lurida*, pl. xv, fig. 8, FIXSEN, in Rom. Mém. iii, n. sp.

Chilena similis, Walk., pl. ccxii, fig. 5, figured; MOORE, Lep. Ceyl. iii.

Pandala dolosa, ♀ figured; MOORE, Lep. Ceyl. iii, pl. ccxii, fig. 3.

Horanpella cinnamomea, ♀ figured, pl. ccxii, fig. 2; MOORE, Lep. Ceyl. iii.

Apona shevaroyensis, figured, pl. ccxiii, figs. 1 & 2; MOORE, Lep. Ceyl. iii.

Citheronia sepulchralis, G. & R., larva described; EDWARDS, Ent. Am. iii, p. 168.

Murlida fraterna, Moore, fig. 1, *lineosa*, Walk., fig. 2, figured, pl. clxxiii; WATERHOUSE, Aid.

Eupterote fasciata, Ceylon, p. 544, pl. ccxii, fig. 1, MOORE, Lep. Ceyl. iii, n. sp.

Trabala rosa, E. Africa, DRUCE, P. Z. S. 1887, p. 678; *T.* (?) *fusca*, Panama, p. 207, pl. xxii, fig. 11, *id.* Biol. Centr. Am. Heter. i: n. spp.

Gastropacha rubi, spermatocysts; ST. GEORGE, Arch. mikr. Anat. xxx, p. 429, pl. xxv, fig. 11.

Megasoma primigenum (*repanda*, Hb., var. ?), Central Asia, STAUDINGER, S. E. Z. xlviii, p. 100; *M. stupidum*, Wladiwostok, *id.* in Rom. Mém. iii, p. 210, pl. xii, fig. 5; *M. polydora*, p. 678, pl. lv, fig. 11, *splendens*, fig. 10, *vesta*, fig. 6, p. 679, Trop. Africa, DRUCE, P. Z. S. 1887: n. spp.

Pachypasa? massilia, *phocea*, Trop. Africa, DRUCE, P. Z. S. 1887, p. 680, n. spp.

Gonometa postica, Walk., note on; SOMERVILLE, P. N. H. Soc. Glasg. (n. s.) i, pp. 312–314.

G. nyea, p. 680, *lomia*, *cassandra*, p. 681, W. Africa, DRUCE, P. Z. S. 1887, n. spp.

Hibrildes, n. g., for *H. norax*, n. sp., E. Africa; DRUCE, P. Z. S. 1887, p. 675.

Jana sciron, W. Africa, DRUCE, P. Z. S. 1887, p. 676, n. sp.

Chrysopoloma bithynia, p. 676, *labda*, *C.? thelda*, p. 677, Trop. Africa, DRUCE, P. Z. S. 1887, n. spp.

Eutricha audea, W. Africa, DRUCE, P. Z. S. 1887, p. 677, n. sp.

Metanastria mexicana, Mexico, p. 201, pl. xxi, figs. 9 & 10, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Gloveria venerabilis, figured, pl. xxii, figs. 18 & 19, ♂ described, p. 202; DRUCE, Biol. Centr. Am. Heter. i.

Lebeda championi, Panama, p. 203, pl. xxii, fig. 1, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Lasiocampa fasciatella, Mén., form from Corea described; FIXSEN, in Rom. Mém. iii, p. 344.

L. monteiroi, E. Africa, DRUCE, P. Z. S. 1887, p. 677; *L. thyatira*, pl. xxii, fig. 2, *modesta*, Panama, *id.* Biol. Centr. Am. Heter. i: n. spp.

Artace punctistriga, Walk., = (*Titya rubripalpis*, Feld.); DRUCE, Biol. Centr. Am. Heter. i, p. 204.

Cœculia bella, Panama, p. 205, pl. xxii, fig. 3, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Hydrias limba, pl. xxii, figs. 4 & 5, *larunda*, fig. 6, Costa Rica, *laronia*, fig. 7, Panama, DRUCE, Biol. Centr. Am. Heter. i, p. 206, n. spp.

Ocha lauda, Guatemala, pl. xxii, fig. 12, *lasthenia*, Mexico, DRUCE, Biol. Centr. Am. Heter. i, p. 207, n. spp.

Apatelodes, *cf. Notodontidæ*.

ZEUZERIDÆ.

[*Cf.* BUCKLER (98), CHRISTOPH (132, 659), DRUCE (179, 263), STAUDINGER (733).]

Langsdorfia forreri, Mexico, p. 231, pl. xxiv, fig. 5, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Cossus ligniperda at sugar; MACLACHLAN, Ent. M. M. xxiv, p. 10: spermatocysts; ST. GEORGE, Arch. mikr. Anat. xxx, p. 426, pl. xxv, fig. 1: larva figured, pl. xxxi, fig. 3; BUCKLER, Larv. brit. iii.

C. toluminus, W. Africa, DRUCE, P. Z. S. 1887, p. 684; *C. colossus*, p. 86, *modestus*, p. 88, *intractatus*, p. 89, Central Asia, STAUDINGER, S. E. Z. xlviii; *C.* (?) *multipunctata*, Panama, p. 230, pl. xxiv, fig. 9, DRUCE, Biol. Centr. Am. Heter. i: n. spp.

Cossulus, n. g., p. 91, for *C. argentatus*, n. sp., Armenia, p. 90; STAUDINGER, S. E. Z. xlviii.

Zeuzera cognata, Walk., ♀ figured, pl. xxiv, fig. 6; DRUCE, Biol. Centr. Am. Heter. i. *Z. æsculi*, larva figured, pl. xxxi, fig. 1; BUCKLER, Larv. brit. ii: new food-plant of; FLACH, S. E. Z. xlviii, p. 257.

Z. stephania, E. Africa, DRUCE, P. Z. S. 1887, p. 685, pl. lv, fig. 3, n. sp.

Phragmatœcia territa, Stgr., figured; Rom. Mém. iii, p. 60. *P. arundinis*, larva figured, pl. xxxi, fig. 2; BUCKLER, Larv. brit. ii.

Holcocerus (*Cossus*) *arenicola*, Stgr., figured; *H.* (*Hypopta*) *gloriosa*, Ersch., noticed, p. 56; CHRISTOPH, in Rom. Mém. iii.

H. inspersus, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 163; *H. putridus*, p. 57, pl. iii, fig. 4, *mollis*, p. 58, fig. 5, *gracilis*, p. 59, fig. 6, Achal-Tekké, *id.*, in Rom. Mém. iii: n. spp.

Stygia æthiops, Central Asia, STAUDINGER, S. E. Z. xlviii, p. 91, n. sp.

Endagria lacertula, p. 92, *nigritula*, p. 93, Central Asia, *bipunctata*, Asia Minor, p. 94, STAUDINGER, S. E. Z. xlviii, n. spp.

HEPIALIDÆ.

[*Cf.* BUCKLER (98), DRUCE (263), FIXSEN (659), MOORE (515), OLLIFF (537), STAUDINGER (659).]

Hepialus hectus and *humali*, on the flight and pairing of; ROBSON, Ent. M. M. xxiii, p. 186. *H. sylvinus*, *lupulinus*, flight and pairing of; *id. t. c.* p. 214. *H. velleda*, habits of; STAINTON, Ent. M. M. xxiii, p. 234. *H. humuli*, flight and pairing of; BALDING, Ent. M. M. xxiv, p. 11: ab. *hethlandica*, Stgr., noticed; HOFFMANN, S. E. Z. xlviii, p. 265. *H. hectus*, *lupulinus*, *humuli*, *velleda*, *sylvinus*, larvæ figured, pl. xxx; BUCKLER, Larv. brit. ii.

H. askoldensis, p. 193, pl. xi, fig. 5, *varius*, p. 194, pl. xi, fig. 6, Askold I., STAUDINGER, in Rom. Mém. iii ; *H. taprobanus*, Ceylon, p. 545, pl. ccxii, fig. 6, MOORE, Lep. Ceyl. iii ; *H. pharus*, Guatemala, Costa Rica, p. 232, pl. xxiv, fig. 12, DRUCE, Biol. Centr. Am. Heter. i : n. spp.

Zelotypia stacyi, habits, n. var. *sinuosa* ; OLLIFF, P. Linn. Soc. N.S.W. (2) ii, pp. 467–470.

Dalaca assa, Guatemala, p. 232, pl. xxiv, fig. 10, DRUCE, Biol. Centr. Am. Heter. i, n. sp.

Phassus herzi, Corea, FIXSEN, in Rom. Mém. iii, p. 335, pl. xv, fig. 3 ; *P. phalerus*, Mexico, pl. xxiv, fig. 8, *championi*, Guatemala, fig. 11, p. 233, *costaricensis*, Costa Rica, fig. 4, p. 234, DRUCE, Biol. Centr. Am. Heter. i : n. spp.

CYMATOPHORIDÆ.

[*Cf.* FIXSEN (659), MOORE (515), POUJADE (573), STAUDINGER (659).]

Thyatira aurorina, Butl., figured under name of *möllendorfi* ; FIXSEN, in Rom. Mém. iii, p. 351, pl xv, fig. 12.

T. violacea, Corea, FIXSEN, in Rom. Mém. iii, pl. xv, fig. 11, p. 352 ; *T. oblonga*, Mou-pin, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. xlix ; *T.* (*Gonophora*) *pterographa*, Mou-pin, *id. t. c.* p. cxxxv : n. spp.

Cymatophora angustata, Amur-river, STAUDINGER, in Rom. Mém. iii, p. 231, pl. xiii, fig. 6, n. sp.

Risoba basalis, Moore, figured, pl. ccxiv, fig. 1 ; MOORE, Lep. Ceyl. iii.

NOCTUIDÆ.

[*Cf.* ALPHERAKY (7, 659), BEHRENS (46), BUTLER (108), CHRISTOPH (132, 659), DRUCE (179), EDWARDS (190, 191), FRENCH (239), HAASE (288), MEYRICK (492, 493), MOORE (515), OBERTHÜR (534), PABST (548), POUJADE (573), ROGENHOFER (658), SMITH (718), SNELLEN (724).]

Bryophila distincta, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 62, pl. iii, fig. 9, n. sp.

Diphthera spissa, Mexico, EDWARDS, Ent. Am. iii, p. 92, n. sp.

Apatela felina, Grote, preparatory stages ; FRENCH, Canad. Ent. xix, p. 48.

Arsilonche albovenosa, Guen., larval stages described ; EDWARDS, Ent. Am. iii, p. 171.

Acronycta : synonymical notes on N. American species ; BUTLER, Ent. Am. iii, pp. 35 & 36, and SMITH, *t. c.* p. 36. *A. alni*, L., mode of obtaining ; SCHARFENBERGER, Soc. Ent. ii, p. 58.

A. elaeagni, Turkestan, ALPHERAKY, S. E. Z. xlviii, p. 167, n. sp.

Leucania : 16 New Zealand species described ; MEYRICK, Tr. N. Z. Inst. xix, pp. 7–13.

Ichneutica, n. g., after *Leucania*, for *I. ceraunias*, n. sp., New Zealand ; MEYRICK, Tr. N. Z. Inst. xix, p. 13.

L. indistincta, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 79, pl. iv, fig. 5 ; *L. acontistis*, p. 9, *phaula*, *alopa*, p. 10, *aulacias*, *arotis*, p. 11, New Zealand, MEYRICK, Tr. N. Z. Inst. xix : n. spp.

Rhizogramma petersoni, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 76, pl. iv, fig. 3, n. sp.

Noropsis hyroglyphica, Cr., note on; SNELLEN, Tijdschr. Ent. xxx, p. 35.

Xylomyges eridania, Cr., note on, with fig.; SNELLEN, Tijdschr. Ent. xxx, p. 36, pl. iii, figs. 2 & 2*a*.

Spodoptera cilium, Guen., = (*Caradrina latebrosa*, Led.), its generic position discussed; SNELLEN, Tijdschr. Ent. xxx, pp. 88 & 89.

Laphygma frugiperda, Abb., noticed from Curaçao; SNELLEN, Tijdschr. Ent. xxx, p. 37.

? *Heliophobus unctus*, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 164, n. sp.

Phlebocis, n. g., near *Episema*, for *P. petersi*, n. sp., Askhabad; CHRISTOPH, S. E. Z. xlviii, p. 164.

Charæas graminis, ravages on the borders; HARDY (297).

Luperina impedita, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 74, pl. iv, fig. 2; *L. renalis*, Turkestan, ALPHERAKY, S. E. Z. xlviii, p. 170: n. spp.

Mamestra: 27 New Zealand species tabulated and described; MEYRICK, Tr. N. Z. Inst. xix, pp. 13-28. *M. ochracea* and *splendens*, distinctions of larvæ; GLEISSNER, B. E. Z. xxxi, p. xxxviii. *M. rubrica*, n. var. *subapicalis*, p. 462, *olivacea*, n. var. *obscurior*, p. 465, *assimilis*, n. var. *fulverulenta*, p. 468; SMITH, P. U. S. Nat. Mus. x. *M. siri*, Ersch., referred to *Luperina*; CHRISTOPH, in Rom. Mém. iii, p. 74. *M. brassicæ* feeding on oak; JORDAN, Ent. M. M. xxiv, p. 63. *M. persicariæ*, spermatocysts; ST. GEORGE, Arch. mikr. Anat. xxx, p. 428, pl. xxv, fig. 10.

M. roseo-nitens, Algeria, OBERTHÜR, Bull. Soc. Ent. Fr. (6) vii, p. xlix; *M. spalax*, Turkestan, ALPHERAKY, S. E. Z. xlviii, p. 168; *M. stigmosa*, Achal-Tekke, CHRISTOPH, in Rom. Mém. iii, p. 70, pl. iii, fig. 12; *M. lepidula*, p. 463, *prodeniformis*, *canadensis*, p. 464, *rectilinea*, p. 465, *vaumedia*, *incurva*, p. 466, *variolata*, *minorata*, p. 467, *obscura*, p. 468, N. America, SMITH, P. U. S. Nat. Mus. x; *M. paracausta*, p. 15, *polychroa*, p. 16, *lithias*, p. 17, *agorastis*, p. 18, *rhodopleura*, p. 19, *pelistis*, *ochthistis*, p. 20, *homoscia*, p. 21, *steropastis*, p. 22, *arachnias*, p. 23, *omoplaca*, p. 24, *prionistis*, p. 27, New Zealand, MEYRICK, Tr. N. Z. Inst. xix: n. spp.

Scotogramma, n. g., p. 469, near *Mamestra* (type *Anarta submarina*, Grote), with *S. perplexa*, *inconcinna*, p. 469, *umbrosa*, p. 470, n. spp., N. America; SMITH, P. U. S. Nat. Mus. x.

S. stretchii, Colorado, EDWARDS, Canad. Ent. xix, p. 146, n. sp.

Copimamestra curialis, N. America, SMITH, P. U. S. Nat. Mus. x, p. 470, n. sp.

Ulolonche, n. g., with *U. fasciata*, n. sp., N. America, p. 471, to include also *Mamestra niveiguttata*, Grt., and *Tæniocampa modesta*, Morr.; SMITH, P. U. S. Nat. Mus. x.

Comophorus, n. g., p. 168, for *C. villosus*, n. sp., Turkestan, p. 169; ALPHERAKY, S. E. Z. xlviii.

— *Tornos*, *cf. Geometridæ*.

Caradrina? *grisescens*, Mou-pin, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. clvii, n. sp.

Agrotis: the 5 New Zealand species redescribed; MEYRICK, Tr. N. Z.

Inst. xix, pp. 32-34. *A. raddei* and *fimbriola*, distinctions of ; CHRISTOPH, in Rom. Mém. iii, p. 66. *A. xanthographa* n. var. *elutior*, *birivia* n. var. *plumbea* ; ALPHERAKY, S. E. Z. xlviii, p. 168. *A. fennica*, note on ; DOBRÉE, Ent. xx, p. 213. *A. speciosa*, Hb., metamorphoses ; HOFFMANN, S. E. Z. xlviii, pp. 142-147. *A. annexa*, Tr., note on, from Curaçao, with fig. ; SNELLEN, Tijdschr. Ent. xxx, p. 37, pl. iii, figs. 3 & 3*a*. *A. grisescens*, larva described ; RÜHL, Soc. Ent. i, p. 138. *A. segetum*, L., ravages of in 1887 ; ORMEROD, Rep. xi, pp. 96–101.

A. stictica, Mou-pin, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. lxviii ; *A. arvicola*, *indigna*, *glaucescens*, Tekke, CHRISTOPH, S. E. Z. xlviii, p. 163 ; *A. glis*, p. 64, pl. iii, fig. 10, *junctimacula*, Achal-Tekké, p. 67, pl. iii, fig. 11, CHRISTOPH, in Rom. Mém. iii ; *A. binominalis*, *crenulata*, p. 451, *confusa*, *tepperi*, p. 452, *sorror* (sic), *proclivis*, p. 453, *albicosta*, *oblongistigma*, p. 454, *flavidens*, *brevipennis*, p. 455, *flavicollis*, *obesula*, p. 456, *sponsa*, *finis*, *luteola*, p. 457, *serricornis*, *tetrica*, p. 458, *medialis*, *extranea*, p. 459, *trifasciata*, *bifasciata*, *orbicularis*, p. 460, *rufula*, *pallipennis*, p. 461, *solitaria*, p. 462, N. America, SMITH, P. U. S. Nat. Mus. x : n. spp.

Richia, note on its composition ; GROTE, Canad. Ent. xix, p. 44.

Trichoclea edwardsii, California, SMITH, P. U. S. Nat. Mus. x, p. 478, n. sp.

Physetica, n. g., for *Agrotis cærulea*, Gn. ; MEYRICK, Tr. N. Z. Inst. xix, p. 5.

Tæniocampa uniformis, *columbia*, p. 472, *utahensis*, p. 473, *suffusa*, *obtusa*, p. 474, *pectinata*, *terminata*, p. 475, *subterminata*, p. 476, SMITH, P. U. S Nat. Mus. x, n. spp.

Perigrapha inferior, California, SMITH, P. U. S. Nat. Mus. x, p. 477, n. sp.

Noctua carnea, Thunb., identification of this species discussed ; LAMPA, Deutsche e. Z. xxxi, pp. 355–358. *N. scitula*, Ramb., = (*Agrophila gibbosa*, Snell., and *Nola exasperata*, Led.) ; its generic position probably is in *Thalpochares* ; SNELLEN, Tijdschr. Ent. xxx, p. 89.

Orthosia, synonymy and description of the two New Zealand species ; MEYRICK, Tr. N. Z. Inst. xix, p. 30.

Elydna trapezata, Ceylon, MOORE, p. 547, pl. ccxiv, fig. 9, n. sp.

Orthodes irrorata, N. America, SMITH, P. U. S. Nat. Mus. x, p. 478, n. sp.

Xanthia fulvago var. *flavescens*, note on ; SHELDON, Ent. xx, p. 277.

X. ceramodes, New Zealand, MEYRICK, Tr. N. Z. Inst. xix, p. 31, n. sp.

Dianthœcia capsophila, food-plant ; FEATHERSTONHAUGH, Ent. xx, p. 231.

Oncocnemis exacta, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 72, pl. iv, fig. 1, n. sp.

Polia senex, Geyer, referred to *Ammoconia*, synonymy ; ROGENHOFER (658). *P. caduca*, H.-S., note on ; SPEYER, S. E. Z. xlviii, p. 338.

P. asiatica, *chamaeleon*, *tenuicornis*, Turkestan, ALPHERAKY, S. E. Z. xlviii, p. 169, n. spp.

Raphia approximata, Turkestan, ALPHERAKY, S. E. Z. xlviii, p. 167, n. sp.

Miselia cortex, Turkestan, ALPHERAKY, S. E. Z. xlviii, p. 169 ; *M. pessota*, New Zealand, MEYRICK, Tr. N. Z. Inst. xix, p. 29 : n. spp.

Hadena devastatrix, habits, &c.; Webster, in Riley Rep. 1886, pp. 578–580.

? *H. armata*, Turkestan, Alpheraky, S. E. Z. xlviii, p. 170; *H. spectabilis*, Mou-pin, Poujade, Bull. Soc. Ent. Fr. (6) vii, p. cx: n. spp.

Homohadena elda, California, French, Canad. Ent. xix, p. 5, n. sp.

Appana cingalesa, Ceylon, p. 548, pl. ccxiv, fig. 6, Moore, Lep. Ceyl. iii, n. sp.

Erana graminosa, Walk., = (*vigens*, *id.*), redescribed; Meyrick, Tr. N. Z. Inst. xix, p. 28.

Pulcheria, n. g., near *Lithocampa*, for *P. catomelas*, n. sp., Turkestan; Alpheraky, S. E. Z. xlviii, p. 170.

Chloantha luciniosa, Achal Tekké, Christoph, in Rom. Mém. iii, p. 77, pl. iv, fig. 4, n. sp.

Rhuda, Walk., n. sp., *cf. Notodontidæ*.

Cucullia amota, Turkestan, Alpheraky, S. E. Z. xlviii, p. 171, n. sp.

Lithophane fagina, Morr., and *georgii*, Grote, characters of; Grote, Canad. Ent. xix, pp. 54 & 55.

Epimecia argillacea, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 81, pl. iv, fig. 6, n. sp.

Cleophana omar, Algeria, Oberthur, Bull. Soc. Ent. Fr. (6) vii, p. lvii, n. sp.

Aidisura splendens, W. Africa, Druce, P. Z. S. 1887, p. 685, n. sp.

Anarta richardsoni, Curt., in Arctic Asia; Aurivillius, Veg. Exp. Vet. iv, p. 79.

Thalpochares illota, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 83, pl. iv, fig. 7; *T. coccophaga*, Sydney (feeding on *Coccus*), Meyrick, P. Linn. Soc. N. S. W. (2) i, p. 1037: n. spp.

Aedophron venosa, Askhabad, Christoph, S. E. Z. xlviii, p. 165, n. sp.

Xanthodes camilla, W. Africa, Druce, P. Z. S. 1887, p. 686, n. sp.

Acontia zelia, W. Africa, Druce, P. Z. S. 1887, p. 686; *A. biskrensis*, Algeria, Oberthur, Bull. Soc. Ent. Fr. (6) vii, p. lviii: n. spp.

Aporocosmus bracteatus, Butl., *cf. Eurycreon lamprodeta*, *Pyralidæ*.

Metoponia obtusula, Z., and allies noticed; Snellen, Tijdschr. Ent. xxx, pp. 39 & 40.

Ponometia ochricosta, H.-S., descriptive note and fig.; Snellen, Tijdschr. Ent. xxx, p. 40, pl. iii, figs. 4 & 4*a*.

Bagada pyrochroma figured; Moore, Lep. Ceyl. iii, pl. ccxiv, fig. 2.

Erastria venustula, larva noticed and described; Chrétien, Feuill. Nat. xvii, pp. 86–89 & 118. *E. scitula*, Peragallo's observations on larva translated; S. E. Z. xlviii, pp. 274–276. *E. pustulata*, Walk., referred to *Argyrophyes*; Butler, Ent. Am. iii, p. 17.

E. ornatula, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 84, pl. iv, fig. 8, n. sp.

Phothedes (*Armada*) *kisilkumensis*, Ersch., figured, &c.; Christoph, in Rom. Mém. iii, p. 86, pl. iv. fig. 9.

? *P. albirena*, = (*kisilkumensis*, Chr., in Rom. Mém. i, p. 132, pl. viii, fig. 9), Achal-Tekké, Christoph, in Rom. Mém. iii, p. 87, n. sp.

Megalodes liturata, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 89, pl. iv, fig. 10, n. sp.

Cosmodes elegans, described from New Zealand; MEYRICK, Tr. N. Z. Inst. xix, p. 35.

Abrostola nubila, Ceylon, p. 549, pl. ccxiv, fig. 5, MOORE, Lep. Ceyl iii, n. sp.

Plusia moneta, F., note on; BRANTS, Tijdschr. Ent. xxx, pp. xxvii–xxix. *P. pulchrina*, n. var. *monogramma*; ALPHERAKY, S. E. Z. xlviii, p. 171. *P. brassicæ*, Riley, habits, ravages, remedies; ASHMEAD, Bull. Dep. Agric. Ent. xiv, p. 10. *P. pulchrina*, Haw., note on its distinctness from *iota*, L.; RÜHL, Soc. Ent. ii, p. 99.

P. bella, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 164; *P. argenteoguttata*, Mou-pin, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. lxviii: n. spp.

Telesilla cinereola, Guen., larva described; ASHMEAD, Bull. Dep. Agric. Ent. xiv, p. 22.

Gonodonta, n. sp., *cf. Notodontidæ*.

Calpe? striata, Mou-pin; POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. cxxxix, n. sp.

Hyblæa puera, Cr., scent-organ of; HAASE, CB. Iris, i, p. 170.

Aletia argillacea, note on; GROTE, Canad. Ent. xix, p. 14: swarms of; *t. c.* p. 223.

Scoliopteryx libatrix, L., habits, structure of pupa; PACKARD, Bull. Dep. Agric. Ent. xiii, p. 26.

Gonoptera libatrix, changes in the colour of the larva previous to pupation, discussed; POULTON, Tr. E. Soc. 1887, pp. 302 & 303, pl. x, figs. 11–13: the structures for protection of the perfect insect; *id. t. c.* pp. 308 & 309, pl. x, fig. 16.

Bityla, synonymy and descriptions of the two New Zealand species; MEYRICK, Tr. N. Z. Inst. xix, p. 31.

Plecoptera reflexa, Guen., scent-organ of ♂; HAASE, CB. Iris, i, p. 170.

Homoptera and allied genera, note on; GROTE, Canad. Ent. xix, p. 177.

H. catenata, Ceylon, p. 550, pl. ccxiv, fig. 1, MOORE, Lep. Ceyl. iii, n. sp.

Felinia spissa, Gn., figured, pl. ccxiv, fig. 4, MOORE, Lep. Ceyl. iii.

Plotheia basifascia and others noticed; MOORE, Lep. Ceyl. iii, p. 550.

Pericyma profesta, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 165, n. sp.

Palpangula imitatrix, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 165, n. sp.

Panula inconstans, Guen., and spec.? noticed; SNELLEN, Tijdschr. Ent. xxx, pp 42–44.

Bolina abrupta, p. 44, pl. iv, figs. 1–2*a*, *B.? calamioides*, p. 47, pl. iv, figs. 3 & 3*a*, Curaçao, SNELLEN, Tijdschr. Ent. xxx, n. spp.

Catocala neogama, Abb., note on; GROTE, Canad. Ent. xix, pp. 113 & 114. *C. puerpera*, n. var. *pallida*, Thibet, ALPHERAKY, in Rom. Mém. iii, p. 406.

C. davidi, Mou-pin, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. xxxviii; *C. lesbia*, Tekke, CHRISTOPH, S. E. Z. xlviii, p. 165; *C. elda*, Oregon, BEHRENS, Canad. Ent. xix, p. 199: n. spp.

Agonista ochrifera, Feld., and *endoleuca*, Guer., scent-organs of ♂; HAASE, CB. Iris, i, p. 171.

Anisoneura sphingoides, Feld., scent-organ of ♂; HAASE, CB. Iris, i, p. 172.

Nyctipao variegata, p. 432, *caliginea*, p. 433, Solomon Is., BUTLER, Ann. N. H. (5) xix, n. spp.

Patula macrops, scent-organ of ♂; HAASE, CB. Iris, i, p. 172.

Ommatophora luminosa, Cr., scent-organ of ♂; HAASE, CB. Iris, i, p. 173.

Dasypodia selenophora, described from New Zealand; MEYRICK, Tr. N. Z. Inst. xix, p. 38.

Spirama retorta, L., scent-organ of ♂; HAASE, CB. Iris, i, p. 173.

Hulodes caranea, Cr., scent-organs of ♂; HAASE, CB. Iris, i, p. 173.

Lagoptera elegans and *honesta*, scent-organs of ♂s; HAASE, CB. Iris, i, p. 174.

Calesia pellio, Feld, scent-organ of ♂; HAASE, CB. Iris, i, p. 175.

Ophiusa fulvotænia, Gn., scent-organ of ♂; HAASE, CB. Iris, i, p. 175.

Achaea melicerte, Dru., described from New Zealand; MEYRICK, Tr. N. Z. Inst. xix, p. 37.

Heteropygas ligia, Feld., note on; SNELLEN, Tijdschr. Ent. xxx, p. 48.

Egnasia castanea, Moore, figured, pl. clxxiii, fig. 4; WATERHOUSE, Aid. *E. scopigera*, ♀ figured, pl. ccxv, fig. 3; MOORE, Lep. Ceyl. iii.

Hiragala transcitta, Ceylon, p. 551, pl. ccxv, fig. 1, MOORE, Lep. Ceyl. iii, n. sp.

Dysgonia amygdalis, Ceylon, MOORE, Lep. Ceyl. iii, p. 551, pl. ccxiv, fig. 3, n. sp.

Sonagara superior, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 433, n sp.

Mestleta fasciosa, Ceylon, p. 552, pl. ccxiv, fig. 12, MOORE, Lep. Ceyl. iii, n. sp.

Gesonia flavifrons, Ceylon, MOORE, p. 552, pl. ccxiv, fig. 9, Lep. Ceyl. iii, n. sp.

Doranaga, n, g., for *D. apicalis*, fig. 7, *striatura*, fig. 8, n. spp., Ceylon, p. 553, pl. ccxiv; MOORE, Lep. Ceyl. iii.

Pseudephyra, Butl., 1886, referred to *Noctuina*; MEYRICK, Tr. E. Soc. 1887, p. 186.

DELTOIDOIDÆ.

[*Cf.* BUTLER (108), MOORE (515).]

Hypena umbripennis, fig. 5, and *ophiusoides*, fig. 6, Moore, figured; WATERHOUSE, Aid, pl. clxxiii. *H. ravalis*, H.-S., *ravulalis revolutalis*, Z., probably one; CHRISTOPH, in Rom. Mém. iii, p. 92.

H. iridis, p. 435, *sylpha*, p. 436, Solomon Is., BUTLER, Ann. N. H. (5) xix, n. spp.

Avitta rufifrons, Ceylon, p. 554, pl. ccxv, fig. 2, MOORE, Lep. Ceyl. iii, n. sp.

Rhynchina angulifascia, Moore, figured, pl. clxxiii, fig. 7; WATERHOUSE, Aid.

Saraca pannosa, Moore, figured; WATERHOUSE, Aid, pl. clxxiii, fig. 8.

Cosmodes elegans, described from New Zealand; MEYRICK, Tr. N. Z. Inst. xix, p. 35.

Abrostola nubila, Ceylon, p. 549, pl. ccxiv, fig. 5, MOORE, Lep. Ceyl iii, n. sp.

Plusia moneta, F., note on; BRANTS, Tijdschr. Ent. xxx, pp. xxvii–xxix. *P. pulchrina*, n. var. *monogramma*; ALPHERAKY, S. E. Z. xlviii, p. 171. *P. brassicæ*, Riley, habits, ravages, remedies; ASHMEAD, Bull. Dep. Agric. Ent. xiv, p. 10. *P. pulchrina*, Haw., note on its distinctness from *iota*, L.; RÜHL, Soc. Ent. ii, p. 99.

P. bella, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 164; *P. argenteoguttata*, Mou-pin, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. lxviii: n. spp.

Telesilla cinereola, Guen., larva described; ASHMEAD, Bull. Dep. Agric. Ent. xiv, p. 22.

Gonodonta, n. sp., *cf. Notodontidæ*.

Calpe? striata, Mou-pin; POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. cxxxix, n. sp.

Hyblæa puera, Cr., scent-organ of; HAASE, CB. Iris, i, p. 170.

Aletia argillacea, note on; GROTE, Canad. Ent. xix, p. 14: swarms of; *t. c.* p. 223.

Scoliopteryx libatrix, L., habits, structure of pupa; PACKARD, Bull. Dep. Agric. Ent. xiii, p. 26.

Gonoptera libatrix, changes in the colour of the larva previous to pupation, discussed; POULTON, Tr. E. Soc. 1887, pp. 302 & 303, pl. x, figs. 11–13: the structures for protection of the perfect insect; *id. t. c.* pp. 308 & 309, pl. x, fig. 16.

Bityla, synonymy and descriptions of the two New Zealand species; MEYRICK, Tr. N. Z. Inst. xix, p. 31.

Plecoptera reflexa, Guen., scent-organ of ♂; HAASE, CB. Iris, i, p. 170.

Homoptera and allied genera, note on; GROTE, Canad. Ent. xix, p. 177.

H. catenata, Ceylon, p. 550, pl. ccxiv, fig. 1, MOORE, Lep. Ceyl. iii, n. sp.

Felinia spissa, Gn., figured, pl. ccxiv, fig. 4, MOORE, Lep. Ceyl. iii.

Plotheia basifascia and others noticed; MOORE, Lep. Ceyl. iii, p. 550.

Pericyma profesta, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 165, n. sp.

Palpangula imitatrix, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 165, n. sp.

Panula inconstans, Guen., and spec.? noticed; SNELLEN, Tijdschr. Ent. xxx, pp 42–44.

Bolina abrupta, p. 44, pl. iv, figs. 1–2*a*, *B.? calamioides*, p. 47, pl. iv, figs. 3 & 3*a*, Curaçao, SNELLEN, Tijdschr. Ent. xxx, n. spp.

Catocala neogama, Abb., note on; GROTE, Canad. Ent. xix, pp. 113 & 114. *C. puerpera*, n. var. *pallida*, Thibet, ALPHERAKY, in Rom. Mém. iii, p. 406.

C. daridi, Mou-pin, POUJADE, Bull. Soc. Ent. Fr. (6) vii, p. xxxviii; *C. lesbia*, Tekke, CHRISTOPH, S. E. Z. xlviii, p. 165; *C. elda*, Oregon, BEHRENS, Canad. Ent. xix, p. 199: n. spp.

Agonista ochrifera, Feld., and *endoleuca*, Guer., scent-organs of ♂; HAASE, CB. Iris, i, p. 171.

Anisoneura sphingoides, Feld., scent-organ of ♂; HAASE, CB. Iris, i, p. 172.

Nyctipao variegata, p. 432, *caliginea*, p. 433, Solomon Is., BUTLER, Ann. N. H. (5) xix, n. spp.

Patula macrops, scent-organ of ♂; HAASE, CB. Iris, i, p. 172.

Ommatophora luminosa, Cr., scent-organ of ♂; HAASE, CB. Iris, i, p. 173.

Dasypodia selenophora, described from New Zealand; MEYRICK, Tr. N. Z. Inst. xix, p. 38.

Spirama retorta, L., scent-organ of ♂; HAASE, CB. Iris, i, p. 173.

Hulodes caranea, Cr., scent-organs of ♂; HAASE, CB. Iris, i, p. 173.

Lagoptera elegans and *honesta*, scent-organs of ♂s; HAASE, CB. Iris, i, p. 174.

Calesia pellio, Feld, scent-organ of ♂; HAASE, CB. Iris, i, p. 175.

Ophiusa fulvotænia, Gn., scent-organ of ♂; HAASE, CB. Iris, i, p. 175.

Achaea melicerte, Dru., described from New Zealand; MEYRICK, Tr. N. Z. Inst. xix, p. 37.

Heteropygas ligia, Feld., note on; SNELLEN, Tijdschr. Ent. xxx, p. 48.

Egnasia castanea, Moore, figured, pl. clxxiii, fig. 4; WATERHOUSE, Aid. *E. scopigera*, ♀ figured, pl. ccxv, fig. 3; MOORE, Lep. Ceyl. iii.

Hiwula transvitta, Ceylon, p. 551, pl. ccxv, fig. 1, MOORE, Lep. Ceyl. iii, n. sp.

Dysgonia amygdalis, Ceylon, MOORE, Lep. Ceyl. iii, p. 551, pl. ccxiv, fig. 3, n. sp.

Sonagara superior, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 433, n. sp.

Mestleta fasciosa, Ceylon, p. 552, pl. ccxiv, fig. 12, MOORE, Lep. Ceyl. iii, n. sp.

Gesonia flavifrons, Ceylon, MOORE, p. 552, pl. ccxiv, fig. 9, Lep. Ceyl. iii, n. sp.

Doranaga, n. g., for *D. apicalis*, fig. 7, *striatura*, fig. 8, n. spp., Ceylon, p. 553, pl. ccxiv; MOORE, Lep. Ceyl. iii.

Pseudephyra, Butl., 1886, referred to *Noctuina*; MEYRICK, Tr. E. Soc. 1887, p. 186.

DELTOIDOIDÆ.

[*Cf.* BUTLER (108), MOORE (515).]

Hypena umbripennis, fig. 5, and *ophiusoides*, fig. 6, Moore, figured; WATERHOUSE, Aid, pl. clxxiii. *H. ravalis*, H.-S., *ravulalis revolutalis*, Z., probably one; CHRISTOPH, in Rom. Mém. iii, p. 92.

H. iridis, p. 435, *sylpha*, p. 436, Solomon Is., BUTLER, Ann. N. H. (5) xix, n. spp.

Avitta rufifrons, Ceylon, p. 554, pl. ccxv, fig. 2, MOORE, Lep. Ceyl. iii, n. sp.

Rhynchina angulifascia, Moore, figured, pl. clxxiii, fig. 7; WATERHOUSE, Aid.

Saraca pannosa, Moore, figured; WATERHOUSE, Aid, pl. clxxiii, fig. 8.

Mastygophora scopigeralis, Moore, figured, pl. clxxiii, fig. 3; Waterhouse, Aid.

Epizeuxis punctigera, L., scent-organ of ♂; Haase, CB. Iris, i, p. 175.

E. minima, Solomon Is., Butler, Ann. N. H. (5) xix, p. 436, n. sp.

Aginna notata, erebina, Solomon Is., Butler, Ann. N. H. (5) xix, p. 437, n. spp.

Bocana stellaris, Solomon Is., Butler, Ann. N. H. (5) xix, p. 438, n. sp.

Hypenodes jucundalis, Snell., generic position queried; Butler, Ann. N. H. (5) xix, p. 439.

Ballatha elegans, Solomon Is., Butler, Ann. N. H. (5) xix, p. 439, n. sp.

Anemosa isidasalis, Wlk., genus and species redescribed as *A. isadalis* (*Pyralidæ*); Meyrick, Tr. E. Soc. 1887, p. 194.

Geometridæ.

[*Cf.* Blachier (72), Bohatsch (76), Butler (107), Christoph (132, 659), Guest (284), Gumppenberg (285), Haase (288), Hulst (333, 334), Merrifield (488), Moore (515), Oberthür (534), Poulton (574) Purdie (584), Romanoff (659), Snellen (723).]

Monograph of the Palæarctic and N. American *Geometridæ* commenced; Gumppenberg (285).

Scent-organs of ♂ of several genera briefly noticed; Haase, CB. Iris, i, pp. 176–178.

Food-plants of *Geometridæ* (N. American), with other notes; Bruce, Ent. Am. iii, pp. 47–50.

Geometridæ larvæ, discussion of points in connection with their resemblance to twigs; Poulton, Tr. E. Soc. 1887, pp. 291–295, pl. x, figs. 4 & 5.

Baputa, Walk., referred to *Geometridæ*; Haase, CB. Iris, p. 178.

Angerona prunaria, on breeding varieties of; Grapes, Ent. xix, pp. 36–38.

Hyperetis nyssaria, Sm. & Ab., metamorphoses; Packard, Bull. Dep. Agric. Ent. xiii, p. 28. *H. amicaria*, H.-S., = (*Selenia œsionaria*); Hulst, Ent. Am. iii, p. 114.

Endropia obtusaria, Hub., var., = (*tiviaria*, Walk.); Hulst, Ent. Am. iii, p. 113.

Metrocampa margaritaria, Fr., metamorphoses; Mohr, Soc. Ent. ii, p. 83, and Caspari, *t. c.* p. 105.

Caberodes antidiscaria, Walk., = (*Endropia lentaria*, Hulst); Hulst, Ent. Am. iii, p. 113.

Tetracis pallulata, N. America, Hulst, Ent. Am. iii, p. 211, n. sp.

Plagodis kentzingaria, Packd., var. *nigrescaria*, n. var.; Hulst, Ent. Am. ii, p. 212.

Eurymene dolabraria, metamorphoses; Hiller, Soc. Ent. ii, p. 50.

Selenia illustraria, breeding of, in connection with enquiries as to heredity; Merrifield (488). *S. alciphearia*, Walk., = (*kentaria*, G. & R.); Hulst, Ent. Am. iii, p. 113.

Azelina rectisectaria, H.-S., = (*salissaria*, Walk.); Hulst, Ent. Am. iii, p. 113.

Metanema incongruaria, N. America, Hulst, Ent. Am. ii, p. 212, n. sp.

Hyperythra lutea, Cr., figured, pl. clxxxv, figs. 6 & 6*a*; Moore, Lep. Ceyl. iii.

Fascellina ceylonica, Ceylon, Moore, Lep. Ceyl. iii, p. 394, pl. clxxxvii, figs. 3 & 3*a*, n. sp.

Orsonoba rajaca, Walk., pl. clxxxvii, figs. 1, *a*, *b*, *clelia*, Cr., fig. 2, figured; Moore, Lep. Ceyl. iii.

Petelia medardaria, H. Sch., figured; Moore, Lep. Ceyl. iii, pl. cxcii, figs. 2 & 2*a*, larva, 2*b*.

Alana vexilliaria, Guén., figured; Moore, Lep. Ceyl. iii, pl. cxciii, fig. 3.

Marcala galbulata, Feld., pl. clxxxv, fig. 5, *saturataria*, Walk. (sub *Geometra*), pl. cciv, fig. 4, figured; Moore, Lep. Ceyl. iii.

M. sulphurescens, Ceylon, Moore, Lep. Ceyl. iii, p. 405, pl. clxxxv, fig. 8, n. sp.

Decetia insignis, Solomon Is., Butler, Ann. N. H. (5) xx, p. 242, n. sp.

Noreia ajaia, Walk. (sub *Timandra*), fig. 3, *inamata*, Walk. (sub *Acidalia*), fig. 4, figured, pl. clxxxv; Moore, Lep. Ceyl. iii.

Arhodia pyrrhata, Wlk., referred to *Striglina*, and redescribed; Meyrick, Tr. E. Soc. 1887, p. 199.

Amphydasis cognataria, Guén., metamorphoses, &c.; Packard, Bull. Dep. Agric. Ent. xiii, p. 29.

Buzura strigaria, Moore, figured, pl. clxxxviii, figs. 1*a*, 1*b*, *c* larva; Moore, Lep. Ceyl. iii.

Casiala, n. g. (*Amphidasidæ*), type, *C. boarmoides*, Darjeeling (n. sp. ?), and to include *Boarmia suiasasa*, *disterminata*, and *raptaria* Walk.; Moore, Lep. Ceyl. iii, p. 407.

Medasina, n. g. (*Boarmiidæ*), for *Hemerophila strixaria*, Guén.; Moore, Lep. Ceyl. iii, p. 408.

Menophra, n. n. for *Hemerophila*, Steph., p. 409, *M. canidorsata*, Walk., figured, pl. clxxxvii, fig. 6; Moore, Lep. Ceyl. iii.

M. imbecilis, Ceylon, p. 410, pl. clxxxvii, fig. 7, Moore, Lep. Ceyl. iii, n. sp.

Hemerophila lederi, Tekke, Christoph, S. E. Z. xlviii, p. 166, n. sp.

Narapa, n. g., p. 410, type *Boarmia adamata*, Feld., which is figured, pl. clxxxvii, fig. 8, and including *similaris*, fig. 9, *umbrata*, fig. 10, *indistincta*, fig. 5, n. spp., Ceylon, p. 411; Moore, Lep. Ceyl. iii.

Boarmia crepuscularia, Tr., = (*Tephrosia abraxaria*, Walk.); Hulst, Ent. Am. iii, p. 114. *B. repandata*, L., variation of; South, P. E. Soc. 1887, pp. xliii & xliv. *B. diffusaria*, Walk., pl. clxxxvii, fig. 11, pl. clxxxviii, fig. 2, and larva 2*a*, *bhurmitra*, pl. cxci, fig. 2, figured; Moore, Lep. Ceyl. iii.

B. fortunata, Teneriffe, Blachier, Feuill. Nat. xvii, p. 103, n. sp.

Pseudangerona, n. g., p. 414, for *Boarmia separata*, Walk., which is figured, pl. 202, fig. 8; Moore, Lep. Ceyl. iii.

Catoria, n. g., p. 414, for *Boarmia sublavaria*, Guén., figured, pl. cxc, figs. 2 & 2*a*, and *B. procursaria*, Walk., figured, pl. cxci, fig. 3; Moore, Lep. Ceyl. iii.

Chogada, n. g., p. 415, type *Boarmia alienaria*, Walk., figured, pl. cxci, figs. 1, 1*a*, & 1*b*, larva, and including also *B. injectaria*, Walk.; Moore, Lep. Ceyl. iii.

Serraca, n. g., p. 416, for *Boarmia transcissa*, Walk., figured, pl. cxc, figs. 3 & 3*a* ; Moore, Lep. Ceyl. iii.

Bylazora ceylonica, Ceylon, p. 417, pl. cxciii, figs. 4 & 4*a* ; Moore, Lep. Ceyl. iii.

Hypochroma lahayei, Algeria, Oberthur, Bull. Soc. Ent. Fr. (6) vii, p. lix, n. sp.

Ophthalmodes herbidaria, Guén., figured, pl. cxci, fig. 4 ; Moore, Lep. Ceyl. iii.

O. parva, Solomon Is., Butler, Ann. N. H. (5) xx, p. 242, n. sp.

Racotis, n. g., p. 418, for *Hypochroma boarmiaria*, Guén., figured, pl. cxcii, figs. 3, 3*a*, & 3*b* larva ; Moore, Lep. Ceyl. iii.

Pingasa, n. g., p. 419, for part of *Hypochroma*, Guén. (type *ruginaria*), *crenaria*, Gn., pl. cxcii, figs. 1, 1*a*, & 1*b*, and *minimaria*, Gn., fig. 2, figured ; Moore, Lep. Ceyl. iii.

Elphos hymenaria figured, pl. cxciii, fig. 1 ; Moore, Lep. Ceyl. iii.

Amblychia torrida, Moore, figured, pl. clxxxviii, fig. 3 ; Moore, Lep. Ceyl. iii.

Gnophos ambignata, Dup., life-history ; Höfner, Soc. Ent. ii, p. 131.

G. snelleni, p. 96, pl. iv, fig. 13, *farinosata*, p. 98, pl. v, fig. 1, *pollinaris*, p. 100, pl. v, fig. 2, *luticiliata*, p. 100, pl. v, fig. 3, Achal-Tekké, Christoph, in Rom. Mém. iii, n. spp.

Dasydia tenebraria, Esp., metamorphoses ; Millière, Nat. Sicil. vi, p. 129.

Geometra specularia, Guén., figured, pl. cxciv, figs. 1 & 1*a* ; Moore, Lep. Ceyl. iii. *G. inclusaria*, Walk., = (*Aplodes rubrolineata*, Pack.) ; Hulst, Ent. Am. iii, p. 113.

Thalassodes dissita, Walk., pl. cxciv, fig. 2, larva, fig. 2*a*, *rubrolimbataria*, Guén., pl. cxcv, fig. 5, figured ; Moore, Lep. Ceyl. iii.

T. leucospilota, Ceylon, Moore, Lep. Ceyl. iii, p. 427, pl. cxciv, fig. 4, n. sp.

Thalera ; Moore figures *acutissima*, Walk., pl. cxcvi, fig. 7, *flavifusata*, Walk., pl. cxciv, fig. 3, larva, fig. 3*a*, *disjuncta*, Walk., pl. cxcvi, fig. 5 ; Lep. Ceyl. iii.

T. costipunctata, Ceylon ; Moore, Lep. Ceyl. iii, p. 428, pl. cxcv, fig. 4, n. sp.

Iodis indecretata, pl. cxciv, fig. 5, and *vivilaca*, Walk., pl. cxcv, fig. 3, figured ; Moore, Lep. Ceyl. iii.

I. thalassica, Ceylon, Moore, Lep. Ceyl. iii, p. 430, pl. cxciv, fig. 6, n. sp.

Nemoria viata, Ceylon, p. 431, pl. cxcv, fig. 6, Moore, Lep. Ceyl. iii, n. sp.

Eucrostis albicostaria, H.-S., note on ; Snellen, Tijdschr. Ent. xxx, p. 49. *E. disparata*, Walk., figured, pl. cxcvi, fig. 3 ; Moore, Lep. Ceyl. iii.

E. petitaria, Askhabad, Christoph, S. E. Z. xlviii, p. 165, n. sp.

Zamarada, n. g., for *Z. translucida*, n. sp., Ceylon, p. 432, pl. cxcvii, fig. 2 ; Moore, Lep. Ceyl. iii.

Comibæna divapala, Walk., pl. cxcv, fig. 2, larva, fig. 2*a*, *semialba*, Walk., pl. cxcvi, fig. 1, larva, fig. 1*a*, figured ; Moore, Lep. Ceyl. iii.

C. pannosa, p. 433, pl. cxcv, figs. 1 & 1*a*, larva, 1*b*, *biplagiata*, Walk., p. 435, Ceylon, Moore, Lep. Ceyl. iii, n. spp.

Berta chrysolineata, fig. 4, *gavissima*, Walk., fig. 6, figured, pl. cxcvi; Moore, Lep. Ceyl. iii.

Maxates, n. g., for *Thalassodes cælataria*, Walk., figured, pl. cxcvi, figs. 2 & 2*a*; Moore, Lep. Ceyl. iii, p. 436.

Aplodes rubro-linearia, Packd., larva described; Hulst, Ent. Am. iii, p. 72.

Phorodesma pustulata, Hfngl., life-history; Rogner, Soc. Ent. ii, p. 137.

P. crucigerata, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 93, pl. iv, fig. 11, n. sp.

Agathia lætata, Fab., pl. cxcvii, figs. 1 & 1*a*, larva, 1*b*, *magnifica*, Moore, fig. 4, *hemithearia*, Guén., fig. 3, figured; Moore, Lep. Ceyl. iii.

A. pisina, Solomon Is., Butler, Ann. N. H. (5) xx, p. 243, n. sp.

Uranodoxa, n. g. (*Palyadidæ*), for *U. longicornis*, n. sp., Solomon Is.; Butler, p. 244, Ann. N. H. (5) xx.

Phrygionis argentistriata, Streck., = (*Byssodes obrussata*, Grote); Hulst, Ent. Am. ii, p. 222.

Eumelea: Moore figures, pl. cxcviii, *ludovicata*, Guén., figs. 1 & 1*a*, *vulperaria*, Cr., fig. 2, *aureliata*, Guén., figs. 4 & 4*a*; Lep. Ceyl. iii.

E. flavata, Ceylon, Moore, Lep. Ceyl. iii, p. 440, pl. cxcviii, fig. 3, n. sp.

Cocyparis insolitata, Walk., figured, pl. cxcviii, figs. 5 & 5*a*; Moore, Lep. Ceyl. iii.

Ephyra culicaria, Guén., var. = (*myrtaria*, Guén.); Hulst, Ent. Am. ii, p. 221.

Cyclophora, Hb., = (*Ephyra*, Dup.), p. 441; *C. pendularia*, L., = (*E. vusarmana*, Walk.), p. 442; *C. abhadraca*, Walk., pl. cxcix, fig. 3, larva, fig. 3*a*, *invexata*, Walk., fig. 2, *quieta*, Swin., figs. 1 & 1*a*, figured; Moore, Lep. Ceyl. iii.

Anisodes: Moore figures on pl. cxcix, *A. obrinaria*, Guén., fig. 4*a*, *carneearia*, Walk., fig. 6, *caligata*, Walk., fig. 4, *nebulosata*, Walk., fig. 5; Lep. Ceyl. iii.

A. patruelis, p. 444, pl. cxcix, fig. 4, *pallida*, pl. cci, fig. 11, *acuta*, pl. ccxv, fig. 9, *arenosaria*, pl. ccii, fig. 1, p. 445, Ceylon, Moore, Lep. Ceyl. iii; *A. pauper*, Solomon Is., Butler, Ann. N. H. (5) xx, p. 245: n. spp.

Borbacha, n. g., p. 446, for *Anisodes pardaria*, Guén., which is figured, pl. cxcix, fig. 9; Moore, Lep. Ceyl. iii.

Euacidalia punctulata, Curaçao, Snellen, Tijdschr. Ent. xxx, p. 50, pl. iv, fig. 4, n. sp.

Acidalia ossularia, Hb., and other spp. noticed: *hepaticaria*, Guén., = (*rubromarginata*, Pack.), *sideraria*, Guén., = (*californiata* and *pacificaria*, Pack.), *magnetaria*, Guén., = (*rubrolineata*, Pack.), *purata*, Guén., = (*cacuminata*, Morr.); Hulst, Ent. Am. ii, pp. 221 & 222. *A. remotata*, Guén., noticed; Oberthür, Bull. Soc. Ent. Fr. (6) vii, p. lxvii. *A. impauperata*, Walk., = (?*inductata*, Guen.); Hulst, Ent. Am. iii, p. 114. *A. insularia*, Guén., larva described; *id. l. c.* pp. 175 & 176. *A. punctata*, Tr., metamorphoses; Gross, S. E. Z. xlviii, p. 48.

A. lambessata, Algeria, OBERTHUR, Bull. Soc. Ent. Fr. (6) vii, p. lxvii, n. sp.

Idæa, Tr., used in place of *Acidalia*, Tr., p. 452 ; *I. actiosaria*, *actuaria*, *aspilataria*, *adeptaria*, *attentata*, *cæsaria*, and *extimaria*, Walk., and *fibulata*, Gn., figured ; MOORE, Lep. Ceyl. iii.

I. intensata, Ceylon, MOORE, Lep. Ceyl. iii, p. 453, pl. cc, fig. 7, n. sp.

Pomasia psylaria, Walk., figured, pl. cc, fig. 2 ; MOORE, Lep. Ceyl. iii.

Micræschus oblataria, Walk. (sub *Hyria*), figured, pl. cc, fig. 6 ; MOORE, Lep. Ceyl. iii.

Asthena sunandava, Walk. (sub *Pomasia*), figured ; MOORE, Lep. Ceyl. iii, pl. cc, fig. 4.

Pseudasthena, n. g., p. 450, for *P. lunulosa*, pl. cc, figs. 5 & 5*a*, *dissimilis*, pl. cxcix, fig. 7, p. 450, n. spp., Ceylon, to include also *Pomasia memorata*, Walk., figured, pl. cxcix, fig. 8, *Hyria rhodinaria*, Walk., and *H. grataria*, Walk., pl. cc, fig. 3 ; MOORE, Lep. Ceyl. iii.

Craspedia : MOORE figures, pl. cci, *deliciosaria*, Walk. (sub *Acidalia*), fig. 7, *addictaria*, Walk., figs. 3 & 4, *pedilata*, Feld., fig. 9, *turpisaria*, Walk., fig. 10 ; Lep. Ceyl. iii.

Ochodontia subochrea, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 245, n. sp.

Zanclopteryx ætherialis, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 246, n. sp.

Lycauges defamataria, Walk., figured, pl. cci, fig. 2 ; MOORE, Lep. Ceyl. iii.

L. postvittata, Ceylon, p. 456, pl. cci, fig. 12 ; MOORE, Lep. Ceyl. iii, n. sp.

Luxiaria exclusa, Walk., figured, pl. ccii, fig. 5, pl. ccxv, fig. 4 ; MOORE, Lep. Ceyl. iii.

Erosiidæ : the group should be placed near *Agaristidæ* and *Chalcosiidæ* ; MOORE, Lep. Ceyl. iii, p. 398.

Gathynia miraria, Walk., figured ; MOORE, Lep. Ceyl. iii, pl. clxxxvii, fig. 4.

Dirades : MOORE figures *binotata*, Walk., pl. clxxxvi, fig., *adjutaria*, Walk., fig. 9, *quadricaudata*, Walk. (sub *Erosia*), fig. 1, larva, fig. 1*a*, *palaca*, Walk. (sub *Erosia*), fig. 2, *rhagavata*, Walk. (sub *Erosia*), fig. 3 ; Lep. Ceyl. iii.

D. aluensis, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 435 ; *D. conifera*, p. 399, pl. clxxxvi, fig. 8, *prunaria*, *obscuraria*, fig. 6, p. 400, *lilacina*, fig. 4, *parcula*, fig. 5, p. 401, *irrorata*, fig. 10, *latifasciata*, figs. 12 & 12*a*, larva, 12*b*, *conchiferata*, fig. 11, p. 403, MOORE, Lep. Ceyl. iii : n. spp.

Erosia mutans, Solomon Is., BUTLER, Ann. N. H. (5) xix, p. 434, n. sp.

Erastria correctaria, Walk. (sub *Timandra*), pl. ccii, figs. 3 & 3*a*, *aventiaria*, Guén., figs. 4 & 4*a*, figured ; MOORE, Lep. Ceyl. iii ; *cf.* also *Noctuidæ*.

Rambara, n. g., for part of *Zanclopteryx*, Guén., p. 458, *saponaria*, Gn., being figured, pl. cciii, fig. 8 ; MOORE, Lep. Ceyl. iii.

Strophidia fasciata, Cr., figured, pl. cciii, fig. 7 ; MOORE, Lep. Ceyl. iii.

S. costalis, p. 246, *hyemalis*, p. 247, Solomon Is., BUTLER, Ann. N. H. (5) xx, n. spp.

Micronia aculeata, Gn., figured, pl. cciii, fig. 1 ; MOORE, Lep. Ceyl. iii.

Pseudomicronia, n. g., for *P. fraterna*, n. sp., Ceylon, p. 461, figured,

pl. cciii, fig. 2 ; Moore, Lep. Ceyl. iii. *Micronia caudata*, Walk., *nec* Fab., is type of the genus, and is renamed *P. cælata* ; Moore, *l. c.*, note.

Pigia infantularia, Gn., figured, pl. cciii, fig. 3 ; Moore, Lep. Ceyl. iii.

Deilinia variolaria, Guén., metamorphoses ; Packard, Bull. Dep. Agric. Ent. xiii, pp. 25 & 26. *D. quadrinotaria*, H. Sch., = (*septemfluaria*, Grote) ; Hulst, Ent. Am. ii, p. 223. *Deilinia*, Hb., used in place of *Sphecodes*, Hb. ; Moore, Lep. Ceyl. iii, p. 462.

D. costata, Ceylon, p. 463, pls. cciii, fig. 4, & cciv, fig. 3, Moore, Lep. Ceyl. iii, n. sp.

Gubaria, n. g., p. 464, type *Phalæna fasciata*, Fab., which is figured, pl. cciii, figs. 6, 6*a*, & 6*b* larva ; Moore, Lep. Ceyl. iii.

Macaria nora, Walk., referred to *Gubaria*, and figured, pl. cciii, figs. 5 & 5*a* ; Moore, Lep. Ceyl. iii.

M. venerata, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 94, pl. iv, fig. 12, n. sp.

Gonodela sufflata, Gr. (sub *Macaria*), pl. ccv, figs. 5 & 6, *vasudeva*, Walk., fig. 11, *honoria*, Walk., fig. 12, figured ; Moore, Lep. Ceyl. iii.

Semiothisa vellivolata, Hulst, referred to *Paraphia* ; *S. prœatomata*, Haw., = (*grassata*, Hulst), *multilineata*, Pack., = (*patriciata*, Gr.), *granitata*, Guén., var., = (*denticulata*, Gr., and *sexpunctata*, Bates) ; Hulst, Ent. Am. ii, p. 223. *S. æquiferaria*, Walk., = (*bisignata*, Walk.) ; *id. op. cit.* iii, p. 114.

Zeheba, n. g., p. 468, for *Evarsia aureata* and *marginata*, Walk., the latter figured, pl. ccv, fig. 8 ; Moore, Lep. Ceyl. iii.

Azata quadraria, p. 469, pl. ccv, fig. 1, *ferruginata*, p. 470, fig. 2, Moore, Lep. Ceyl. iii, n. spp.

Tephrina falsaria, Walk. (sub *Macaria*), figs. 1 & 2, *cacavena*, Walk., figs. 11 & 12, *pulinda*, Walk. (sub *Cleora*), figs. 7 & 8, figured, pl. cciv ; Moore, Lep. Ceyl. iii.

T. modesta, Ceylon, p. 471, pl. cciv, fig. 6, Moore, Lep. Ceyl. iii ; *T. subarenacearia*, Curaçao, Snellen, Tijdschr. Ent. xxx, p. 53, pl. iv, figs. 5 & 5*a* : n. spp.

Plutodes transmutata, Walk., figured, pl. ccv, fig. 7 ; Moore, Lep. Ceyl. iii.

Corymica arnearia, Walk., figured, pl. ccv, figs. 9 & 10 ; Moore, Lep. Ceyl. iii.

Ozola microniaria, Walk., figured, pl. cciv, fig. 9 & 10 ; larva, 10*a* ; Moore, Lep. Ceyl. iii.

Prionia squalida, Hb., figured, pl. ccv, figs. 3 & 4 ; larva, 4*a* ; Moore, Lep. Ceyl. iii.

Selidosema cricetaria, Vill., presumed migration of ; Sauber, Verh. Ver. Hamb. vi, p. 40.

Fidonia fimetaria, G. & R., = (*partitaria*, G.), and *F. stalachtaria*, Streck., = (*alternaria*, G.) ; Hulst, Ent. Am. iii, p. 9.

? *F. solitaria*, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 101, pl. v, fig. 4, n. sp.

Cleogene lutearia, influence of weather on its appearance ; Rühl, Soc. Ent. ii, p. 36.

Gorytodes uncanaria, Guén., = (*personaria*, Hy. Edw.) ; Hulst, Ent. Am. iii, p. 10. *G. trilinearia*, Packd., = (*dulcearia*, G.) ; *id. l. c.* p. 11.

Aspilates gilvaria, L., = (*Napuca oreiferata*, Walk., and *Phasiane aberrata*, Edw.) ; Hulst, Ent. Am. ii, p. 223. *A. liberaria*, Walk., synonymical note ; *id. op. cit.* iii, p. 10. *A. coloraria*, Fab., varietal and synonymical note ; *id. l. c.*

A. opusculuria, *behrensaria*, *desperaria*, p. 210, *carata*, *croceuria*, *litaria*, p. 211, N. America, Hulst, Ent. Am. iii, n. spp.

Chloraspilates bicoloraria, Pack., = (*arizonaria*, G.) ; Hulst, Ent. Am. iii, p. 10.

Comibaena, n. sp., *cf. Notodontidæ*, p. 242.

Vestigifera, n. g., for *Zerene catenaria*, Packd. ; Gumppenberg, Nova Acta Ac. L.-C. Nat. cur. xlix, p. 369.

Hazis, *cf. Lithosiidæ*, p. 237.

Celerena, *cf. Pericopidæ*, p. 234.

Euschemidæ, *cf.* antea, p. 234.

Cimelia mimicaria, Algeria, Oberthur, Bull. Soc. Ent. Fr. (6) vii, p. lviii, n. sp.

Catastictis, n. n. for *Eufitchia*, Packd. ; Gumppenberg, Nova Acta Ac. L.-C. Nat. cur. xlix, p. 370.

Amygdaloptera, n. n. for *Heteropsis*, Gn. ; Gumppenberg, Nova Acta Ac. L.-C. Nat. cur. xlix, p. 374.

Ptygmatophora, n. n. for *Ptychoptera*, Christ. ; Gumppenberg, Nova Acta Ac. L.-C. Nat. cur. xlix.

Hybernia progeminaria, melanic variation ; P. E. Soc. 1887, p. xiii.

Anisopteryx vernata, Peck., ravages ; Murtfeldt, Bull. Dep. Agric. Ent. xiii, p. 60.

Cheimatobia brumata, L., enemies of ; Rudow, Insekten-Welt, iv, pp. 21 & 25.

Eupithecia : the Austrian species ; Bohatsch (76). *E. distinctaria*, H. S., = (*constrictata*, Gn., *sextiata*, Mill., and *heydenaria*, Stgr.), but *extravasaria*, Stgr., is distinct ; localities for the species ; Bohatsch, S. E. Z. xlviii, p. 121. *E. implicata*, Walk., = (*miserulata*, Grote) ; Hulst, Ent. Am. iii, p. 114. *E. nanata*, Hb., var. *curzoni*, noticed at length ; Hoffmann, S. E. Z. xlviii, p. 267. *E. glaucomictata*, Mn., fig. 2, *variostrigata*, Alpheraky, fig. 4, figured ; Rom. Mém. iii, pl. i. *E. palpata*, Walk. (sub *Cidaria*), figured, pl. ccvi, fig. 6 ; Moore, Lep. Ceyl. iii.

E. variegata, fig. 5, *virescens*, fig. 4, *attenuata*, fig. 3, Ceylon, pl. ccvi, p. 479, Moore, Lep. Ceyl. iii ; *E. ochrovittata*, p. 7, pl. i, fig. 3, *lithographata*, p. 9, pl. i, fig. 5, *fascicostata*, p. 11, pl. i, fig. 6, Romanoff, Mém. iii : n. spp.

Pasiphila lichenodes, N. Zealand, Purdie, Tr. N. Z. Inst. xix, p. 70, n. sp.

Calluga, n. g., *Larentiidæ*, for *C. costalis*, n. sp., Ceylon, pl. ccvi, fig. 1 ; Moore, p. 480, Lep. Ceyl. iii.

Iramba, n. g., p. 480, for *I. tibialis*, n. sp., Ceylon, p. 481, pl. ccvi, fig. ii, and including *Eupithecia recensitaria*, *immixtaria*, *admixtaria*, Walk. ; Moore, Lep. Ceyl. iii.

Collix hypospilata, Gn., fig. 8, *ghosha*, figs. 9 & 10, larva, 10*a*, figured, pl. ccvi ; Moore, Lep. Ceyl. iii.

Tornos incopriarius, N. America, Hulst, Ent. Am. ii, p. 210, n. sp.

Lepiodes scolopacinaria, Guén., = (*Tornos rubiginosarius*, Morr.), *L. escaria*, Gr., = (*pygmœolaria*, Gr.), and *approximaria*, Pack., = (*infamataria*, Gr.) ; Hulst, Ent. Am. iii, p. 11.

Remodes remodesaria, Walk. (sub *Sauris*), figs. 2, 3, & 5, *proboscidaria*, fig. 6, figured, pl. ccvii ; Moore, Lep. Ceyl. iii.

R. triseriata, Ceylon, p. 485, pl. ccvii, figs. 1 & 4, Moore, Lep. Ceyl. iii ; *R. volcanica*, Solomon Is., Butler, Ann. N. H. (5) xx, p. 247 : n. spp.

Lobophora viretatâ, food-plants, &c. ; Thornewill, Ent. xx, p. 260.

Cidaria russata, melanic variation ; P. E. Soc. 1887, p. lv. *C. cambrica*, Curt., metamorphoses ; S. E. Z. xlviii, pp. 147 & 148. *C. fluctuata*, L., aberr. *neapolisata*, from Naples and Scotland, described and figured ; Millière, Ann. Soc. Ent. Fr. (6) vii, p. 218, pl. v, fig. 7. *C. nigrofasciaria*, Gooze, var. *ludovicata*, described and figured ; *id. t. c.* fig. 14. *C. fluctuata*, L., variation in Caucasus, with n. var. *acutangulata* ; Romanoff, Mém. iii, p. 2, pl. i, figs. 1 *a* & *b*. *C. luteolata*, Hulst., referred to *Acidalia* ; Hulst, Ent. Am. ii, p. 222. *C. inclinataria*, Walk., = (*Larentia perlineata*, Packd.) ; *id. op. cit.* iii, p. 114. *C.* (?) sp., larva from Arctic Asia ; Aurivillius, Veg. exp. Vet. iv, p. 79.

Anticlea occlusata, Feld. (sub *Cidaria*), figured, pl. ccvii, figs. 7 & 8 ; Moore, Lep. Ceyl. iii.

Plemyria baccata, figured, pl. ccvi, fig. 7 ; Moore, Lep. Ceyl. iii.

Eustroma dissecta, Ceylon, p. 488, pl. ccvii, fig. 9, Moore, Lep. Ceyl. iii, n. sp.

Lampropteryx molata, Feld. (sub *Cidaria*), figured, pl. ccvii, figs. 11 & 12 ; Moore, Lep. Ceyl. iii.

L. cingala, Ceylon, p. 489, pl. ccvii, fig. 10, Moore, Lep. Ceyl. iii, n. sp.

Phasiane neptata, Guén., = (*cinereata*, Bates), *trifasciata*, Pack., var., = (*mellistrigata*, G. & R.), *nubeculata*, Pack., = (*colata*, Grt.) ; Hulst, Ent. Am. ii, pp. 223 & 224. *P.* (sub *Anaitis*) *continuata*, Walk., = (*A. orillata*, Walk.) ; *id. op. cit.* iii, p. 114.

Lithostege senata, Askhabad, Christoph, S. E. Z. xlviii, p. 166 ; *L. distinctata*, Achal-Tekké, *id.* in Rom. Mém. iii, p. 104, pl. v, fig. 5 : n. spp.

Caripeta augustioraria, Walk., and allies, note on ; Hulst, Ent. Am. iii, p. 9.

Pyralidæ (including Siculodidæ, Musotimidæ, Tineodidæ, and Epipaschiidæ).

[*Cf.* Butler (104), Christoph (132, 659), Fernald (225, 226), Hulst (335), Meyrick (490, 491), Moore (515), Oberthür (534), Ragonot (598), Romanoff (659), Snellen (724).]

N.B.—The arrangement of genera is alphabetical.

Acrospila gastralis, Guén., = (*Botis levalis*, Hulst); Hulst, Ent. Am. ii, p. 22.

Actænia, n. g., near *Cledeobia*, for *A. byzacænalis*, n. sp., Tunis; Ragonot, Bull. Soc. Ent. Fr. (6) vii, p. 138.

Æliodes effertalis, Wlk., referred to *Agrotera*, and redescribed; Meyrick, Tr. E. Soc. 1887, p. 224.

Æ. discrepans, Solomon Is., Butler, Ann. N. H. (5) xx, p. 117, n. sp.

Agathodes ostentalis, Hb., figured, pl. ccxv, fig. 10; Moore, Lep. Ceyl. iii.

Anreglis demissalis, Led., metamorphoses described, pp. 155–157, figured, pl. xiii, figs. 1–1*b*; Hubbard, Ins. Orange.

? *Anreglis argentalis*, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 106, pl. v, fig. 6, n. sp.

Anemosa, Walk. (*Hypenidæ*), referred to *Pyralidæ*, and redescribed; Meyrick, Tr. E. Soc. 1887, p. 199.

Anthophilodes mœschleri, Chr., fig. 1, *concinnalis*, fig. 2, figured; Rom. Mém. iii, pl. ii.

Aporodes dentifascialis, Transcaucasus, Romanoff, Mém. iii, p. 20, pl. i, fig. 9, n. sp.

Argyrophyes (sub *Erastria*) *pustulata*, Walk., = (*nigrofasciata*, Z.), and is placed in *Nolidæ*; Butler, Ent. Am. iii, p. 17.

Asopia onychinalis, Gn., referred to *Synclera*; Meyrick, Tr. E. Soc. 1887, p. 214. *A. hipponalis*, Wlk., referred to *Botys*, and = (*B. pigresalis*, Wlk.), ♂ described; *id. t. c.* p. 231.

Astrapometis, *cf. Epipaschia*, *infrà*.

Balanotis crypsaula, n. n. for *recurvalis*, Meyr., *nec* Wlk.; Meyrick, Tr. E. Soc. 1887, p. 191.

Botyodes asialis, Gn., = (*Lygropis sirioxantha*, Meyr.); Meyrick, Tr. E. Soc. 1887, p. 228.

B. occidentalis, Curaçao, Snellen, Tijdschr. Ent. xxx, p. 57, pl. v, figs. 2 & 2*a*, n. sp.

Botys adhæsalis, *atopalis*, *damasalis*, *macaralis*, Wlk., all referred to *Pleonectusa* as one species, called *P. adhæsalis*, p. 215; *B. bianoralis*, Wlk., referred to *Pachyzancla*, p. 228; *B. celatalis*, Wlk., = (*suavalis*, *id.*), referred to *Mnesictena*, Meyr., and ♀ described, p. 235; *B. achœusalis*, Wlk., referred to *Myriostephes* and called *M. achœalis*, p. 236; *B. beatalis*, Feld., generic position noticed, p. 242: Meyrick, Tr. E. Soc. 1887. *B. origoalis* referred to *Nosophora*; Butler, Ann. N. H. (5) xx, p. 121. *B. mustilinealis*, Pack., = (*monulalis*, Hulst), *coloradensis*, Gr., = (*pergilvalis*, Hulst), *magistralis*, Gr., = (*gulosalis*, Hulst), p. 21; *B. diffissa*, G. & R., var. = (*bellulalis*, Hulst), p. 22; Hulst, Ent. Am. iii. *A. cultralis*, Stg., figured, pl. ii, fig. 4, with long synonymical note relating to *labutonalis*, Ld., and *ussurialis*, Brem., with n. var. *amurensis*; Romanoff, Mém. iii. *B. ustrinalis*, Chr., figured, pl. ii, fig. 7; *t. c.* *B. flavalis*, var. *tripunctalis*; Oberthür, Bull. Soc. Ent. Fr. (6) vii, p. xcix. *B. hyalinalis*, development of egg: Jeffrey, Ent. M. M. xxiii, pp. 173–178.

B. designatalis, p. 28, pl. ii, fig. 3, *vastalis*, p. 33, pl. ii, fig. 5, *perochrealis*, p. 35, pl. ii, fig. 6, Transcaucasus, Romanoff, Mém. iii; *B. epitrota*, N. S. Wales, Meyrick, Tr. E. Soc. 1887, p. 231; *B. aluensis*, Solomon Is., Butler, Ann. N. H. (5) xx, p. 123: n. spp.

Cacozelia, *cf. Stericta*, *infrà*.

Cataclysta lemnata, habits of larva ; Chrétien, Bull. Soc. Ent. Fr. (6) vii, p. cxlix.

C. delicata, Ceylon, p. 556, pl. ccxv, fig. 5, Moore, Lep. Ceyl. iii, n. sp.

Catamola, *cf. Epipaschia*, *infrà*.

Ceratoclasis chlorura, Queensland, Meyrick, Tr. E. Soc. 1887, p. 222, n. sp.

Chalcidoptera, n. g., near *Nosophora*, p. 119, for *C. rubra*, n. sp., Solomon Is., p. 120 ; Butler, Ann. N. H. (5) xx.

Chalcœla gemmalis, Hulst, *cf. Tineidæ*, *Choreutes*.

Cænostola cromenalis, Snell., referred to *Paraponyx*, and redescribed ; Meyrick, Tr. E. Soc. 1887, p. 206.

Conogethes lictor, *ædilis*, Queensland, Meyrick, Tr. E. Soc. 1887, p. 227, n. spp.

Constantia, n. g., near *Dattinia* (*infrà*), for *C. syrticolalis*, *ocelliferalis*, n. spp., Tunis ; Ragonot, Bull. Soc. Ent. Fr. (6) vii, p. cxxxvii.

Coptobasis deficiens, fig. 12, *colomboensis*, fig. 13, pl. ccxv, p. 556, Ceylon, Moore, Lep. Ceyl. iii, n. spp.

Cotochena trinotata, Solomon Is., Butler, Ann. N. H. (5) xx, p. 122, n. sp.

Criophthona harmodia, W. Australia, Meyrick, Tr. E. Soc. 1887, p. 243, n. sp.

Cybolomia gratiosalis, Transcaucasus, Romanoff, Mém. iii, p. 40, pl. ii, fig. 9, n. sp.

Dattinia, n. g., near *Hypotia*, for *D. syrtalis*, n. sp., Tunis ; Ragonot, Bull. Soc. Ent. Fr. (6) vii, p. 137.

Desmia ægimiusalis, var. *conjuncta* ; Butler, Ann. N. H. (5) xx, p. 117.

Deuterarcha xanthomela, Meyr., = (*Emprepes insignis*, Butl.) ; Meyrick, Tr. E. Soc. 1887, p. 186.

Deuterollyta, *cf. Epipaschia*, *infrà*.

Diasemia responsalis, Wlk., referred to *Paraponyx* and redescribed ; Meyrick, Tr. E. Soc. 1887, p. 207. *D. grammalis*, Dbld., = (*Isopteryx impulsalis*, Walk.) ; *id. t. c.* p. 219.

Diathrausta profundalis, Ld., g. & sp. redescribed ; Meyrick, Tr. E. Soc. 1887, pp. 218 & 219.

D. octomaculalis, N. America, Fernald, Ent. Am. iii, p. 127, n. sp.

Diplopseustis haplodes, Queensland, p. 197, *prophetica*, Victoria, p. 198, Meyrick, Tr. E. Soc. 1887, n. spp.

Dolichosticha (sub *Salbia*) *trapezalis*, Gn., = (*Botys creonalis*, *neoclesalis*, *suspicalis*, *convectalis*, Walk., and *Cnaphalocrocis bifurcalis*, Snell.) ; Meyrick, Tr. E. Soc. 1887, p. 217.

Dracœna pelochra, Meyrick, = (*Botys argyrogaster*, Butl.); Meyrick, Tr. E. Soc. 1887, p. 186.

Ebulea miniosalis, Gn., referred to *Mecyna*, and = (*E. orseisalis*, Wlk.) ; Meyrick, Tr. E. Soc. 1887, p. 234.

Eclipsiodes drozera, Victoria, Meyrick, Tr. E. Soc. 1887, p. 245, n. sp.

Endotricha æthopa, Meyr., = (*obscura*, Butl.) ; Meyrick, Tr. E. Soc. 1887, p. 186. *E. heliopa*, Meyr., ♀ described ; *id. t. c.* p. 195.

E. compsopa, Queensland, p. 195, *aglaopa*, Victoria, p. 196, MEYRICK, Tr. E. Soc. 1887, n. spp.

Epharpastis, n. g., *Tineodidæ*, for *E. dædala*, W. Australia, n. sp.; MEYRICK, Tr. E. Soc. 1887, p. 203.

Epipaschia, Clem., = (*Catamola*, Meyr., *Astrapometis*, Meyr., *Dentero-lyta*, Led., and *Mochlocera*, Gr.); MEYRICK, Tr. E. Soc. 1887, p. 187.

Epipaschiidæ: note on the composition and characters of the group; MEYRICK, Tr. E. Soc. 1887, p. 187.

Erebangela melanauges, Meyr., = (*Graphicopoda hecate*, Butl.); MEYRICK, Tr. E. Soc. 1887, p. 186.

Erilita, Ld., to be suppressed, as not different from *Pleonectusa*; *P. modestalis*, Ld., = (*chalinota*, Meyr.); MEYRICK, Tr. E. Soc. 1887, p. 216.

Eudorea pyralella, var. described; BANKES, Ent. M. M. xxiii, p. 258.

Eurycreon lamprodeta, Meyr., = (*Aporocosmus bracteatus*, Butl.); MEYRICK, Tr. E. Soc. 1887, p. 185. *E. evanidalis*, Berg., noticed and figured; SNELLEN, Tijdschr. Ent. xxx, p. 57, pl. v, figs. 1 & 1*a*.

E. ochrochoa, Queensland, p. 238, *homogama*, *aphrarcha*, p. 239, W. Australia, *strangalota*, N. S. Wales, p. 240, *hemicirca*, Tasmania, *liophæa*, N. S. Wales, p. 241, *ateloxantha*, Queensland, p. 242, MEYRICK, Tr. E. Soc. 1887, n. spp.

Glyphodes, Gn., = (*Pygospila*, Gn.; MEYRICK, Tr. E. Soc. 1887, p. 210. *G. serpunctalis*, Moore, synonymical note; *id. t. c.* p. 211. *G. zelimalis*, Walk., figured, pl. ccxv, fig. 6; MOORE, Lep. Ceyl. iii.

G. cosmarcha, Queensland, MEYRICK, Tr. E. Soc. 1887, p. 212; *G. deliciosa*, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 118: n. spp.

Gonocausta? azuridia, Butl., referred to *Siculodes*; MEYRICK, Tr. E. Soc. 1887, p. 186.

Hæmatia phœnicealis, Hb., referred to *Myriostephes*, and =(*M. heliamma*, Meyr.), 9 of Walker's species of *Pyralidæ* suppressed in it; MEYRICK, Tr. E. Soc. 1887, p. 235.

Haritala pactolica, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 122, n. sp.

Hemimatia rigualis, Led., noticed; SNELLEN, Tijdschr. Ent. xxx, p. 54.

Herculia bilineata, Ceylon, p. 555, pl. ccxv, fig. 11, MOORE, Lep. Ceyl. iii. n. sp.

Heterocnephes felix, Solomon Is., BUTLER, Ann. N. H. (5) xx, p. 118, n. sp.

Hellula undalis, Fab., = (*Leucochroma phidilealis* and *Leucinodes exemptalis*, Wlk.); MEYRICK, Tr. E. Soc. 1887, p. 229.

H. fulvifascialis, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 110, pl. v, fig. 8, n. sp.

Hercyna schrankiana, varietal note; ROMANOFF, Mém. iii, p. 23.

Homophysa cripalis, Gr., = (*Botis saltusalis*, Hulst); HULST, Ent. Am. iii, p. 22.

H. crambidalis, Curaçao, SNELLEN, Tijdschr. Ent. vi, p. 62, pl. v, fig. 5, n. sp.

Hydrocampa nebulosalis, N. America, FERNALD, Ent. Am. iii, p. 127, n. sp.

Hypotia proximalis, Chr., figured, pl. i, fig. 7, ♀ = (*rubella*, Swinhoe), p. 15; ROMANOFF, Mém. iii.

H. atomalis, Tekké, Christoph, S. E. Z. xlviii, p. 166, n. sp.

Ischnurges, Ld., = (*Nesolocha*, Meyr.), and *I. illustralis*, Ld., = (*N. autolitha*, Meyr.); Meyrick, Tr. E. Soc. 1887, p. 220.

Isocentris, n. g., p. 232, for *Botys æqualis*, Ld., and *Endotricha rhodophilalis*, Wlk.; Meyrick, Tr. E. Soc. 1887, p. 232.

Isopteryx flavofuscalis, Curaçao, Snellen, Tijdschr. Ent. xxx, p. 60, pl. v, figs. 3 & 4, n. sp.

Libya, n. g., near *Constantia* (*suprà*), for *L. dattinii*, n. sp., Tunis; Ragonot, Bull. Soc. Ent. Fr. (6) vii, p. cxxxviii.

Lonchodes (sub *Tatobotys*), *argillacea*, Butl., = (*ceramochra*, Meyr.); Meyrick, Tr. E. Soc. 1887, p. 214.

Marasmia hemicrossa, Tahiti, Meyrick, Tr. E. Soc. 1887, p. 217, n. sp.

Margarodes tritonias, Queensland, Meyrick, Tr. E. Soc. 1887, p. 209; *M. nereis*, Ceylon, *id. t. c.* p. 271: n. spp.

Margaronia diaphanalis, Wlk., referred to *Margarodes* and redescribed; Meyrick, Tr. E. Soc. 1887, p. 209. *M. limbata*, Butl., referred to *Margarodes*; *id. t. c.* p. 186.

Magarosticha sphænotis, Queensland, Meyrick, Tr. E. Soc. 1887, p. 204, n. sp.

Metallarcha tetraplaca, p. 236, *pseliota*, p. 237, S. Australia, Meyrick, Tr. E. Soc. 1887, n. spp.

Metasia ochrofascialis, Chr., figured; Romanoff, Mém. iii, pl. ii, fig. 10.

Microsca nitens, *M.? pusilla*, Solomon Is., Butler, p. 116, Ann. N. H. (5) xx, n. spp.

Microschœnis, n. g., for *Dosara immeritalis*, Wlk., = (*Araxes decursella*, Wlk.); Meyrick, Tr. E. Soc. 1887, p. 270.

Mixophyla, n. g., for *Crambus ermineus*, Moore; Meyrick, Tr. E. Soc. 1887, p. 269.

Mnesictena pactolina, N. Australia, Meyrick, Tr. E. Soc. 1887, p. 234, n. sp.

Mochlocera, *cf. Epipaschia*, *suprà*.

Myrmidonistis, n. g., p. 196, near *Diplopseustis*, for *M. hoplora*, n. sp., Queensland, p. 197; Meyrick, Tr. E. Soc. 1887.

Nascia cilialis, description of larva and pupa; Fletcher, Ent. M. M. xxiv, p. 115, and Stainton, *l. c.* and *t. c.* p. 133.

Nesolocha, Meyr., *cf. Ischnurges*, *suprà*.

Noctuelia plebeialis, Chr., figured; Romanoff, Mém. iii, pl. i, fig. 12.

Noctuomorpha venustalis, Ld., figured; Romanoff, Mém. iii, pl. i, fig. 10.

Nosophora chironalis, Wlk., = (*ochnodes*, Meyr.); Meyrick, Tr. E. Soc. 1887, p. 225.

N. margarita, Solomon Is., Butler, Ann. N. H. (5) xx, p. 120, n. sp.

Notarcha trigalis, Ld., reinstated as a valid species; Meyrick, Tr. E. Soc. 1887, p. 226.

N. tharsalea, Queensland, Meyrick, Tr. E. Soc. 1887, p. 225, n. sp.

Nyctarcha paracentra, W. Australia, Meyrick, Tr. E. Soc. 1887, p. 245, n. sp.

Omiodes pluto, Solomon Is., Butler, Ann. N. H. (5) xx, p. 121, n. sp.

Orobena manglisalis, Ersch., figured; Romanoff, Mém. iii, pl. ii, fig. 8.

O. vagabundalis, Askhabad, Christoph, S. E. Z. xlviii, p. 166; *O. rena-*

talis, allardalis, Algeria, Oberthür, Bull. Soc. Ent. Fr. (6) vii, p. xcix : n. spp.

Paraponyx stratiotata, mode of filling its subaquatic coccoon with air; Schmidt-Schwedt, B. E. Z. xxxi, p. 331. *P. dicentra*, Meyr., = (*Oligostigma pallida*, Butl.) ; Meyrick, Tr. E. Soc. 1887, p. 186.

Pharambara splendida, Solomon Is., Butler, Ann. N. H. (5) xx, p. 117, n. sp.

Pilocrosis ramentalis, Led., = (*Zinckenia perfuscalis*, Hulst) ; Hulst, Ent. Am. iii, p. 22.

Pleonectusa parallela, Meyr., = (*Botys horatius*, Butl.) ; Meyrick, Tr. E. Soc. 1887, p. 186. *P., cf.* also *Erilita, suprà.*

P. aurata, argentata, Solomon Is., Butler, Ann. N. H. (5) xx, p. 124, n. spp.

Pseudephyra straminea, Butl., referred to *Noctuina* ; Meyrick, Tr. E. Soc. 1887, p. 186.

Pterygisus ochreipennis, Butl., referred to *Eurycreon* ; Meyrick, Tr. E. Soc. 1887, p. 186. *P. fœdalis*, Gn., = (*Physematia* (?) *epispila*, Meyr.) ; *id. t. c.* p. 229.

Pygospila, Gn., *cf. Glyphodes, suprà.*

Pyralis ducalis, Wlk., described and referred to *Asopia* ; Meyrick, Tr. E. Soc. 1887, p. 192. *P. semitessellalis*, Wlk., referred to *Striglina* ; *id. t. c.* p. 199. *P. polyphoralis*, Wlk., referred to *Mesopempta*, and re described ; *id. t. c.* p. 202. *P. ægnusalis*, Walk., *cf. Crambidæ Canthelea.*

P. repetita, Solomon Is., Butler, Ann. N. H. (5) xx, p. 115, n. sp.

Pyrausta punicealis, food-plant, &c. ; MacLachlan, Ent. M. M. xxiv, p. 87.

Rhimphalea lindalis, Wlk., = (*ænone*, Butl.); Meyrick, Tr. E. Soc. 1887, p. 186.

Scoparia resinea, larva described; Porritt, Ent. M. M. xxiii, p. 248. *S. ingratella*, variation of; Tutt, Ent. M. M. xxiv, p. 42. *S. angustea*, double-brooded ; Sheldon, Ent. xx, p. 318. *S. centuriella*, S. V., var., = (*ninguidalis*, Hulst.) ; Hulst, Ent. Am. iii, p. 22.

S. absconditalis, Transcaucasus, Romanoff, Mém. iii, p. 17, pl. i, fig. 8; *S. threnodes*, W. Australia, p. 246, *plagiotis*, Tasmania, p. 247, Meyrick, Tr. E. Soc. 1887 ; *S. chordactis*, Straits of Magellan, *id. t. c.* p. 272 : n. spp.

Scopula decrepitalis, life-history ; Porritt, Ent. M. M. xxiv, p. 121. *S. auritincta*, Butl., referred to *Conogethes* ; Meyrick, Tr. E. Soc. 1887, p. 186.

Sedenia aspasta, W. Australia, Meyrick, Tr. E. Soc. 1887, p. 244, n. sp.

Semioceros (sub *Deuterarcha*) *mesochlora*, Meyr., = (*Endotricha annuligera*, Butl.); Meyrick, Tr. E. Soc. 1887, pp. 186 & 220.

S. parapsephis, Queensland, Meyrick, Tr. E. Soc. 1887, p. 221, n. sp.

Siculodes crypsiria, n. n. for *Pharambara reticulata*, Butl. ; Meyrick, Tr. E. Soc. 1887, p. 185.

S. magnifica, N. S. Wales, *theorina*, Queensland, p. 200, *rhythmica*, Port Darwin, p. 201, Meyrick, Tr. E. Soc. 1887, n. spp.

Spilobotys, n. g. (*Botydidæ*), for *S. arctioides*, n. sp., Solomon Is.; Butler, p. 123, Ann. N. H. (5) xx.

Stemmatophora nicalis, Gr., = (*Botis uxoreulalis*, Hulst); Hulst, Ent. Am. iii, p. 22.

S. fuscolimbalis, Tunis, Ragonot, Bull. Soc. Ent. Fr. p. cxxxviii; *S. leonalis*, Algeria, Oberthur, Bull. Soc. Ent. Fr. (6) vii, p. lxxvi: n. spp.

Stenia intervacatalis, Chr., figured; Romanoff, Mém. iii, pl. ii, fig. 11.

Stenurges designalis, Guén., = (*floridalis*, Hulst); Hulst, Ent. Am. iii, p. 22.

Stericta, Led., = (*Cacozelia*, Gr.); Meyrick, Tr. E. Soc. 1887, p. 187. *Stericta*, *cf.* also *Crambidæ*, *Salma recurvalis*.

S. (*Glossina*, Guén.) *evanescens*, Solomon Is., Butler, Ann. N. H. (5) xx, p. 115; *S.* (?) *demotis*, W. Australia, p. 187, *tornotis*, Queensland, p. 188, *pyrastis*, N. S. Wales, p. 190, Meyrick, Tr. E. Soc. 1887: n. spp.

Strepsimela signiferalis, Wallgr., = (*Rinecera nigrescens*, Butl., and *mirabilis*, Butl.); Meyrick, Tr. E. Soc. 1887, pp. 186 & 222.

S. pseudadelpha, Fiji, Meyrick, Tr. E. Soc. 1887, p. 223, n. sp.

Striglina myrtæa, Don., var. = (*Microsca plagifera*, Butl.); Meyrick, Tr. E. Soc. 1887, p. 185. *Striglina*, *cf.* also *Arhodia*, *Geometridæ*.

Synclera bleusei, Algeria, Oberthur, Bull. Soc. Ent. Fr. (6) vii, lxxxii, n. sp.

Syngamia floridalis?, = (*Hyalea fulcidalis*, Wallgr.); Meyrick, Tr. E. Soc. 1887, p. 218.

Talis dilatalis, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 109, pl. v, figs. 7 *a* & *b*; *T. arenella*, Tunis, Ragonot, Bull. Soc. Ent. Fr. (6) vii, p. cxxxviii: n. spp.

Tamraca, n. g., near *Cledeobia*, p. 554, for *Asopia torridalis*, Led., figured, pl. ccxv, figs. 7 & 8; Moore, Lep. Ceyl. iii.

Thelcteria costæmaculalis, Curaçao, Snellen, Tijdschr. Ent. xxx, p. 54, pl. 4, figs. 6 & 6*a*, n. sp.

Threnodes möschleri, Transcaucasus, Romanoff, Mém. iii, p. 22, pl. i, fig. 11, n. sp.

Tineodidæ referred to neighbourhood of *Siculodidæ*; Meyrick, Tr. E. Soc. 1887, p. 203.

Toripalpus adulatalis, p. 129, *incrustalis*, *lunulalis*, N. America, Hulst, Ent. Am. iii, p. 130, n. spp.

Trichophysetis (sub *Hydrocampa*) *cretacea*, Butl., = (*T. neophyla*, Meyr.); Meyrick, Tr. E. Soc. 1887, p. 204.

Tritæa ustalis, Wlk., = (*Nymphula sordida*, Butl.); Meyrick, Tr. E. Soc. 1887, p. 186.

Vitessa hemiallactis, n. n. for *pyraliata*, Meyr., *nec* Wlk.; Meyrick, Tr. E. Soc. 1887, p. 193.

Xeroscopa nephelitis, N. S. Wales, Meyrick, Tr. E. Soc. 1887, p. 247, n. sp.

Zebronia braurealis, Wlk., referred to *Synclera*, Ld., = (*Lepyrodes astomalis*, Feld., *G. astomalis*, Meyr.); Meyrick, Tr. E. Soc. 1887, p. 213.

Crambidæ.

[*Cf.* Christoph (132), Costa (141), Fernald (225), Hulst (235), Meyrick (490, 491, 493), Moore (515), Ragonot (596, 598), Romanoff (659), Tutt (758).]

N.B.—The arrangement of genera is alphabetical.

Acrobasis rufizonella, Wladiwostok, p. 227, *rubidella*, France, *atrisquamella*, Asia Minor, p. 228, Ragonot, Ann. Soc. Ent. Fr. (6) vii; *A. alatella*, California, *hystriculella*, Texas, p. 135, Hulst, Ent. Am. iii: n. spp.

Adelosemia, n. g., for *A. subsoritella*, n. sp., Schahkuh; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 230.

Ancylodes, n. g., for *A. griseomixtella*, *fuscovenella*, Kuldja, *pallens*, Syria, n. spp.; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 251.

Ancylosis erschoffi, Marghilan, *flammella*, Kuldja, *iranella*, Schahkuh, p. 251, *ustella*, Algeria, *diremptella*, Grenada, *signosella*, Amur, *ochricostella*, Askhabad, *byzacænicella*, Gabès, p. 252, Ragonot, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Anerastia incarnatella, *nitidicostella*, Sarepta, p. 259, *flavicolella*, Marghilan, *infamella*, Schahrud, p. 260, Ragonot, Ann. Soc. Ent. Fr. (6) vii; *A. metallactis*, N. S. Wales, Meyrick, Tr. E. Soc. 1887, p. 262; *A. clarella*, p. 137, *illibella*, *opacella*, p. 138, Texas, Hulst, Ent. Am. iii: n. spp.

Anoristia, n. g., for *A. umbrifasciella*, Namangan, *nomiella*, Transcaucasus, *gilvella*, Armenia, &c., n. spp.; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 236.

Aquita claviferella, Wlk., referred to *Thinasotia*, and = (*Crambus strigosus*, Meyr.); Meyrick, Tr. E. Soc. 1887, p. 248.

Araxes decursella, Wlk., *cf. Microschœnis*, *Pyralidæ*.

Aria, n. g., for *A. bilineella*, n. sp., Turkestan; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 235.

Aurana actiosella, Wlk., referred to *Myelois*, and ♂ described; Meyrick, Tr. E. Soc. 1887, p. 255.

Balanomis, n. g. (*Phycitidæ*), p. 264, for *B. eucyclia*, N. S. Wales, n. sp., p. 265; Meyrick, Tr. E. Soc. 1887.

Bazaria, n. g. (type, *Salebria pempeliella*, Stgr.), with *turcusis*, Biskra, &c., *expallidella*, Turcomania, n. spp.; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 234.

Bradyrrhoa marianella, Spain, *dicaricella*, Samarcand, p. 240, *subflavella*, Sicily, p. 241, Ragonot, Ann. Soc. Ent. Fr. (6) vii: n. spp.

Canthelea, Wlk., characters of, p. 253; *Pyralis ægausalis*, Wlk., referred to it, and = (*C. gratella*, Wlk.), p. 254; Meyrick, Tr. E. Soc. 1887.

Cataremna tacapella, Gabès, Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 253, n. sp.

Centrometopia, n. g., p. 236, for *C. interruptella*, *atrisparsella*, n. spp., Askhabad, p. 237; Ragonot, Ann. Soc. Ent. Fr. (6) vii.

Ceroprepes, Z., neuration noticed; *C. sebasmia*, S. Australia, Meyrick, Tr. E. Soc. 1887, p. 253, n. sp.

Christophia, n. g., for the following new species, *callipterella*, *litterella*,

Askhabad, *trilineella*, Namangan, *dattinella*, Gabès ; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 233.

Crambus microphaellus, Wlk., referred to *Ptochostola* and = (*P. dimidiella*, Meyr.) ; MEYRICK, Tr. E. Soc. 1887, p. 248. *C. ermineus*, Moore, see *Mixophyla*, *Pyralidæ*. *C. zeellus*, Fern., = (*refotalis*, Hulst), and *plejadellus*, Zinck., = (*bonnsculalis*, Hulst) ; HULST, Ent. Am. iii, p. 22.

C. salinellus, England, TUTT, Ent. xx, p. 57 ; *C. italellus*, Abruzzi, COSTA, Rend. Acc. Nap. (2) i, p. 244 ; *C. cyrenaicellus*, Tunis, RAGONOT, p. 138, Bull. Soc. Ent. Fr. (6) vii ; *C. profluxellus*, Transcaucasus, ROMANOFF, Mém. iii, p. 45, pl. ii, fig. 13 ; *C. bolterellus*, Texas, *multilinellus*, Florida, *behrensellus*, California, FERNALD, Ent. Am. iii, p. 37 : n. spp.

Cryptoblabes loxiella, Europe and Siberia, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 226, n. sp.

Dakruma coccidivora, Coms., metamorphoses figured and described ; HUBBARD, Ins. Orange, p. 76, pl. vi, fig. 3.

Dectocera, n. g., for *D. pseudolimbella*, n. sp., Fume (sic) ; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 243.

Dentinodia, n. g., for *D. craticulella*, n. sp., Marghilan ; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 251.

Dioryctria unicolorella, *bistriatella*, Washington, *minutularia*, Texas, p. 136, HULST, Ent. Am. iii, n. spp.

Dipsychophora inornata, Butl., referred to *Noctuina* ; MEYRICK, Tr. E. Soc. 1887, p. 186,

Elegia, n. g., p. 229, for *E. atrifasciella*, n. sp., Lagodechi, p. 230 ; RAGONOT, Ann. Soc. Ent. Fr. (6) vii.

Emathudes vitellinella, Grusia, *varicella*, Marghilan, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 258, n. spp.

Emporia, n. g., near *Eucarphia*, for *E. grisescens*, n. sp., Gabès ; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 239.

Ephestia (sub *Nephopteryx*) *desuetella*, Wlk., = (*ficulella*, Barrett) ; MEYRICK, Ent. M. M. xxiv, p. 8. *E. ficella*, larva described ; PORRITT, *t. c.* p. 9. *E. kühniella*, ravages ; P. E. Soc. 1887, pp. lii–liv.

E. abnormalella, Marghilan, *irroratella*, S. Russia, *gypsella*, Schahkuh, p. 256, *bacillella*, *zosteriella*, *coaretella*, Asia Minor, *baptella*, Samarcand, *habenella*, Sicily, *infumatella*, Chiclana, p. 257, RAGONOT, Ann. Soc. Ent. Fr. (6) vii ; *E. opalescella*, California, *ella*, Florida, p. 138, HULST, Ent. Am. iii : n. spp.

Epicrocis, Z., synonymy discussed, = (*Salebria*, Hein.) ; MEYRICK, Tr. E. Soc. 1887, p. 257. *E. cucometis*, Meyr., = (*Salebria squamicornis*, Butl.) ; *id. t. c.* p. 186.

E. macrota, p. 258, *mesembrina*, p. 259, W. Australia, MEYRICK, Tr. E. Soc. 1887, n. spp.

Epischnia masticella, Persia, *cuculliella*, Sarepta, *zophodiella*, Amur, *maracandella*, Samarcand, *plumbella*, Sicily, p. 237, *glyphella*, Sarepta, *nervosella*, Achal-Tekké, *muscidella*, Amasia, *aspergella*, Kuldja, *christophori*, Kasikoparan, *leucomixtella*, Tiflis, p. 238, *oculatella*, Schahrud, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Eranophthora, n. g., allied to *Hypophana*, for *E. phœnicias*, Queensland, n. sp. ; MEYRICK, Tr. E. Soc. 1887, p. 263.

Eromene pulverosa, Transcaucasus, ROMANOFF, Mém. iii, p. 47, pl. ii, fig. 14, n. sp.

Etiella villosella, N. America, HULST, Ent. Am. iii, p. 133, n. sp.

Euzophera subarcuella, Meyr., generic position is in *Euzophera*, not *Cateremna*; MEYRICK, Tr. E. Soc. 1887, p. 255.

E. holophragma, W. Australia, MEYRICK, Tr. E. Soc. 1887, p. 255; *E. politella*, *albipunctilla*, Kuldja, *costivitella*, Sarepta, *afflictella*, Amur, p. 253, *bisinuella*, *alpherakyella*, Schahkuh, *subnitidella*, Marghilan, with var. *striatella*, Altai, *pulchella*, Balkans, *albogilvella*, p. 254, Askhabad, *subcribrella*, Turcomania, p. 255, RAGONOT, Ann. Soc. Ent. Fr. (6) vii: n. spp.

Glyptoteles rhypodella, Oregon, HULST, Ent. Am. iii, p. 137, n. sp.

Gyrtona sordidella, Wlk., referred to *Melissoblaptes*, and redescribed; MEYRICK, Tr. E. Soc. 1887, p. 252.

Hedemannia, n. g., for *H. lineatella*, n. sp., Askhabad; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 244.

Hednota xylophaea, S. Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) i, p. 1038; *H. toxotis*, Melbourne, p. 249, *gelastis*, Tasmania, *asterias*, W. Australia, p. 250, MEYRICK, Tr. E. Soc. 1887: n. spp.

Heosphora psamathella, Meyr., = (*Anerastia nitens*, Butl.); MEYRICK, Tr. E. Soc. 1887, p. 186.

Heterographis pectinatella, Marghilan, p. 246, *aspidiella*, Askhabad, *syrtella*, Gabès, *bicordella*, Schahrud, *trifasciella*, *conchyliella*, Kuldja, *ignibasella*, Askhabad, *decentella*, Schahrud, *dryadella*, Kuldja, p. 246, *dumetella*, Kuldja, *lividella*, Askhabad, *harmoniella*, Gabès, *nubeculella*, Ordubad, *wockeella*, Kuldja, *delimitella*, Sarepta, *euclastella*, Kuldja, p. 247, *biligulella*, *blandella*, Ordubad, *lacteicostella*, Marghilan, *fulvobasella*, Schahrud, *gracilella*, Central Asia, *ochrotæniella*, Ordubad, p. 248, *subcaudidatella*, Marghilan, *monostictella*, Derbent, p. 249, RAGONOT, Ann. Soc. Ent. Fr. (6) vii: n. spp.

Homœosoma achrœella, Saisan, *obatricostella*, Schahkuh, *osteella*, Kasikoparan, *calcella*, Orenburg, *albatella*, Samarcand, p. 255, *nigrilimbella*, *inquinatella*, Asia Minor, *caudefactella*, Derbent, p. 256, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Hypochalcia staudingeri, Saisan, *griseœneella*, Tarbagatai, p. 241, *balcanica*, Balkans, *oxydella*, *castanella*, Kuldja, *fulvo-squamella*, Ala-Tau, *subrubiginella*, *hepaticella*, Tyrol, p. 242, *gianelliella*, Turin, *longobardella*, Lombardy, *orbipunctella*, Macedonia, p. 243, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Hypophana homosema, W. Australia, MEYRICK, Tr. E. Soc. 1887, p. 264, n. sp.

Isauria, n. g., for *I. kuldgensis*, n. sp., Kuldja; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 228.

Lasiosticha, n. n. for *Lasiocera*, Meyr.; MEYRICK, Tr. E. Soc. 1887, p. 261.

Megasis nubigerella, Varna, *pupillatella*, Askhabad, *macrodontella*, p. 239, *satanella*, Armenia, *alpherakii*, Kuldja, *noctileucella*, Kasikoparan, *pistrinariella*, Narün, p. 240, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Melissoblaptes ægidia, Adelaide, MEYRICK, Tr. E. Soc. 1887, p. 252, n. sp.

Meroptera prærella, Gr., metamorphoses; PACKARD, Bull. Dep. Agric. Ent. xiii, p. 23.

Mesodiphlebia stricticostella, Djur, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 260, n. spp.

Myelois cpelydella and allies, presumed changes of habitat; SAUBER, Verh. Ver. Hamb. vi, p. 42. *M. solskyi*, n. var. *bivitella* figured; CHRISTOPH, in Rom. Mem. iii, pl. v, fig. 9.

M. nigripalpella, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 166; *M. luticornella*, Asia Minor, *calicatella*, Kuldja, *pluripunctella*, *osseella*, Beyrout, *staudingerella*, Samarcand, p. 226, *subcognata*, *amurensis* var. of *tetricella*, Amur, *griseella*, Asia Minor, p. 227, RAGONOT, Ann. Soc. Ent. Fr. (6) vii; *M. aliculella*, Arizona, p. 135, *zelatella*, New York, *M.* (?) *georgiella*, Colorado, p. 136, HULST, Ent. Am. iii : n. spp.

Myrlaea, n. g. (type *albistrigata*, Stgr.), with *dentilineella*, n. sp., Malatia; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 234.

Nephopteryx concineratella, Tarbagatai, *imperialella* (Chr.), Caucasus, &c., *hastiferella*, Marghilan, *obscuribasella*, Saisan, p. 230, *nocticolorella*, Amur, *romanoffella*, Achal-Tekké, *cleopatrella*, Gabès, *nobilella*, Achal-Tekké, p. 231, RAGONOT, Ann. Soc. Ent. Fr. (6) vii; *N. carneella*, *amatella*, *furfurella*, *caliginella*, *tenebrosella*, p. 131, *hapsella*, *bifasciella*, *odiosella*, *subrufella*, p. 132, Southern U.S. N. America, HULST, Ent. Am. iii : n. spp.

Parthia, n. g., for *P. christophorella*, n. sp., Krasnowodsk; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 235.

Pempelia hieroglyphella, Astrabad, *ambustiella*, Armenia, *macedoniella*, Macedonia, *boeticella*, Andalusia, p. 244, *ardosiella*, Castille, *sororculella*, Parnassus, *fraternella*, Kasikoparan, &c., p. 245, RAGONOT, Ann. Soc. Ent. Fr. (6) vii; *P.? hemichlæna*, Victoria, MEYRICK, Tr. E. Soc. 1887, p. 260; *P. mulleolella*, Florida, *albipenella*, California, p. 133, *quantulella*, Texas, p. 134, HULST, Ent. Am. iii : n. spp.

Phycita pedisignella, Amasia, *nephodeella*, Transcaucasus, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 228 : n. spp.

Pinipestis reniculella, Grote, metamorphoses and ravages; PACKARD, Bull. Dep. Agric. Ent. xiii, pp. 21–23, woodcuts.

P. cacabella, New York, HULST, Ent. Am. iii, p. 133, n. sp.

Polyocha foucarti, Algeria, *neuropterella*, Marghilan, *subfasciatella*, Derbent, RAGONOT, p. 258, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Pristophora, n. g., for the following n. spp.: *dispergella*, Askhabad, *ruptifasciella*, *fumosella*, Samarcand, *polyptychella*, Schahkuh, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 229.

Prophtasia, n. g., for *P. platycerella*, n. sp., Armenia; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 259.

Prorophora, n. g., for *P. curvibasella*, n. sp., Turkestan; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 252.

Psorosa ochrifasciella, Amasia, *vittatella*, E. Siberia, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 245, n. spp.

Rhodophæa crastriella, Armenia, *niveicinctella*, Achal-Tekké, *nigrisquamella*, Samarcand, RAGONOT, Ann. Soc. Ent. Fr. (6) vii, p. 227, n. spp.

Salebria venustella, Sarepta, p. 231, *intricatella*, Persia, &c., *lepidella*,

Asia Minor, *orcella*, Marghilan, *corticinella*, Amur, *nigrisparsella*, Derbent, *veruculella*, Transcaucasus, p. 232, *melanochroella*, Turkestan, p. 233, Ragonot, Ann. Soc. Ent. Fr. (6) vii, n. sp.

Salma recurvalis, Wlk., referred to *Stericta* and redescribed; Meyrick, Tr. E. Soc. 1887, p. 189.

Saluria, n. g., p. 258, for *S. maculiritella*, p. 258, *pectigerella*, p. 259, Marghilan, n. spp.; Ragonot, Ann. Soc. Ent. Fr. (6) vii.

Schœnobius alpherakii, Stgr., figured; Romanoff, Mém. iii, pl. ii, figs. 12 *a*, *b*.

Scirpophaga fasciella, *flavicostella*, Florida, Fernald, Ent. Am. iii, p. 38, n. spp.

Seeboldia, n. g., for *S. korgosella*, n. sp., Sarepta, &c; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 253.

Selagia griseolella, Central Asia, *dissimilella*, Kasikoparan, p. 234, *disclusella*, Schahkuh, p. 235, Ragonot, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Seleucia, n. g., for *S. semirosella*, n. sp., Beyrout; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 259.

Spermatophthora gemmatilla, Illinois, *multilineatella*, Florida, *montinatatella*, California, *graciella*, Colorado, p. 134, *S.* (?) *bonifatella*, Colorado, p. 135, Hulst, Ent. Am. iii, n. spp.

Staudingeria, n. g., p. 249, for the following new species: *albinotella*, Schahrud, *versicolorella*, Krasnowodsk, *partitella*, Ordubad, p. 249, *deliculella*, Gabès, *spectrifasciella*, Achal-Tekké, *adustella*, Sarepta, &c., p. 250, Ragonot, Ann. Soc. Ent. Fr. (6) vii.

Stenoptycha pneumatella, *pallulella*, N. America, Hulst, Ent. Am. iii, p. 137, n. spp.

Syria, n. g. (type, *arenosella*, Stgr.), for *S. citrinella*, n. sp., Achal-Tekké; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 244.

Tetralopha dilucitella, Gr., = (*Toripalpus taleolalis*, Hulst); Hulst, Ent. Am. iii, p. 22.

T. piratis, Queensland, Meyrick, Tr. E. Soc. 1887, p. 257; *T. baptisiella*, N. America, Fernald, Ent. Am. iii, p. 128: n. spp.

Thialella signifera, Wlk., referred to *Crambus* and = (*Araxes admigratella* and *cæsella*, *id.*, and *C. troglodytellus*, Snell.), the ♂ described; Meyrick, Tr. E. Soc. 1887, p. 272.

Trachylepidia, n. g. (*Galleriidæ*), for *T. fructicasiella*, n. sp., Egypt and Syria; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 260.

Tylochares? ianthemis, Australia, Meyrick, Tr. E. Soc. 1887, p. 260, n. sp.

Zophodia bollii, Z., note on, and figure; Snellen, Tijdschr. Ent. xxx, p. 64, pl. v, figs. 6 & 6*a*.

Zophodiodes, n. g., for *Z. leucocostella*, Amasia, n. sp.; Ragonot, Ann. Soc. Ent. Fr. (6) vii, p. 241.

Tortricidæ.

[*Cf.* Christoph (659), Meyrick (493), Romanoff (659), Walsingham (515).]

Teras forskaleana, L., habits; Lerche, Soc. Ent. i, p. 183.

Tortrix obliquana, Beut., is probably *Pandemis albariana*, Walk., *trileucana* is *Ptycholoma persicana*, Fitch., *biustulana* is *P. melaleucana*, Zell., and *flavofasciana* is *Sericoris instrutana*, Clem.; Barrett, Ent. M. M. xxiv, pp. 35 & 36. *T. quercifoliana*, Fitch., metamorphoses; Packard, Bull. Dep. Agric. Ent. xiii, p. 31.

Cacœcia micaceana, Walk., figured, pl. ccviii, fig. 1; Moore, Lep. Ceyl. iii.

Cochylis musschliana, larva described; Chrétien, Bull. Soc. Ent. Fr. (6) vii, p. clxxxiv.

Eupœcilia degreyana, larva described; Warren, Ent. M. M. xxiv, p. 134. *E. pallidana*, Z., food-plant; Digby, Ent. M. M. xxiv, p. 89. *E. flaviciliana*, larva described; Warren, Ent. M. M. xxiv, p. 88.

Phtheochroa variolosana, Achal-Tekké, Christoph, in Rom. Mém. iii, p. 115, pl. v, fig. 10, n. sp.

Penthina sauciana, = (*grevillana*, Curt.), ex typ.; Barrett, Ent. M. M. xxiv, p. 34. *P. ustulana*, Haw., this name to be dropped, being, ex typ., either *fuligana* or *nigricostana*; *id. t. c.* p. 34. *P. fuligana*, Hb., larva noticed; Millière, Nat. Sicil. vi, p. 127.

Euchromia purpurana, Hw., life-history; Fletcher, Ent. M. M. xxiv, p. 134.

Dichelia retractana, Walk., figured, pl. ccviii, fig. 11; Moore, Lep. Ceyl. iii.

Platypeplus, n. g., p. 495, for *Eccopsis aprobola*, Meyr., which is figured pl. ccviii, fig. 2; Walsingham, in Moore, Lep. Ceyl. iii.

Lobesia permixtana or *reliquana*, synonymy and habits; Stainton, Ent. M. M. xxiv, pp. 58–61; *cf.* also Walsingham, *t. c.* p. 87.

Grapholitha cœcana referred to *Catoptria*; Tutt, Ent. xx, pp. 13–15, and Warren, *t. c.* p. 38. *G. opulentana*, Millière, habits of larva; Walsingham, Ent. M. M. xxiv, p. 87.

Stigmonota pallifrontana, Z., note on; Warren, Ent. M. M. xxiii, p. 232: larva described; *id. op. cit.* xxiv, p. 89.

Pædisca occultana, habits and larva; Balding, Ent. M. M. xxiv, p. 13.

Halonota obscurana, Steph., = (*ravulana*, H.-S.); Stainton, Ent. M. M. xxiv, p. 8.

Hedya lariciana, habits and larva; Balding, Ent. M. M. xxiv, p. 12.

Steganoptycha pygmæana, Hb., and *abiegana*, Dup., descriptive and synonymical note, the latter to be called *subsequana*, Haw.; Warren, Ent. M. M. xxiv, pp. 6–8.

Platynota rostrana, Walk., metamorphoses and parasites; Hubbard, Ins. Orange, pp. 152 & 153, figs. 71 & 72.

Isochorista cosmota, S. Australia, Meyrick, P. Linn. Soc. N.S.W. (2) i, p. 1038, n. sp.

Tineidæ.

[*Cf.* Beutenmuller (58), Camus (117), Christoph (132, 659), Meyrick (491, 493), Millière (504), Ragonot (597), Riley (634), Romanoff (659), Stainton (728, 729, 730), Threlfall (752), Tutt (759), Walsingham (515, 778), Warren (779), Wocke (807).]

Scale-eating Tineid figured, and habits described; HUBBARD, Ins. Orange, p. 77.

Choreutes ljerkandella, Thun., = (*Chalcœla gemmalis*, Hulst); HULST, Ent. Am. iii, p. 21.

Microcossus, n. g. (*Lypusidæ*), p. 497, for *mackwoodii*, n. sp., Ceylon, p. 498, pl. ccviii, fig. 9; WALSINGHAM, in Moore, Lep. Ceyl. iii.

Euplocamus pallidellus, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 117, pl. v, fig. 11, n. sp.

Hapsifera seclusella, Walk. (sub *Cimitra*), figured, pl. ccviii, figs. 12 & 13; MOORE, Lep. Ceyl. iii.

Macharopteris, n. g., for *Tinea receptella*, Walk.; WALSINGHAM, in Moore, Lep. Ceyl. iii: the insect figured, pl. ccviii, fig. 14, *t. c.*

Tineola biselliella, longevity of larva; FROHAWK, Ent. xx, p. 233.

Tinea tapezella, antennary nerve of; CHATIN (127). *T. misella* in granaries; BARRETT, Ent. M. M. xxiii, p. 234. *T. longella*, Walk., referred to *Blabophanes*, and figured, pl. ccix, fig. 1; MOORE, Lep. Ceyl. iii.

Alavona taprobana, figs. 7 & 8, *thwaitesii*, figs. 3 & 4, Ceylon, p. 503; WALSINGHAM, in Moore, Lep. Ceyl. iii.

Lasioctena, n. g. (*Tineidæ*), p. 278, for *L. sisyrœa*, S. Africa, n. sp., p. 279; MEYRICK, Tr. E. Soc. 1887.

Tirasia granulatella, Walk., referred to *Anaphorinæ*; WALSINGHAM, Tr. E. Soc. 1887, p. 137.

Eddara xylinella, Walk., referred to *Anaphorinæ*; WALSINGHAM, Tr. E. Soc. 1887, p. 137.

Anaphorinæ, WALSINGHAM (778): subfamily to contain *Acrolophus* and *Anaphora* (the species of which are revised and tabulated), *Staberrhinus*, Butl., *Eulepiste*, Wlsm., *Urbava*, Wlk., and the following n. gg.:—

Neolophus, n. g., p. 141, for *N. furcatus*, Arizona, n. sp., p. 141, pl. vii, figs. 1, 1*a*, & 1*b*; WALSINGHAM, Tr. E. Soc. 1887.

Hypoclopus, n. g., for *H. griseus*, n. sp., Arizona, pl. vii, figs. 2, 2*a*, & 2*b*; WALSINGHAM, Tr. E. Soc. 1887, p. 144.

Thysanoscelis, n. g., p. 145, for *T. hirsutus*, Espirito Santo, n. sp., p. 146, pl. vii, figs. 3–3*c*; WALSINGHAM, Tr. E. Soc. 1887.

Ankistrophorus, n. g., p. 146 (suppressed in favour of *Homonymus*, Pr. E. Soc. 1887, pl. liv), for *H. corrientis*, Corrientes, n. sp., p. 146, pl. vii, figs. 4, 4*a*, & 4*b*; WALSINGHAM, Tr. E. Soc. 1887.

Cœnogenes, n. g., p. 154, for *C. perrensella*, n. sp., Corrientes, p. 155, pl. vii, figs. 10 & 10*a*; WALSINGHAM, Tr. E. Soc. 1887.

Felderia, n. g., p. 165, type, *Acrolophus cossoides*, F. & R., figured fig. 23, pl. viii, and to include *doeri*, figs. 20, 20*a*, & 20*b*, *maculata*, Petropolis, fig. 21, p. 166, *filicicornis*, Arizona, p. 167, figs. 22 & 22*a*, *pygmæa*, Corrientes, p. 168, figs. xx & xx*a*, n. spp.; WALSINGHAM, Tr. E. Soc. 1887, pl. viii.

Orthologhus, n. g., for *O. variabilis*, n. sp., Arizona, pl. viii, figs. 24–24*c*; WALSINGHAM, Tr. E. Soc. 1887, p. 169.

Pseudanaphora, n. g., for *Anaphora arcuella*, Clemens; WALSINGHAM, Tr. E. Soc. 1887, p. 170.

Eulepiste maculifer, Arizona, p. 143, pl. vii, figs. 1*c* & 1*a*; WALSINGHAM, Tr. E. Soc. 1887, n. sp.

Acrolophus plumifrontellus, Clem., var. *angustipennella* (sic), n. var.; BEUTENMULLER, Ent. Am. iii, p. 139.

A. violaceellus, N. Carolina, *hulstellus*, Florida, *davisellus*, Arizona, BEUTENMULLER, Ent. Am. iii, p. 139; *A. cervinus*, Texas, fig. 6, *argentinus*, Buenos Ayres, fig. 7, pl. vii, p. 151, *arizonellus*, Arizona, fig. 10, p. 153, WALSINGHAM, Tr. E. Soc. 1887 : n. spp.

Anaphora morrisoni, fig. 12, *propinqua*, p. 157, *minima*, Ceara, p. 159, *bogotensis*, fig. 14, p. 160, *ferruginea*, p. 161, fig. 15, *ornata*, Colombia?, fig. 16, *uncigera*, Bogota, fig. 17, p. 163, *tenuis*, N. Carolina, fig. 18, p. 164, *macrogaster*, Arizona, figs. 19 & 19*a*, p. 165, WALSINGHAM, Tr. E. Soc. 1887, pl. viii, n. spp.

Pronuba yuccasella, its fertilisation of Yucca discussed; RILEY & HULST, Ent. Am. ii, pp. 233–238.

Acrolepia assectella, injurious to Allium; DECAUX, Feuill. Nat. xvii, p. 136.

Prays hilarella, Snell., *cf. Lithosiidæ*, *Cydosia*.

Attera, Walk., redescribed, p. 504, *Oeta impariguttella*, Walk., figured and referred to it, pl. ccix, fig. 2; WALSINGHAM, in Moore, Lep. Ceyl. iii.

Azinis hilarella, Walk., figured, pl. ccix, fig. 3; MOORE, Lep. Ceyl. iii.

Theoxenia, n. g., for *T. penicillata*, n. sp., Ceylon, p. 506, pl. ccix, fig. 4; WALSINGHAM, in Moore, Lep. Ceyl. iii.

Enæmia erythractis, p. 1043, *caminæa*, p. 1044, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) i, n. spp.

Ceratophysetis, n. g. (*Hyponomeutidæ*), p. 1044, for *C. sphærosticha*, n. sp., Australia, p. 1045; MEYRICK, P. Linn. Soc. N.S.W. (2) i.

Thyridectis, n. g. (*Hyponomeutidæ*), p. 1045, for *T. psephonoma*, n. sp., Australia, p. 1046; MEYRICK, P. Linn. Soc. N.S.W. (2) i.

Theristis mucronella, Sc., presumed migration; SAUBER, Verh. Ver. Hamb. vi, p. 41.

Plutella cruciferarum, Zell., recorded in Arctic Asia; AURIVILLIUS, Veg. exp. Vet. iv, p. 80 : 4 annual generations in Florida; ASHMEAD, Bull. Dep. Agric. Ent. xiv, p. 12.

Acmosara, n. g. (*Plutellidæ*), p. 1042, for *A. polyxena*, n. sp., Australia, p. 1043; MEYRICK, P. Linn. Soc. N.S.W. (2) i.

Ancylometis, n. g. (*Plutellidæ*, p. 276), for *A. trigonodes*, Mauritius, *scæocosma*, Réunion, p. 277, *astrapias*, Mauritius, p. 278, n. spp.; MEYRICK, Tr. E. Soc. 1887.

Gelechiadæ, character of larvæ; WOOD, Ent. M. M. xxiv, p. 160.

Diurnea fagella, melanic variation; PORRITT, P. E. Soc. 1887, p. xlv.

Eretmocera impactella, Walk. (sub *Gelechia*), figured, pl. ccix, fig. 10; MOORE, Lep. Ceyl. iii.

Tipha irrorella, fig. 9, *tinctella*, fig. 11, p. 517, Ceylon, WALSINGHAM, in Moore, Lep. Ceyl. iii, n. spp.

Strobisia aurantiaca, Ceylon, pl. ccix, fig. 6, p. 518, WALSINGHAM, Moore, Lep. Ceyl. iii, n. sp.

Timyra cingalensis, Ceylon, p. 522, pl. ccix, fig. 12, WALSINGHAM, in Moore, Lep. Ceyl. iii, n. sp.

Gelechia oronella, Walsinghm., metamorphoses; PACKARD, Bull. Dep.

Agric. Ent. xiii, p. 25. *G. tetraspilella*, Walk., referred to *Phæosaces*, Meyr., and redescribed; MEYRICK, Tr. E. Soc. 1887, p. 275.

G. semidecandrella, Britain (*maculiferella*, Stn., pars olim), STAINTON & THRELFALL, Ent. M. M. xxiii, p. 233; *G.* (*Lita*) *blandulella*, England, TUTT, Ent. M. M. xxiv, p. 105 : n. spp.

Depressaria badiella, Hb., food-plant; FLETCHER, Ent. M. M. xxiv, p. 135. *D. ciniflonella*, Z., life-history; *id. op. cit.* xxiii, p. 258.

D. pupillana, Centr. Europe, WOCKE, Z. Ent. Bresl. xii, p. 62; *D. angusta*, Ceylon, p. 508, pl. ccix, fig. 5, WALSINGHAM, in Moore, Lep. Ceyl. iii; *D. fuscicostella*, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 119, pl. v, fig. 12 : n. spp.

Tachyptilia timidella, Silesia, WOCKE, Z. Ent. Bresl. xii, p. 63, n. sp.

Magostolis, n. g. (*Gelechiadæ*), p. 1039, for *M. uranaula*, n. sp., Australia, p. 1040; MEYRICK, P. Linn. Soc. N.S.W. (2) i.

Hypsolophus (*Ypsolophus*) and *Nothris* not distinct, characters discussed; MEYRICK, Tr. E. Soc. 1887, p. 274.

Hypsolophus ianthis, Réunion, MEYRICK, Tr. E. Soc. 1887, p. 273, n. sp.

Macrernis, n. g., near *Crocanthes*, for *M. heliapta*, n. sp., Ceylon; MEYRICK, Tr. E. Soc. 1887, p. 275.

Gonionota pyrobola, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) i, p. 1041, n. sp.

Dactylota kinkerella, habits, &c., noticed; SNELLEN, Tijdschr. Ent. xxx, pp. xv–xvii.

Lecithocera (sub *Phibalocera*) *nigrana*, Dup., = (*orsoviella*, Hein.); BROWN, Act. Soc. L. Bord. xli, p. xviii.

Pancalia latreillella and *leeuwenhoekella*, note on; TUTT, Ent. M. M. xxiv, pp. 64–66.

Cryptolechia quercicella, Clem., metamorphoses, ravages; PACKARD, Bull. Dep. Agric. Ent. xiii, p. 27.

C. diluticornis, p. 519, pl. ccix, fig. 7, *tripustulata*, p. 520, fig. 8, Ceylon, WALSINGHAM, Moore, Lep. Ceyl. iii, n. spp.

Cryptophasia leucadelpha, *ecclesiastis*, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) i, p. 1040, n. spp.

Lita marmorea, Hw., and allies, characters and variation; TUTT, Ent. xx, pp. 28–31 & 291–294.

Teleia partilella, Askhabad, CHRISTOPH, S. E. Z. xlviii, p. 167, n. sp.

Metanarsia onzella, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 120, pl. v, fig. 13, n. sp.

Anarsia eburnella, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 122, pl. v, fig. 14, n. sp.

Blastobasis icerycella, N. America, destroying *Icerya purchasi*; RILEY, Rep. 1886, p. 485, pl. iii, fig. 3, n. sp.

Hypertropha chlænota, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) i, p. 1042, n. sp.

Gracilaria latifoliella, maritime Alps, MILLIÈRE, Ann. Soc. Ent. Fr. (6) vii, p. 219, pl. v, figs. 10–13 (and *cf.* Zool. Rec. xxiii, *Ins.* Titles 452, "*Nepticula latifoliella*"), n. sp.

Coleophora, parasitical *Hymenoptera* attacking; Ent. M. M. xxiii, p. 214.

C. amethystinella, Rag., described and figured, and the allied species tabulated ; RAGONOT, Ann. Soc. Ent. Fr. (6) vii, pp. 222–224, pl. v, figs. 2 & 3. *C. ochrea*, var. *thuringiaca* ; MARTINI, Z. Ent. Bresl. xii, p. 61. *C. adjunctella*, Hodg., = (*paludicola*, Stn.), life-history of ; FLETCHER, Ent. M. M. xxiv, p. 15. *C. flavaginella*, Lien., life-history ; *id. t. c.* p. 13.

C. mühligiella, Europe, STAINTON, Ent. M. M. xxiv, p. 14, but altered to *mœniacella*, *t. c.* p. 41, n. sp.

Chauliodidæ, the English species ; WARREN (779).

Œnophila v-flavum, Hw., generic position discussed ; HEYLAERTS, C.R. Ent. Belg. 1887, p. viii.

Laverna quaggella, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 123, pl. v, fig. 15, n. sp.

Butalis siccella, Zell., note on in Britain ; BANKES, Ent. M. M. xxiii, p. 275.

B. chloræma, S. Africa, MEYRICK, Tr. E. Soc. 1887, p. 279, n. sp.

Elachista scirpi, England, STAINTON, Ent. M. M. xxiii, p. 253 (habits of larva, FLETCHER, *t. c.* p. 254), n. sp.

Batrachedra pinicolella, larva ; WOOD, Ent. M. M. xxiv, p. 126, *cf.* also ATMORE, *t. c.* p. 161.

Placostola, n. g., near *Stathmopoda*, for *P. diplaspis*, Aden, n. sp., and *Gracilaria resplendens*, Staint. ; MEYRICK, Tr. E. Soc. 1887, p. 280.

Ptilocheres, n. g. (*Elachistidæ*), p. 1046, for *P. trissodesma*, n. sp., Australia, p. 1047 ; MEYRICK, P. Linn. Soc. N.S.W. (2) i.

Castorura, n. g. (*Elachistidæ*), for *C. chrysias*, n. sp., Australia ; MEYRICK, P. Linn. Soc. N.S.W. (2) i, p. 1047.

Atalopsycha melanthes, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) i, p. 1048, n. sp.

Phyllocnistis suffusella, Z., intermediate larval form of ; HOFFMANN, S. E. Z. xlviii, pp. 307–310. *P. saligna*, Zell., habits of larva ; FLETCHER, Ent. M. M. xxiii, p. 188.

Bucculatrix albiguttella, Mill., described and figured ; MILLIÈRE, Ann. Soc. Ent. Fr. (6) vii, p. 221, pl. v, fig. 1.

B. turatii (Standf.), Italy, attacking *Paliurus aculeatus*, CAMUS (117), n. sp.

Nepticula gratiosella, Stt., = (*ignobilella*, Stt., and *latifasciella*, Hein.), and *obliquella*, Hein., = (*diversa*, Glitz) ; GLITZ, S. E. Z. xlviii, pp. 276 & 277. *N. headleyella*, Stn., life-history ; FLETCHER, Ent. M. M. xxiii, p. 187.

N. woolhopiella, England, STAINTON, Ent. M. M. xxiv, p. 62, n. sp.

PTEROPHORIDÆ.

[*Cf.* CHRISTOPH (659), MEYRICK (490), MOORE (515).]

Agdistis ingens, Achal-Tekké, CHRISTOPH, in Rom. Mém. iii, p. 124, pl. v, fig. 16, n. sp.

Amblyptilia argyriodactyla, Walk. (sub. *Platyptilus*), figured, pl. ccix, fig. 13 ; MOORE, Lep. Ceyl. iii.

Trichoptilus adelphodes, W. Australia, MEYRICK, Tr. E. Soc. 1887, p. 266, n. sp.

Tetraschalis, n. g., allied to *Oxyptilus*, for *T. arachnodes*, N. S. Wales, n. sp.; MEYRICK, Tr. E. Soc. 1887, p. 267.

Oxyptilus caffer, Z., referred to *Sphenarches*, Meyr., and = (*O. anisodactylus*, Wlk., *walkeri*, Wlsm., and *S. synophrys*, Meyr.); MEYRICK, Tr. E. Soc. 1887, p. 268.

Pterophorus leucadactylus, fig. 15, *oxydactylus*, fig. 16, pl. cciv, figured; MOORE, Lep. Ceyl. iii.

Leioptilus serindibanus, Ceylon, MOORE, Lep. Ceyl. iii, p. 527, pl. cciv, fig. 14, n. sp.

(D.) *DIPTERA.*

[*Cf.* Becker (42), Bergroth (55), Bigot (64–71), Brauer (89), Coquillett (138–140), Cuccati (148a), Dugès (184), Dziedzicki (187), Forbes (234), Gercke (253), Girschner (258, 259), Gobert (262), Hofmann (315), Hudson (331), Joseph (253–255), Karsch (362–366), Kowarz (396), Lindeman (445), Lowne (451, 452), Meade (482), Mik (495–503), Ormerod (540, 542), Osten-Sacken (263, 543, 544, 545), Pokorny (564, 565), Portschinsky (572), Raschke (600, 601), Rees (603), Riley (634, 642), Röder (649–656), Schnabl (679, 680, 744), Steel (735), Tief (753), Verrall (767), Wachtl (776), Waterhouse (786), Webster (637), Weeks (792), Williston (803–805), Wulp (808–810).]

Variegation and coloration of eyes; Girschner (258). List of *Diptera* of Porto Rico; Gundlach (286). Histological changes during metamorphosis; Kowalevsky (395). Formation of egg; Blochmann (74), Korschelt (394). *Diptera* in exhumed corpses; Mégnin (483).

Cecidomyiidæ.

Cecidomyiidæ during 1886, notes on; Inchbald, Ent. xx, pp. 34–36.

Cecidomyia destructor, Say, appearance of in England; Ormerod (540), and abstract in Ent. xx, pp. 8–13; Campbell (116): discussion on its introduction in Britain; P. E. Soc. 1887, pp. 45–48: life-history; Forbes (234): in Russia, Lindeman (445): descriptive note, &c.; Inchbald & Meade, Ent. xx, pp. 169–173: parasites of; Lindeman (443), Ormerod, Ent. xx, p. 317, and Enock, P. E. Soc. 1887, pp. 39–42. *C. baccarum*, p. 289, pl. iv, figs. 1 & 1*b*, *bupleuri*, p. 291, pl., figs. 2 & 2*a*, full descriptions of, and figures of galls and ovipositors; Wachtl, Wien. ent. Z. vi.

Diplosis nigra, Meig. ? (with provisional n. n. *pyricora*), and its metamorphoses described; Riley, Wien. ent. Z. vi, pp. 201–206, woodcuts in text

Miastor subterraneus, Saxony, Karsch, Ent. Nach. xiii, p. 200, n. sp.

Limnophyes, Eaton, referred to *Chironomidæ*; Mik, Wien. ent. Z. vi, p. 34.

Mycetophilidæ.

Use of the hypopygium as systematic character discredited; Mik, Wien. ent. Z. vi, p. 190. Discussion, chiefly personal, relative to hypopygium of *Mycetophilidæ*, between Dziedzicki & Mik (187).

Gnoriste harcyniæ, Harz, Röder, Wien. ent. Z. vi, p. 155, n. sp.

Sciara sulcata, Java, WULP, Tijdschr. Ent. xxx, p. 177, n. sp.

Parexechia, Becher, is not distinct from *Exechia*, Winn.; MIK, Wien. ent. Z. p. 189.

Luminous larva in N. Zealand; HUDSON (331).

Sciophila: the luminous N. Zealand larva referred to this or an allied genus; OSTEN-SACKEN, Ent. M. M. xxiii, pp. 230 & 231.

Leptomorphus walkeri, Curt., note on; MIK, Wien. ent. Z. vi, p. 35.

SIMULIIDÆ and BIBIONIDÆ.

Simulium: sp. attacking larvæ in Japan; PRYER, Ent. M. M. xxiv, p. 156. Report on buffalo-gnats; WEBSTER (637). RILEY (634) gives a large quantity of information on two species of *Simulium* injurious to cattle in N. America, viz.: *S. pecuarum*, p. 512, pl. viii, fig. 3, *meridionale*, pl. viii, fig. 6, RILEY, Rep. 1886, n. spp.

Bibio siebkei, n. n. for *B. femoralis*, Siebke, *nec* Meig., *B. lacteipennis*, Zett., to be used for *B. albipennis*, Meig., *nec* Say; MIK, Wien. ent. Z. vi, p. 36.

CULICIDÆ and CHIRONOMIDÆ.

Culex nemorosus, anatomy of larva; RASCHKE (600, 601).

C. mucidus, Delagoa Bay, KAERSCH, Ent. Nachr. xiii, p. 25, n. sp.

Chironomus, sp., larva figured; RILEY, Rep. 1886, pl. ix, fig. 1: noticed, p. 503.

Diamesa waltlii, Meig., swarms of on fresh-fallen snow; MIK, Wien. ent. Z. vi, p. 187.

Orphnephila obscura, Zett., note on; POKORNY, Verh. z.-b. Wien, xxxvii, p. 383.

Limnophyes, Eaton, *cf. Cecidomyiidæ*.

TIPULIDÆ.

Characters of *Tipulidæ*; OSTEN-SACKEN, B. E. Z. xxxi, p. 167–171: note on Roudani's genera of; *id. t. c.* pp. 230–233: note on Bigot's classification of; *id. t. c.* pp. 234–236.

Tipulidæ brevipalpi, revision of the genera and classification of the group; OSTEN-SACKEN, B. E. Z. xxxi, pp. 163–242.

Geranomyia, Haliday, notes on; OSTEN-SACKEN, B. E. Z. xxxi, p. 173.

Dicranomyia, St., notes on; OSTEN-SACKEN, B. E. Z. xxxi, pp. 172 & 173.

Peripheroptera, Schiner, discussed at length; OSTEN-SACKEN, B. E. Z. xxxi, pp. 175–176.

P. incommoda, p. 176, *schineri*, p. 177, Brazil, OSTEN-SACKEN, B. E. Z. xxxi, pp. 173–176, n. spp.

Rhipidia punctiplena, Austria, MIK, Verh. z.-b. Wien, xxxvii, p. 173, pl. iv, figs. 1–7, n. sp.

Limnobia albonotata, Loew, referred to *Eriocera*, and redescribed; OSTEN-SACKEN, B. E. Z. xxxi, p. 223. *L. vitripennis*, Meig., noticed; *id. t. c.* p. 187.

Libnotes, Westw., notes on the genus, *L. aurantiaca*, Dolesch., redescribed, table of the known species; Osten-Sacken, B. E. Z. xxxi, pp. 179–183.

Rhamphidia longirostris, Meig., note on; Verrall, Ent. M. M. xxiii, p. 205.

R. albitarsis, Porto Rico, Osten-Sacken, B. E. Z. xxxi, p. 184, n. sp.

Elephantomyia, note on; Osten-Sacken, B. E. Z. xxxi, p. 184.

Elliptera, Schin., note on; Osten-Sacken, B. E. Z. xxxi, p. 186.

Antocha, Ost.-Sack., = (*Taphrophila*, Rond., and *Orimargula*, Mik); Osten-Sacken, B. E. Z. xxxi, p. 187.

Teucholabis fenestrata, Ceylon, *determinata*, Sula, p. 188, *polita*, Brazil, p. 189, Osten-Sacken, B. E. Z. xxxvi, n. spp.

Paratropesa, note on its venation; Osten-Sacken, B. E. Z. xxxi, p. 189.

P. collaris, Upp. Amazon, Osten-Sacken, B. E. Z. xxxi, p. 190, n. sp.

Polymoria, Phil., note on its position; Osten-Sacken, B. E. Z. xxxi, p. 192.

Orimarga virgo, Zett., noticed; Verrall, Ent. M. M. xxiii, p. 205.

Molophilus: notes on the British species; Verrall, Ent. M. M. xxiii, pp. 205–207. *M. ater*, Meig.: the *Rhicnoptila limnophiloformis* of Beuthin's *Diptera* of Hamburg is this; Mik, Wien. ent. Z. vi, p. 188.

Rhypholophus: characters of British species; Verrall, Ent. M. M. xxiii, p. 207. *R. phryganopterus*, Kol., synonymical note; Osten-Sacken, B. E. Z. xxxi, p. 192.

Erioptera, Meig., its composition and subgenera; Osten-Sacken, B. E. Z. xxxi, pp. 193–195. Note on *E. tænionota*, Mg., and other British species; Verrall, Ent. M. M. xxiii, pp. 207 & 208.

Trimicra, Ost.-Sack., note on; *T. pilipes* = (*Limnobia brunnipennis*, Macq.); Osten-Sacken, B. E. Z. xxxi, p. 195.

Chionea, mode of copula; Osten-Sacken, B. E. Z. xxxi, p. 196. *C. araneoides*, Dalm., note on habits, &c.; Girschner, Ent. Nachr. xiii, p. 131.

Symplecta, Meig., and *Symplectomorpha*, Mik, noticed; Osten-Sacken, B. E. Z. xxxi, p. 197.

S. elongata, Loew, referred to *Symplectomorpha*; Mik, Wien. ent. Z. vi, p. 36.

Gnophomyia guttatipennis, E. Africa, Karsch, B. E. Z. p. 369; *G. cordialis*, Australia, *fascipennis*, Amazons, p. 199, *caloptera*, Brazil (?), p. 200, Osten-Sacken, B. E. Z. xxxi: n. spp.

Gonomyia, Ost.-Sack., note on its groups and species; Osten-Sacken, B. E. Z. xxxi, pp. 200–203.

Mongoma, Westw., note on; Osten-Sacken, B. E. Z. xxxi, p. 203.

M. pennipes, Borneo, Osten-Sacken, B. E. Z. xxxi, p. 204, n. sp.

Lipsothrix, Loew, characters of; Osten-Sacken, B. E. Z. xxxi, p. 205.

Cladura fuscula, Loew, genus of queried; Osten-Sacken, B. E. Z. xxxi, p. 205.

Lecteria, n. g., for *Limnobia armillaris*, Fab.; Osten-Sacken, B. E. Z. xxxi, p. 206.

Conosia, Wulp, commented on; Osten-Sacken, B. E. Z. xxxi, p. 206.

N. ruina, Wallengr., noticed; Osten-Sacken, B. E. Z. xxxi, p. 207.

Epiphragma delicatula, Colombia, Osten-Sacken, B. E. Z. xxxi, p. 208, n. sp.

Ephelia, British species tabulated ; Verrall, Ent. M. M. xxiii, p. 263.

E. submarmorata, Britain, Verrall, Ent. M. M. xxiii, p. 264, n. sp.

Limnophila, Macq., its composition and subgenera ; Osten-Sacken, B. E. Z. xxxi, p. 209 : British species noticed and tabulated ; Verrall, Ent. M. M. xxiii, pp. 264–267.

L. lineolella, Ent. M. M. xxiii, p. 266, *aperta*, xxiv, p. 108, Britain ; Verrall, n. spp.

Gynoplistia, Westw., its characters, should include *Canarthria*, Thoms., and *Cloniophora*, Schin. ; Osten-Sacken, B. E. Z. xxxi, pp. 210 & 211.

Cerozodia, Westw., note on ; Osten-Sacken, B. E. Z. xxxi, p. 211–213.

C. plumosa, New Zealand, Osten-Sacken, B. E. Z. xxxi, p. 213, n. sp.

Ctedonia, Phil., note on the genus and its species ; Osten-Sacken, B. E. Z. xxxi, p. 213.

Phyllolabis, Ost.-Sack., its characters ; Osten-Sacken, B. E. Z. xxxi, p. 216.

Trichocera, note on habits, &c., including *Trichoptera*, Strobl., and *Diazoma*, Wall. ; Osten-Sacken, B. E. Z. xxxi, pp. 217–219.

Peronecera, Curtis, merged in *Anisomera* ; Osten-Sacken, B. E. Z. xxxi, p. 219.

Eriocera humberti, meleagris, p. 221, *pachyrrhina, crystalloptera*, p. 222, Ceylon, Osten-Sacken, B. E. Z. xxxi, n. spp.

Amalopis, Hal., synonymy of ; Osten-Sacken, B. E. Z. xxxi, p. 224.

Cylindrotoma ornatissima, Doles., referred to *Tanyderus* ; Osten-Sacken, B. E. Z. xxxi, p. 226 ; redescribed, p. 229.

Tanyderus forcipatus, Ost.-Sack., note on ; Osten-Sacken, B. E. Z. xxxi, p. 228.

Dolichopeza malagasya, Karsch, note on ; Osten-Sacken, B. E. Z. xxxi, p. 238.

Brachypremna pictipes, Brazil, *unicolor*, Porto Rico, Osten-Sacken, B. E. Z. xxxi, p. 239, n. spp.

Tanypremna manicata, Brazil, Osten-Sacken, B. E. Z. xxxi, p. 240, n. sp.

Macromastix, problematic species of, noticed ; Osten-Sacken, B. E. Z. xxxi, p. 241.

Tipula oleracea, L., ravages of ; Beling, Wien. ent. Z. vi, p. 61. *T. mayer-dürii*, ♀ described ; Pokorny, Wien. ent. Z. vi, p. 60, pl. i, fig. 12.

T. bilobata, Austrian Alps, Pokorny, Wien. ent. Z. vi, p. 58, n. sp.

Oreomyza, n. g., near *Tipula*, for *O. glacialis*, pl. i, fig. 1, p. 50, *irregularis*, p. 53, *austriaca*, p. 54, n. spp., Austrian Alps, Pokorny, Wien. ent. Z. vi.

Ctenophora pictipennis, p. 3, pl. i, *parca*, p. 4, fig. 2, E. Siberia, Portschinsky, Hor. Ent. Ross. xxi, n. spp.

Stratiomyiidæ.

Oplacantha annulifera, N. America, Bigot, Ann. Soc. Ent. Fr. (6) vii, p. 21, n. sp.

Hermetia laglaizei, N. Guinea, Bigot, Ann. Soc. Ent. Fr. (6) vii, p. 21, n. sp.

Stratiomys, not *Stratiomyia*, to be used; Bigot, Wien. ent. Z. vi, p. 215. *S. nigriceps*, Big., *infra*, synonymy, &c., discussion between Mik & Bigot, Wien. ent. Z. vi, p. 238, &c., also Bigot, Bull. Soc. Ent. Fr. (6) vii, p. cev.

S. unguicornis, Switzerland, Becker, B. E. Z. xxxi, p. 103; *S. brevicornis*, Central Asia, Portschinsky, Hor. Ent. Ross. xxi, p. 176; *S. nigriceps*, Mont Genèvre Alps, p. 22, *diadema*, *calopus*, p. 23, *nevadæ*, *simplex*, p. 24, N. America, Bigot, Ann. Soc. Ent. Fr. (6) vii : n. spp.

Odontomyia microleon, L., = (*Stratiomys nigriceps*, Big.); Mik, Wien. ent. Z. vi, p. 191, but *cf.* Bigot, *t. c.* p. 215.

O. pyrrhostoma, *hoodiana*, N. America, Bigot, Ann. Soc. Ent. Fr. (6) vii, p. 25, n. spp.

Rhaphiocera (?) *brevis*, New Caledonia, Bigot, Ann. Soc. Ent. Fr. (6) vii, p. 26, n. sp.

Chrysochlora quadrilineata, Cuba, Bigot, Ann. Soc. Ent. Fr. (6) vii, p. 26, n. sp.

Sargus infuscatus, Meig., note on; Becker, B. E. Z. xxxi, p. 96.

S. puntifer (sic), *picticornis*, p. 27, *pallipes*, N. America, *saphireus*, Cuba, p. 28, Bigot, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Myocheira cærulea, N. America, Bigot, Ann. Soc. Ent. Fr. (6) vii, p. 29, n. sp.

Oxycera locuples, Loew, p. 97, *engadinica*, Jaennicke, p. 98, noticed at length; Becker, B. E. Z. xxxi.

Beris fuscipes, Meig., noticed and sexes described; Becker, B. E. Z. xxxi, p. 100.

Nemotelus ruficentris, Armenia, Portschinsky, Hor. Ent. Ross. xxi, p. 177 : *N. nigripennis*, S. Africa, p. 29, *tristis*, California, p. 30, Bigot, Ann. Soc. Ent. Fr. (6) vii : n. spp.

Tabanidæ.

Silvius alpinus, Drap., = (*hirtus*, Loew); Bergroth, Ent. Nachr. xiii, p. 151.

S. astroides, p. 371, pl. iv, fig. 1, *innotatus*, p. 372, and fig. 6, E. Africa, Karsch, B. E. Z. xxxi, n. spp.

Hæmatopota albihirta, fig. 4, *maculipleua*, fig. 5, E. Africa, Karsch, p. 371, pl. iv, B. E. Z. xxxi, n. spp.

Tabanus impurus, pl. iv, fig. 2, *imbecillus*, E. Africa, Karsch, p. 370, B. E. Z. xxxi; *T. tataricus*, Central Asia, p. 178, *pulchriventris*, p. 179, *signatipennis*, p. 180, *budda*, p. 181, Mongolia, Portschinsky, Hor. Ent. Ross. xxi; *T.* (*Atylotus*) *pyrrhoceras*, p. lxxvii, *rufidens*, p. lxxviii, Japan, Bigot, Bull. Soc. Ent. Fr. (6) vii : n. spp.

Leptidæ.

Leptis monticola, Egger, described; Becker, B. E. Z. xxxi, p. 139.

L. annulata, p. 112, *scapulifera*, Japan, *maculifera*, p. 113, *albibarbis*,

p. 114, *pruinosa*, *hoodiana*, p. 115, N. America, *hirtula*, Chili, p. 116, Bigot, Bull. Soc. Z. Fr. xii, n. spp.

Chrysopila fuscipes, Corsica, p. 103, *flavida*, *tomentosa*, p. 104, *anthracina*, *testaceipes*, N. America, *antipoda*, Australia, p. 105, Bigot, Bull. Soc. Z. Fr. xii, n. spp.

Leptipalpus limbipennis, N. America, *stigmatias*, Cuba, p. 106, *obscuripennis*, N. America, *vertebratus*, Haiti, p. 107, *saffranus*, Chili, L.? *waigiensis*, Waigiou, p. 108, Bigot, Bull. Soc. Z. Fr. xii, n. spp.

Symphoromyia latipalpis, p. 108, *picticornis*, *trivittata*, p. 109, *fulvipes*, p. 110, *atripes*, *comata*, p. 111, N. America, Bigot, Bull. Soc. Z. Fr. xii, n. spp.

Dasyomma croceicornis, Chili, Bigot, Bull. Soc. Z. Fr. xii, p. 112, n. sp.

Atherix pachypus, N. America, *labiatus*, Ceylon, Bigot, Bull. Soc. Z. Fr. xii, p. 117, n. spp.

Clinocera maculipes, California, Bigot, Bull. Soc. Z. Fr. xii, p. 118, n. sp.

Hilarimorpha obscura, California, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. cxli, n. sp.

Asilidæ.

Osten-Sacken catalogues the Central American species; Biol. Centr. Am. Dipt. pp. 167–212.

Stenopogon wolfii, Caucasus, Mik, Wien. ent. Z. vi, p. 162, n. sp.

Stichopogon catulus, Mexico, Osten-Sacken, Biol. Centr. Am. Dipt. p. 170; *S. spinimanus*, Tyrol, Pokorny, Verh. z.-b. Wien. xxxvii, p. 391: n. spp.

Psammorycter vermileo, Schrnk., = (*Apogon dufourii*, Perr.); Mik, Wien. ent. Z. pp. 311–313.

Planetolestes and *Blepharepium*, note on these, and on *P. secabilis*, Walk.; Osten-Sacken, Biol. Centr. Am. Dipt. pp. 171 & 172.

Diogmites, note on specific difficulties, &c., p. 173; *D. sallæi*, Bell., figured, pl. iii, fig. 8, *cuantlensis*, Bell., p. 175, *rubescens*, Bell., p. 176, *jalapensis*, Bell., p. 177, noticed at length; Osten-Sacken, Biol. Centr. Am. Dipt.

D. memnon, Costa Rica, Panama, p. 174, pl. iii, fig. 9, *tau*, Panama, fig. 11, p. 176, Osten-Sacken, Biol. Centr. Am. Dipt., n. spp.

Saropogon senex, Mexico, Osten-Sacken, Biol. Centr. Am. Dipt. p. 179, n. sp.

Lastaurus anthracinus, Loew, figured, pl. iii, fig. 10, described, p. 179; *mutabilis*, Loew, note on, p. 180; Osten-Sacken, Biol. Centr. Am. Dipt.

Cophura, n. g. (*Dasypogonina*, near *Nicocles*), for *C. sodalis*, n. sp., Mexico, pl. iii, fig. 13; Osten-Sacken, Biol. Centr. Am. Dipt. p. 181.

Doryclus and *Megapoda*, note on the two genera; Röder, B. E. Z. xxxi, pp. 76–78. *D.* (sub *Ampyx*) *varipennis*, Walk., redescribed; Osten-Sacken, Biol. Centr. Am. Dipt. p. 182.

Megapoda ruficentris, Amazons, Röder, B. E. Z. xxxi, p. 78, n. sp.

Pseudorus and *P. bicolor*, Bell., note on venation of; Osten-Sacken, Biol. Centr. Am. Dipt. p. 183.

Atomosia mucida, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 184, n. sp.

Laphria numitor, Nicaragua, *ichneumon*, Guatemala, OSTEN-SACKEN, Biol. Centr. Am. Dipt. pl. iii, fig. 6, p. 185, n. spp.

Lampria aurifex, Mexico, Costa Rica, = (*clavipes*, Bell., *nec* Fab.); OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 187, n. sp.

Mallophora infernalis, Bell., p. 189, *pluto*, Wied., and spp. ?, p. 190, descriptive notes on; OSTEN SACKEN, Biol. Centr. Am. Dipt.

M. fautrix, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 191, pl. iii, fig. 14, n. sp.

Promachus: OSTEN-SACKEN describes some unnamed species, and notices *P. cinctus*, Bell., p. 193, *albifacies*, Will., p. 195; Biol. Centr. Am. Dipt.

P. pontifex, p. 374, *rex*, *enucleatus*, p. 375, E. Africa, KARSCH, B. E. Z. xxxi; *P. yesonicus*, Japan, BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. lxxix; *P. forfex*, Costa Rica, *anceps*, = (*fuscipennis*, Bell., *nec* Macq.), Panama, p. 194, *nobilis*, Costa Rica, p. 196, OSTEN-SACKEN, Biol. Centr. Am. Dipt.: n. spp.

Philomachus, n. g., near *Promachus*, for *P. rhopalocerus*, n. sp., E. Africa; KARSCH, B. E. Z. xxxi, p. 375.

Erax: OSTEN-SACKEN notices at length several described Central American species, and gives characters for five others not named; Biol. Centr. Am. Dipt. pp. 197–205.

E. triton, p. 200, *rapax*, p. 201, *prolificus*, p. 202, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt., n. spp.

Proctacanthus minor, Central Asia, PORTSCHINSKY, Hor. Ent. Ross. xxi, p. 5; *P. exquisitus*, Mexico, p. 206, pl. iii, fig. 12, OSTEN-SACKEN, Biol. Centr. Am. Dipt.: n. spp.

Asilus midas, Brauer, described; OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 209.

A. chrysauges, Guatemala, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 208, n. sp.

Pamponerus germanicus, L., abnormal wing-neuration; ENGEL, Ent. Nachr. xiii, p. 47.

Mochtherus deserticolus, E. Africa, KARSCH, B. E. Z. xxxi, p. 376, n. sp.

Neomochtherus plebeius, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 209, n. sp.

Ommatius peregrinus, Panama, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 210, n. sp.

Atractia marginata, Nicaragua, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 212, n. sp.

Dysmachus forcipula, Zeller, note on; BECKER, B. E. Z. xxxi, p. 109.

Alcimus tigris, E. Africa, KARSCH, B. E. Z. xxxi, p. 376, n. sp.

Laxenecera sororcula, E. Africa, KARSCH, B. E. Z. xxxi, p. 374, pl. iv, fig. 9, n. sp.

Discodamalis, n. g., near *Damalis*, p. 374, for *D. debilis*, n. sp., E. Africa, p. 373; KARSCH, B. E. Z. xxxi.

Apiocera augur, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 212, n. sp.

Nemestrinidæ.

Rhyncocephalus lativentris, Astrabad, Portschinsky, Hor. Ent. Ross. xxi, p. 4, n. sp.

Nemestrina obscuripennis, Armenia, Portschinsky, Hor. Ent. Ross. xx p. 5, pl. i, fig. 3, n. sp. ?, var. ?.

Bombyliidæ.

Peculiarities of wing-neuration in *Bombyliidæ*; Engel, Ent. Nachr. xiii, p. 46.

Hemipenthes, Loew., merged in *Anthrax*; Osten-Sacken, Biol. Centr. Am. Dipt. p. 129.

Exoprosopa chalybæa, Syria, Röder, B. E. Z. xxxi, p. 75; *E. turcomana* (*cf.* Mik, Wien. ent. Z. vi, p. 242), p. 183, pl. vi, fig. 1, *tamerlan*, p. 185, fig. 2, Central Asia, Portschinsky, Hor. Ent. Ross. xxi; *E. schmidti*, p. 372, pl. iv, fig. 7, *venus*, p. 373, and fig. 8, E. Africa, Karsch, B. E. Z. xxxi: n. spp.

Exoptata, n. g., near *Exoprosopa*, for *E. dirisa*, n. sp., California; Coquillett, Canad. Ent. xix, p. 13.

Anthrax sinuosa, Wied., p. 133, *stenozona* ?, Loew, p. 138, and several undescribed n. spp. noticed; Osten-Sacken, Biol. Centr. Am. Dipt.

A. macrops, Armenia, Portschinsky, Hor. Ent. Ross. xxi, p. 186, pl. vi, fig. 3; *A.* (*Dipalta*) *junctura*, p. 163, *keenii*, p. 164, *A. ænea*, *nebulo*, *consessor*, p. 165, *mercedis*, p. 166, *turbata*, p. 168, *anna*, *supina*, *inops*, *eudora*, p. 169, *caprea*, *inaurata*, p. 170, *lauta*, *agrestis*, *campestris*, *atrata*, *miscella*, p. 171, *scitula*, p. 172, *vana*, *syrtis*, p. 173, *cautor*, p. 175, *adumbrata*, *perplexa*, *vigilans*, p. 176, *fumida*, *impiger*, *dispar*, p. 177, *plagosa*, *nugator*, p. 178, *mira*, p. 179, *willistonii*, p. 181, *effrena*, *arizonensis*, *otiosa*, p. 182, Coquillett, Tr. Am. Ent. Soc. xiv; *A. lepidota*, p. 130, pl. ii, fig. 18, *eumenes*, fig. 19, *chimæra*, p. 131, *scylla*, p. 132, pl. iii, fig. 1; *A.* (*Hyalanthrax*) *faustina*, p. 136, *sabina*, p. 137, *moneta*, p. 138, *livia*, pl. iii, fig. 2, *agrippina*, fig. 3, p. 139, all from Mexico, Osten-Sacken, Biol. Centr. Am. Dipt.: n. spp.

Oncodocera, Macq., characters and affinities with *Lomatia* discussed; Osten-Sacken, Biol. Centr. Am. Dipt. p. 141.

Epacmus, n. n. for *Leptochilus*, Loew, p. 142, characters of, p. 143; *E. modestus*, Loew, noticed, *l. c.*: Osten-Sacken, Biol. Centr. Am. Dipt.

Aphœbantus, Loew, characters and affinities discussed, pp. 143–145, *A. mus*, sp. ?, p. 147, *cervinus*, Loew, p. 148, noticed; Osten-Sacken, Biol. Centr. Am. Dipt.

A. cyclops, Mexico, p. 146, pl. iii, fig. 4, *rattus*, p. 147, *conurus*, p. 148, N. America, *bisulcus*, Mexico, p. 148, *carbonarius*, N. America and Mexico, *pecdes*, Mexico, p. 149, Osten-Sacken, Biol. Centr. Am. Dipt. n. spp.

Lomatia fuscipennis, Amur, Portschinsky, Hor. Ent. Ross. xxi, p. 183, n. sp.

Bombylius, L., 5 Central American species noticed; Osten-Sacken, Biol. Centr. Am. Dipt. pp. 150 & 151.

B. megacephalus, Persia, PORTSCHINSKY, Hor. Ent. Ross. xxi, p. 182, n. sp.

Comastes, Ost.-Sack., addition to characters of; OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 151.

Pantarbes, Ost.-Sack., amended description; OSTEN-SACKEN, Biol. Centr. Am. Dipt. pp. 151 & 152.

P. pusio, Mexico, pl. iii, figs. 15 & 15*a–d*, *willistoni*, N. America, p. 153, OSTEN-SACKEN, Biol. Centr. Am. Dipt., n. spp.

Lordotus, Loew, characters supplemented; OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 154.

L. canalis, p. 115, *miscellus*, *zona*, *apicula*, p. 116, COQUILLETT, Ent. Am. iii, n. spp.

Paracosmus morrisoni, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 155, n. sp.

Phthiria consors, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 155, n. sp.

Systropus, Wied., American species tabulated; OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 157.

S. rogersi, Costa Rica, *cerdo*, Panama, p. 158, *lugubris*, *ruficentris*, p. 159, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt., n. spp.

Lepidophora, the known species noticed; OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 160.

Eclimus (?) *auripilus*, Mexico, p. 161, pl. iii, fig. 5, OSTEN-SACKEN, Biol. Centr. Am. Dipt., n. sp.

Thevenemyia, Big., = (*Epibates*, Ost.-Sack.); BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. lx. *T. californica* noticed; *id. t. c.*

Eniconeura fenestralis, Macq, note on its true habitat; BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. lx.

Toxophora, the African species discussed; KARSCH, Ent. Nachr. xiii, p. 24.

T. cæruleiventris, Delagoa Bay, KARSCH, Ent. Nachr. xiii, p. 25, n. sp.

Stomylomyia, n. g., near *Cyllenia*, for *S. leonina*, n. sp., Asia Minor; BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. xxxi.

Hyperalonia, Rond., = (*Velocia*, Coq.); COQUILLETT, Canad. Ent. xix, p. 12.

Argyrospila, note on; COQUILLETT, Canad. Ent. xix, p. 12.

THEREVIDÆ.

Thereva bolbocera, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 162, n. sp.

CYRTIDÆ.

Acrocera trigrammoides, Tyrol, POKORNY, Verh. z.-b. Wien, xxxvii, p. 387, pl. vii, figs. 1*a*, *b*, *c*, *braueri*, p. 388, pl. vii, fig. 2, n. spp.

Ocnaea grossa, Costa Rica, p. 163, pl. iii, fig. 7, *trichocera*, Panama, p. 164, OSTEN-SACKEN, Biol. Centr. Am. Dipt., n. spp.

Oncodes benacensis, Tyrol, POKORNY, Verh. z.-b. Wien, xxxvii, p. 389,

pl. vii, fig. 3 ; *O. humeralis*, Mexico, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 164 : n. spp.

Pialeoidea metallica, Guatemala, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 165, n. sp.

Lasia, venation of noticed; OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 166.

L. scribæ, Guatemala, OSTEN-SACKEN, Biol. Centr. Am. Dipt. p. 166, n. sp.

EMPIDÆ.

Rhamphomyia culicina, p. 111, *flaviventris*, Macq., p. 109, *geniculata*, Meig., p. 112, *stigmosa*, Macq., p. 115, *dispar*, Zett., p. 116, noticed at length ; BECKER, B. E. Z. xxxi.

R. sancti-mauritii, p. 113, *angustipennis*, *umbripes*, p. 117, *crinita*, p. 118, *melania*, p. 119, Switzerland, BECKER, B. E. Z. xxxi ; *R. argentata*, Harz, RÖDER, Wien. ent. Z. vi, p. 113 ; *R. morissoni*, p. cxli, *pachymera*, *nigrita*, *geniculata*, p. cxlii, N. America, BIGOT, Bull. Soc. Ent. Fr. (6) vii : n. spp.

Analytical table of genera of *Hemerodromiæ* ; RÖDER (653).

Empis semicinerea, Loew, descriptive notice ; BECKER, B. E. Z. xxxi, p. 123, n. sp.

E. serena, Tyrol, POKORNY, Verh. z.-b. Wien. xxxvii, p. 393 ; *E. malleola*, p. 120, *lamellicornis*, p. 124, *unistriata*, p. 125, Switzerland, BECKER, B. E. Z. xxxi ; *E. diaphorina*, *benigna*, Mexico, p. 215, *pegasus*, Panama, p. 216, OSTEN-SACKEN, Biol. Centr. Am. Dipt. : n. spp.

Hilara scrobiculata, Loew (and other species) noticed ; BECKER, B. E. Z. xxxi.

H. cærulea, Switzerland, BECKER, B. E. Z. xxxi, p. 128 ; *H. magica*, Carinthia, MIK, Wien. ent. Z. vi, p. 100 : n. spp.

Steleocheta, n. g., p. 129, for *S. setacea*, n. sp., Switzerland, p. 130, woodcuts ; BECKER, B. E. Z. xxxi.

Brachystoma vesiculosum, Fab., n. var., *flavicolle* ; MIK, Wien. ent. Z. vi, p. 103.

Gloma, Meig., *nec* Loew, redescribed ; BECKER, B. E. Z. xxxi, p. 131, woodcut.

G. ossicula, Switzerland, BECKER, B. E. Z. xxxi, p. 132, n. sp.

Tachydromia : BECKER describes varr. of *macula*, Zett., and *varia*, Walk., p. 134, *pubicornis*, Zett., p. 137, *nigrina*, Meig., p. 138 ; B. E. Z. xxxi.

T. testacea, p. 135, *lateralis*, p. 137, *montana* (Loew), p. 138, Switzerland, BECKER, B. E. Z. xxxi, n. spp.

Microphorus velutinus, Mcq. & Wlk., synonymical note ; MIK, Wien. ent. Z. vi, p. 100.

M. vicinus, Carinthia, MIK, Wien. ent. Z. vi, p. 99, n. sp.

Philolutra erminea, Carinthia, MIK, Wien. ent. Z. vi, p. 161, n. sp.

Chamædipsia longicornis, Carinthia, MIK, Wien. ent. Z. vi, p. 162, n. sp.

Clinocera, *cf. Leptidæ*.

Dolichopodidæ.

Dolichopus myosota, Mexico, p. 213, Osten-Sacken, Biol. Centr. Am. [illegible] n. sp.

Aphrosylus raptor, teeth of; Harris, Sci. Goss. xxiii, pp. 108 & 109.

Syrphidæ.

Synopsis of North American; Williston (803).

Additions to and corrections of Catalogue of South American *Syrphidæ*; Williston, Ent. Am. iii, pp. 27 & 28.

Epidemic disease in; Ent. Nachr. xiii, p. 266.

Microdon pulcher, St. Domingo, p. 5, *limbus*, Florida, *pachystylum*, Georgia, p. 8, *falcatus*, Mexico, p. 9, *scitulus*, Florida, p. 10, Williston, Bull. U. S. Nat. Mus. xxxi, n. spp.

Chrysotoxum przewalskyi, Central Asia, p. 6, *robustum*, Astrabad, p. 7, pl. i, fig. 4, Portschinsky, Hor. Ent. Ross. xxi; *C. ypsilon*, New Mexico, p. 14, *integre*, Arizona, p. 16, Williston, Bull. U. S. Nat. Mus. xxxi : n. spp.

Pipiza puella, p. 27, *albopilosa*, *nigripilosa*, p. 28, *pistica*, *pisticoides*, *pulchella*, p. 29, N. America, Williston, Bull. U. S. Nat. Mus. xxxi : n. spp.

Lepromyia, n. n. for *Lepidomyia*, Loew, *nec* Bigot; Williston, Bull. U. S. Nat. Mus. xxxi, p. 31.

Lepromyia, Will., = (*Lepidostola*, Mik); Mik, Wien. ent. Z. vi, p. 265.

Chrysogaster pulchella, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, p. 35, pl. ii, fig. 9, n. sp.

Xanthogramma maculipenne, Caucasus, Mik, Wien. ent. Z. vi, p. 163, n. sp.

Chilosia petulca, p. 39, *baroni*, p. 40, *versipellis*, p. 44, *lugubris*, p. 45, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, n. spp.

Melanostoma cærulescens, p. 49, *angustatum*, p. 50, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, n. spp.

Platychirus chætopodus, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, p. 59, n. sp.

Eristalis fuscicornis, *macrops*, *dulcis*, *melanops*, p. 100, *decŏlor*, p. 104, Pungo-Andongo, Karsch, Ent. Nachr. xiii, n. spp.

Syrphus mentalis, p. 72, *pauxillus*, *sodalis*, p. 74, *lotus*, p. 75, *xanthostomus*, *genualis*, p. 86, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, n. spp.

Mesograpta aurulenta, San Domingo, Williston, Bull. U. S. Nat. Mus. xxxi, p. 102, n. sp.

Allograpta obliqua, Say, metamorphoses; Ashmead, Bull. Dep. Agric. Ent. xiv, p. 14.

Sphærophoria melanosa, California, Williston, Bull. U. S. Nat. Mus. xxxi, p. 106, n. sp.

Baccha babista, Walk., metamorphoses described and figured, p. 183, figs. 81–83, *lugens*, Loew, *puparium*, fig. 184; Hubbard, Ins. Orange.

B. brevis, Pungo-Andongo, Karsch, Ent. Nachr. xiii, p. 97 ; *B. torva*, Texas, Williston, Bull. U. S. Nat. Mus. xxxi, p. 124 : n. spp.

Neoascia, n. n. for *Ascia*, Meig., *nec* Scop., p. 111, *N. distincta*, n. sp., Massachusetts, p. 112 ; Williston, Bull. U. S. Nat. Mus. xxxi. Note on this name ; Mik, Wien. ent. Z. vi, p. 265.

Volucella bombylans, L., n. var. *xantholeuca* ; Mik, Wien. ent. Z. vi, p. 265.

V. brevipila, Amur, Portschinsky, Hor. Ent. Ross. xxi, p. 7 ; *V. comstocki*, *anna*, Arizona, p. 138, *eugenia*, Florida, p. 139, *isabellina*, Arizona, p. 140, *victoria*, New Mexico, p. 145, *chætophora*, Mexico, 149, Williston, Bull. U. S. Nat. Mus. xxxi : n. spp.

Copestylum limbipennis, Mexico, Williston, Bull. U. S. Nat. Mus. xxxi, p. 152, n. sp.

Sericomyia volucellina, figured ; Portschinsky, Hor. Ent. Ross. xxi, pl. vi, fig. 5.

S. bifasciata, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, p. 154, n. sp.

Doliosyrphus rileyi, New Mexico, Williston, Bull. U. S. Mus. Nat. xxxi, p. 178, n. sp.

Helophilus continuus, Loew, characters of ; Portschinsky, Hor. Ent. Ross. xxi, p. 9.

H. distinctus, *modestus*, p. 192, *conostomus* = (*lineatus*, Ost.-Sack., *nec* F.), p. 193, *bilinearis*, p. 295, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, n. spp.

Tropidia calcarata, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, p. 208, n. sp.

Criorhina (*Cynorhina*) *nigra*, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, p. 214, n. sp.

Merodon fuscinervis, Crete, Röder, B. E. Z. xxxi, p. 73, n. sp.

Brachypalpus zugmayeriæ, Caucasus, Mik, Wien. ent. Z. vi, p. 164 ; *B. rileyi*, *parvus*, p. 222, *sorosis*, p. 223, N. America, Williston, Bull. U. S. Nat. Mus. xxxi : n. spp.

Xylota (?) *tuberans*, Texas, p. 225, *X. marginalis*, *analis*, p. 226, *notha*, p. 228, *elongata*, p. 234, N. America, Williston, Bull. U. S. Nat. Mus. xxxi, n. spp.

Spilomyia vespiformis, L., varr. described ; Portschinsky, Hor. Ent. Ross. xxi, pp. 7 & 8.

S. liturata, New Mexico, *pleuralis*, Mexico, p. 247, Williston, Bull. U. S. Nat. Mus. xxxi, n. spp.

Milesia eristaloides, Transcaucasus, Portschinsky, Hor. Ent. Ross. xxi, p. 187, pl. vi, fig. 4, n. sp.

Temnostoma pictulum, p. 251, *venustum*, p. 253, N. America, Williston, Bull. U. S. Nat. Mus. xxxi : n. spp.

Ceria loewii, Arizona, p. 260, *nigripennis*, p. 263, *superba*, *pedicellata*, p. 264, *scutellata*, p. 265, Mexico, Williston, Bull. U. S. Nat. Mus. xxxi : n. spp.

Priomerus gigathinus, Ecuador, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. lxxix, n. sp.

Graptomyza suavissima, E. Africa, Karsch, B. E. Z. xxxi, p. 382, pl. iv, fig. 12, n. sp.

Melithreptus scriptus, L., oviposition ; PIERRE, Bull. Soc. Saone, iv, p. 40.

Plagiocera latevittata, Big., and *maculipennis*, Loew, note on ; KARSCH, Tijdschr. Ent. xiii, p. 98.

Ischyroptera, n. g., p. 397 (type of a peculiar group, *Ischyropterini*, p. 398), for *I. bipilosa*, n. sp., Tyrolese Alps, p. 399, POKORNY, Verh. z.-b. Wien, xxxvii, n. sp.

CONOPIDÆ.

Conopsidi : BIGOT admits only three valid genera, viz., *Pleurocerina*, *Brachyglossum*, *Conops* ; Ann. Soc. Ent. Fr. (6) vii, pp. 30 & 31.

List of Bohemian *Conopidæ* ; KOWARZ (396).

Conops fuscanipennis, Big., note on ; MIK, Wien. ent. Z. vi, p. 268. *C. fuscipennis*, synonymical note ; BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. cevi.

C. rugifrons, E. Africa, KARSCH, B. E. Z. xxxi, p. 381 ; *C. aurulentus*, S. Europe, p. 31, *fuscanipennis*, Sicily, p. 32, *euzonatus*, Caucasus, *calopus*, Pondicherry, p. 33, *tenellus*, p. 35, *nubeculosus*, Ceylon, *annulosus*, Moluccas, p. 36, *maculipes*, C. of Good Hope, p. 37, *nigrimanus*, p. 38, *ochreiceps*, p. 39, N. America, *nigrifacies*, Mexico, p. 40, *tricolor*, Monte Video, p. 41, *carbonarius*, Mexico, p. 42, *satanicus*, *piceus*, p. 43, *macer*, p. 44, Australia, *punctum*, S. America ?, p. 45, *pruinosus*, S. America ?, p. 46, BIGOT, Ann. Soc. Ent. Fr. (6) vii : n. spp.

Physocephala bimarginipennis, Pungo-Andongo, KARSCH, Ent. Nachr. xiii, p. 10, n. sp.

Zodion triste, California, p. 203, *flavipenne*, *zebrinum*, Mexico, p. 204, *flavocaudatum*, Chili, p. 205, BIGOT, Ann. Soc. Ent. Fr. (6) vii : n. spp.

Glossigona nigripes, Drap., = (*bicolor*, Meig.) ; BERGROTH, Ent. Nachr. xiii, p. 151.

Glossigona palliceps, Algeria, p. 205, *rubida*, *maculifrons*, N. America, p. 206, BIGOT, Ann. Soc. Ent. Fr. (6) vii, n. spp.

Gonirhynchus castaneus, N. America, BIGOT, Ann. Soc. Ent. Fr. (6) vii, p. 207, n. sp.

PIPUNCULIDÆ.

Nephrocerus problematic sp. (? *lapponicus*, Zett.), note on ; POKORNY, Verh. z.-b. Wien, xxxvii, p. 401.

Pipunculus, tabulation of the Bohemian species, with notes on *P. auctus*, Fll., *pilosus*, Zett., *terminalis*, Th., *zonatus*, Zett., *fuscipes*, Zett., *pulchripes*, Th., *flavipes*, Mg., *varipes*, Mg., *rufipes*, Mg., *pratorum*, Fll., &c. ; KOWARZ, Wien. ent. Z. vi, pp. 147–154.

P. semifumosus, p. 149, *zugmayeriæ*, p. 151, *wolfii*, p. 152, *xanthocerus*, p. 153, Bohemia, KOWARZ, Wien. ent. Z. vi, n. spp.

ŒSTRIDÆ.

Classification of *Œstridæ* based on larvæ and perfect insects ; BRAUER, Wien. ent. Z. vi, pp. 4–15 : recent bibliography of ; *id. t. c.* p. 71.

Rhinœstrus, Brauer, fuller characters of; Brauer, Wien. ent. Z. vi, pp. 15 & 16.

Œstridæ larvæ and their attacks on man discussed; Brauer, Wien. ent. Z. vi, pp. 72–74.

Œstrus ovis, L., larval history; Ormerod, Rep. xi, pp. 121–126.

Cobboldia, n. g., for *Œstrus elephantis*, Cobb.; Brauer, Wien. ent. Z. vi, p. 218: larva fully described; *id. t. c.* p. 220.

Gastrophilus rhinozerontis, Owen, note on; Karsch, B. E. Z. xxxi, p. xx.

Bot-larvæ (*Gastrophilus*) in the Terrapin; Leidy, P. Ac. Phil. 1887, pp. 393 & 394.

Hypoderma, wing-neuration of species of, noticed; Brauer, Wien. ent Z. vi, pp. 75 & 76: larva attacking man; Mik (501). *H. bovis*, Deg., ravages, remedies, metamorphoses; Ormerod, Rep. xi, pp. 102–117.

Oestroderma, n. g., p. 190, for *O. potanini*, n. sp., Mongolia, p. 191, pl. vi, fig. 6; Portschinsky, Hor. Ent. Ross. xxi.

Tachinœstrus, n. g., p. 194, for *T. semenovi*, n. sp., Mongolia, p. 195, pl. vi, fig. 7; Portschinsky, Hor. Ent. Ross. xxi.

Tachinœstrus queried as probably *Trixa*; Mik, Wien. ent. Z. vi, p. 241.

Pharyngobolus cameli, structure of larva described and figured; Steel, J. Bomb. N. H. Soc. ii, pp. 28 & 29, pl.

Ctenostylum: its position should probably be near *Cephalia* and *Michogaster*; Brauer, Wien. ent. Z. vi, p. 75: note on its systematic position; Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clvii.

Microcephalus przewalski, Central Asia, Portschinsky, Hor. Ent. Ross. xxi, p. 9, pl. i, fig. 7, n. sp.

Tachinidæ.

Bogosia engeli, Pungo-Andongo, Karsch, Ent. Nachr. xiii, p. 4, n. sp.

Phasia rothi, Zett., referred with doubt to *Tachinidæ*; Girschner, Ent. Nachr. xiii, p. 76.

Alophora, classification and affinities discussed; Girschner (259). *A.* (*Hyalomyia*) *obesa*, Fbr., further notes on; Girschner, Ent. Nachr. xiii, pp. 74, 75, 129, & 130.

A. (*Hyalomyia*) *barbifrons*, Germany, Girschner, Z. Naturw. lx, p. 410, n. sp.

Paralophora, n. subg. of *Alophora*; Girschner, Z. Naturw. lx, p. 412.

Litophasia, n. g., for *Alophora hyalipennis*, *pygmæa*, *nana*; Girschner, Z. Naturw. lx, p. 380.

Ocyptera umbripennis, Wulp, and *fuscipennis*, Wied., note on; Wulp, Tijdschr. Ent. xxx, p. 175, pl. xi, fig. 10.

Hystricia fulvida, N. America, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. cxxxix, n. sp.

Jurinia barbata, *gonioides*, Mexico, Bigot, Bull. Soc. Ent. Fr. 6) vii, p. cxl, n. spp.

Echinomyia jakowlewii and *albidopilosa*, Portsch., noticed; Portschinsky, Hor. Ent. Ross. xxi, p. 15.

E. rubrifrons, N. America, *cora*, *macrocera*, p. cxl, *notata*, p. cxli, Mexico, Bigot, Bull. Soc. Ent. Fr. (6) vii, n. spp.

Gonia fasciata, *försteri*, Mg., characters of; Röder, Ent. Nachr. xiii, pp. 87–89. *G. frontosa*, Say, redescribed; Williston, Canad. Ent. xix, p. 8.

G. senilis, *porca*, p. 10, *exul*, p. 11, *sequax*, p. 12, N. America, Williston, Canad. Ent. xix, p. 8, n. spp.

Elachipalpus nigrifrons, Mexico, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clxi, n. spp.

Cryptopalpus flaviceps, *melanopygatus*, N. America, Bigot, Bull. Soc Ent. Fr. (6) vii, p. cxli, n. spp.

Tachina, sp., mode of oviposition; Weeks (792). *T.*, sp., its oviposition, &c.; Riley, Rep. 1886, pp. 534 & 535.

Tachina (*Exorista*) *futilis* (Say, M.S.), p. 161, *blanda*, p. 162, *hirsuta*, p. 163, *deilephilæ* (Riley, M.S.), p. 164, *theclarum* (Scudder), p. 166, N. America, Osten-Sacken, Canad. Ent. xix, n. spp.

Paragusia elegantula, Zett., characters of, = (*P. frivaldszkyi*, Schin.); Sintenis, Wien. ent. Z. vi, p. 259.

Masicera pratensis, L., abnormal wing-neuration; Ent. Nachr. xiii, p. 47.

Microtricha, n. n. for *Stylomyia*, Wulp, *nec* West; Mik, Wien. ent. Z. vi, p. 269.

Degeeria proxima, E. Africa, Karsch, B. E. Z. xxxi, p. 376, n. sp.

Blepharipeza trichopsis, Mexico, *fulvipes*, *inermis*, *monticola*, N. America, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. cxl, n. spp.

Fabricia infumata, Mexico, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. cxli, n. sp.

Frontina rufo-stylata, *chrysopyga*, Mexico, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. cxli, n. spp.

Talarocera, n. g., p. 152, for *T. smithii*, Brazil, n. sp., p. 153; Williston, Ent. Am. iii.

Dexidæ and Sarcophagidæ.

Doleschalla, Walk., = (*Rhaphis*, Wulp), but there is a prior *Doleschallia* in *Lepidoptera*; Wulp, Tijdschr. Ent. xxx, p. 172.

Uramyia, Rob. D., = (*Oxydexia*, Big.), *U. acuminata*, Big., and *producta*, Rob. D., characters of; Wulp, Tijdschr. Ent. xxx, pp. 168–171, pl. xi, figs. 2–7.

Sarcophagula, n. g., for *Sarcophaga occidua*, F., and other spp.; Wulp, Tijdschr. Ent. xxx, p. 173.

Cynomyia mortuorum, biology; Osten-Sacken (543).

Muscidæ.

Biological observations on *Muscidæ*; Osten-Sacken (543).

Stomoxis plurinotata, Ceylon, p. 593, *tæniatus*, Natal, p. 594, Bigot, Bull. Soc. Z. Fr. xii, n. spp.

Mesembrina meridiana is viviparous; Osten-Sacken (543).

Rhinœstrus, Brauer, fuller characters of; Brauer, Wien. ent. Z. vi, pp. 15 & 16.

Œstridæ larvæ and their attacks on man discussed; Brauer, Wien. ent. Z. vi, pp. 72–74.

Œstrus ovis, L., larval history; Ormerod, Rep. xi, pp. 121–126.

Cobboldia, n. g., for *Œstrus elephantis*, Cobb.; Brauer, Wien. ent. Z. vi, p. 218: larva fully described; *id. t. c.* p. 220.

Gastrophilus rhinozerontis, Owen, note on; Karsch, B. E. Z. xxxi, p. xx.

Bot-larvæ (*Gastrophilus*) in the Terrapin; Leidy, P. Ac. Phil. 1887, pp. 393 & 394.

Hypoderma, wing-neuration of species of, noticed; Brauer, Wien. ent Z. vi, pp. 75 & 76: larva attacking man; Mik (501). *H. bovis*, Deg., ravages, remedies, metamorphoses; Ormerod, Rep. xi, pp. 102–117.

Oestroderma, n. g., p. 190, for *O. potanini*, n. sp., Mongolia, p. 191, pl. vi, fig. 6; Portschinsky, Hor. Ent. Ross. xxi.

Tachinœstrus, n. g., p. 194, for *T. semenovi*, n. sp., Mongolia, p. 195, pl. vi, fig. 7; Portschinsky, Hor. Ent. Ross. xxi.

Tachinœstrus queried as probably *Trixa*; Mik, Wien. ent. Z. vi, p. 241.

Pharyngobolus cameli, structure of larva described and figured; Steel, J. Bomb. N. H. Soc. ii, pp. 28 & 29, pl.

Ctenostylum: its position should probably be near *Cephalia* and *Michogaster*; Brauer, Wien. ent. Z. vi, p. 75: note on its systematic position; Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clvii.

Microcephalus przewalski, Central Asia, Portschinsky, Hor. Ent. Ross. xxi, p. 9, pl. i, fig. 7, n. sp.

Tachinidæ.

Bogosia engeli, Pungo-Andongo, Karsch, Ent. Nachr. xiii, p. 4, n. sp.

Phasia rothi, Zett., referred with doubt to *Tachinidæ*; Girschner, Ent. Nachr. xiii, p. 76.

Alophora, classification and affinities discussed; Girschner (259). *A.* (*Hyalomyia*) *obesa*, Fbr., further notes on; Girschner, Ent. Nachr. xiii, pp. 74, 75, 129, & 130.

A. (*Hyalomyia*) *barbifrons*, Germany, Girschner, Z. Naturw. lx, p. 410, n. sp.

Paralophora, n. subg. of *Alophora*; Girschner, Z. Naturw. lx, p. 412.

Litophasia, n. g., for *Alophora hyalipennis*, *pygmæa*, *nana*; Girschner, Z. Naturw. lx, p. 380.

Ocyptera umbripennis, Wulp, and *fuscipennis*, Wied., note on; Wulp, Tijdschr. Ent. xxx, p. 175, pl. xi, fig. 10.

Hystricia falcida, N. America, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. cxxxix, n. sp.

Jurinia barbata, *gonioïdes*, Mexico, Bigot, Bull. Soc. Ent. Fr. 6) vii, p. cxl, n. spp.

Echinomyia jakowlewii and *albidopilosa*, Portsch., noticed; Portschinsky, Hor. Ent. Ross. xxi, p. 15.

E. rubrifrons, N. America, *cora*, *macrocera*, p. cxl, *notata*, p. cxli, Mexico, BIGOT, Bull. Soc. Ent. Fr. (6) vii, n. spp.

Gonia fasciata, *försteri*, Mg., characters of; RÖDER, Ent. Nachr. xiii, pp. 87–89. *G. frontosa*, Say, redescribed; WILLISTON, Canad. Ent. xix, p. 8.

G. senilis, *porca*, p. 10, *exul*, p. 11, *sequax*, p. 12, N. America, WILLISTON, Canad. Ent. xix, p. 8, n. spp.

Elachipalpus nigrifrons, Mexico, BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. clxi, n. spp.

Cryptopalpus flaviceps, *melanopygatus*, N. America, BIGOT, Bull. Soc Ent. Fr. (6) vii, p. cxli, n. spp.

Tachina, sp., mode of oviposition; WEEKS (792). *T.*, sp., its oviposition, &c.; RILEY, Rep. 1886, pp. 534 & 535.

Tachina (*Exorista*) *futilis* (Say, M.S.), p. 161, *blanda*, p. 162, *hirsuta*, p. 163, *dcilephilæ* (Riley, M.S.), p. 164, *theclarum* (Scudder), p. 166, N. America, OSTEN-SACKEN, Canad. Ent. xix, n. spp.

Paragusia elegantula, Zett., characters of, = (*P. frivaldszkyi*, Schin.); SINTENIS, Wien. ent. Z. vi, p. 259.

Masicera pratensis, L., abnormal wing-neuration; Ent. Nachr. xiii, p. 47.

Microtricha, n. n. for *Stylomyia*, Wulp, *nec* West; MIK, Wien. ent. Z. vi, p. 269.

Degeeria pygmæa, E. Africa, KARSCH, B. E. Z. xxxi, p. 376, n. sp.

Blepharipeza trichopsis, Mexico, *fulvipes*, *inermis*, *monticola*, N. America, BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. cxl, n. spp.

Fabricia infumata, Mexico, BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. cxli, n. sp.

Frontina rufo-stylata, *chrysopyga*, Mexico, BIGOT, Bull. Soc. Ent. Fr. (6) vii, p. cxli, n. spp.

Talarocera, n. g., p. 152, for *T. smithii*, Brazil, n. sp., p. 153; WILLISTON, Ent. Am. iii.

DEXIDÆ and SARCOPHAGIDÆ.

Doleschalla, Walk., = (*Rhaphis*, Wulp), but there is a prior *Doleschallia* in *Lepidoptera*; WULP, Tijdschr. Ent. xxx, p. 172.

Uramyia, Rob. D., = (*Oxydexia*, Big.), *U. acuminata*, Big., and *producta*, Rob. D., characters of; WULP, Tijdschr. Ent. xxx, pp. 168–171, pl. xi, figs. 2–7.

Sarcophagula, n. g., for *Sarcophaga occidua*, F., and other spp.; WULP, Tijdschr. Ent. xxx, p. 173.

Cynomyia mortuorum, biology; OSTEN-SACKEN (543).

MUSCIDÆ.

Biological observations on *Muscidæ*; OSTEN-SACKEN (543).

Stomoxis plurinotata, Ceylon, p. 593, *tæniatus*, Natal, p. 594, BIGOT, Bull. Soc. Z. Fr. xii, n. spp.

Mesembrina meridiana is viviparous; OSTEN-SACKEN (543).

Calliphora erythrocephala, biology ; Osten-Sacken (543).

C. xanthorrhina, Mexico, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clxxx, n. sp.

Musca domestica, *meditabunda*, *corvina*, biology ; Osten-Sacken (543). *M. vomitoria*, post-embryonal development of ; Rees (603) : formation of egg ; Blochmann (74). Blowfly, structure of head of larva ; Lowne (451).

M. atrifrons, Cuba, Mexico, *flavipennis*, N. America, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clxxxi ; *N. eutæniata*, India, *flavipennis*, N. America, p. 605, *flavifacies*, New Caledonia, *cingalaisina*, Ceylon, p. 606, *pampasiana*, Buenos Ayres, *atrifrons*, Cuba, Mexico, p. 607, Bigot, Bull. Soc. Z. Fr. xii : n. spp.

Curtoneura tristis, Natal, *fulvipes*, *vittigera*, Mexico, p. 613, *anthomydea*, N. America, *pallidicornis*, p. 614, *callimera*, Mexico, *nigriceps*, N. America, p. 615, Bigot, Bull. Soc. Z. Fr. xii ; *C. fulvipes*, *vittigera*, *pallidicornis*, *callidimera*, Mexico, *anthomydæa*, *nigriceps*, N. America, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clxxxii : n. spp.

Pollenia (*Calliphora*) *azurea*, Fall., noticed ; Portschinsky, Hor. Ent. Ross. xxi, p. 17, pl. i, figs. 9 & 10.

P. nitidiventris, France, *nudiuscula*, Natal, p. 596, *obscura*, N. America, p. 597, Bigot, Bull. Soc. Z. Fr. xii ; *P. obscura*, N. America, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clxxxi : n. spp.

Nitellia glabricula, California, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clxxxii ; *N. glabricula*, California, Bigot, Bull. Soc. Z. Fr. xii, p. 594 : n. sp.

Sarcophila intermedia, Orenburg, Portschinsky, Hor. Ent. Ross. xxi, p. 16, n. sp.

Graphomyia chilensis, Chili, Bigot, Bull. Soc. Z. Fr. xii, p. 616, n. sp.

Chrysomyza clausa (Macq.), E. Africa, Karsch, B. E. Z. xxxi, p. 397, n. sp.

Somomya, supræsophageal ganglion, &c., of ; Cuccati (148a).

Somomyia deserti, E. Africa, Karsch, B. E. Z. xxxi, p. 378 ; *S. rupicola*, p. clxxx, *rufigena*, *rectinervis*, N. America, *iridicolor*, Cuba, p. clxxxi, Bigot, Bull. Soc. Ent. Fr. (6) vii ; *S. barbigera*, C. Good Hope, p. 597, *fulvobarbata*, Monte Video, *rufigena*, N. America, p. 598, *iridicolor*, Cuba, *cæruleolimbata*, Java, p. 599, *dives*, Calcutta, *rectinervis*, N. America, p. 600, *micropogon*, Australia, *atrifacies*, Calcutta, p. 601, *melanorhyna* (sic), Malasia, *xanthorhina*, Mexico, p. 602, *rupicola*, N. America, *pachysoma*, *nitidifacies*, p. 603, *cyanocincta*, *nebulosa*, p. 604, Java, Bigot, Bull. Soc. Z. Fr. xii, n. spp.

Pyrellia obscuripes, Mexico, Bigot, Bull. Soc. Ent. Fr. (6) vii, p. clxxxi ; *P. scintillans*, C. Good Hope, *obscuripes*, Mexico, Bigot, Bull. Soc. Z. Fr. xii, p. 616 : n. spp.

Dasyphora pratorum, biology ; Osten-Sacken (543).

Tricyclea flavipennis, *parva*, E. Africa, Karsch, B. E. Z. xxxi, p. 378, n. sp.

Lucilia cæsar, biology ; Osten-Sacken (543). *L. sericata*, its [illegible] on sheep ; Bos, Biol. Centralbl. vii, pp. 324–331 ; noticed ; Ports- 521–523.

Ochromyia crassirostris, E. Africa, KARSCH, B. E. Z xxxi, p. 377 ; *O. unicolor*, Sierra Leone, *quadrinotata*, Ceylon, p. 608, *limbata*, Natal, *fulvescens*, Moluccas, p. 609, BIGOT, Bull. Soc. Z. Fr. xii : n. spp.

Phumosia variegata, *papouana*, New Guinea, p. 610, *fulvicornis*, Java, *xanthura*, p. 611, *dichromata*, p. 612, New Caledonia, BIGOT, Bull. Soc. Z. Fr. xii, n. spp.

Rhinia rugosa, Sierra Leone, BIGOT, Bull. Soc. Z. Fr. xii, p. 591, n. sp.

Rhyncomyia palliceps, Hindostan, p. 594, *diversicolor*, E. Africa, *pictifacies*, C. Good Hope, p. 595, BIGOT, Bull. Soc. Z. Fr. xii, n. spp.

Cosmina depressa, E. Africa, KARSCH, B. E. Z. xxxi, p. 377, n. sp.

Stomorhina scalaris, Ternate, p. 591, *melanorhina*, C. Good Hope, *bivittata*, Hindostan, p. 592, BIGOT, Bull. Soc. Z. Fr. xii, n. spp.

ANTHOMYIIDÆ.

Classification and other points discussed ; SCHNABL (679).

Aricia : extent of the genus discussed ; *semidiaphana*, Rond., *simplex*, Wied., *aculeata*, Lw., notes on : MIK, Ent. Nachr. xiii, pp. 234–237. Note on Schnabl's paper (1886) ; MIK, Wien. ent. Z. vi, p. 271. *A. scalaris*, *manicata*, *incisurata*, infesting man ; LAMPA (415). *A. vagans*, Fall., *nec* Schiner, synonymy and characters discussed at length ; SCHNABL, Hor. Ent. Ross. xxi, pp. 458–466. *A. arguta*, Karsch, figured, pl. iv, fig. 10, and referred to *Spilogaster* ; KARSCH, B. E. Z. xxxi, p. 379.

Spilogaster : 2 spp. from Pungo-Andongo diagnosed ; KARSCH, Ent. Nachr. xiii, p. 5. *S. tetrastigma*, Meig., descriptive note on ; MEADE, Ent. M. M. xxiii, p. 181. *S. ancilla*, Meig., characters of ; PORTSCHINSKY. Hor. Ent. Ross. xxi, p. 20.

Limnophora albifrons, Rond., *solitaria*, Zett., noticed ; MEADE, Ent. M. M. xxiii, p. 250.

L. pardalina, E. Africa, KARSCH, B. E. Z. xxxi, p. 379, n. sp.

Hydrotæa impexa, Loew, characters of ; MEADE, Ent. M. M. xxiii, p. 251.

H. similis, Britain, MEADE, Ent. M. M. xxiii, p. 250, n. sp.

Homalomyia fuscula (synonymy), *coracina*, Lw., = (*spissata*, Meade), *triangulifera*, Rond., noticed ; MEADE, Ent. M. M. xxiii, p. 252.

H. nigrisquama, England, MEADE, Ent. M. M. xxiii, p. 253, n. sp.

Schœnomyza litorella, Fall., teeth of ; HARRIS, Sci. Goss. xxiii, p. 246.

Cœnosia pictipennis, Lw., characters of ; MEADE, Ent. M. M. xxiv, p. 74.

C. pygmæella, S. Tyrol, POKORNY, Verh. z.-b. Wien, xxxvii, p. 409 ; *C.* (*Caricea*) *stroblii*, S. Austria, MIK, Wien. ent. Z. vi, p. 261 : n. spp.

Chirosia albitarsis, Zett., note on ; MIK, Wien. ent. Z. vi, p. 264.

Chortophila sylvestris, Fall., *trapezina*, Zett., *cinerea* and *longula*, Fall., noticed ; MEADE, Ent. M. M. xxiv, p. 54.

C. longimana, Alps of Tyrol, POKORNY, Verh. z.-b. Wien, xxxvii, p 405 ; *C. rupicapra*, Tyrolese Alps, MIK, Wien. ent. Z. vi, pp. 296–302, pl. v, figs. 10–16 (with metamorphoses) : n. spp.

Caricea exsul, Zett., *humilis* and *sexmaculata*, Meig., noticed ; MEADE, Ent. M. M. xxiv, pp. 73 & 74.

C. setigera, S. Tyrol, POKORNY, Verh. z.-b. Wien, xxxvii, p. 407, n. sp.

Melanochelia maritima, Noderney I., Röder, Wien. ent. Z. vi, p. 115, n. sp.

Polietes hirticrura, England, Meade, Ent. M. M. xxiii, p. 179, n. sp.

Pegomyia silacea, *flavcolli*, Fall., characters and synonymy; *ephippiu* Zett., description of; Meade, Ent. M. M. xxiv, pp. 56–58 & 73.

Chelisia tricolor, Zett., noticed; Meade, Ent. M. M. xxiv, p. 75.

Hyetodesia trigonalis, Meig., *basalis*, Zett., *simplex*, Wied., noticed; Meade, Ent. M. M. xxiii, pp. 180 & 181.

Cordyluridæ.

Scatophaga magnipennis, p. 198, *amplipennis*, p. 199, Central Asia, Portschinsky, Hor. Ent. Ross. xxi, n. spp.

Ceratinostoma oceanum, teeth of: Harris, Sci. Goss. xxiii, p. 152.

Clidogastra (*Cleigastra*) *breviseta*, Zett., note on; Mik, Verh. z.-b. Wien, xxxvii, p. 186, pl. iv, fig. 16.

Cleigastra flavipes, Mg., injuries of and biological note on; Lindeman, Bull. Mosc. (n.s.) i, pp. 199–205.

C. carbonaria, Alps of Tyrol, Pokorny, Verh. z.-b. Wien. xxxvii, p. 411, pl. vii, fig. 7; *C. subnigripes*, E. Africa, Karsch, B. E. Z. xxxi, p. 380: n. spp.

Helomyzidæ.

Heteromyza atricornis, Lw., note on; Girschner, Ent. Nachr. xiii, p. 132.

Neottiophilum præustum, Meig., note on; Mik, Wien. ent. Z. vi, p. 34.

Sciomyzidæ and Psilidæ.

Ectinocera vicaria, Alps of Tyrol, Pokorny, Verh. z.-b. Wien, xxxvii, p. 417, pl. vii, figs. 4*a* & 4*b*, n. sp.

Psila caucasica, Caucasus, Mik, Wien. ent. Z. vi, p. 164, n. sp.

Micropezidæ and Ortalidæ.

Nerius spinosissimus, *simillimus*, Pungo-Andongo, Karsch, Ent. Nachr. xiii, p. 9, n. spp.

Cœlocephala, n. g. (*Ortalidæ*), for *C. strigilis*, n. sp., E. Africa; Karsch, B. E. Z. xxxi, p. 380.

Trypetidæ.

Dacus punctatifrons, Pungo-Andongo, Karsch, Ent. Nachr. xiii, p. 8, n. sp.

Acidia obnubila, p. 6, fig. 5, *tristriata*, p. 7, fig. 6, Pungo-Andongo, Karsch, Ent. Nachr. xiii, n. spp.

Hemilea tripunctulata, Pungo-Andongo, Karsch, Ent. Nachr. xiii, p. 6, fig. 4, n. sp.

Ceratitis rosa, Delagoa Bay, Karsch, Ent. Nachr. xiii, p. 22, n. sp.

Adrama determinata, Walk., descriptive and synonymical note; Wulp, Tijdschr. Ent. xxx, p. 176.

Tephritis leontodontis, Deg., descriptive and varietal notice; Mik, Verh. z.-b. Wien. xxxvii, p. 184, pl. iv, fig. 12–15.

Carphotricha alpestris, Alps of Tyrol; Pokorny, Verh. z.-b. Wien, xxxvii, p. 413, n. sp.

Zonosema meigenii, Lw., habits and metamorphoses described; Mik, Wien. ent. Z. vi, pp. 293–296, pl. v, figs. 1–9.

Sapromyzidæ and Celyphidæ.

Pachycerina calliopsis, Austria, Mik, Verh. z.-b. Wien, xxxvii, p. 176, n. sp.

Sapromyza difformis, Lw., sexes described; Mik, Verh. z.-b. Wien, xxxvii, p. 183, pl. iv, fig. 11.

Celyphus africanus, Walk., = (*galamensis*, Big.); Bigot, Bull. Soc. Ent. Fr. (6) vii, p. lxi.

Diopsidæ.

Sphyracephala africana, E. Africa, Karsch, B. E. Z. xxxi, p. 380, pl. iv, fig. 11, n. sp.

Sepsidæ.

Saltella scutellaris, Fall., var. = (*melanocephala*, Drap.); Bergroth, Ent. Nachr. xiii, p. 151.

Ephydridæ and Geomyzidæ.

Canace ranula, Loew: structure of mouth and other parts, habits, &c.; Gercke, Wien. ent. Z. vi, pp. 1–4, woodcut.

Apsinota, n.g., p. 178, near *Diplocentra*, Low., for *A. pictiventris*, n. sp., Java, p. 180, pl. xi, fig. 13; Wulp, Tijdschr. Ent. xxx.

Oscinidæ.

Gampsocera numerata, Heeg., localities of; Mik, Wien. ent. Z. vi, p. 189: descriptive note and figs.; *id.* Verh. z.-b. Wien, p. 180, pl. iv, figs. 9 & 10.

Oscinis, spp., and *Chlorops*, sp., attacking corn in N. America; Riley, Rep. 1886, pp. 574, 577, & 582.

Chlorops glabra, Meig., note on habits; Karsch, B. E. Z. xxxi, p. xi. *C. tæniopus*, its attacks on corn in 1887, metamorphoses, &c.; Ormerod, Rep. xi, pp. 54–59.

Agromyzidæ and Phytomyzidæ.

Lobioptera tiefi, Austria, Mik, Verh. z.-b. Wien, xxxvii, p. 178 ; *cf.* also Wien. ent. Z. vi, p. 238 : n. sp.

Loxocera, synoptic table of the species of ; Bigot (64).

Phytomyza geniculata and *horticola*, synonymical note ; Mik, Wien. ent. Z. vi, p. 188.

Phoridæ.

Metopina galeata, Hal., = (*Phora oligoneura*, Mik., *Drepanophora braueri*, Strobl, and *Leptophora perpusilla*, Six) : Röder, Wien. ent. Z. vi, p. 288.

P. rufipes, Mg., ein Beitrag zur Biologie der ; Mayer, Soc. Ent. i, p. 146.

Hippoboscidæ.

Ornithomyia villadæ, Mexico, Dugès, La Naturaleza (2) i, p. 20, pl. iii, fig. 3, n. sp.

Anapera fimbriata, New Mexico, on *Cypselus melanoleucus*, Waterhouse, P. Z. S. 1887, p. 163, woodcut, n. sp.

(E.) *RHYNCHOTA.*

Ovaries and oogenesis ; KORSCHELT (393, 394).

HEMIPTERA-HETEROPTERA.

[*Cf.* ASHMEAD (19), ATKINSON (20), BERGROTH (54, 55), CARLINI (120), COMSTOCK (137), COSTA (141), DISTANT (161, 162), HORVATH (324, 325, 329), JAKOWLEFF (344), KUNCKEL (406), MEINERT (487), MONTANDON (514), PROVANCHER (581), PUTON (585), PUTON & LETHIERRY (586), REUTER (630, 631), UHLER (637, 761, 762), WITLACZIL (806).]

PENTATOMIDÆ.

Coptosoma fimbriatum, Sikkim, DISTANT, Tr. E. Soc. 1887, p. 342, n. sp.

Podisus spinosus, Dall., habits ; RILEY, Rep. 1886, p. 527.

P. volxemi, Brazil, DISTANT, C.R. ent. Belg. 1887, p. lviii, n. sp.

Sesha, n. g. (*Asopinæ*), for *S. manifesta*, n. sp., Sikkim, pl. xii, fig. 2 ; DISTANT, Tr. E. Soc. 1887, p. 343.

Tynacantha cincticeps, Stål (sub *Telepta*), = (*Arma lateralis*, Walk.) ; DISTANT, C.R. ent. Belg. 1887, p. lix.

Anhanga, n. g., near *Empicoris*, for *A. modesta*, n. sp., S. America ; DISTANT, C.R. ent. Belg. 1887, p. lx.

Euschistus bovillus, p. lxi, *quadrimaculatus*, p. lxii, Brazil, DISTANT, C.R. Ent. Belg. 1887, n. spp.

Edessa ansata, p. lxiii, *macraspis*, *complicata*, p. lxiv, Brazil, DISTANT, C.R. ent. Belg. 1887, n. spp.

Halyomorpha murrea, Sikkim, DISTANT, Tr. E. Soc. 1887, p. 344, pl. xii, fig. 5, n. sp.

Dolycoris formosana, Formosa, DISTANT, Tr. E. Soc. 1887, p. 345, n. sp.

Scylax, n. g., near *Dichelocephala*, for *S. porrectus*, India, pl. xii, fig 7, p. 345, *macrinus*, Sikkim, p. 346, fig. 9, n. spp. ; DISTANT, Tr. E. Soc. 1887.

Carbula fusca, p. 346, *scutellata*, p. 347, E. India, DISTANT, Tr. E. Soc. 1887, n. spp.

Agæus mimus, Assam, DISTANT, Tr. E. Soc. 1887, p. 347, pl. xii, fig. 1, n. sp.

Eurydema multipunctata, India ?, DISTANT, Tr. E. Soc. 1887, p. 348, pl. xii, fig. 6, n. sp.

Alcimus flavicornis, Sikkim, DISTANT, Tr. E. Soc. 1887, p. 349, n. sp.

Hoplistodera incisa, N. India, DISTANT, Tr. E. Soc. 1887, p. 349, pl. xii, fig. 3, n. sp.

Antestia modificata, Sikkim, DISTANT, Tr. E. Soc. 1887, p. 350, pl. xii, fig. 4, n. sp.

Abeona? serrata, Bombay, DISTANT, Tr. E. Soc. 1887, p. 350, n. sp.

Compastes truncatus, fig. 10, *spinosus*, fig. 11, Sikkim, DISTANT, Tr. E. Soc. 1887, pl. xii, p. 351, n. spp.

Placosternum cervus, Assam, DISTANT, Tr. E. Soc. 1887, p. 352, n. sp.

Sastragala rufispina, *mustelina*, p. 352, *binotata*, pl. xii, fig. 12, *parmata*, India, *javanensis*, Java, p. 353, DISTANT, Tr. E. Soc. 1887, n. spp.

Anaxandra fulvicornis, *tauriformis*, p. 354, *compacta*, p. 355, N. India, DISTANT, Tr. E. Soc. 1887, n. spp.

Clinocoris scutellata, *maculata*, N. India, DISTANT, Tr. E. Soc. 1887, p. 355, n. spp.

Urochela pulchra, pl. xii, fig. 8, *ferruginea*, N. India, DISTANT, Tr. E. Soc. 1887, p. 356, n. spp.

Eusthenes antennatus, p. 357, *curytus*, p. 358, India, DISTANT, Tr. E. Soc. 1887, n. spp.

Basicryptus illuminatus, N. India, DISTANT, Tr. E. Soc. 1887, p. 358, n. sp.

Gonopsis rubescens, Sikkim, DISTANT, Tr. E. Soc. 1887, p. 359, n. sp.

Urolabida chennelli, p. 356, *khasiana*, p. 357, Assam, DISTANT, Tr. E. Soc. 1887, n. spp.

Promecocoris pictus, Askhabad, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 297, n. sp.

Trigonosoma carinatum, Taschkent, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 298, n. sp.

Sternodontus ampliatus, Ordubad, JAKOWLEFF, Hor. Ent. Ross. xxi, p. 300, n. sp.

Oplistochilus, n. g., p. 303, for *O. pallidus*, n. sp., Turkestan, p. 305; JAKOWLEFF, Hor. Ent. Ross. xxi.

Phœocoris, n. g., p. 306, for *P. semenowi*, n. sp., Altaï, p. 308; JAKOWLEFF, Hor. Ent. Ross. xxi.

Capnoda, n. g., p. 309, for *C. nigroænea*, n. sp., Songoria, p. 310; JAKOWLEFF, Hor. Ent. Ross. xxi.

Brachyplatys stumpffii, Madagascar, REUTER, Ent. Tidskr. viii, p. 77, n. sp.

Thoria affinis, *distans*, Madagascar, REUTER, Ent. Tidskr. viii, p. 79, n. spp.

Solenogaster, n. g. (*Halyaria*), p. 80, for *S. longirostris*, n. sp., Madagascar, p. 81; REUTER, Ent. Tidskr. viii.

Paraleria, n. g. (*Halyaria*), p. 83, for *P. annulipes*, n. sp., Madagascar; REUTER, Ent. Tidskr. viii.

Aeliomorpha? viridis, Madagascar, REUTER, Ent. Tidskr. viii, p. 83, n. sp.

Coquerelidea, n. g., near *Coquerelia*, p. 85, for *C. viridipes*, n. sp., Madagascar, p. 86; REUTER, Ent. Tidskr. viii.

Gadarscama, n. g., p. 87 (near *Alciphron*), for *G. ebenaui*, n. sp., Madagascar, p. 88; REUTER, Ent. Tidskr. viii.

Bathycœlia madagascariensis, Loucoubé, REUTER, Ent. Tidskr. vii, p. 88, n. sp.

Jurtina biforeolata, Madagascar, REUTER, Ent. Tidskr. viii, p. 88, n. sp.

Aspongopus nossibeensis, Madagascar, REUTER, Ent. Tidskr. viii, p. 89, n. sp.

Psacasta marmottani, Algeria, PUTON, Rev. d'Ent. vi, p. 298, n. sp.

Cydnus pallidus, Biskra, PUTON, Rev. d'Ent. vi, p. 298, n. sp.

Podops calligera, France, HORVATH, Rev. d'Ent. vi, p. 253, n. sp.

Brachynema triguttatum, Fieb., var. *hypocrita*; PUTON, Rev. d'Ent. vi, p. 96.

Aeschrus, Spin., = (*Eurrhinocoris*, Stål); BERGROTH, Ent. Nachr. xxx, p. 152.

Aeschrocoris, n. n. for *Aeschrus*, Dallas, *nec* Spin.; BERGROTH, Ent. Nachr. xxx, p. 152.

Acoloba, Spin., = (*Dichelocephala*, Stål); BERGROTH, Ent. Nachr. xiii, p. 151.

Hypogomphus, Spin., = (*Mazium*, Dall.); BERGROTH, Ent. Nachr. xiii, p. 151.

Myota, Spin., = (*Ægius*, Dall.); BERGROTH, Ent. Nachr. xiii, p. 151.

COREIDÆ.

Coreus scapha, Fab., var. *illyricus*; HORVATH, Rev. d'Ent. vi, p. 73.

Centrocoris marmottani, Biskra, PUTON, Rev. d'Ent. vi, p. 300, n. sp.

S. nocephalus, Latr., the palæarctic species tabulated; HORVATH, Bull. Ent. Ital. xix, pp. 278–281.

S. crassicornis, Anatolia, *tunetanus*, Tunis, p. 279, *pruinosus*, Carniolia, *fergauensis*, Turkestan, p. 280, HORVATH, Bull. Ent. Ital. xix, n. spp.

Acanthomia tuberculicollis, Nossi Bé, REUTER, Ent. Tidskr. viii, p. 90, n. sp.

Euthoctha galeator, Fab., figured, fig. 76, noticed, p. 163; HUBBARD, Ins. Orange.

Leptoglossus phyllopus, L., figured, fig. 78, habits noticed, p. 168; HUBBARD, Ins. Orange.

Metapodius femoratus, Fab., habits, p. 162, egg figured, fig. 75; HUBBARD, Ins. Orange.

Anasa tristis, habits, injuries, enemies; ASHMEAD, Bull. Dep. Agric. Ent. xiv, pp. 22–24.

BERYTIDÆ.

Berytus crassipes, H.-S., var. *intermedius*; MONTANDON, Rev. d'Ent. vi, p. 64.

Hoplinus multispinus, Florida, ASHMEAD, Ent. Am. iii, p. 155, n. sp.

LYGÆIDÆ.

Micropus leucopterus, ravages of; BRUNER, Bull. Dep. Agric. Ent. xiii, pp. 34–37.

Nysius longicornis, Puton, var. *pallescens*; PUTON, Rev. d'Ent. vi, p. 300.

Lygæus turcicus, Fab., life-history; Townsend, Ent. Am. iii, pp. 53–55.

Lygæosoma reticulatum, H.-S., var. *numidicum*; Puton, Rev. d'Ent. vi, p. 96.

Geocoris grylloides, L., macropterous form; Fokker, Tijdschr. Ent. xxx, p. 1.

Stenophthalmicus biskrensis, Algeria, Puton, Rev. d'Ent. vi, p. 301, n. sp.

Germalus tingitanus, Fairm., generic position queried; Puton, Rev. d'Ent. vi, p. 301.

Macropterna gibbicollis, Tunis, Puton, Rev. d'Ent. vi, p. 96, n. sp.

Rhyparochromus mixtus, France, Horvath, Rev. d'Ent. vi, p. 254, n. sp.

Marmottania, n. g., near *Paromius*, for *M. simonis*, n. sp., Biskra; Puton, Rev. d'Ent. vi, p. 303.

Tropistethus nitidicollis, Tunis, Puton, Rev. d'Ent. vi, p. 97, n. sp.

Lamprodema weyersi, Carthagena, Puton, Rev. d'Ent vi, p. 97, n. sp.

Camptocera angustula, Algeria, Puton, Rev. d'Ent. vi, p. 303, n. sp.

Scolopostethus puberulus, Illyria, Horvath, Rev. d'Ent. vi, p. 73, n. sp.

Largus succinctus (and other *Hemiptera*) noted as destroying *Icerya*; Riley, Rep. 1886, p. 487.

Dysdercus suturellus, H. Sch., habits, &c.; Hubbard, Ins. Orange, pp. 165–168, pl. xi, fig. 4.

D. konowi, Hanover, Puton, Rev. d'Ent. vi, p. 98, n. sp.

Neueretus, n. g., near *Dindymus*, for *N. distantii*, n. sp., Madagascar; Reuter, Ent. Tidskr. viii, p. 92.

Graptostethus distantii, Madagascar, Reuter, Ent. Tidskr. viii, p. 93, n. sp.

Paristhmius, n. g., near *Teracrius*, p. 94, for *P. vitticollis*, n. sp., Madagascar, p. 95; Reuter, Ent. Tidskr. viii.

Pachygrontha angularis, Nossi Bé, Reuter, Ent. Tidskr. viii, p. 95, n. sp.

Dieuches fuscus, p. 100, *humilis*, p. 101, Madagascar, Reuter, Ent. Tidskr. viii, n. spp.

Poecantius unidentatus, Madagascar, Reuter, Ent. Tidskr. viii, p. 102, n. sp.

Lethaeus longirostris, Madagascar, Reuter, Ent. Tidskr. viii, p. 102, n. sp.

Pamera ebenaui, Madagascar, Reuter, Ent. Tidskr. viii, p. 96, n. sp.

Perimeda, n. g., near *Polycrates*, p. 97, for *P. dimidiata*, n. sp., Madagascar, p. 98; Reuter, Ent. Tidskr. viii.

Lanchnophorus, n. g. (*Beosaria*), p. 98, for *L. guttulatus*, n. sp., Madagascar, p. 99; Reuter, Ent. Tidskr. viii.

Tingitidæ.

Stymnonotus, n. g., p. 103, for *St. apicalis*, n. sp., Nossi Bé, p. 104; Reuter, Ent. Tidskr. viii.

Orthostira samara, Lugano, PUTON, Rev. d'Ent. vi, p. 98, n. sp.

Campylostira perithrix, Algeria, p. 99, *maroccana*, p. 100, PUTON, Rev. d'Ent. vi, n. spp.

Derephysia rectinervis, Algeria, PUTON, Rev. d'Ent. vi, p. 304, n. sp.

Galeatus debilis, Herzegovina, MONTANDON, Rev. d'Ent. vi, p. 65, n. sp.

Tingis hystricellus, magnified figure; Stud. Micr. Sci. iv, sect. 4, p. 51, pl. xii.

Sphærocysta peckhami, N. America, ASHMEAD, Ent. Am. iii, p. 156, n. sp.

ARADIDÆ.

Aradus betulinus, Fall., and *corticalis*, L., differential characters of; BERGROTH, Rev. d'Ent. vi, p. 244.

A. breviatus, p. 245, *centriguttatus*, p. 246, Florida, *aurivillii*, Georgia, p. 247, BERGROTH, Rev. d'Ent. vi, n. spp.

CAPSIDÆ.

Lopus vittiventris, Put., var. *leveillei*; PUTON, Rev. d'Ent. vi, p. 101.

Miridius pallidus, Illyria, HORVATH, Rev. d'Ent. vi, p. 72, n. sp.

Phytocoris chardoni, Algeria, PUTON, Rev. d'Ent. vi, p. 305, n. sp.

Calocoris 7-expunctatus, Fab., var. *cuneatus*; PUTON, Rev. d'Ent. vi, p. 102.

Pycnopterna amœna, Canada, PROVANCHER, Faune Can. Hem. p. 114, n. sp.

Lygus pratensis (and other *Hemiptera*), injuries of their punctures to plants; WEBSTER (637).

L. monachus, N. America, injurious to *Acer*, UHLER, Bull. Dep. Agric. Ent. xiii, p. 63, n. sp.

Cyphodema mendosa, Herzegovina, MONTANDON, Rev. d'Ent. vi, p. 66, n. sp.

Camptobrochis grandis, N. America, UHLER, Ent. Am. ii, p. 230, n. sp.

Capsus punctum, Ramb., var. *mimus*; PUTON, Rev. d'Ent. vi, p. 103.

C. freyi, Sicily, PUTON, Rev. d'Ent. vi, p. 102; *C. martini*, Algeria, PUTON, Rev. d'Ent. vi, p. 306: n. spp.

Systellonotus venustissimus, Abruzzi, COSTA, Rend. Acc. Nap. (2) i, p. 244, n. sp.

Pilophorus confusus, Kb., var. *nitidicollis*; PUTON, Rev. d'Ent. vi, p. 103.

P. amœnus, walshii, N. America, UHLER, Ent. Am. iii, p. 30, n. spp.

Pamillia, n. g., near *Pilophorus*, for *P. behrensii*, n. sp., San Francisco; UHLER, Ent. Am. iii, p. 31.

Diommatus, n. g. (*Cyllecoraria*), p. 32, for *D. congrex*, n. sp., N. America, p. 33; UHLER, Ent. Am. iii.

Bolteria, n. g., near *Labops*, p. 33, for *B. amicta*, n. sp., New Mexico, p. 34; UHLER, Ent. Am. iii.

Eucerocoris guttulatus, N. America, UHLER, Ent. Am. iii, p. 150, n. sp.

Xenetus, Dist., note on; UHLER, Ent. Am. iii, p. 151.

Labops marginellus, Algeria, PUTON, Rev. d'Ent. vi, p. 306, n. sp.

Orthotylus martini, Biskra, PUTON, Rev. d'Ent. vi, p. 307, n. sp.

Malacocoris provancheri, Canada, BURQUE, in Provancher Faune Can. Hem. p. 144, n. sp.

Heterocordylus farinosus, Illyria, HORVATH, Rev. d'Ent vi, p. 73, n. sp.

Psallus puberulus, Herzegovina, MONTANDON, Rev. d'Ent. vi, p. 68; *P. delicatus*, N. America, UHLER, Ent. Am. iii, p. 34 : n. spp.

Teratocoris miraria, Labrador, p. 67, *discolor*, N. America, p. 68, UHLER, Ent. Am. iii, n. spp.

Melinna, n. g., p. 68, near *Megacœlum*, for *M. modesta*, *pumila*, n. spp., N. America, p. 69, to include also *Megacœlum fasciatum*, Uhler ; UHLER, Ent. Am. iii.

Megacœlum grossum, p. 70, *pusillum*, *mundum*, p. 71, N. America, UHLER, Ent. Am. iii, n. spp.

Eccritotarsus elegans, N. America, UHLER, Ent. Am. iii, p. 149, n. sp.

Rhinocloa citri, Florida, ASHMEAD, Ent. Am. iii, p. 155, n. sp.

Plagiognathus cunctator, Illyria, HORVATH, Rev. d'Ent. vi, p. 73 ; *P. rubricans*, Canada, PROVANCHER, Faune Can. Hem. p. 154 : n. spp.

Chlamydatus luctuosus, Canada, PROVANCHER, Faune Can. Hem. p. 137, n. sp.

Collaria, Prov., = (*Nabidea*, Uhler), and *C. meilleurii*, Pr., = (*coracina*, Uhl.) ; UHLER, Ent. Am. ii, p. 230.

C. explicata, W. Indies, UHLER, Ent. Am. ii, p. 230, n. sp.

CIMICIDÆ.

Cimex lectularius, odoriferous glands, &c. ; KÜNCKEL (407).

Myrmedobia bedeli, Algeria, MONTANDON, Rev. d'Ent. vi, p. 65, n. sp.

SALDIDÆ.

Salda littoralis, L., var. *adriatica* ; HORVATH, Rev. d'Ent. vi, p. 72.

REDUVIIDÆ and NABIDÆ.

Sinea javanensis, Am. & Serr., referred to *Irantha* and redescribed ; REUTER, Rev. d'Ent. vi, p. 149.

Cosmocleptes phemiodes, Stål, = (*Polemistes fulvicornis* and *bicoloripes*, Reut.) ; REUTER, Rev. d'Ent. vi, pp. 150 & 167.

Coranus rubripennis, Reut., var. described ; REUTER, Rev. d'Ent. vi, p. 150.

Gminatus nigrispinis, New Holland, REUTER, Rev. d'Ent. vi, p. 150, n. sp.

Pœcilosphodrus, n. g., near *Velinus*, p. 150, for *P. annulipes*, n. sp., New Holland, p. 151 ; REUTER, Rev. d'Ent. vi.

Sphedanolestes angularis, Madagascar, REUTER, Rev. d'Ent. vi, p. 152, n. sp.

Biasticus fuliginosus, N. India, p. 152, *abdominalis*, Silhet, p. 153, REUTER, Rev. d'Ent. vi, n. spp.

Amphibolus maurus, Africa, REUTER, Rev. d'Ent. vi, p. 153, n. sp.

Paramphibolus, n. g., for *P. pusillus*, Egypt, n. sp.; REUTER, Rev. d'Ent. vi, p. 154.

Labidocoris splendens, Dist., var. described; REUTER, Rev. d'Ent. vi, p. 155.

Sirthenea flavipes, var.? noticed; REUTER, Rev. d'Ent. vi, p. 156.

Pirates castaneipennis, New Caledonia, REUTER, Rev. d'Ent. vi, p. 156, n. sp.

Acanthaspis spinicollis, Walk., noticed and referred to *Vellejus*; REUTER, Rev. d'Ent. vi, p. 162. *A. cinctierus*, Stål, noticed; *id. t. c.* p. 157.

A. trimaculata, India, REUTER, Rev. d'Ent. vi, p. 157, n. sp.

Erythrosphodrus, n. g., for *E. corallinus*, n. sp., Java; REUTER, Rev. d'Ent. vi, p. 158.

Reduvius personatus, effects of bite; MÉGNIN, C.R. Soc. Biol. (8) iv, p. 563.

R. cinctierus, Silhet, *fasciatus*, China, p. 159, *debilis*, India bor., p. 160, REUTER, Rev. d'Ent. vi, n. spp.

Vellejus signatipennis, New Holland, REUTER, Rev. d'Ent. vi, pp. 161 & 167, n. sp.

Petalocheirus malayus, Stål, = (*vicinus*, Sign.); REUTER, Rev. d'Ent. vi, p. 162.

P. indicus, Pondicherry, REUTER, Rev. d'Ent. vi, p. 162, n. sp.

Psiromtis (*Centromelus*) *incerta*, India (? occ.), REUTER, Rev. d'Ent. vi, pp. 163 & 167, n. sp.

Pygolampis biguttata, Java, REUTER, Rev. d'Ent. vi, p. 164, n. sp.

Sastraprada flava, Am. & Serv., redescribed; REUTER, Rev. d'Ent. vi, p. 164.

Staccia javanica, Java, REUTER, Rev. d'Ent. vi, p. 165, n. sp.

Tribelocephala lignea, Java, REUTER, Rev. d'Ent. vi, p. 166, n. sp.

Myiophanes tipulina, Reut., corrigendum to description; REUTER, Rev. d'Ent. vi, p. 166.

Darbanus palliatus, Canada, PROVANCHER, Faune Can. Hem. p. 182, n. sp.

Evagoras marginata, Canada, PROVANCHER, Faune Can. Hem. p. 182, n. sp.

Ploiaria culiciformis, de G., var. *nouhalieri*; PUTON, Rev. d'Ent vi, p. 101. *P. bispinosa* and *madagascariensis*, Westw., referred to *Stenolæmus*, Sig.; BERGROTH, Bull. Soc. Ent. Fr. (6) vii, p. xvii.

P. soror, Tunis, PUTON, Rev. d'Ent. vi, p. 101, n. sp.

Rhapactor, n. g., near *Harpactor*, p. 304, for *R. biparticeps*, n. sp., Tunis, p. 305; PUTON, Rev. d'Ent. vi.

Polididus longispinis, Nossi Bé, REUTER, Ent. Tidskr. viii, p. 105, n. sp.

Coranus nossibeensis, Madagascar, REUTER, Ent. Tidskr. viii, p. 106, n. sp.

Cleptria signoretii, p. 107, *bidens*, p. 108, Madagascar, REUTER, Ent. Tidskr. viii, n. spp.

Sirthenea picescens, Nossi Bé, REUTER, Ent. Tidskr. viii, p. 109, n. sp.

Arilus insignis, Illyria, HORVATH, Rev. d'Ent. vi, p. 71, n. sp.

p. 21. *M. pomo. ossibeensis*, Madagascar, REUTER, Ent. Tidskr. viii, pp. 19–25, fig. 3, and pl.

27, pl. iii, fig. 1, life-hist

Hydrometridæ.

Biological discussion ; Meinert (487).
Aëpophilus bonnairei, note on ; Marquand, Ent. M. M. xxiii, p. 169.
Halobates, note on anatomy, &c. ; Witlaczil (806).

Naucoridæ and Nepidæ.

Borbocoris volxemi, Leth., is probably from Brazil, and is perhaps only *Limnocoris insignis*, Stål ; Puton, Rev. d'Ent. vi, p. 103.
Ranatra linearis, eine abweichende Bildungsweise des Chitin's bei Entstehung der "Eistrahlen" von ; Korschelt, Z. wiss. Zool. xlv, pp. 327–357, pl. xviii, figs. 1–27.

HEMIPTERA-HOMOPTERA.

[*Cf.* Aleman (3), Distant (163, 165, 263), Horvath (328), Loew (448), Lucas (453), Puton & Lethierry (586); also *Aphididæ* and *Coccidæ*).]

Cicadidæ.

Pœcilopsaltria hampsoni, India, *semusta*, Chusan, p. 227, Distant, Ann. N. H. (5) xx, n. spp.
Leptopsaltria nilgirensis, India, p. 228, *lactea*, Sumatra, p. 229, Distant, Ann. N. H. (5) xx, n. spp.
Cosmopsaltria padda, Penang, Distant, Ann. N. H. (5) xx, p. 229, n. sp.
Pomponia promiscua, Sumatra, Distant, Ann. N. H. (5) xx, p. 230, n. sp.
Cryptotympana sinensis, Shantung, p. 415, *insularis*, Andaman Is., Distant, Ann. N. H. (5) xx, n. spp.
Cicadatra longiceps, Tunis, Puton, Rev. d'Ent. vi, p. 104, n. sp.
Cyclochila australasiæ, Don., sound organs of ; Lucas (453).

Fulgoridæ.

Flata conica, Say, pupa, &c., noticed ; Murtfeldt, Bull. Dep. Agric. Ent. xiii, p. 61.
Diareusa, Walk., noted as omitted from Scudder's "Nomenclator Zoologicus ;" Distant, Biol. Centr. Am. Rhynch. Homop. p. 25.
Amycle and *Cyrpoptus*, Stål, synonymy discussed ; Distant, Biol. Centr. Am. Rhynch. Homop. p. 25.
Enchophora stillifer, Stål, figured, pl. iv, figs. 14, *a* & *b*, noticed p. 27 ; Distant, Biol. Centr. Am. Rhynch. Homop.
E. rosacea, Nicaragua, pl. iv, figs. 11, *a* & *b*, *sanguinea*, Guatemala, Panama, figs. 16, *a* & *b*, p. 27, *florens*, Nicaragua, Costa Rica, figs. 12, *a* & *b*, *subviridis*, Panama, figs. 17, *a* & *b*, *longirostris*, Colombia, p. 28, Distant, Biol. Centr. Am. Rhynch. Homop., n. spp.
Coanaco, n. g., p. 28, for *Enchophora guttata* ; Silhet, p. 153, vi, p. 153, n. sp.

figs. 10, *a* & *b*), and *C. ornanda*, n. sp., Panama, p. 29, pl. iv, figs. 13, *a* & *b*; DISTANT, Biol. Centr. Am. Rhynch. Homop.

Obia, n. g., for *O. tenebrosa*, n. sp., Mexico, pl. v, figs. 17 & 17*a*; DISTANT, Biol. Centr. Am. Rhynch. Homop. p. 29.

Amalivaca, n. g., p. 29, for *A. fucata*, n. sp., Costa Rica, p. 30, pl. v, figs. 18 & 18*a*; DISTANT, Biol. Centr. Am. Rhynch. Homop.

Amantia (*Poiocera*) *imperatoria*, Gerst., figured, pl. iv, figs. 7 & 7*a*; Biol. Centr. Am. Rhynch. Homop.

Acræphia (*Poiocera*) *fastuosa*, Gerst., figured, pl. iv, figs. 9 & 9*a*; Biol. Centr. Am. Rhynch. Homop.

Poblicia misella, Stål, pl. v, figs. 6 & 6*a*, *constellata* (*Poiocera*), Walk., pl. iv, figs. 6 & 6*a*, *atomaria* (*Poiocera*), pl. v, figs. 2 & 2*a*, figured; Biol. Centr. Am. Rhynch. Homop.

Domitia neotropicalis, Mexico to Panama, p. 32, pl. v, figs. 3 & 3*a*, *obscura*, Mexico, p. 33, figs. 10 & 10*a*, *D.* (?) *miscella*, Panama, p. 33, figs. 7 & 7*a*, DISTANT, Biol. Centr. Am. Rhynch. Homop., n. spp.

Hypæpa illuminata, pl. v, figs. 5 & 5*a*, *zapotensis*, figs. 8 & 8*a*, Guatemala, *rubricata*, Panama, figs. 4 & 4*a*, p. 34, DISTANT, Biol. Centr. Am. Rhynch. Homop., n. spp.

Acmonia ? *trivia*, Guatemala, pl. v, figs. 14 & 14*a*, *procris*, Panama, figs. 12 & 12*a*, p. 35, DISTANT, Biol. Centr. Am. Rhynch. Homop., n. spp.

Cyrpoptus suavis, Stål, figured, pl. v, figs. 15 & 15*a*; Biol. Centr. Am. Rhynch. Homop.

Calyptoproctus guttipes, Walk., figured, pl. v, figs. 9 & 9*a*; Biol. Centr. Am. Rhynch. Homop.

Scaralis (*Poiocera*) *spectabilis*, Walk., figured, pl. v, figs. 16 & 16*a*; Biol. Centr. Am. Rhynch. Homop.

Atalanta ærata, Panama, pl. v, figs. 11 & 11*a*, *violacea*, Guatemala, figs. 13 & 13*a*, p. 37, DISTANT, Biol. Centr. Am. Rhynch. Homop., n. spp.

Pterodictya ephemera, Fab., habits noticed; DISTANT, Biol. Centr. Am. Rhynch. Homop. p. 38.

Cladypha and *Cladodiptera*, synonymy discussed; DISTANT, Biol. Centr. Am. Rhynch. Homop. p. 38.

C. interlita, Panama, p. 39, pl. vi, fig. 1, DISTANT, Biol. Centr. Am. Rhynch. Homop. p. 38, n. sp.

Dictyophara nodivena, Walk., pl. vi, fig. 3, *curviceps*, Stål, = (*dioxys*, Walk.), p. 40, fig. 4, *brachyrhina*, Walk., fig. 5, *obtusifrons*, Walk., fig. 6, *herbida*, Walk., fig. 7, figured; DISTANT, Biol. Centr. Am. Rhynch. Homop.

D. ferocula, Panama, p. 40, pl. vi, fig. 2, DISTANT, Biol. Centr. Am. Rhynch. Homop., n. sp.

Phantia viridipennis, Algeria, LETHIERRY, Rev. d'Ent. vi, p. 308, n. sp.

Haplacha letourneuxi, Tunis, p. 308, *tamaricis*, Sarepta, p. 309, LETHIERRY, Rev. d'Ent. vi, n. spp.

Hyalesthes bicuspidiceps, Biskra, LETHIERRY, Rev. d'Ent. vi, p. 309, n. sp.

p. 21. *M. pomorum venenosum*, Tunis, PUTON, Rev. d'Ent. vi, p. 104.

pp. 19–25, fig. 3, and pl.

27, pl. iii, fig. 1, life-histo

Membracidæ.

Eutilia sinuata, Fab. (sic, probably *Entylia* is intended), metamorphosis and habits; Murtfeldt, Ent. Am. iii, pp. 177 & 178.

Psyllidæ.

Psyllidæ of Hungary: Horvath (328).

Athysanus palliatus, Biskra, Lethierry, Rev. d'Ent. vi, p. 310, n. sp.

Notus pavesii, Italy, Ferrari, Bull. Ent. Ital. xix, p. 275, n. sp.

Rhinocola lowii, Biskra, Lethierry, Rev. d'Ent. vi, p. 311, n. sp.

Aphalara abeillei, Hyères, Loew, Rev. d'Ent. vi, p. 278, n. sp.

Frey-Suila, n. g., for *F. dugesii*, n. sp., Aleman, La Naturaleza (2) i, p. 26, pl. iii.

Aphididæ.

[*Cf.* Blochmann (75), Graells (273), Horvath (326, 327), Kessler (372), Oestlund (535).]

List of the writings of Lichtenstein, Ann. Soc. Ent. Fr. (6) vii, pp. 53–58.

Nectarophora, n. n. for *Siphonophora*, Koch; Oestlund, Bull. Surv. Minnesota, 4, p. 78, with the following n. spp. from Minnesota; *fulvæ*, *geranii*, p. 80, *cynosbati*, *purpurascens*, p. 81, *potentillæ*, p. 83, *pallida*, p. 84, n. spp.

Siphonophora citrifolii, Ashm., noticed and figured; Hubbard, Ins. Orange, pp. 157–159, pl. xiii, figs. 3–3*d*.

Megoura solani, Thomas, description, ravages, enemies; Ashmead, Bull. Dep. Agric. Ent. xiv, pp. 18 & 19.

Phorodon humuli, biology, ravages, and prevention; Riley (639): migrations discussed; Ormerod, Rep. xi, pp. 83–86.

Rhopalosiphum serotinæ, Minnesota, Oestlund, Bull. Surv. Minnesota, 4, p. 76, n. sp.

Melanoxanthus bicolor, Minnesota, Oestlund, Bull. Surv. Minnesota, 4, p. 36, n. sp.

Myzus junackianus, Germany, Karsch, B. E. Z. xxxi, S.B. pp. xxi & xxii, n. sp.

Aphis aceris, development of egg: Blochmann (74). *A. cucumeris*, habits, ravages, &c.; Ashmead, Bull. Dep. Agric. Ent. xiv, pp. 27–29. *A. brassicæ*, L., habits, parasites, &c.; *id. t. c.* pp. 12–16. *A.* sp. ?, living on carrots, parthenogenesis and biology; Graells (273).

A. albipes, p. 52, *trifolii*, p. 55, *mimuli*, p. 57, *monardæ*, *thaspii*, p. 58, *neillieæ*, p. 59, *rubicola*, p. 60, *maculatæ*, p. 61, *oxybaphi*, *œnotheræ*, p. 62, *spiræa*, p. 68, Minnesota, Oestlund, Bull. Surv. Minnesota, 4, n. spp.

Monellia, n. g., p. 44, for *Aphis caryella*, Fitch; Oestlund, Bull. Surv. Minnesota, 4.

Chaitophorus aceris, Koch, metamorphoses; Kessler, Nov. Act. p. 153, L.-C. Nat. cur. li, pp. 159–164, pl. xxxiv, figs. 1–5. *C. populeti*, Kalt. vi, p. 153, n. sp. ton, metamorphoses; *id. t. c.* pp. 165–170, figs. 6–

C. lyropictus, Europe, KESSLER, Nova Acta Ac. L.-C. Nat. cur. li, pp. 171–175, pl. xxxiv, figs. 11–15, n. sp.

Schizoneura lanuginosa, Hart., chemical analysis of the substance found in its galls ; HORVATH (327).

S. crataegi, Minnesota, OESTLUND, Bull. Surv. Minnesota, 4, p. 27, n. sp.

Hormaphis papyraceæ, Minnesota, OESTLUND, Bull. Surv. Minnesota, 4, p. 19, n. sp.

Chermes, discovery of ♂ discussed ; Ent. Nachr. xiii, pp. 362–364. *C. abietis*, L., biology, sexual forms ; BLOCHMANN (75). *C. abietis, viridis, laricis*, habits, &c. ; GLASER (260).

Phylloxera : production of winged forms (370). Mode of *Phylloxera* destruction by *Scymnus* ; LEMOINE, Bull. Soc. Ent. Fr. (6) vii, pp. iv & v. Sur les deux espèces de *Phylloxera* de la vigne ; DONNADIEU, C.R. civ, pp. 1246–1248. Sur la ponte du *Phylloxera* pendant la saison d'hiver ; DONNADIEU, C.R. civ, pp. 483–485 ; BALBIANI, *t. c.* pp. 667–669. Sur quelques points controversés de l'histoire du *Phylloxera* ; DONNADIEU, *t. c.* pp. 836–839. L'œuf d'hiver du *Phylloxera* ; LAFITTE, *t. c.* pp. 1044–1046 ; and Sur l'histoire du *Phylloxera* de la vigne, *t. c.* pp. 1419–1421. Sur les mœurs du *Phylloxera* et sur l'état actuel des vignobles ; BOITEAU, *t. c.* pp. 157–159. *P. punctata*, nervous system of, and development of eggs ; LEMOINE (426).

P. prolifera, Minnesota, OESTLUND, Bull. Surv. Minnesota, 4, p. 16, n. sp.

COCCIDÆ.

[*Cf.* BROWN (97), DOUGLAS (178), HUBBARD (330), MASKELL (474, 475, 476), MONIEZ (511), ORMEROD (541), RILEY (634, 638).]

Characters of the family, and of the *Diaspinæ*, *Lecaninæ*, and *Coccinæ*, their ravages, enemies, and remedies ; HUBBARD, Ins. Orange, chaps. i–vii.

Aspidiotus rapax, Comstock, and *camelliæ*, Boisd., characters discussed ; MORGAN, Ent. M. M. xxiv, pp. 79–82. *A. ostreæformis*, note on ; DOUGLAS, Ent. M. M. xxiii, pp. 239–241. *A. nerii*, metamorphoses, structure, &c. ; LEMOINE (427). *A. ficus*, Ashm., *aurantiæ*, Mask., *nerii*, Bouché, Ashmead's and Comstock's accounts of reproduced with figures, pp. 28–37 ; HUBBARD, Ins. Orange.

Ischnaspis, n. g. (*Diaspina*), for *I. filiformis*, n. sp., conservatories in London ; DOUGLAS, Ent. M. M. xxiv, p. 21.

Diaspis rosæ, Bouché, note on ; DOUGLAS, Ent. M. M. xxiv, p. 23. *D. pentagona*, n. sp., injurious to mulberry-tree ; TARGIONI (745).

Chionaspis citri, Coms., noticed ; HUBBARD, Ins. Orange, p. 40. *C. euonymi* ; VAYSSIÈRE (766).

Parlatoria proteus, Curt., descriptive and varietal note ; DOUGLAS, Ent. M. M. xxiii, p. 241. *P. pergandii*, Coms., life-history of ; HUBBARD, Ins. Orange, pp. 37–40, pl. v, figs. 8 & 9.

Poliaspis cycadis, Comstock, note on ; DOUGLAS, Ent. M. M. xxiv, p. 22.

Mytilaspis pinnæformis, Bouché, note on ; DOUGLAS, Ent. M. M. xxiv, p. 21. *M. pomorum*, Bouché, pp. 15–19, figs. 1 & 2, *gloverii*, Packd., pp. 19–25, fig. 3, and pl. iii, fig. 2, and pl. iv, *citricola*, Packd., pp. 26 & 27, pl. iii, fig. 1, life-histories ; HUBBARD, Ins. Orange.

Eriochiton, n. g., near *Lecanodiaspis*, for *Ctenochiton spinosus*, Mask., and *E. hispidus*, n. sp., New Zealand, pl. ii, figs. 5–8; MASKELL, Tr. N. Z. Inst. xix, pp. 46–48.

Ctenochiton elæocarpi, Mask., organ for excretion of honey-dew; MASKELL, Tr. N. Z. Inst. pp. 41 & 42.

Celostoma zelandicum, its excretion of honey-dew; MASKELL, Tr. N. Z. Inst. xix, p. 42.

Eriopeltis lichtensteinii, Sign., noticed; DOUGLAS, Ent. M. M. xxiv, p. 166.

Ceroplastes floridensis, Coms., *cirripediformis*, Coms, life-histories; HUBBARD, Ins. Orange, pp. 56–61, figs. 20 & 21.

Lichtensia viburni, Sign., description and notice; DOUGLAS, Ent. M. M. xxiv, p. 167.

Pulvinaria mesembryanthemi, Vallot, note on; DOUGLAS, Ent. M. M. xxiv, p. 24.

Lecanium hesperidum, male of; MONIEZ (511): account of Moniez's observations on rudimentary ♂ in ovary of females; DOUGLAS, Ent. M. M. xxiv, pp. 25–27: parasitic fungus of; MONIEZ (513). *L. hesperidum*, L., *oleæ*, Bern., *hemisphæricum*, Targ., life-histories and parasites; HUBBARD, Ins. Orange, pp. 48–56, figs. 11–19. *L. tessellatum*, Sign., *angustatum*, Sign., *depressum*, Sign., *filicum*, Boisd., pp. 25–28, *testudo*, Curt., *fuscum*, Reaum., with synonymical discussion, pp. 95–101, *g. oberum*, Dalm., p. 165, descriptions and habits, &c., of; DOUGLAS, Ent. M. M. xxiv.

L. beaumontiæ, Kew Gardens, on *Beaumontia grandiflora*, p. 95, *longulum*, gardens near London, on several foreign plants, p. 97; DOUGLAS, Ent. M. M. xxiv, n. spp.

Dactylopius destructor, Comstock's account of reproduced, with figs.; HUBBARD, Ins. Orange, pp. 64–66, figs. 22–24.

Coccus sp. destroyed by *Thalpochares coccophaga*; MEYRICK, P. Linn. Soc. N.S.W. (2) i, p. 1037.

Icerya purchasi, in S. Africa; ORMEROD (541): in California; CHAPIN, in Hubbard Ins. Orange, pp. 66–68, fig. 25; RILEY (634) discusses geographical distribution, introduction and spread in America, the food-plants, the characters and life-history, pls. i & ii; habits, enemies, and remedies; experiments for destroying it, pp. 558–572: ♂ described; MASKELL, Tr. N. Z. Inst. xix, p. 45, pl. ii, figs. 1–4.

Orthezia, n. sp. ?, noticed and figured; BROWNE (97).

O. insignis, Kew Gardens, DOUGLAS, Ent. M. M. xxiv, p. 169, woodcuts, n. sp.

Brachyscelis munita, Schrader, galls of; HART (298).

Lepidosaphes, Shimer, use of the name discussed; DOUGLAS, Ent. M. M. xxiii, p. 242.

Nexus, p. 153,

c. vi, p. 153, n. sp.

(F). *NEUROPTERA.*

Formation of egg ; KORSCHELT (394).

TRICHOPTERA.

[*Cf.* HAGEN (291), KOLBE (385), MCLACHLAN (458, 459), F. MÜLLER (522, 523, 524), W. MÜLLER (525, 526).]

Trichoptera attracted by electric light ; COCKERELL, Ent. M. M. xxiv, p. 91.

Philanisus, marine species in New South Wales ; MACLACHLAN (459).

Philarctus przewalskii, Central Asia, MACLACHLAN, Hor. Ent. Ross. xxi, p. 456, n. sp.

Sericostoma personatum and others, scent organs in ; MÜLLER (525, 526).

Lagenopsyche spirogyræ, cases of (?) in China ; FIELDE, P. Ac. Philad. 1887, p. 293. *L. spirogyræ*, Müll., referred to *Oxyethira*, MÜLLER, Ent. Nachr. xiii, pp. 337–340.

Hydropsyche, sp., larva feeding on the larvæ of *Simulium* ; RILEY (following Howard), Rep. 1886, p. 510, pl. ix, figs. 3–5. *H.*, sp., emergence from water ; COMSTOCK, Am. Nat. xxi, p. 480.

Chimarrha, the position of the genus to be in *Hydropsychidæ*, pupa of *C. morio* ? noticed ; MÜLLER, Ent. Nachr. xiii, pp. 225 & 226 : true position is in *Hydropsychidæ* ; MACLACHLAN, Ent. M. M. xxiv, p. 90. *Chimarrha* (or, if new, *Chimarrhodes*), larva described ; MÜLLER, Ent. Nachr. xiii, p. 289 & 290, woodcut.

Hydroptila femoralis, Eaton, and *longispina*, MacL., are probably one ; MACLACHLAN, Ent. M. M. xxiv, p. 44.

Oxyethira costalis, Curt., on the cases of ; MORTON, Ent. M. M. xxiii, p. 201.

Orthotrichia angustella ? on the cases of ; MORTON, Ent. M. M. xxiii, p. 202.

O. tetensii, Berlin, KOLBE, Ent. Nachr. xiii, p. 357, n. sp.

Plethus n. g., for *Hydroptila cursitans*, Hag. ; HAGEN, Verh. z.-b. Wien, xxxvii, p. 463, pl. viii.

NEUROPTERA PLANIPENNIA.

[*Cf.* BRAUER (90), HAGEN (290), MACLACHLAN (457, 458, 460).]

Panorpidæ.

Panorpa leucoptera, sexes described ; MACLACHLAN, MT. schw. ent. Ges. vii, p. 402.

P. orientalis, Wladiwostok, p. 400, *lewisi*, p. 401, *bicornuta*, p. 403, Japan, *cornigera*, p. 404, Jap. and Wlad., MacLachlan, MT. schw. ent. Ges. vii, n. spp.

Panorpodes decorata, Japan, MacLachlan, MT. schw. ent. Ges. vii, p. 405, n. sp.

Bittacus sinensis, note on this and Japanese examples of ; MacLachlan, MT. schw. ent. Ges. vii, p. 406.

Hemerobiidæ.

Psychopsis meyricki, N. S. Wales, MacLachlan, Ent. M. M. xxiv, p. 30, n. sp.

Chrysopidæ.

Chrysopa vulgaris, Schn., variations in, noticed ; MacLachlan, Hor. Ent. Ross. xxi, p. 453. *C. oculata*, habits and parasite described ; Hubbard, Ins. Orange, pp. 80 & 81.

C. dubitans, p. 448, *perplexa*, p. 449, *thibetana*, p. 450, *decia*, p. 451, Central Asia, MacLachlan, Hor. Ent. Ross. xxi, n. spp.

Nothochrysa insignis, Walk., = (*Chrysopa stictonevra*, Gerst.) ; MacLachlan, Ent. M. M. xxiv, p. 44.

Myrmeleonidæ.

Notes on the species figured by Seba, *Thesaurus* ; Hagen, Canad. Ent. xix, pp. 133 & 134.

Palpares inclemens, Walk., p. 89, *latipennis*, Rbr., p. 91, *cephalotes*, Kl., p. 92, *burmeisteri* (n. n. for *Myrmeleon gigas*, Burm.), p. 93, *papilionoides*, Kl., p. 110, *immensus*, MacL., p. 110, *caffer*, Burm., p. 110, *pardalinus*, Burm., p. 111, critical and descriptive notes on ; Hagen, Canad. Ent. xix.

Pamexis contaminatus, Burm., *lutens*, Thunbg., synonymical notes on ; Hagen, Canad. Ent. xix, p. 112.

Acanthaclisis americana, Drury, described in full, pp. 134–136 ; *texana*, Hag. (? n. sp.), differentiated from *americana*, p. 148 ; *fallax*, Rbr., noticed, p. 148 ; *americana*, preparatory stages, pp. 149–151 ; *occitanica*, Vill., note on habitat, p. 152 ; *congener*, Hag., described, p. 154 ; Hagen, Canad. Ent. xix.

A. pallida, Central Asia, MacLachlan, Hor. Ent. Ross. xxi, p. 453, n. sp.

Myrmeleon gulo, Burm., p. 155, and *nigrum*, L., p. 156, noticed ; Hagen, Canad, Ent. xix.

Maracanda amœna, MacL., description of g. & sp. translated, p. 211, *conspersa*, Rbr., described, p. 212 ; Hagen, Canad. Ent. xix.

M. signata, p. 215, *henshawi*, p. 216, N. America, Hagen, Canad. Ent. xix, n. spp.

Ascalaphidæ.

Ascalaphus ustulatus, Eversm., additional note on ; MacLachlan, C.R. ent Belg. 1887, p. xxxiv.

Colobopterus excisus, N. America, Hagen, Canad. Ent. xix, p. 153, n. sp.

Mantispidæ.

Symphrasis, note on the development of the larva in nests of *Hymenoptera*; BRAUER, Zool. Anz. x, pp. 212 & 218, woodcut.

PSEUDO-NEUROPTERA.

THYSANURA.

[*Cf.* BELING (49), GRASSI (276), HACOHOBA (289), OUDEMANS (547), PARONA (552).]

Japyx: list of the species; KARSCH, B. E. Z. xxxi, p. 154: is it *Thysanuridæ* or *Forficulidæ*? *J. solifugus*, Hal., = (*Typhlolabia subterranea*, Bormans); *T. larva*, Phil., is also a *Japyx*; BORMANS, C.R. ent. Belg. 1887, p. xcv.

Lepismidæ, taxonomy of considered and anatomy sketched; GRASSI (276).

Termophila, n. subg (Rovelli in lit.) of *Lepisma*; GRASSI, Bull. Ent. Ital. xix, p. 58.

Lepisma saccharina, anatomy of; HACOHOBA, (289) pp. 16–30. *L.*, n. spp. ?, described; GRASSI, Bull. Ent. Ital. xix, pp. 60–62.

Lepismina pseudolepisma, p. 59, *polipodia*, p. 60, Italy, GRASSI, Bull. Ent. Ital. xix, n. spp.

Lipura ambulans, anatomy of; HACOHOBA (289), pp. 44–53.

Machilis italicus, p. 53, *targioni*, p. 54, Italy, GRASSI, Bull. Ent. Ital. xix, n. spp.

Nicoletia maggi, Italy, GRASSI, Bull. Ent. Ital. xix, p. 59, n. sp.

Sminthurus cucumeris, ? *solani*, Curt., description and ravages; BELING, Wien. ent. Z. vi, pp. 62 & 63, n. sp.

Anurida maritima, Guer., embryology of; RYDER, Am. Nat. xx, pp. 299–302.

Achorutes viaticus, Tullb., = (*murorum*, auct.), synonymical note, referring to a species from Patagonia; PARONA, Ann. Mus. Genov. (2) iv, pp. 473–480.

Campodea staphylinus, anatomy of; HACOHOBA, (289) pp. 30–44.

THYSANOPTERA.

[*Cf.* LINDEMAN (442).]

Thrips tritici (?) on orange; HUBBARD, Ins. Orange, pp. 164 & 165, fig. 77, and pl. xi, fig. 5.

T. secalina, S.E. Russia, LINDEMAN, Bull. Mosc. lxii, pp. 308–319, woodcuts, n. sp.

Chirothrips antennatus, Osb., descriptive note and larva; LINDEMAN, Bull. Mosc. lxii, pp. 322–325, woodcuts.

Aptinothrips rufa, Hal., descriptive note of ♀; LINDEMAN, Bull. Mosc. lxii, pp. 319–321, woodcut.

Phlœothrips frumentaria, Bel., sexes and life-history described; LINDEMAN, Bull. Mosc. lxii, pp. 325–335.

P. armata, S.E. Russia, LINDEMAN, Bull. Mosc. lxii, pp. 335–337, n. sp.

Fossil *Thysanoptera*, *cf.* SCHLECHTENDAL (675) and Palæo-entomology.

Termitidæ.

[*Cf.* Drummond (181), Forel (236), Grassi (275, 277), Jhering (350, 351), Müller (521).]

Ravages of *Termitidæ* in Catania; Grassi (277).

Habits of White Ants in Central Africa; Drummond (181).

Calotermes flavicollis, note on the nests and winged individuals; Grassi, Bull. Ent. Ital. xix, pp. 75–77.

Termes, metamorphoses; Müller (521). *T. lucifugus*, notes on the habits of; Grassi, Bull. Ent. Ital. xix, pp. 77–80. *T. bellicosus*, Smeath., habits, &c.; Forel (236). *T. flavipes*, ravages of; Scudder, Canad. Ent. xix, p. 217: habits and ravages in Florida; Hubbard, Ins. Orange, pp. 122–125, fig. 46.

T. riograndensis, *mülleri*, Brazil, Jhering, Ent. Nachr. xiii, p. 3, n. spp. (? described).

Anoplotermes, its relations to *Eutermes*; Jhering (351).

Hodotermes viator, Latr., habits noticed; Kolbe, Ent. Nachr. xiii, pp. 70 & 71.

Eutermes sp., development and alternation of generations; Jhering, Ent. Nachr. xiii, p. 2.

Psocidæ.

Psocus venosus, Burm., and *citricola*, Ashm., habits noticed; Hubbard, Ins. Orange, pp. 193–196.

Perlidæ.

[*Cf.* MacLachlan (458).]

Tæniopteryx maracandica, MacL., referred to *Nemoura*; MacLachlan, Ent. M. M. xxiv, p. 90.

Ephemeridæ.

[*Cf.* Eaton (188).]

Ephemeridæ of Portugal; Eaton, Ent. M. M. xxiv, pp. 4–6.

Ephemerella ignita, oviposition and duration in egg; Halford, Ent. M. M. xxiii, p. 235.

E. notata, North England, p. 305, pl. lxv, fig. 9, *hispanica*, Central Spain, p. 306; Eaton, Tr. L. S. (2) iii, n. spp.

Ameletus inopinatus, Black Forest, Eaton, p. 307, pl. lxv, fig. 13, n. sp.

Ecdyurus: Eaton completes the descriptions of the genus, pp. 281–295, Tr. L. S. (2) iii. *E. venosus* var. ? *quæsitor*, p. 286; *id. t. c.*

E. helveticus, Alps, p. 282, pl. xxiv, fig. 46*a*, *affinis*, Netherlands, p. 293, pl. xxiv, fig. 46*c*, Eaton, Tr. L. S. (2) iii, n. spp.

Odonata.

[*Cf.* Barbiche (35), Fausseк (214, 215), Hagen (292), MacLachlan (461, 462), Selys (697, 698).]

Odonata of the palæarctic region, with complete list of those of geographical Europe; SELYS (698). *Odonata* from Central Asia; SELYS (697). Synoptic descriptions of Odonates of Lorraine; BARBICHE (35). Histology of intestine; FAUSSEK (214, 215).

Classification of the *Odonata*, discussed pp. 70–73, and use of the names *Sympetrum*, *Platetrum*, and *Orthetrum*, Newm.; SELYS, Ann. Ent. Belg. xxxi.

Libellulina.

Libellula cærulescens, Fab., p. 13, *ramburii*, Sel., p. 14, *brunnea*, Fons., p. 15, *tæniolata*, Schn., p. 17, *chrysostigma*, Burm., p. 19, ♂ characters described; *L. fulva*, Müll., n. race, *pontica*, p. 12: SELYS, Ann. Ent. Belg. xxxi.

L. gracilis (Albarda), N. Persia, &c., SELYS, p. 15, *l. c.*, n. sp.

Trithemis arteriosa, Burm., n. race *syriaca*; SELYS, Ann. Ent. Belg. xxxi, p. 22.

T. fuscopalliata, Mesopotamia, SELYS, Ann. Ent. Belg. xxxi, p. 23, n. sp.

Rhyothemis imperatrix, Loo-Choo Is., SELYS, Ann. Ent. Belg. xxxi, p. 53, n. sp.

Leucorhinia orientalis, Amur, SELYS, Ann. Ent. Belg. xxxi, p. 54, n. sp.

Sympetrum armeniacum, Sel., ♀ described, p. 55; *S. imitans*, Selys, ♂ described, p. 56: SELYS, Ann. Ent. Belg. xxxi.

Lyriothemis elegantissima, Sel., additional characters; SELYS, Ann. Ent. Belg. xxxi, p. 57.

Corduliina.

Somatochlora graeseri, Amur, SELYS, Ann. Ent. Belg. xxxi, p. 58, n. sp.

Epitheca bimaculata, Charp., n. race *sibirica*; SELYS, Ann. Ent. Belg. xxxi, p. 59.

Gomphina.

Onychogomphus macrodon, Syria, SELYS, Ann. Ent. Belg. xxxi, p. 24, n. sp.

Gomphus schneiderii, Selys, specific validity discussed; SELYS, Ann. Ent. Belg. xxxi, p. 29.

G. davidi, Syria, SELYS, Ann. Ent. Belg. xxxi, p. 30; *G. nigripes*, Amur, *id. t. c.* p. 59: n. spp.

Æschnina.

Æschna crenata, Hag., ♀ = (*arundinacea*, Sel.); SELYS, Ann. Ent. Belg. xxxi, p. 60.

Æ. perrensi, Argentine Republic, MACLACHLAN, Ent. M. M. xxiv. p. 76, n. sp.

Calopterygina.

Calopteryx splendens, Harr., n. race *orientalis*; SELYS, Ann. Ent. Belg. [illegible]

Gomphadorhis [illegible], p. 31, for *N. elwesi*, Darjiling, n. sp., p. 32; MAC- p. 412, n. sp.

Neurobasis chinensis and allies noticed with *longipes*, Borneo, n. sp. ?, p. 648 ; Hagen, Verh. z.-b. Wien, pp. 647 & 648.

Vestalis amœna, note on sexes and localities ; Hagen, Verh. z.-b. Wien, xxxvii. p. 648.

Agrionina.

Sympycna pædisca, Brauer, specific validity discussed, &c. ; Selys, Ann. Ent. Belg. xxxi, pp. 43–45.

Pseudagrion prætextatum, Hag., n. race *syriacum* ; Selys, Ann. Ent. Belg. xxxi, p. 48.

Platycnemis acutipennis, Sel., *diversa*, Rb , and *algira*, Kolbe, note on ; Selys, Ann. Ent. Belg. xxxi, pp. 63 & 64.

Ischnura lamellata and *maroccana*, Kolbe, specific validity queried ; Selys, Ann. Ent. Belg. xxxi, p. 65.

Erythromma humerale, Siberia, Selys, Ann. Ent. Belg. xxxi, p. 61, n. sp.

(G.) *ORTHOPTERA.*

[*Cf.* Bolivar (78, 79), Brown (96), Caulfield (124), Cobelli (134), Colenso (135), Cuccati (148), Davis (152), Decroix (153), Deichmüller (154), Dohrn (169, 170), Finot (227), Hofer (311), Karsch (356, 367, 368, 369), Krassilstschik (400), Krauss (401), Meinert (485), Pictet & Saussure (563), Ruhl (662), Saulcy (665, 666), Saussure (667), Tepper (748), Viallanes (773, 774).]

Ovaries, Korschelt (393).—Intestine of *Eremobia*; Fausser (214, 215).—Catalogue of *Orthoptera* of Denmark; Meinert (485).—List of *Orthoptera* of Canada; Caulfield (124).—List of *Orthoptera* of Porto Rico; Gundlach (286).

Forficulidæ.

An unknown species destroying *Icerya*; Riley, Rep. 1886, p. 487, pl. iii, fig. 6.

Spongophora brunneipennis, Serv., described; Scudder, Canad. Ent. xix. p. 67.

Forficula bipunctata and *auriculata*: period of coupling, habits; Ruhl (662).

F. lesnei, Calvados, Finot, Bull. Soc. Ent. Fr. (6) vii, p. clxxxix, n. sp.

Typhlolabia, *cf. Japyx*, *Thysanuridæ*.

Blattidæ.

Blatta germanica, development of egg; Blochmann (73). *B. ægyptiaca*, cysticercoids of Tænia detected in; Ent. Nachr. xiii, p. 303.

Periplaneta orientalis, bacteria in eggs and tissues of; Blochmann, Biol. Centralbl. vii, p. 606: temperature experiments on; Graber (270): salivary glands; Hofer (311): spermatozoa and egg; Dewitz (157): ovary; Korschelt, Z. wiss. Zool. xlv, p. 371.

Aphlebia bætica fully described and figured; Bolivar, An. Soc. Esp. xvi, p. 90, pl. iv, fig. 2.

A. moghrebica, Morocco, Bolivar, Ann. Soc. Esp. xvi, p. 89, pl. iv, fig. 1, n. sp.

Megaloblatta, n. g., p. 408, for *M. peruviana*, Peru, and *rufipes*, Panama, n. spp., p. 409; Dohrn, S. E. Z. xlviii.

Pelmatosilpha, n. g., p. 410, for *P. præstans*, S. America, n. sp., p. 411, and *P. alaris*, Saus.; Dohrn, S. E. Z. xlviii.

Gromphadorhina hildebrandti, Madagascar; Dohrn, S. E. Z. xlviii, p. 412, n. sp.

Ectobia vittiventris, Costa, characters of; Krauss, Verh. z.-b. Wien, xxxvii, p. 6.

Loboptera decipiens, Germ., larva noticed; Krauss, Verh. z.-b. Wien, xxxvii, p. 7.

Mantidæ and Phasmatidæ.

Mantis carolina, ♀ devouring ♂; Howard, Science, viii, p. 326.

Phyllium siccifolium, note on its development; Brongniart, Bull. Soc. Ent. Fr. (6) vii, pp. lxxxiv–lxxxvii.

Lopaphus macrotegmus, S. Australia, Tepper, Tr. R. Soc. S. Austr. ix, p. 112, pl. vi, n. sp.

Gryllidæ.

Gryllodes littoreus, more fully described; Bolivar, An. Soc. Esp. xvi, p. 109, pl. iv, fig. 13.

Lissoblemmus praticola, more fully described; Bolivar, An. Soc. Esp. xvi, p. 111.

Homaloblemmus olcesei, more fully described; Bolivar, An. Soc. Esp. xvi, p. 112, pl. iv, fig. 14.

Gryllomorphus fragosoi, more fully described; Bolivar, An. Soc. Esp. xvi, p. 113.

Brachytrypes megacephalus, Lefebv., habits, &c., described; Krauss, Verh. z.-b. Wien xxxvii, pp. 18–21.

Locustidæ.

Orphania lixonensis, Pyrenees, Saulcy, Bull. Soc. Metz, (2) xvii, p. 189, n. sp.

Thyreonotus bidens, Spain, Bolivar, An. Soc. Esp. xvi, p. 101, n. sp.

Decticus bicolor, ovary and changes in; Korschelt, Z. wiss. Zool. xlv, pp. 367–370.

Locusta viridissima, ovary; Korschelt, Z. wiss. Zool. p. 371: copulation of; Bolivar, An. Soc. Esp. xvi, pp. 70–73, woodcut.

Cleandrus graniger, Serv., ♂ & ♀ noticed; Karsch, Ent. Nachr. xiii, p. 259.

Ephippigera pellucida, serrata, balearica, Bol., more fully described; Bolivar, An. Soc. Esp. xvi, pp. 104 & 105.

Hemideina longipes, New Zealand, Colenso, Tr. N. Z. Inst. xix, p. 145, n. sp.

Platycleis carpetana, p. 106, pl. iv, fig. 12, *oporina*, p. 108, Spain, Bolivar, An. Soc. Esp. xvi; *P. marqueti*, p. 80, *buyssoni, novi*, p. 190, Pyrenees, Saulcy, Bull. Soc. Metz (2) xvii: n. spp.

Antaxius hispanicus, Barcelona, Bolivar, An. Soc. Esp. xvi, p. 103, n. sp.

Conocephalus exiliscanorus, Staten Is., Davis, Canad. Ent. xix, p. 57, n. sp.

Pœcilogramma, n. g., near *Pardalota*, p. 52, for *P. striatifemur, annulifemur*, E. Africa, p. 53, n. spp.; Karsch, Ent. Nachr. xiii.

Conchotopoda, n. g., p. 44, for *C. belcki*, n. sp., Dam[illegible]araland, p. 45; Karsch, Ent. Nachr. xiii.

Odontura stenophixa, Fieb., ♂ & ♀ characters; KRAUSS, Verh. z.-b. Wien. xxxvii, pp. 14 & 15.

Microcentrum retinerve, metamorphoses and parasite noticed, p. 134, figured, pl. ix; HUBBARD, Ins. Orange.

Hetrodides: the group revised, three subfamilies adopted, viz., *Pycnogastrina*, *Hetrodina*, and *Eugastrina*, the genera tabulated and several species described; KARSCH (367).

Hetrodes militaris, White, note on: KARSCH, B. E. Z. xxxi, p. 71.

H. bachmanni, S. W. Africa, KARSCH, p. 57, pl. ii, fig. 1, B. E. Z. xxxi, n. sp.

Enyaliopsis, n. g., for *Eugaster ephippiatus*, Gerst., and *Hetrodes petersii*, Schaum.; KARSCH, B. E. Z. xxxi, p. 60.

Gymnoproctus, n. g., for *Hetrodes abortiva*, Serv. (figured, pl. ii, fig. 2); KARSCH, B. E. Z. xxxi, p. 61.

Pornotrips, n. g., for *Hetrodes horridus*, Burm.; KARSCH, B. E. Z. xxxi, p. 62.

Acanthoproctus, n. g., for *Hetrodes cervina*, de Haan, and *diadematus*, Stål; KARSCH, B. E. Z. xxxi, p. 66.

Prionocnemis, n. g., p. 67, for *P. verruciferus*, n. sp., Mombasa, p. 67, pl. ii, fig. 3; KARSCH, B. E. Z. xxxi: ♀ described; *id.* Ent. Nachr. xiii, p. 261.

Spalacomimus, n. g., for *Eugaster talpa*, Gerst.; KARSCH, B. E. Z. xxxi, p. 68.

Bradyopisthius, n. g., for *B. paradoxurus*, n. sp., Somali-land, pl. ii, fig. 4; KARSCH, B. E. Z. xxxi, p. 69.

ACRIDIIDÆ.

Œdipoda cærulescens and *Caloptenus italicus*, anatomy of brain; VIALLANES (773, 774).

Gryllus (*Locusta*) *grossus*, L., synonymy; SHAW, P. E. Soc. 1887, pp. ii–iv.

Note on the post-oak Locust (species?) in Texas; BRUNER, (637) pp. 17–19.

Stenobothrus bonneti, fully described; BOLIVAR, An. Soc. Esp. xvi, p. 93.

S. festivus, p. 94, *panteli*, p. 95, Spain, BOLIVAR, An. Soc. Esp. xvi; *S. finoti*, p. 82, *pyrenæus*, p. 83, Pyrenees, SAULCY, Bull. Soc. Metz (2) xvii: n. spp.

Arcyptera tornosi, Spain, BOLIVAR, An. Soc. Esp. xvi, p. 97, n. sp.

Œdaleus mlokosiewitchi fully described; BOLIVAR, An. Soc. Esp. xvi, p. 98.

Oenerodes canonicus, Fisch., varieties described; KRAUSS, Verh. z.-b. Wien, xxxvii, p. 11.

Melanophus differentialis, ravages in Texas; BRUNER (637).

Dissosteira carolina, note on; M'NEIL, Canad. Ent. xix, p. 58.

Opsomala sordida, Serv., figured, with details; MCCOY, Prodr. Zool. Vict. xiv, pl. cxxxix, figs. 1–4.

Mesops pedestris, Er., figured, with details; MCCOY, Prodr. Zool. Vict. xiv, pl. cxxxix, figs. 5 & 6.

Tropinotus australis, Leach, figures and details of ; McCoy, Prodr. Zool. Vict. xiv, pl. cxl.

Trachypetra, White, nd *Batrachotetrix*, Burm., note on ; Karsch, Ent. Nachr. xiii, p. 260. *T.*, White, discussed ; Karsch, Ent. Nachr. xiii, pp. 41–44.

Orestera, n. g., p. 331, for *O. ephippium*, n. sp., Peru, p. 332 ; Pictet & Saussure, MT. schw. ent. Ges. vii.

Tropidostethus, Phil., and *T. bicarinatus*, Phil., described ; Pictet & Saussure, MT. schw. ent. Ges. vii, p. 334.

Alcamenes, Stål, synopsis of the species ; Pictet & Saussure, MT. schw. ent. Ges. vii, p. 336.

A. clarazianus, Argentine Rep., Pictet & Saussure, MT. schw. ent. Ges. vii, p. 336, n. sp.

Colpolopha, Stål, arrangement of the species ; Pictet & Saussure, M.T. schw. ent. Ges. vii, p. 338.

C. biloba, Peru, Pictet & Saussure, MT. schw. ent. Ges. vii, p. 338, n. sp.

Draconata (sic), n. g., p. 341, for *D. mancus*, n. sp., Colombia, p. 342, Pictet & Saussure, MT. schw. ent. Ges. vii.

Elæochlora, Stål, synopsis of the species ; Pictet & Saussure, MT. schw. ent. Ges. vii, pp. 343 & 344.

Rhomalea, Burm., synopsis of the species ; Pictet & Saussure, MT. schw. ent. Ges. vii, pp. 348–350.

R. stolli, *latipennis*, Brazil, p. 351, *peruviana*, Peru, p. 352, *icterus*, Argentine Rep., p. 353, Pictet & Saussure, MT. schw. ent. Ges. vii : n. spp.

Clarazella, n. g., p. 354, for *C. patagona*, Patagonia, n. sp., p. 355 ; Pictet & Saussure, MT. schw. ent. Ges. vii.

Zoniopoda, Stål, synopsis and descriptions of the species ; Pictet & Saussure, MT. schw. ent. Ges. vii, pp. 356–358.

Z. jheringi, S. Brazil, Pictet & Saussure, MT. schw. ent. Ges. vii, p. 357, n. sp.

Tropidacris, Scud., synopsis of the species ; Pictet & Saussure, MT. schw. ent. Ges. vii, pp. 358 & 359.

T. cardinalis, p. 360, *imperialis*, p. 361, Guatemala, Pictet & Saussure, MT. schw. ent Ges. vii, n. spp.

Titanacris, Scudd., synopsis of the species ; Pictet & Saussure, MT. schw. ent. Ges. vii, pp. 362 & 363.

Diponthus, Stål, synopsis and descriptions of the species ; Pictet & Saussure, MT. schw. ent. Ges. vii, pp. 365–376.

D. clarazianus, p. 370, *argentinus*, p. 372, *pycnostictus*, p. 373, *puelchus*, p. 375, Argentine Rep., Pictet & Saussure, MT. schw. ent. Ges. vii, n. spp.

Adephagus, n. g., for *Pamphagus cristatus*, Burm. ; Saussure, Spic. Ent. ii, p. 23 : the insect described, *l. c.*, and figured, fig. 22.

Porthetis elephas, Serv., referred to *Pamphagus* ; Saussure, Spic. Ent. ii, p. 25.

Akicera carinata, Serv., referred to *Xiphocera* ; Saussure, Spic. Ent. ii, p. 25 : *A. grisea*, Serv., ♂ referred to *Xiphocera* (*Hoplolopha*) ; *id. l. c.*, note.

Akicera, Serv., restricted to *A. fusca*, which is redescribed, the name altered to *Acocera*; Saussure, Spic. Ent. ii, p. 25.

Xiphocera, Latr., history of the name, p. 27: the known species tabulated and diagnosed, and some figured, pp. 29–70; Saussure, Spic. Ent. ii. *X. auripennis*, *jucunda*, and *spoliata*, Walk., queried as probably spp. of *Elaeochlora*; Pictet & Saussure, MT. schw. ent. Ges. vii, p. 346.

X. spinulosa, Natal, p. 40, *spectrum*, W. Africa, p. 41, *brunneriana*, Abyssinia, p. 43, fig. 7, *cristata*, E. Africa, p. 44, fig. 9, *nasuta*, Zululand, p. 45, fig. 6, *angolensis*, Angola, p. 47, fig. 8, *æstuans*, S. E. Africa, p. 52, *latipes*, Zambesi, p. 51, fig. 12, *bradyana*, Transvaal, p. 55, fig. 1, *mannulus*, Grahamstown, p. 56, fig. 5, *bolivariana*, Mozambique, p. 57; *X.* (*Porthetis*) *consobrina*, Transvaal, p. 62, *X.* (*Hoplolopha*) *dromadaria*, p. 64, figs. 14 & 15, *fissa*, p. 56, *camelina*, p. 67, figs. 18 & 19, = (*Pamphagus reflexus*, Walk., ♂, and ♀ *P. horridus*, Burm.), *asina*, p. 68, figs. 20 & 21, S. Africa, Saussure, Spic. Ent. ii, n. spp.

Bolivarella, n. g., for *B. calens*, n. sp., W. Africa, Saussure, Spic. Ent. ii, p. 70.

Tropidauchen, n. g., p. 72, for *T. securicolle*, Syria, p. 73, fig. 23, *cultricolle*, Turkestan, p. 74, n. spp.; Saussure, Spic. Ent. ii.

Pamphagus brunnerianus, Syria, p. 75, figs. 24 & 25, *paulinoi*, Portugal, p. 77, Saussure, Spic. Ent. ii, n. spp.

Eunapius numida, Tunis, p. 79, fig. 26, *maroccanus*, p. 80, fig. 27, *vaucherianus*, p. 81, fig. 28, Morocco, Saussure, Spic. Ent. ii, n. spp.

Tettigidæ: monograph of, with fresh classifications, characters of the group, catalogue of the species, characters of the seven sections, table of the generic characters, descriptions of the genera and species; Bolivar (78).

Tettigides: the following are the new genera and species included in Bolivar's memoir (Ann. Ent. Belg. xxxi):—

Hypsæus, n. g., for *H. westwoodi*, n. sp., Philippines, p. 200, pl. iii, figs. 3*a* & *b*.

Piezotettix, n. g, p. 200, for a portion of *Hymenotes*, Stål.

Chorophyllum saussurei, Cuba, p. 203, pl. iii, fig. 5, n. sp.

Xerophyllum fuscum, p. 204, *simile*, p. 205, pl. iii, figs. 6 & 6*a*, W. Africa, n. spp.

Eleleus, n. g., p. 205, for *E. curtus*, n. sp., Brazil, p. 206, pl iii, figs. 7*a* & *b*.

Cota, n. g, p. 206, for *C. strumosa*, p. 206, *saxosa*, p. 207, pl. iii, figs. 8 & 8*a*, n. spp., S. America.

Potua, n. g., for *P. coronata*, n. sp., Borneo, p. 208, pl. iii, fig. 9.

Diotarus brunneri, Sydney, *galeatus*, *pupus*, Philippines, p. 212, n. spp.

Pantelia, n. g., for *P. cristulata*, n. sp., pl. iii, fig. 12, Sierra Leone, p. 214.

Scelimena sanguinolenta, Java, p. 216, n. spp.

Gavialidium tuberculatum, Minahassa, *philippinum*, p. 219, *aurivilii*, Philippines, *celebicum*, Celebes, p. 220, *kraussi*, Philippines, p. 221, n. spp.

Chthonius, n. g., for *Tettix palpatus*, Stål, p. 221.

Criotettix, n. g., for part of *Tettix*, p. 222, and including the following n. spp.: *tricarinatus*, Ceylon, *nexuosus*, Borneo, p. 224, *borrei*, Cochin China, *nigellus*, Gaboon, *saginatus*, Java, p. 225, *miliarius*, Ceylon, p. 226, *baeri*, *vidali*, *terminutus*, Philippines, *subulatus*, India, or., p. 227, *rugosus*,

Borneo, *insidiosus*, Malacca, *pulcher*, Queensland, p. 228, *pullus*, Philippines, *clavitarsis*, Borneo, p. 230.

Threciscus, n. g., p. 232, for *Spartolus pugionatus*, Stål.

Spartolus tricostatus, Philippines, p. 233, n. sp.

Systolederus, n. g., p. 234, for *Tettix* part, with n. spp. *ophthalmicus*, *haani*, p. 235, *languidus*, p. 236, Philippines.

Mazarredia, n. g., p. 236, for *Tettix* part, with the following n. spp., *sculpta*, India, *remissa*, Cambodia, *semperi*, Philippines, p. 238, *abbreviata*, Fiji Is., *insularis*, Ceylon, p. 239, *atypa*, *lauta*, p. 240, *gemella*, Philippines, *celebica*, Celebes, p. 241, *centrosa*, Borneo, p. 242.

Xistra, n. g., p. 242, for *Tettix corniculata*, Stål, and the following n. spp., *gogorzæ*, p. 243, *sagittaria*, *impressa*, *lurida*, p. 244, *similis*, *ochracea*, p. 245, Philippines.

Pterotettix, n. g., for *P. andrei*, n. sp., Nossi Bé, p. 245.

Crimisus, n. g., for *C. patruus*, Amazons, *contractus*, Peru, n. spp., p. 246.

Cotys, n. g., for *C. antennatus*, n. sp., Peru, p. 247.

Metrodora, n. g., p. 247, for *Tettix spinifrons*, Stål, and the following n. spp.: *rana*, Upp. Amazons, *lutosa*, Brazil, p. 248, *amazonica*, Upp. Amazons, *concinna*, Brazil, p. 249.

Amorphopus cunctatus, New Caledonia, p. 250, *phyllocerus*, Gaboon, *antennatus*, *griseus*, Upp. Amazons, p. 251, n. spp.

Nephele, n. g., for *Tetrix asmodeus*, Serv., and *N. turgida*, n. sp., Upp. Amazons, p. 252.

Mitraria, n. g., for *Acridium phyllocerum*, Haan, and *producta*, n. sp., Upp. Amazons, p. 253.

Thyrsus, n. g., p. 253, for *T. tiaratus*, n. sp., Fiji Is., p. 254, and fig. 21.

Prototettix, n. g., p. 255, for *Tettix impressus* and *lobulatus*, Stål, and *P. fossulatus*, n. sp., Brazil, p. 256.

Tettix asperulus, Apiahy, p. 260, *priscus*, N. Australia, *dubiosus*, Caffraria, p. 261, *irruptus*, Sydney, *nobrei* (figured, An. Soc. Esp. xvi, pl. iv, fig. 10), Portugal, *tartarus*, Turkestan, p. 262, *japonicus*, Japan, p. 263, *sibiricus*, E. Siberia, p. 265, *brunnerii*, Hudson's Bay, p. 266, figs. 22 & 22*a*, *ceperoi*, Mediterranean coasts, p. 267 (also An. Soc. Esp. xvi, p. 100), *signatus*, Philippines, p. 268, n. spp.

Paratettix, n. g., p. 270, for *Tettix* part with the following n. spp.: *peruvianus*, Peru, p. 272, *cayennensis*, Cayenne, p. 273, *schochii*, Guatemala, p. 274, *frey-gessneri*, Cuba, *variabilis*, Asiatic Archipelago, p. 276, *femoralis*, Sydney, *obesus*, hab. ?, *cinereus*, Nossi Bé, p. 277, *personatus*, Ceylon, *mimus*, Philippines, p. 278, *variegatus*, Ceylon, *fluctuans*, N. Australia, *sagittatus*, Philippines, p. 280, *indicus*, India, *contractus*, Borneo, *pullus*, Fiji Is., p. 281, *tricarinatus*, Philippines, *similis*, N. Australia, *fullax*, Guatemala, p. 282.

Hedotettix, n. g., p. 283, for *Tettix* part, with n. spp., *H. gracilis*, Java, p. 284, *affinis*, *guibelondoi*, Philippines, *cinctus*, Sumatra, p. 285, *sobrinus*, *rusticus*, Philippines, *festivus*, Ceylon, p. 286, *angustifrons*, Philippines, *pulchellus*, Congo, Madagascar, p. 287.

Coptotettix, n. g., p. 287, for the following n. spp., *fossulatus*, Ceylon, p. 288, *planus*, N. Australia, *capitatus*, Java, *fuscus*, Philippines, p. 289, *rufipes*, Somali, *maesoi*, Philippines, *asperatus*, Cochin China, p. 290,

tuberculatus, Borneo, *testaceus*, Ceylon, *interruptus*, Java, p. 291, *fuliginosus* India, *nodulosus*, *ferrugineus*, p. 292, *mazarredoi*, p. 293, Philippines.

Pe lla, n. g., p. 294, for *Tettigidea obesa*, Scudd.

Tettigidea gualtemeca, Guatemala, p. 298, *scudderi*, Upp. Amazons, *multicostata*, Brazil, p. 299, n. spp.

Bairachidea flavonotata, N. Grenada, p. 300, n. sp.

Scaria, n. g., p. 301, for *Acrydium hamatum*, Deg., and *S. lineata*, n. sp., Upp. Amazons, p. 302.

Puiggaria, n. g., for *P. antennata*, n. sp., Brazil, figs. 26*a*, *b*, p. 302.

Saussurella, n. g., p. 303, for *Acridium cornutum*, Haan.

Phlæonotus, n. g., p. 303, for *Hymenotes humilis*, Gerst., and *natalensis*, n. sp., S. Africa, figs. 27*a* & *b*, p. 304.

Discotettix selysi, Sumatra, p. 306, n. sp.

Hirrius, n. g., p. 308, for *Arulenus punctatus*, Stål.

Phœstus, n. g., p. 309, for *Tettix mellerborgi*, Stål.

the papers marke
se

ECHINODERMATA.

BY

G. HERBERT FOWLER, B.A., PH.D.

I.—LIST OF PUBLICATIONS.

AURIVILLIUS, C. W. S. Hafsevertebrata från Nordligaste Tromsö amt och Vestfinmarken. Bih. Sv. Ak. Handl. xi, No. 4.

Echinodermata, pp. 47–51.

BARROIS, J. Note sur une nouvelle forme Parasite des Firoles. J. de l'Anat. Phys. xxiii, pp. 1–17, pls. i & ii.

Trichælina paradoxa, parasitic on *Pterotrachea*, with some resemblances to *Echinodermata*. [*Cf.* LUDWIG (1).]

BELL, F. J. (1) Description of a New Species of *Evechinus*. Ann. N. H. (5) xix, pp. 403–405, pl. xvii, figs. 7 & 8.

——. (2) On the term *Mülleria* as applied to a genus of Holothurians. *T. c.* p. 392; xx, p. 148.

This name being already occupied, the substitute, *Actinopyga*, suggested by Brönn, should replace it.

——. (3) A New Species of *Nucleolites*, with remarks on the subdivisions of the genus. *T. c.* xx, pp. 125–127.

A new species, linking *Nucleolites* and *Echinobrissus*, which the author therefore regards as synonymous.

——. (4) Note on the Variations of *Amphiura chiajii*, Forbes. *T. c.* pp. 411–413.

——. (5) A Note on *Echinaster decanus*. P. Linn. Soc. N.S.W. (2) ii, p. 1074.

Port Jackson the habitat of this rare form.

For the papers marked with one asterisk, I am indebted to the Zool. Anz. 1887-88 for those with two, to the Zool. Jahresb. for 1886.

[Bell, F. J.] (6) Holothurians, or Sea-Slugs. Zool. (3) xi, pp. 41–47, 2 woodcuts.

Popular account.

——. (7) Report on a Collection of *Echinodermata* from the Andaman Islands. P. Z. S. 1887, pp. 139–145, pl. xvi. [*Cf.* Ludwig (2).]

——. (8) Report on the *Echinodermata* collected by the Officers of H.M.S. 'Flying-fish' on Christmas Island. Proc. Zool. Soc. 1887, p. 523.

——. (9) Studies in the *Holothuroidea*. VI. Description of New Species. *T. c.* pp. 531–534, pl. xlv.

Blake, J. F. On a New Specimen of *Solaster murchisoni*, from the Yorkshire Lias. Geol. Mag. (3) iv, pp. 529–531, pl. xv ; prelim. note in Rep. Brit. Ass. 1887, p. 716.

Bucaille, E. Sur les Échinides de la craie. Bull. Soc. Rouen (3) xxii, pp. 222 & 223.

With remarks on the local variations.

Bury, H. On the Early Stages in the Development of *Antedon rosacea*. P. R. Soc. xliii, pp. 297–299; Rep. Brit. Ass. 1887, pp. 735 & 736.

Abstract only ; early stages from segmentation till shortly after fixation.

Carpenter, P. H. (1) Notes on Echinoderm Morphology. X. On the Supposed Presence of Symbiotic Algæ in *Antedon rosacea*. Q. J. Micr. Soc. xxvii, pp. 379–391, pl. xxx, fig. 3.

Refuses Vogt and Yung's conclusion that the sacculi, common at the sides of the pinnules, are vegetable.

——. (2) Notes on Echinoderm Morphology. XI. On the Development of the Apical Plates in *Amphiura squamata*. *Op. cit.* xxviii, pp. 303–317.

——. (3) The Supposed *Myzostoma*-cysts in *Antedon rosacea*. Nature, xxxv, p. 535.

Cysts recently described as probably due to *Myzostoma*, due really to some other agent. [*Cf.* von Graff.]

——. (4) Zoölogische Bijdragen tot de Kennis der Karazee. II. Report on the *Comatulæ*. Bijdr. Dierk. xiv, pp. 41–49, 1 pl.

——. (5) The Generic Position of *Solanocrinus*. Ann. N. H. (5) xix, pp. 81–88.

Author recognizes *Solanocrinus* only as a synonym of *Antedon*, not as an independent genus.

——. (6) Professor Perrier's Historical Criticisms. [illegible], pp. 57–62 & 84–88; also Further Remarks [illegible]ppines, p. Historical Errors, *id. ibid.* pp. 262–2[illegible]ina, p.

[Carpenter, P. H.] (7) The Morphology of *Antedon rosacea*. Ann. N. H. (5) xix, pp. 19–41.

A sharp criticism of that section of Vogt & Yung's Traité d'Anatomie Comparée Pratique which deals with *Antedon*.

Cotteau, G. (1) Sur les genres éocènes de la famille des Brissidées (Echinides irréguliers). C.R. civ, pp. 1532–1534.

——. (2) Sur trois genres nouveaux d'échinides éocènes. C.R. Ass. Fr. Sci. 1886, pp. 379–381, 3 woodcuts.

——. (3) Catalogue raisonné des échinides jurassiques recueillis dans la Lorraine. *T. c.* pp. 460–468.

——. (4) Catalogue des Échinides recueillis par M. Roussel dans le terrain Crétacé des petites Pyrénées et des Corbières. Bull. Soc. géol. (3) xv, pp. 639–665, pls. xvi–xx.

Cuénot, L. (1) Formation des organes génitaux et dépendances de la glande ovöide chez les Asterides. C.R. civ, pp. 88–90.

——. (2) Sur le système nerveux et l'appareil vasculaire des Ophiures. *Op. cit.* cv, pp. 818–820.

°°Davy, —. Note sur un Ophiure (*Protaster daoulasensis*) du Dévonien inférieur de la rade de Brest. Bull. Soc. géol. xiv, pp. 182–188.

Döderlein, L. (1) Eine Eigenthümlichkeit triassischen Echinoideen. JB. Mineral. 1887, bd. 2, pp. 1–4, pl. i.

Three ambulacral pores on each side of the "mittelfeld."

°——. (2) Die japanischen Seeigel. I. Familien *Cidaridæ* und *Saleniidæ*. Stuttgart: 1887, 4to, 59 pp., 11 pls.

Duncan, P. M. (1) On the *Ophiuridæ* of the Mergui Archipelago, collected for the Trustees of the Indian Museum by Dr. John Anderson. J. L. S. xxi, pp. 85–106, pls. viii, ix, & xi (figs. 28–40).

9 n. spp. and 1 n. g. are described and figured; some other forms are also discussed.

——. (2) On some parts of the Anatomy of *Ophiothrix variabilis*, Dunc., and *Ophiocampsis pellucida*, Dunc. *T. c.* pp. 107–120, pls. x, & xi (figs. 21–27).

——. (3) On the *Echinoidea* of the Cretaceous Strata of the lower Narbadá Region. Q. J. Geol. Soc. xliii, pp. 150–155.

——. (4) A Revision of the *Echinoidea* from the Australian Tertiaries. *T. c.* pp. 411–430, 1 woodcut.

1 new genus is recorded.

——. (5) & Sladen, W. P. On some points in the Morphology and ——ification of the *Saleniidæ*, Agassiz. Ann. N. H. (5) xix,

For the papers marked with one ° for those with two, to the Zool. Jap[illegible] the various genera.

DURHAM, H. E. (1) The Emigration of Amœboid Corpuscles in the Star-fish. P. R. Soc. xliii, pp. 327–330, pl. iii.

Phagocytes remove foreign particles, passing out through the dermal branchiæ.

——. (2) Note on the Madreporite of *Cribrella ocellata*. *T. c.* pp. 330–332, 2 woodcuts.

Connection between the hydrocœle and enterocœle cavities.

EBERT, —. Uber die Gattung *Spatangus*. Z. geol. Ges. xxxix, pp. 229 & 230.

ECK, H. Bemerkungen über einige *Encrinus*-Arten. *T. c.* pp. 540–558, 1 woodcut.

With list of species from the Muschelkalk.

FEWKES, J. W. On the Development of the Calcareous Plates of *Amphiura*. Bull. Mus. C. Z. xiii, pp. 107–150, 3 pls.

Observations on various morphological points in the pluteus and pentagonal embryo. The succession of development of the plates is traced, and their homologies are discussed.

FOLLMANN, O. Unterdevonische Crinoiden. Verh. Ver. Rheinl. xliv, pp. 113–138, pls. ii & iii.

°°FRAAS, E. Die Asterien des weissen Jura von Schwaben und Franken mit Untersuchungen über die Struktur der Echinodermen und das Kalkgerüste der Asterien. Palæontogr. xxxii, pp. 227–261, pls. xxix & xxx.

FREDERICQ, L. L'Autotomie chez les Étoiles de Mer. Rev. Sci. xl, pp. 589–592. [*Cf.* GIARD, *ibid.* p. 629.]

Summary of known instances in *Echinodermata*.

VON FRITSCH, C. Ueber *Encrinus carnali* (Beyr.). Z. Naturw. lx, pp. 83 & 84.

GAUTHIER, V. (1) Échinides.—Description des espèces de la craie de Reims, et de quelques espèces nouvelles de l'Aube et de l'Yonne. Bull. Soc. Yonne, xli, pp. 367–399, pls. iv–vii.

Several former spp. figured for the first time.

——. (2) Recherches sur l'appareil apical dans quelques espèces échinides appartenant au genre *Hemiaster*. C.R. Ass. Fr. Sci. 1886, p. 406.

——. (3) Échinides fossiles de l'Algérie. *T. c.* pp. 474–475.

GIARD, A. Sur un Copépode (*Cancerilla tubulata*, Dal.) parasite de l'*Amphiura squamata*. C.R. civ, pp. 1189–1192.

VON GRAFF, L. The Cysts of *Antedon rosacea*. Chall. Rep. Zool. xx, pp. 15 & 16 of Report on *Myzostomida*.

Description and plate of the cysts, but no conclusions as to their nature, except that they are not caused by *Myzostomida*. [*Cf.* CARPENTER (3).]

GROOM, T. T. On some new features in *Echinocorys* [illegible] *Pelanechinus corallinus*. Q. J. Geol. Soc. xliii, pp. 703–714, pl. xxviii, 6 woodcuts.

GÜRICH, —. *Encrinus gracilis* aus dem Gogoliner Muschelkalk. JB. schles. Ges. 1886, pp. 132 & 133, and Z. geol. Ges. xxxix, pp. 498–501, 1 woodcut.

HAACKE, W. (1) Seeigelgewohnheiten, Tiefseefauna und Paläontologie. Biol. Centralbl. vi, pp. 641–647.

An instance of adaptation to environment, and remarks on the scarcity of fossil littoral species.

——. (2) Die Radiärthiernatur der Seeigel. *Op. cit.* vii, pp. 289–294.

HADDON, A. C. Preliminary Report on the Fauna of Dublin Bay. P. R. Irish Ac. (2) iv, pp. 523–531.

Echinodermata, p. 528.

HAMANN, O. (1) Die Urkeimzellen (Ureier) im Thierreich und ihre Bedeutung. Jen. Z. Nat. xxi, pp. 517–538.

Echinodermata, p. 524.

——. (2) Die wandernden Urkeimzellen und ihre Reifungsstätten bei den Echinodermen. Z. wiss. Zool. xlvi, pp. 80–98, pl. xi.

A migration of the sexual cells occurs, comparable to that in Hydroids, but antecedent to their differentiation from "Urkeimzellen."

——. (3) Beiträge zur Histologie der Echinodermen. Jen. Z. Nat. xxi, pp. 87–266, pls. vi–xviii; translated in Ann. N. H. (5) xx, pp. 361–378.

Treats in detail the histology of the various parts of the regular Echinoids (pp. 90–194), and of the Spatangids (pp. 195–231). In the general section (pp. 232–251) are discussed—(1) the phylogeny of *Echinodermata*, the author regarding *Asteroidea* as the "Stammform," and the group as derived from worms with a true body cavity; (2) the relation between *Asteroidea* and *Echinoidea*; (3) the blood-vascular system of *Echinodermata*; (4) the general results attained by study of *Echinoidea*.

——. (4) Vorläufige Mitteilungen zur Morphologie der Ophiuren. Nachr. Ges. Götting. 1887, pp. 394–400.

Treats of the nervous system, the migrations and maturation of the germinal cells, the dorsal pore, and the vascular system.

HARTOG, M. M. The True Nature of the "Madreporic System" of *Echinodermata*, with remarks on Nephridia. Ann. N. H. (5) xx, pp. 321–326, and prel. note in Rep. Brit. Ass. 1887, p. 736.

The author concludes that the madreporic system is a left nephridium, the ciliary current of which is directed outwards; and that its altered position in *Holothuroidea* is due to secondary nephridial function on the part of the respiratory trees. The cœlomic fluid continues a coagulable albuminoid.

HENDERSON, J. R. The *Echinodermata* of the Firth of Clyde. P. Phys. Soc. Edin. ix, pp. 328–337.

List of species and occurrence.

HENSEN, V. Ueber die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thiere. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 1–109, pls. i–vi.

Echinoderm larvæ, comparative numbers in known volume of wate breeding seasons, &c., p. 62.

HERDMAN, W. A. An abnormal Starfish (*Goniaster temp' oni*). Nature xxxiv (1886), p. 596.

A possible tendency to dichotomous division.

HÉROUARD, E. (1) Sur le *Colochirus lacazei*. C.R. cv, pp. 234–236.

——. (2) Sur la formation des corpuscles calcaires chez les Holothuries. *T. c.* pp. 875 & 876.

——. (3) Sur le système lacunaire dit sanguin et le système nerveux des Holothuries. *T. c.* pp. 1273–1275.

HERTWIG, O. & R. Ueber den Befruchtungs- und Teilungs-vorgang des tierischen Eies unter dem Einfluss äusserer Agentien. Jen. Z. Nat. xx, pp. 120–241 & 477–510, pls. iii–ix.

Researches on the ovum of *Strongylocentrotus lividus*.

JAMES, U. P. *Agelacrinus holbrooki*. J. Cincinn. Soc. x, pp. 25 & 26, 1 woodcut.

Now first figured.

KOCH, A. Echiniden der obertertiären Ablagerungen Siebenbürgens. Kolozsvári Orvos-term. társ. Értes. xii, 1887, p. 255–271, 1 pl.

KOEHLER, R. Recherches sur l'appareil circulatoire des Ophiures. Ann. Sci. Nat. (7) ii, pp. 101–158, 3 pls.

VON KOENEN, A. Beitrag zur Kenntniss der Crinoiden des Muschelkalks. Abh. Ges. Götting. xxxiv, 44 pp., 1 pl.

KOLESCH, K. Ueber *Eocidaris keyserlingi*, Gein. Jen. Z. Nat. xx, pp. 639–665, pl. xxxviii.

LAMBERT, T. Echinides.—Description de quelques espèces de la craie de l'Yonne. Bull. Soc. Yonne, xli, pp. 400–419, pl. viii.

°°LEVINSEN, G. M. R. Kara Havets *Echinodermata*. Dijmphna-Togtets zool.-bot. Udbytte, pp. 383–418, pls. xxxiv & xxxv.

With notes on the embryology and generative organs. 27 species are recorded.

°DE LORIOL, P. Notes pour servir à l'étude des Echinodermes ; II. Rec. Z. Suisse, iv, pp. 365–407.

LUDWIG, H. (1) Ueber den angeblichen neuen Parasiten der Firoliden ; *Trichoelina paradoxa*, Barrois. Zool. Anz. x, pp. 296–298 ; *cf.* also Ueber die Pedicellarien des Seeigels, in Verh. Ver. Rheinl. (SB. niederrhein. Ges.) xliv, p. 129.

Cf. BARROIS ; the author asserts the new parasite to be part of a pedicellaria.

[Ludwig, H.] (2) Drei mittheilungen über alte und neue Holothurienarten. SB. Ak. Berlin, 1887, pp. 1217–1244, pl. xv.

Collections in Ceylon, Angra Pequena, and by the 'Prinz Adalbert.'

Marktanner-Turneretscher, G. Beschreibung neuer Ophiuriden und Bemerkungen zu Bekannten. Ann. Hofmuseum Wien, ii, pp. 291–316, pls. xii & xiii.

Marshall, C. F. Observations on the Structure and Distribution of Striped and Unstriped Muscle in the Animal Kingdom, and a Theory of Muscular Contraction. Q. J. Micr. Sci. xxviii, pp. 75–107, pl. vi.

Echinodermata, p. 85; the muscle is smooth (*cf.* Hamann (3)].

Meneghini, G. *Goniodiscus ferrazzii*, Mgh.; nuova Stelleride terziaria del Vicentino. Atti (Mem.) Soc. Tosc. viii, pp. 1–8, pl. x.

Meyer, O. Beitrag zur Kenntniss der Fauna des Alttertiärs von Mississippi und Alabama. Ber. Senck. Ges. 1887 (Abhandl.), pp. 1–22, pls. i & ii.

°Nachtrieb, H. F. Notes on Echinoderms obtained at Beaufort, N.C. Stud. Biol. Lab. J. Hopkins Univ. iv, pp. 81 & 82.

Nicklès, R. Sur une Astérie (*Stellaster sharpii*) du Bajocien des environs de Nancy. C.R. Ass. Fr. Sci. 1886, pp. 482 & 483, 1 woodcut.

Oehlert, D. Étude sur quelques Fossiles Dévoniens de l'Ouest de la France. Bibl. haut. études, xxxiii, pp. 1–80, pls. i–v.

Echinodermata, pp. 67 & 68.

Peron, A. Notes pour servir à l'Histoire du Terrain du craie dans le Sud-Est du bassin Anglo-Parisien. Bull. Soc. Yonne, xli (sci. nat.), pp. 145–366, pls. i–iii.

Echinodermata, pp. 348–359.

Perrier, E. (1) Mémoire sur l'organisation et le développement de la Comatule de la Méditerranée (*Antedon rosacea*). N. Arch. Mus. (2) ix, pp. 177–348, pls. ix–xx.

Continuation of the memoir recorded last year.

——. (2) Sur le corps plastidogène ou prétendu cœur des Échinodermes. C.R. civ, pp. 180–182.

——. (3) Réponse à M. Herbert Carpenter. Zool. Anz. x, pp. 145–147.

[*Cf.* Carpenter (6).]

Pfeffer, G. (1) Zoologische Kleinigkeiten. vii. Ueber die Rechtschreibung des Wortes "Echinoderma." Verh. Ver. Hamb. vi, pp. 107–109.

——. (2) Zoologische Kleinigkeiten. viii. Ueber Abweichungen von der Fünfzahl bei Echinodermen. *T. c.* p. 110.

——. (3) Zoologische Kleinigkeiten. ix. Ueber *Parasalenia gratiosa* (A. Agass.) und *P. pohlii*, n. sp. *T. c.* pp. 110–113.

——. (4) Mollusken, Krebse, und Echinodermen von Cumberland-Sund. JB. Hamb. iii.

Echinodermata, 2 species only, p. 49.

PREYER, W. Ueber die Bewegung der Seesterne; II. MT. z. Stat. Neap. vii, pp. 191–233, pl. vii; (critical notice by G. J. ROMANES, Nature xxxvi, pp. 20 & 21). The two parts published together, 144 pp., 1 pl. Berlin: 1887, 8vo.

Physiological experiment, psychological deduction.

PROUHO, H. (1) Sur le développement de l'appareil génital des Oursins. C.R. civ, pp. 83–85.

——. (2) Sur quelques points controversés de l'organisation des Oursins. *T. c.* pp. 706–708.

On the vascular systems, in connection with PERRIER (2).

——. (3) Recherches sur le *Dorocidaris papillata*, et quelques autres Échinides de la Méditerranée. Arch. Z. expér. (2) v, pp. 213–380, pls. xiv–xxvi.

A list of *Echinoidea* of the Roussillon coasts (p. 215), is followed by a detailed morphological study.

RATHBUN, R. Description of the species of *Heliaster* (a genus of Starfishes), represented in the U.S. National Museum. P. U. S. Nat. Mus. 1887, pp. 440–448.

RATTE, F. Second Note on *Tribrachiocrinus corrugatus*, Ratte, and on the place of the Genus among *Palæocrinoidea*. P. Linn. Soc. N.S.W. (2) i, pp. 1069–1077.

REPORT (First) on the Marine Fauna of the South-west of Ireland. P. R. Irish Ac. (2) iv, pp. 599–638.

Echinodermata, pp. 618–621.

ROBERTSON, D. *Amphidotus cordatus*. P. N. H. Soc. Glasg. (n.s.) i, pp. 290–293.

Experiments to discover the seat of mucous secretion.

ROMANES, G. J. [See PREYER, W.]

RUIJS, J. M. Zoologische Bijdragen tot de Kennis der Karazee.—I. Inleiding en algemeene mededeelingen. Bijdr. Dierk. xiii, pp. 1–38.

List of *Echinodermata*, p. 30.

SARASIN, F. Zwillingsbildungen der *Linckia multifora*, Lmk. SB. nat. Fr. 1887, p. 209; also Zool. Anz. x, pp. 674 & 675, 1 woodcut.

Regeneration producing an entirely new star at the end of an arm, so that two specimens appear to be fused.

SCHMITT, J. Recherches sur l'action de la Nicotine chez les Étoiles de Mer. C.R. Ass. Fr. Sci. 1886, pt. 2, pp. 587–592, 2 woodcuts.

SCHULZE, F. E. Präparate von Echinodermenskeletten. SB. Nat. Fr. 1887, pp. 30 & 31.

SEMON, R. Beiträge zur Naturgeschichte der Synaptiden des Mittelmeers. MT. z. Stat. Neap. vii; first notice, pp. 272–300, pls. ix & x; second notice, pp. 401–422, pl. xv.

Systematic, with a new species, p. 272; general biology, p. 280; the remainder constitutes a detailed anatomical investigation.

*Simonelli, V. Echinodermi fossili di Pianosa. Atti Soc. Tosc. (proc. verb.) v, pp. 163–165.

Sladen, W. P. [See Duncan, P. M. (5).]

Springer, F. [See Wachsmuth, C.]

°°Stuertz, B. Ueber paläozoische Seesterne. JB. Mineral. ii, pp. 142–154.

Swan, J. G. (1) Fatal injury inflicted by a Starfish. Bull. U.S. Fish Comm. vii, p. 34.

——. (2) The Trepang Fishery. Zool. (3) xi, pp. 434 & 435; and °Bull. U.S. Fish. Comm. vii, p. 333.

Toula, F. Ueber *Aspidura* (*Amphiglypha*) *raiblana*, n. sp. Anz. Ak. Wien, xxiv, p. 293.

Ulrich, E. O. Remarks upon the names *Cheirocrinus* and *Calceocrinus*, with descriptions of three new generic terms, and one new species. Rep. Geol. N. H. Surv. Minnesota, xiv, pp. 104–113, 1 woodcut.

These two names involved in confusion; author substitutes three new genera, under new family *Cremacrinidæ*.

°°Vogt, C., & Yung, E. Embranchement des Échinodermes, pp. 514–670 of Traité d'Anatomie Comparée Pratique (Paris: 1887, 8vo).

Wachsmuth, C., & Springer, F. The summit-plates in Blastoids, Crinoids, and Cystids, and their morphological relations. P. Ac. Philad. 1887, pp. 82–114, pl. iv.

Mainly a criticism of parts of Carpenter's and Etheridge's Catalogue of *Blastoidea*.

Wagner, R. (1) Ueber *Encrinus wagneri*, Ben., aus dem unteren Muschelkalk von Jena. Z. geol. Ges. xxxix, pp. 822–828, 1 woodcut.

——. (2) Die Encriniten des unteren Wellenkalkes von Jena. Jen. Z. Nat. xx, pp. 1–32, pls. i & ii.

Full description and figures of 2 species.

Whiteaves, J. F. On some Marine *Invertebrata* dredged or otherwise collected by Dr. G. M. Dawson in 1885. Tr. R. Soc. Canada, iv, sect. 4, pp. 111–137.

Echinodermata, pp. 115-117.

Wright, T. On a new *Ophiurella* from the Calciferous Grit, near Sandsfoot Castle, Weymouth, Dorset. Geol. Mag. (3) iv, pp. 97 & 98, pl. iii. [From Dorset N. H. Field Club, iv, p. 56.]

II.—SUBJECT-INDEX

TO LIST OF PUBLICATIONS.

Distribution.

Magnaster, Aurivillius. S.W. Ireland, Report on Fauna.
Cidaris rousseli, Gordon Cumberland Sound, Pfeffer (4)
Offaster leymeriei, n. sp., id. Roussillon, Prouho (3).

Mediterranean, SEMON.
Ceylon, &c., LUDWIG (2).
Angra Pequena, LUDWIG (1).
Christmas Is., BELL (8).
Baltic, HENSEN.
Karazee, RUIJS, CARPENTER (4).
Brit. Columbia, WHITEAVES.
Japan, DÖDERLEIN (2).
Beaufort, U.S., NACHTRIEB.
Kara Sea, LEVINSEN.
Andaman Is., BELL (7).
Mergui, DUNCAN (1).

MORPHOLOGY.

GENERAL ANATOMY.

Antedon, CARPENTER (7), PERRIER (1).
Dorocidaris, PROUHO (3).
Synaptidæ, SEMON.
Ophiuroidea, HAMANN (4).

NERVOUS SYSTEM.

Ophiuroidea, CUÉNOT (2).
Holothuroidea, HÉROUARD (3).

VASCULAR SYSTEM.

General, PERRIER (2).
Ophiuroidea, CUÉNOT (2), DURHAM (2), HARTOG, KOEHLER.
Holothuroidea, HÉROUARD (3).
Echinoidea, PROUHO (2), DÖDERLEIN (1).

MUSCULAR AND SKELETAL SYSTEMS.

Ophiuroidea, DUNCAN (2).
Asteroidea, FRAAS.
Holothuroidea, HÉROUARD (2).

EMBRYOLOGY.

Antedon, BURY, PERRIER (1).
Amphiura, CARPENTER (2), FEWKES.
Asteroidea, CUÉNOT (1).
Echinoidea, PROUHO (1).
Migration of sexual cells, HAMANN (2, 4).
Sexual cells in general, HAMANN (1).
Fertilization, &c., of ovum, HERTWIG.

PHYSIOLOGY.

Phagocytes in *Asteroidea*, DURHAM (1).
Madreporic system, HARTOG.
Locomotion, &c., PREYER.
Mucous secretion, ROBERTSON.
Action of nicotine, SCHMITT.

HISTOLOGY.

General, HAMANN (3).
Spicules, HÉROUARD (2).
Muscle, MARSHALL.

MISCELLANEA.

PARASITISM — CARPENTER (3), GIARD.
VARIATION—BELL (4), DUNCAN (1), BUCAILLE.
AUTOTOMY—FREDERICQ.
RADIATE STRUCTURE—HAACKE (2).
MIMICRY—HAACKE (1).
ABNORMALITY—PFEFFER[illegible] SIN, HERDM[illegible]
[illegible]ogy, p. 280; the
PREP[illegible]nvestion.

III.—SYSTEMATIC.

ECHINOIDEA.

Histology ; Hamann (3).
Vascular systems ; Prouho (2).
Genital organs, development of ; Prouho (1).
Micraster fastigatus, n. sp., Gauthier, (1) p. 381.
Leucaster, n. g., with sole n. sp. *remensis*, *id.* p. 386.
Peroniaster, n. g., with sole n. sp. *cotteaui*, *id.* p. 389.
Pyrina cotteaui, n. sp., Lambert, p. 401.
Offaster gauthieri, n. sp., *id.* p. 404.
Cardiaster peroni, n. sp., *id.* p. 412 ; *pygmæus*, discussed, *id.* p. 417 ; *munieri*, n. sp., *id.* p. 418.
Acrosalenia, criticism of the genus and amended definition ; Duncan, (5) pp. 122–129.
Peltastes discussed and defined; with this *Pseudosalenia* and *Hyposalenia* are synonymous ; *id.* pp. 129–131.
Goniophorus, a subgenus of *Peltastes* ; *id.* p. 131.
Salenia discussed and defined ; *id.* pp. 132–136.
Heterosalenia, a subgenus of *Salenia* ; *id.* p. 136.
Parasalenia pöhlii, n. sp., and *gratiosa*, Pfeffer (3).
Nucleolites occidentalis, n. sp., Bell (3).
Evechinus raritubereulatus, n. sp., *id.* (1).
Brissidæ, Eocene genera ; Cotteau (1).
Strongylocentrotus lividus, fertilisation, &c., of ovum ; Hertwig.
Eocidaris keyserlingi, from the Zechstein ; Kolesch.
Dorocidaris papillata, anatomy of ; Prouho (3).
Amphidotus cordatus, seat of mucous secretion ; Robertson.
Coraster evaristei, n. g. & sp., Cotteau, (2) p. 380.
Ornithaster hispanicus, n. g. & sp., *id. ibid.*
Brissopneustes vilanovæ, n. g. & sp., *id.* p. 381.
Echinocyamus meridionalis, n. sp., Meyer, p. 12.
Ortholophus, n. g., to hold (*Temnechinus*) *lineatus* ; Duncan, (4) p. 415.
Echinaster decanus, from Port Jackson ; Bell (5).
Hemiaster, apical plates ; Gauthier (2).
Palanechinus corallinus, notes on ; Groom.
Micraster antiquus, n. sp., Cotteau, (4) p. 642.
Epiaster rousseli, n. sp., *id.* p. 644.
Pyrina rousseli, n. sp., *id.* p. 645.
Botriopygus ataxensis, n. sp., *id.* p. 647.
Discoidea arizensis, n. sp., *id.* p. 648.
Cyphosoma rousseli, *id.* p. 651, *arizensis*, *id.* p. 652, *canali*, *id.* p. 653, all n. sp. ; *gregoirei*, n. sp., *id.* p. 664.
Goniopygus arizensis, n. sp., *id.* p. 655.
Magnosia arizensis, n. sp., *id.* p. 656.
Cidaris rousseli, n. sp., *id.* p. 658.
Offaster leymeriei, n. sp., *id.* p. 661.

Clypeolampas lestelli, n. sp., *id.* p. 662.
Tuberaster, n. g., with n. sp. *tuberculatus*; GAUTHIER (3).
On the *Cidaridæ* and *Saleniidæ* of Japan; DÖDERLEIN (2).

ASTEROIDEA.

Development of genital organs and relations of the ovoid gland in Asteroids; CUÉNOT (1).
Phagocytes; DURHAM (1).
Locomotion; PREYER.
Skeletal structures; FRAAS.
Some Palæozoic forms; STURTZ.
Cribrella ocellata, vascular systems; DURHAM (2).
Solaster murchisoni, new specimen; BLAKE.
Stellaster sharpii, NICKLÈS.
Linckia, regeneration resulting in twinning; SARASIN.
Heliaster, species in U.S. Nat. Mus.; RATHBUN.
Goniodiscus ferrazzii, n. sp., MENEGHINI.
Goniaster, abnormal; HERDMAN.

OPHIUROIDEA.

Nervous and vascular systems; CUÉNOT (2): vascular, KOEHLER.
General morphology; HAMANN (4).
Ophiolepis nodosa, n. sp., Mergui, DUNCAN, (1) p. 86.
Ophiophragmus affinis, n. sp., *id.* p. 89, *difficilis*, n. sp., *id.* p. 90.
Ophiocnida sexradia, n. sp., *id.* p. 92.
Ophiocoma scolopendrina (Lmk.), variations in; *id.* p. 93.
Ophiothrix andersoni, *id.* p. 95, *merguiensis*, *id.* p. 96, *variegatus*, *id.* p. 97, *variabilis*, *id.* p. 99, all n. spp.; for the muscular and skeletal characters of *O. variabilis*, see DUNCAN (2); *alopecurus*, and allied species, MARKTANNER-TURNERETSCHER, p. 304; *fovcolata*, n. sp., *id.* p. 313.
Ophiocampsis, n. g., with sole n. sp. *pellicula*, DUNCAN, (1) p. 101; for muscular and skeletal systems, see *id.* (2).
Ophiocnemis marmorata (Lmk.) redescribed; DUNCAN, (2) p. 107.
Amphiura chiajii, variations in; BELL (4): *squamata*, apical plates, CARPENTER (2): Copepod parasitic on, GIARD: *mülleri*, n. sp., MARKTANNER-TURNERETSCHER, p. 300, *brevispina*, n. sp., *id.* p. 301; developmental points, FEWKES.
Aspidura (*Amphiglypha*) *raiblana*, n. sp., TOULA.
Ophioglypha albida, *affinis*, *grubii*, figured; MARKTANNER-TURNERETSCHER.
Ophiactis resiliens, *id. ibid.*, and *ljungmani*, n. sp., *id.* p. 297, *macrolepidota* and *lütkeni*, n. spp., *id.* p. 298.
Ophiocoma marmorata, n. sp., *id.* p. 303.
Ophiolophus, n. g., with sole n. sp. *novaræ*, *id.* p. 314.
Ophiurella nereida (Wright, 1880), WRIGHT.
Protaster daoulasensis, DAVY.

HOLOTHUROIDEA.

Vascular and nervous systems ; HÉROUARD (3).

Formation of spicules ; *id.* (2).

Trepang fishery ; SWAN (2).

Chirodota venusta, n. sp., SEMON, p. 276.

Muelleria, to be replaced by *Actinopyga* (Brown) ; BELL (2).

Colochirus lacazei, n. sp., HÉROUARD, (1) p. 234.

Synaptidæ, general account of Mediterranean, and anatomy ; SEMON.

Cucumaria sancti-johannis, n. sp., BELL, (9) p. 531 ; *bicolor*, *inconspicua*, n. spp., *id.* p. 532.

Holothuria (*Bohadschia*) *whitmæi*, *id.* p. 532, *inermis*, *kapiolaniæ*, *id.* p. 533, *sæcularis*, *victoriæ*, *id.* p. 534, all n. spp.

Haplodactyla andamanensis, n. sp. ; BELL, (7) p. 143. *H. australis* (+ *andamanensis*), described and figured ; LUDWIG, (2) p. 1218.

Ocnus typicus, *id.* p. 1221.

Stichopus variegatus and *chloronotus*, *id.* p. 1224.

Holothuria cadelli and *albida*, BELL, p. 144, *papillata*, p. 145, all n. spp. *H. scabra* (+ *cadelli*), LUDWIG, (2) p. 1224 ; *spinifera*, *id.* p. 1225 ; *pardalis* (+ *insignis*, *lineata*, *peregrina*), *id.* p. 1226 ; *edulis* (? + *albida*), *imitans*, *id.* p. 1228 ; *marenzelleri* (+ *andersoni*), *id.* p. 1229.

Colochirus doliolum, *id. ibid.*

Cucumaria frauenfeldi, *id.* p. 1231 ; *crocea*, *id.* p. 1232 ; *crucifera*, *id.* p. 1235.

Semperia insolens, LUDWIG, (2) pp. 1231 & 1236.

Pseudocucumis théeli, n. sp., *id.* p. 1236.

Definition of genera *Phyllophorus*, *Orcula*, *Actinocucumis*, *Pseudocucumis* (+ *Amphicyclus*), p. 1240.

Thyonidium molle, *id.* p. 1241.

CRINOIDEA.

Apical plates of *Crinoidea*, *Blastoidea* ; WACHSMUTH.

Antedon rosacea, development, PERRIER (1), BURY ; cysts, not of *Myzostoma*, VON GRAFF, CARPENTER (3) ; *quadrata*, *eschrichtii*, *prolixa*, described and figured, with two pentacrinoid larvæ from the 'Varna' expedition, CARPENTER (4) ; saccules as symbiotic algæ, CARPENTER (1).

Solanocrinus, generic identity with *Antedon* ; CARPENTER (5).

Encrinus gracilis (v. Buch), described and figured, GÜRICH ; WAGNER, (2) p. 6 ; *aculeatus* (v. Meyer), *id.* p. 26 ; *wagneri*, WAGNER (1) ; *carnali*, VON FRITSCH.

Ctenocrinus, discussion of genus and its spp., FOLLMANN, pp. 126–134, with n. spp. *aciculatis*, p. 131, *stellifer* and *rhenanus*, p. 133.

Rhodocrinus gonatodes, *id.* p. 134.

Acanthocrinus longispina, *id.* p. 135.

Dadocrinus gracilis (v. Buch), described and figured ; VON KOENEN.

Encrinus : several old spp. described and figured ; *id. ibid.*
Rhaphanocrinus? wachsmuthi, n. sp., OEHLERT.
Triacrinus elongatus, n. sp., FOLLMANN, p. 114.
Calycanthocrinus, n. g., *id.* p. 115, with n. sp. *decadactylus*.
Taxocrinus rhenanus, *id.* p. 116 ; *stürtzii*, n. sp., *id.* p. 118; ? *T. grebei* n. sp., *id. ibid.*
Poteriocrinus : several species discussed and figured ; *id.* pp. 119–123.
Codiacrinus schultzei, n. sp., *id.* p. 123.
Culicocrinus nodosus, *id.* p. 125.
Cremacrinidæ, n. fam., including the three following genera and *Calceocrinus* ; ULRICH.
Cremacrinus, n. g., with sole n. sp. *punctatus*, *id.* p. 107.
Deltacrinus, n. g., type sp. = *Cheirocrinus clarus*, Hall, *id.* p. 109.
Halysiocrinus, n. g., type sp. = *Cheirocrinus dactylus*, Hall, *id.* p. 110.
Tribrachiocrinus, notes on ; RATTE.

CYSTIDEA.

Carpocystites, n. g., with sole n. sp. *soyei* ; OEHLERT.
Agelacrinus holbrooki, figured ; JAMES.

INCERTÆ SEDIS.

Trichælina paradoxa, n. g. & sp., parasite of doubtful affinities ; BARROIS ; LUDWIG (1).

VERMES.

BY

G. Herbert Fowler, B.A., Ph.D.

I.—LIST OF PUBLICATIONS.

°°Apostolidès, P. Perforation de l'intestine par un Lombric. Semaine médicale, vi, p. 493.

pp. 500–507. A remarkable case of Phosphorescence in an Earth-

——. (4) La . Nat. xxi, pp. 773 & 774.

Parasit. C. W. S. Hafsevertebrata från Nordligaste Tromsö .a Vestfinmarken. Bih. Sv. Ak. Handl. xi, No. 4.

Böhmig *Z. s*, pp. 51 & 52.

°Dard, F. E. (1) On the Occurrence of numerous Nephridia in the same Segment in certain Earthworms, and on the Relationship between the Excretory System in the *Annelida* and in the Platyhelminths. Q. J. Micr. Sci. xxviii, pp. 397–411, pls. xxx & xxxi. Preliminary note, P. R. Soc. xliii, pp. 309 & 310.

In *Acanthodrilus multiporus* and *Perichæta aspergillum* a network of nephridial tubules exists, with many openings to the exterior in each segment; in the second genus the network is not interrupted by the septa. The author shows how the Oligochæte excretory system may have been derived from that of *Platyhelminthes*.

——. (2) On the Anatomy of *Allurus tetrædrus*, Eisen. Q. J. Micr. Sci. xxviii, pp. 365–371, pl. xxv.

——. (3) On the Structure of a New Genus of *Lumbricidæ* (*Thamnodrilus gulielmi*). P. Z. S. 1887, pp. 154–163, 6 woodcuts.

——. (4) On the Reproductive Organs in the Genus *Eudrilus*. P. R. Soc. Edinb. xiii, pp. 672–682, pl. xxv.

Ovary and oviduct are continuous, and connected with the spermatheca.

For the papers marked with one asterisk, I am indebted to the Zool. Anz. 1887-88; for those with two, to the Zool. Jahresb. for 1886.

[Beddard, F. E.] (5) Note on the Structure and Development of the Ovum in an Annelid (*Eudrilus*). J. Anat. Phys. xxi, pp. 9–14, pl. i; abstract in Rep. Brit. Ass. 1887, p. 771.

A large number of germinal cells break down, perhaps for nutrition of the maturing ovum.

——. (6) Contributions to the Anatomy of Earthworms. Nos. i, ii, & iii. P. Z. S. 1887, pp. 372–392, pl. xxxiii, 3 woodcuts.

The first deals with the structure of *Eudrilus sylvicola*, n. sp.; the second contains additional matter on the generative organs of *Acanthodrilus*; the third describes the genital setæ of *Perichæta houlleti*.

——. (7) Contributions to the Anatomy of Earthworms, No. iv. *T. c.* pp. 544–548.

Description of *Cryptodrilus fletcheri*, n. sp.

——. (8) On the so-called Prostate Glands of the *Oligochæta*. Zool. Anz. x, pp. 675–678.

Author concludes that the "prostate" of *Perichæta* is homologous with the atrium of other Earthworms and of the *Limicolæ*.

——. (9) Note on the Reproductive Organs of *Moniligaster*. Zool. Anz. x, pp. 678–681.

Description of the organs, pointing to affinities wi the *Limicolæ*.

Bell, F. J. (1) A New Species of *Distomum*. A p. 116.

From the ureters of *Halosaurus macrochir*. ful affinities;

——. (2) A bifid specimen of *Nereis pelagica*. P. Z. S. 1887,

——. (3) A Note on the Relations of Helminth Parasites to Disease. Rep. Brit. Ass. 1887, p. 770.

The malady not the effect of *Entozoa*.

°°Belleli, V. La *Bilharzia hæmatobia*. Osservazioni anatomo-patologiche e cliniche. Gazz. Ospitali, vii.

van Beneden, É., & Neyt, A. Nouvelles recherches sur la fécondation et la division mitosique chez l'Ascaride mégalocéphale. Bull. Ac. Belg. (3) xiv, pp. 215–295, 6 pls.

°Benedict, J. E. Description of ten Species and one New Genus of Annelids from the Dredgings of the U.S. Fish Comm. Steamer 'Albatross.' P. U. S. Nat. Mus. ix, pp. 547–553.

8 new species, and *Crucigera*, n. g.

Benedict, J. E. [See Webster, H. E.]

Benham, W. B. (1) Recent Researches on Earthworms. Rep. Brit. Ass. 1887, pp. 749 & 750.

General abstract of conclusions.

——. (2) Studies on Earthworms. III. *Criodrilus lacuum*, Hoffmeister. Q. J. Micr. Sci. xxvii, pp. 561–572, pl. xxxviii, figs. 9–19.

Anatomical and histological notes; no gizzard is present.

BERGENDAL, D. Zur Kenntniss der Land-planarien. Zool. Anz. x, pp. 218–224; translated in Ann. N. H. (5) xx, pp. 44–50.

On the fission, nephridia, nervous system, and sense-organs of *Bipalium*.

°BERGH, R. S. Die Entwicklungsgeschichte der Anneliden mit besonderer Rücksicht auf das sog. mittlere Keimblatt und das Centralnervensystem. Kosmos (Vetter), [1886, 2 bd.], xix, pp. 401–417.

BERGONZINI, C. Sopra una Tenia seghettatta. Atti (Rend.) Soc. Mod. (3) iii, pp. 45–49.

°BERTELLI, D. Glandule salivari nella *Hirudo medicinalis*. Atti Soc. Tosc. (Proc. Verb.) v, pp. 284 & 285.

BEWLEY, H. On the changes produced in the lungs of sheep by a parasitic worm (*Strongylus filaria*). J. Anat. Phys. xxi, pp. 374–377, pl. xi.

°°BLANCHARD, R. (1) Articles Helminthes, Helminthiase, Helminthologie in Dict. Encycl. Sc. Méd. pp. 627–655; Hématozoaires, *t. c.* pp. 43–73.

°°——. (2) *Taenia nana*. Semaine médicale, vi, p. 276.

——. (3) Bibliographie des Hématozoaires. Bull. Soc. Zool. Fr. xii, pp. 500–507.

——. (4) La nomenclature zoologique et l'helminthologie. CB. Bakt. Parasit. pp. 422–424 (*cf.* pp. 585 & 586).

BÖHMIG, L. (1) Zur Kenntnis der Sinnesorgane der Turbellarien. Zool. Anz. x, pp. 484–488.

Description of the eyes, and of a touch-organ in *Pl. gonocephala*.

——. (2) *Planaria jheringii*, eine neue Triclade aus Brasilien. *T. c.* pp. 482–484.

°BOMFORD, —. Note on Eggs of *Distoma* (*Bilharzia*) *hæmatobium* found in Transport Cattle. Scient. Mem. Med. Officers Army of India, ii, 1886, 1 pl. Calcutta: 1887.

BORELLI, A. Sul rapporto fra i nefridii e le setole nei lombrici anteclitelliani. Boll. Mus. Zool. Anat. Comp. Torino, ii, No. 27, 5 pp.

With a table of comparative relations of position in species of *Lumbricus*, *Allolobophora*, and *Allurus*.

BOURNE, A. G. (1) Sense of Taste or Smell in Leeches. Nat. xxxvi, p. 125.

——. (2) On Indian Earthworms. Part I. Preliminary notice of Earthworms from the Nilgiris and Shevaroys. P. Z. S. 1886, pp. 662–672.

BOUSFIELD, E. C. The Natural History of the Genus *Dero*. J. L. S. xx, pp. 91–107, pls. iii–v.

Description of habits, general characters, and of the recorded species. One n. sp. is defined and figured.

Boveri, T. (1) Ueber Differenzierung der Zellkerne während der Furchung des Eies von *Ascaris megalocephala*. Anat. Anz. ii. pp. 688–693.

——. (2) Zellen-Studien. Jen. Z. Nat. xxi. pp. 423–515. pls. xxv–xxvi.

The author's studies of the formation of polar bodies in the egg of *Ascaris megalocephala* and *A. lumbricoides* lead him to believe that a true karyokinesis takes place, and that Carnoy's view is erroneous.

——. (3) Ueber die Befruchtung der Eier von *Ascaris megalocephala*. SB. Ges. Morph. iii, pp. 71–80.

Regards the recent conclusions of van Beneden and Carnoy as due to *post-mortem* changes, resulting from inefficient preservation.

——. (4) Ueber die Bedeutung der Richtungskörper. *Op. cit.* ii. pp. 101–106.

Observations on the ovum of *Ascaris megalocephala*, and the significance of the polar bodies.

——. (5) Ueber den Antheil des Spermatozoon an der Theilung des Eies. *Op. cit.* iii, pp. 151–163.

Observations on the fertilisation of the ova in *Ascaris megalocephala*.

Braun, M. [See Blanchard.]

Braun, M. (1) Ueber den Zwischenwirth des breiten Bandwurmes. SB. Ges. Dorp. viii, pp. 86 & 87.

——. (2) Die Finnen von *Bothriocephalus latus* (Brems.) CB. Bakt. Parasit. i, pp. 649 & 650.

Identity of the Cestode described by Zschokke (3) with the *B. latus* of Dorpat.

——. (3) Die Orthonectiden. *Op. cit.* ii, pp. 255–261.

An account of and discussion of the various forms hitherto described, which the author reduces to two species only.

——. (4) Ueber Dicyemiden. *T. c.* pp. 386–389.

Short summary of the group.

——. (5) Ueber parasitische Strudelwürmer. *T. c.* pp. 452–457 & 478–484.

Summary of our knowledge of parasitic *Turbellaria*.

*Bugnion, E. Une nouvelle espèce de Taenia. Semaine médicale, vi. p. 294.

*Calandruccio, S. Secondo caso di anchilostomanemia in Sicilia seguito di guarizione. Riv. Clin. Terapeut. viii. pp. 508–513.

Camerano, L. (1) Richerche intorno al Parassitismo ed al Polimorfismo dei Gordii. Mem. Acc. Tor. xxxviii, pp. 395–413.

Systematic study; synopsis of species, p. 408.

——. (2) Richerche intorno alle specie Italiane del genere *Gordius*. Atti Acc. Tor. xxii, pp. 145–175, pl. i; abstract in Boll. Mus. Zool. Anat. Comp. Torino, ii, No. 20, 4 pp.

[Camerano, L.] (3) Osservazioni sui caratteri diagnostici dei *Gordius* e sopra alcune specie di *Gordius* d'Europa. Boll. Mus. Zool. Anat. Comp. Torino, ii, No. 24, 10 pp.

b Notes on four previous species.

——. (4) Nota intorno alla struttura della cuticula del *Gordius tricuspidatus*, L. Duf. *Op. cit.* No. 25, 3 pp., 1 pl.

——. (5) Del *Gordius tricuspidatus* in Italia. *Op. cit.* No. 28, 2 pp.

——. (6) Nuove osservazioni intorno ai caratteri diagnostici dei *Gordius*. Zool. Anz. x, pp. 602–604.

Response to Villot (1); author retains his species.

——. (7) Ricerche intorno al parassitismo e al polimorphism dei Gordii. Relazione dal Tom. Salvadori. Atti Acc. Tor. xxii, pp. 820–822.

Carnoy, J. B. (1) Some remarks on the recent researches of Zacharias and Boveri upon the Fecundation of the *Ascaris megalocephala*. Rep. Brit. Ass. 1887, pp. 756–758.

[*Cf.* Zacharias (1, 2) and Boveri (1–5).]

——. (2) La cytodiérèse de l'oeuf chez quelques Nematodes. Cellule iii, pp. 1–103, pls. v–viii.

The first part deals with the nucleus and the formation of polar bodies, the second with the segmentation.

——. (3) Conférence donnée à la Société Belge de Microscopie, suivie d'un appendice sur les Globules polaires de l'*Ascaris clavata*. *T. c.* pp. 239–324, 1 pl.

——. (4) Les globules polaires de l'*Ascaris clavata*. *T. c.* fasc. 2, pp. 247–273, 1 pl.

Carpenter, P. H. The supposed *Myzostoma*-cysts in *Antedon rosacea*. Nature xxxv, p. 535. [*Cf.* von Graff (2).]

Cysts recently described as due to *Myzostoma*, really due to some other cause.

Caruccio, A. Sur deux cas d'inclusion de parasites Nematodes dans des oeufs de poule. J. Microgr. xi, pp. 407–412 & 512–514; also in Ital., °Boll. R. Acc. Med. Roma, xii, pt. 6.

Heterakis inflexa and *papillosa*; list of parasites in fowls.

Chatin, J. (1) Sur les Kystes bruns de l'anguillule de la Betterave. Bull. Soc. Philom. (7) xi, pp. 144 & 145; also C.R. cv, pp. 130–132.

Formation of true cysts in *Heterodera schachtii*.

——. (2) Sur l'anatomie de la Bilharzie. *T. c.* pp. 595–597.

——. (3) De l'appareil excreteur et des organes génitaux chez la Bilharzie. *Op. cit.* civ, pp. 1003–1006.

Chworostansky, C. Entwicklungsgeschichte des Eies bei den Hirudineen. Zool. Anz. x, pp. 365–369.

Observations on the structure of the ovary and the formation of ova.

°°Cobbold, T. S. The lung parasites of cattle and sheep, with report on experiments. J. R. Agric. Soc. (2) xxii, pp. 361–376.

Crety, C. Intorno ad alcuni cisticerchi dei rettili. Boll. Soc. Nap. i, pp. 89–92.

Notes on two *Cysticerci*.

Cunningham, J. T. (1) On some points in the Anatomy of *Polychæta*. Q. J. Micr. Sci. xxviii, pp. 239–278, pls. xvii–xix.

Deals (1) with the Nephridia and the relation of the Gonads to them; (2) the Cardiac Body; (3) the Neural Canals, regarded as supporting structures.

——. (2) The Nephridia of *Lanice conchilega*. Nature, xxxvi, pp. 162, 163, & 246.

——. (3) *Stichocotyle nephropis*, n. sp. Tr. R. Soc. Edinb. xxxii, pp. 273–280, pl. xxxix.

A new trematode, with 7–22 suckers; in intestine of *Nephrops norvegicus*.

von Daday, E. (1) Eine neue *Cercaria*-form aus dem Golf von Neapel. Term. füzetek. xi, pp. 107–109, pl. iii, figs. 11–13.

——. (2) Morphologisch-physiologische Beiträge zur Kenntnis der *Hexarthra polyptera*, Schm. *Op. cit.* x, pp. 142–174 (Hung.) & 214–249 (Germ.), 2 pls.

A short discussion and table of the phylogeny follows the detailed study.

Dewoletzky, R. Das Seitenorgan der Nemertinen. Arb. z. Inst. Wien, vii, pp. 233–280, 2 pls., 1 woodcut; abstract in SB. z.-b. Wien, xxxvii, p. 16.

Concludes, in opposition to Hubrecht's view, that in all groups of Nemertines, the lateral organ is a special sense-organ, differentiated for perception of substances in the surrounding medium.

°°Dieffenbach, O. Anatomische und Systematische Studien an Oligochætæ limicolæ. Ber. Oberhess. Ges. pp. 65–108.

Recorded last year from separate copy.

°Drago, U. Un parassita della *Telphusa fluviatilis*, l'*Epitelphusa catanensis*, nuovo genere d'Oligochete. Bull. Soc. Ent. Ital. xix, trim. 1–2, pp. 81–83.

Dugès, E. Una nueva Sanguijuela, *Nephelis mexicana*, nob. Nat. Mex. (2) i, pp. 60–63, pl. vii, 10 figs.

Durand, W. F. Internal Parasites of *Teredo navalis*. Am. Micr. J. viii, pp. 224–226.

Dutilleul, G. (1) Recherches anatomiques et histologiques sur la *Pontobdella muricata*. C.R. Ass. Fr. Sci. 1886, pt. 2, pp. 572–587, pl. xii.

[Dutilleul, G.] (2) Sur quelques points de l'anatomie des Hirudinées rhynchobdelles. C.R. cv, pp. 128–130; translated in Ann. N. H. (5) xx, pp. 150–152.

b. Notes on a larval organ and the male apparatus of *Glossisiphonia*, and on respiration.

——. (3) Sur la genèse de la cuticule dans le groupe des Hirudinées. Bull. Sci. Nord. (2) x, pp. 147–154.

Concludes that it is formed by modification of the external wall of epidermic cells.

°°——. (4) Sur l'appareil génital de la *Pontobdella muricata*. *Op. cit.* ix (1886) pp. 125–130, 1 pl.

Eisig, H. Monographie der Capitelliden des Golfes von Neapel. Fauna und Flora des Golfes von Neapel, Monogr. xvi, 906 pp., (Atlas) 37 pls.

In this, the most important Monograph of the year, the anatomy, histology, physiology, and phylogeny are discussed with great completeness. Of general questions, the formation and derivatives of the cuticle, segmental organs, and the cœlom, are of the utmost importance. The experiments on change of medium, proving that in *C. capitata* the resistance to freshwater is conditioned by the blood-discs of the hæmolymph, are of great interest.

Emery, C. Intorno alla muscolatura liscia e striata della *Nephthys scolopendroides*, D. Ch. MT. z. Stat. Neap. vii, pp. 371–380, pl. xiii.

The distribution and histological structure of smooth and striated muscle in this Polychæte.

°°Eulenberg, H. Ueber die im Jahre 1885 in Preussen auf Trichinen und Finnen untersuchten Schweine. Vierteljahrschrgerichtl. Med. xlv, pp. 384–388.

Fabre-Domergue, —. Sur l'Infusoire Parasite de la cavité générale du *Sipunculus nudus*. *Pompholyxia*, n. g., *sipunculi*, n. sp. C.R. Ass. Fr. Sci. 1886, pt. 2, pp. 593–596, pl. xiii.

Regards the urn-shaped corpuscles as parasitic infusoria.

Fielde, A. M. Note on the Multiplication of *Distoma*. P. Ac. Philad. 1887, p. 111.

Fletcher, J. J. (1) Remarks on an introduced Species of Land-Planarian, apparently *Bipalium kewense*. P. Linn. Soc N.S.W. (2) ii, pp. 244–249.

——. (2) Notes on Australian Earthworms. Part iii. *T. c.* pp. 375–402. Part iv. *T. c.* pp. 601–620.

Several new forms.

—— (3) & Hamilton, A. G. Notes on Australian Land-Planarians, with Descriptions of some New Species. Part i. *T. c.* pp. 349–374, pl. v.

FRAIPONT, J. *Polygordius.* Fauna und Flora des Golfes von Neapel, Monogr. xiv, 125 pp., 16 pls.

Morphology, &c., pp. 1–41 ; ontogeny, pp. 42–83. In the Systematic (pp. 84–90) the two Neapolitan species are described as unnamed. The author believes that it is as yet impossible to decide definitely upon the phylogenetic value of the Trochosphere.

FREDERICQ, —. (On Self-amputation.) Rev. Sci. xl, p. 589.

FRITSCH, G. Zur Anatomie der *Bilharzia hæmatobia*, Cobbold. Arch. mikr. Anat. xxxi, pp. 192–223, pls. xi & xii, 1 woodcut.

An anatomical study. The author believes that infection takes place only through drinking impure water.

°FÜRBRINGER, R. Die Haufigkeit des *Echinococcus* in Thüringen. Inaug. Dissert. 28 pp. Jena : 1887, 8vo.

°GARMAN, S. *Gordius* infesting an *Amblystoma*. Science Obs. 1887.

GAVOY, —. Non-identité du Cysticerque ladrique et du *Tenia solium*. C.R. cv, pp. 827 & 828.

VAN GEHUCHTEN, A. Nouvelles observations sur la vésicule germinative et les globules polaires de l'*Ascaris megalocephala*. Anat. Anz. ii, pp. 751–760, 11 woodcuts ; and Tag. deut. Nat. Vers. lx, pp. 250 & 251.

GIARD, A. (1) Sur un nouveau genre de Lombriciens phosphorescents et sur l'espèce type de ce genre, *Photodrilus phosphoreus*. C.R. cv, pp. 872–874.

——. (2) L'Autotomie dans la serie animale. Rev. Sci. xl, pp. 629 & 630. [*Cf.* FREDERICQ.]

GIRARD, A. (1) Sur le développement des Nématodes de la Betterave, pendant les années 1885 et 1886, et sur leurs modes de propagation. C.R. civ, pp. 522–524.

°——. (2) Les Nématodes de la Betterave ; caractères, découverte, et développement des Nématodes, &c. Paris : 1887, 8vo, 32 pp., 2 pls.

GOSSE, P. H. (1) Twenty-four new species of *Rotifera*. J. R. Micr. Soc. 1887, pp. 1–7, pls. i & ii.

——. (2) Twelve new species of *Rotifera*. *T. c.* pp. 361–367, 1 pl.

——. (3) Twenty-four more new species of *Rotifera*. *T. c.* pp. 861–871.

VON GRAFF, L. (1) Nye Arten af Myzostomider i Universitets Zoologiske Museum i Kjøbenhavn. Vid. Medd. 1884–1886, pp. 81–85.

——. (2) Report on the *Myzostomida* collected during the voyage of H.M.S. 'Challenger,' during the years 1873–1876. (Supplement.) Chall. Rep. Zool. xx, 16 pp., 4 pls.

——. (3) Die Anneliden-Gattung *Spinther*. Z. wiss. Zool. xlvi, pp. 1–66, pls. i–ix, 10 woodcuts ; also reprinted in Arb. z. Inst. Graz. ii.

The genus and the three recognized species are fully defined ; the anatomy and histology (pp. 27–60) discussed and figured in great detail.

GRASSI, B. (1) Die *Tænia nana* und ihre medicinische Bedeutung. CB. Bakt. Parasit. i, pp. 97–100.

——. (2) Einige weitere Nachrichten über *Tænia nana*. *Op. cit.* ii, pp. 282–285.

——. (3). Entwicklungscyclus der *Tænia nana*. *T. c.* pp. 305–312.

Shows that this Cestode may develope directly, and without intermediate host, in mouse or man.

——. (4) Bestimmung der vier von Dr. E. Parona in einem kleinen Mädchen aus Varese (Lombardei) gefundenen *Tænia* (*Tænia flavopunctata*?, Parona). *Op. cit.* i, pp. 257–259.

Refers the sp. to *T. leptocephala* (Creplin).

——. (5) *Trichocephalus* und *Ascaris*-entwicklung. *T. c.* pp. 131 & 132.

Experiments proving the direct development of these forms from ovum to adult in the human subject.

——. (6) *Filaria inermis* (mihi.) ein Parasit des Menschen, des Pferdes, und des Esels. *T. c.* pp. 617–623, 13 woodcuts.

——. (7) Cenno preventivo intorno ad una nuova malattia parassitaria dell' uomo. Gazz. Ospitali, vii, p. 450.

—— (8), & SEGRÈ, R. I. Nuove osservazioni sull' eterogenia del *Rhabdonema* (*Angüillula*) *intestinale*. II. Considerazioni sull' eterogenia. Atti Acc. Rom. (4) iii, pp. 100–108.

—— (9), & FERRARA, —. Zur *Bothriocephalus*-frage. Offener Brief an den hochgeehrten Herrn Medicinalrath Dr. F. Küchenmeister. Deutsch. med. Wochenschr. 1886, p. 699.

GROBBEN, C. (1) Ueber eine Misbildung der *Tænia saginata* (Goeze). Verh. z.-b. Wien, xxxvii, pp. 679–682, 1 cut.

——. (2) Die Pericardialdrüse der Opisthobranchier und Anneliden, sowie Bemerkungen über die perienterische Flüssigkeit der letzteren. Zool. Anz. x, pp. 479–481.

Attributes to it an excretory significance.

HADDON, A. C. (1) Preliminary Report on the Fauna of Dublin Bay. P. R. Irish Ac. (2) iv, pp. 523–531.

Vermes, p. 529.

——. (2) Suggestion respecting the Epiblastic Origin of the Segmental Duct. Sci. P. R. Dubl. Soc. v, pp. 463–472, pl. x.

With remarks on a possible relation between Chætopod and Vertebrate excretory systems.

HALLER, B. Ueber die sogennante Leydig'sche Punktsubstanz im Centralnervensystem. Morph. J.B. xii, pp. 325–332.

Based on observations on *Lepidasthenia elegans* and *Nereis costæ*.

HALLEZ, P. (1) Nouvelles études sur l'embryogénie des Nematodes. C.R. civ, pp. 517–520.

Researches additional to those recorded last year (*q.v.*) chiefly on the relations of the mesoderm.

[Hallez, P.] (2) Sur la fonction de l'organe énigmatique et de l'utérus des Dendrocoeles d'eau douce. *T. c.* pp. 1529-1532.

Regards the "uterus" as a pouch for the fertilization of the ova.

——. (3) Sur les premiers phenoménes du développement des Dendrocoeles d'eau douce. *T. c.* pp. 1732-1735; full paper in °Mem. Soc. Sci. Lille (4) xvi, 107 pp., 5 pls.

Early stages only; no polar bodies observed.

Hamann, O. Die Urkeimzellen (Ureier) im Tierreich und ihre Bedeutung. Jen. Z. Nat. xxi, pp. 517-538.

Vermes, pp. 520-523.

Hamilton, A. G. [See Fletcher, J. J. (3).]

Harker, A. On a Luminous Oligochæte. Rep. Brit. Ass. 1887, p. 767.

A species of *Enchytræus*.

Harmer, S. J. [See M'Intosh, W. C.]

Harvey-Gibson, R. J. An abnormal *Hirudo medicinalis*. Nature, xxxv, p. 392.

Haswell, W. A. (1) On *Temnocephala*, an aberrant Monogenetic Trematode. Q. J. Micr. Sci. xxviii, pp. 279-302, pls. xx-xxii.

4 new species, and the general anatomy fully described.

——. (2) On the Embryology of *Vermilia cæspitosa* and *Eupomatus elegans*. P. Linn. Soc. N.S.W. (2) ii, pp. 1032-1034.

Heckert, G. Zur Naturgeschichte des *Leucochloridium paradoxum*. Zool. Anz. x, pp. 456-461.

Notes on the histology and embryology; the embryo escapes from the shell in the intestine of *Succinea*, the intermediate host.

Hensen, V. Ueber die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thieren. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 1-109, pls. i-vi.

Sagitta, larvæ of *Vermes*, &c.; observations on comparative mass and number in a known quantity of water, breeding seasons, &c.: pp. 59-62.

Horst, R. Descriptions of Earthworms. Notes Leyd. Mus. ix; No. 1, pp. 97-106, pl. i; No. 2, pp. 247-258, pl. iv; No. 3, pp. 291-299, pl. v.

The various species will be found in the Systematic part below.

Hoyle, W. E. (1) Tapeworms. Encycl. Brit. xxiii, pp. 49-56, 5 woodcuts.

——. (2) *Trematoda*. *T. c.* pp. 535-540, 4 woodcuts.

Hubrecht, A. A. W. The Relation of the *Nemertea* to the *Vertebrata*. Q. J. Micr. Sci. xxvii, pp. 605-644, pl. xlii.

Discussion of the preservation by the *Nemertea* of transitional features between the Cœlenterate and the Chordate type, based on the facts of metamerism and nervous structures.

°Ijima, J. Ueber einige Tricladen Europas. Journ. Coll. Tokyo, i, pp. 337–358.

Imhof, O. E. (1) Notizen über die pelagische Fauna der Süsswasserbecken. Zool. Anz. x, pp. 577–582 & 604–606.

General conclusions ; two new Rotifers.

——. (2) Ueber die microscopische Thierwelt hochalpiner Seen [600–2780 m. ü. M.]. *T. c.* pp. 13–17 & 33–42.

Ischikawa, C. [See Weismann, A.]

°Johne, A. Der Trichinenschauer. Leitfaden für den Unterricht in der Trichinenschau, &c., 127 pp, 98 figs. Berlin: 1887, 8vo.

Joubin, L. Note sur l'Anatomie d'une Némerte d'Obock. Arch. Z. expér. (2) v, pp. 61–90, pls. i & ii.

Jourdan, Et. (1) Structure histologique des Téguments et des Appendices sensitifs de l'*Hermione hystrix*, et du *Polynoe grubiana*. *T. c.* pp. 91–122, pls. iii & iv.

——. (2) Sur la structure des fibres musculaires de quelques Annélides polychètes. C.R. civ, pp. 795–797.

°——. (3) Etude anatomique sur le *Siphonostoma diplochætos*, Otto. Ann. Mus. Marseille, Zool., Fasc. 43 pp., 4 pls.

——. (4) Études histologiques sur deux espèces du genre *Eunice* [commencement]. Ann. Sci. Nat. (7) ii, pp. 239–256.

Joyeux-Laffuie, J. (1) Recherches sur l'organisation du Chétoptère. C.R. cv, pp. 125–127.

Points of general anatomy.

——. (2) Sur la *Chloræma dujardini* et *Siphonostoma diplochætos*. *T. c.* pp. 179 & 180.

Denies the identity of the two forms ; answer to Künstler.

Kaiser, J. Ueber die Entwicklung des *Echinorhynchus gigas*. Zool. Anz. x, pp. 414–419 & 437–439.

Ova formed from a syncytium, segmentation irregular, gastrulation epibolic, a histolysis then ensues. The formation of the various organs is fully described.

Kartulis, —. Ueber einen Fall von Auswanderung einer grossen Zahl von Ascariden (*A. lumbricoides*) in die Gallengänge und die Leber. CB. Bakt. Parasit. i, pp. 65–67.

°Keller, C. Formation de la terre végetale par l'activité de certains animaux. Arch. Sci. nat. (3) xviii, p. 429.

von Kennel, —. Einige dendrocœle Turbellarien. SB. Ges. Dorp. viii, p. 333.

Preliminary note only, a new species is described.

Kirk, T. W. Note on a curious Double Worm. Tr. N. Z. Inst. xix, pp. 64 & 65, pl. vi n.

Abnormality (?) of *Acanthodrilus*.

KNAUS, W. Note on an Ice-worm (*Lumbricus*, sp. indet.). Bull. Washb. Coll. i, p. 186.

KOEHLER, R. (1) Recherches anatomiques sur une nouvelle espèce de *Balanoglossus*, le *B. sarniensis*. Bull. Soc. Nancy (2) viii, pp. 15[illegible] 201, pls. i-iii.

The author is in favour of Vertebrate affinities.

——. (2) Documents pour servir à l'histoire des Échinorhynques. J. de l'Anat. Phys. pp. 612–659, pls. xxviii & xxix.

Investigation of adult structure and of the cysts. Author regards the *Paradoxites* of Lindemann as a link between Cestoda and *Echinorhynchus*.

——. (3) Recherches sur la structure et le développement des kystes de l'*Echinorhynchus angustatus*, et de l'*E. proteus*. C.R. civ, pp. 710–712.

——. (4) Recherches sur les fibres musculaires de l'*Echinorhynchus gigas* et de l'*E. heruca*. *T. c.* pp. 1192–1194.

——. (5) Sur la morphologie des fibres musculaires chez les Échinorhynques. *T. c.* pp. 1634–1636.

KORSCHELT, E. Die Gattung *Dinophilus* [illegible] pp. [illegible] der bei ihr auftretende Geschlechtsdimorphismus. Zool. Jahrb. vi, pp. 955–967.

A critical combination of existing observations.

KÜCHENMEISTER, F. (1) Die Finne des *Bothriocephalus* und ihre Uebertragung auf den Menschen. Leipzig : 1886, 8vo, 44 pp. Reviewed in Leopoldina, xxiii, pp. 93–95, by O. TASCHENBERG.

°°——. (2) Weitere Bestätigung meiner Behauptung, das die Finne des Hechts nichts mit *Bothriocephalus* zu thun hat. Deutsch. med. Wochenschr. 1886, pp. 551 & 552.

°KÜHN, J. (1) Bericht über weitere Versuche mit Nematoden-Fangpflanzen. Ber. physiol. Lab. landswirthschaftl. Inst. Halle, pt. 6, pp. 103–175.

°——. (2) Anleitung zur Bekämpfung der Rüben-Nematoden. *T. c.* pp. 176–184 1 pl.

KÜKENTHAL, W. (1) Die Opheliaceen der Expedition der 'Vettore Pisani.' Jen. Z. Nat. xxi, pp. 361–373, pl. xxi.

Seven new species are described.

——. (2) Ueber das Nervensystem der Opheliaceen. *Op. cit.* xx, pp. 511–580, pls. xxxii–xxxiv.

Author studied the genera *Travisia*, *Ophelia*, *Ammotrypane*, *Armandia*, *Polyophthalmus*, with the general conclusions that the nervous system of the group resembles that of the Archiannelida, and that the latter has often a rudimentary rather than an embryonic character.

KÜNSTLER, —. Observations sur le *Siphonostoma diplochætos*. Otto. C.R. civ, p. 1809. [*Cf.* JOYEUX-LAFFUIE (1).]

KŮSTA, T. Příspěvek k sezuání zvířeny kamenouhelné u Rakovníka (Contribution to the knowledge of the Carboniferous Flora of Rakonitz). SB. böhm. Ges. 1887, pp. 561–564, with *resumé* in German.

Two Palæozoic *Oligochæta*.

LABOULBÈNE, A. Sur l'état larvaire des Helminthes nématodes parasites du genre Ascaride. C.R. civ, 1593–1595.

Regards the development as always direct, and infection as generally transmitted by water.

LANDSBERG, B. (1) Ueber die Wimpergrübchen der Rhabdocöliden-gattung *Stenostoma*. Zool. Anz. x, pp. 169–171.

Confirms Vejdovský's observations as to their sensory nature, on histological grounds.

°——. (2) Ueber einheimischer Microstomiden, eine Familie der Rhabdocœliden Turbellarien. Osterprogramme kgl. Gymnasium zu Allenstein, 12 pp., 1 pl.

°LEE, A. B. La spermatogénèse chez les Némertiens, à propos d'une théorie de Sabatier. R[illegible]uisse, iv, pp. 409–430, 1 pl.

LEHMANN, O. Beiträge zur Frage von der Homologie der Segmentalorgane und Ausführgänge der Geschlechts-produkte bei den Oligochæten. Jen. Z. Nat. xxi, pp. 322–360, pl. xx.

The author adduces against Claparède's theory of the homology,—(1) that there is no reason to believe that four segmental organs are typically present in a somite; (2) that nephridia occur in the genital segments of the embryo of *Limicolæ*; (3) that oviducts and sperm-ducts arise considerably later in the embryo than nephridia, the latter being the first organs developed in the embryo. The latter fact tells also against Bergh's view, that nephridial ducts were derived from generative ducts.

°°LEICHTENSTERN, O. (1) Zur Entwicklungsgeschichte von *Ankylostoma duodenale*. Centralbl. Klin. Med. 1886, No. 8.

°°——. (2) Fütterungsversuche mit *Ankylostoma* larven. Eine neue *Rhabditis*-art in den Faeces von Ziegelarbeitern. Berichtigung. *T. c.*, No. 39.

°°——. (3). Weitere Beiträge zur *Ankylostomum*-frage. Deutsch. med. Wochenschr. 1886, pp. 173–176, 194–196, 216–218, & 237–240.

LEIDY, J. (1) Notice of some parasitic worms. P. Ac. Philad. 1887, pp. 20–24, 4 woodcuts.

Descriptions of new species.

——. (2) *Asplanchna ebbesbornii*. *T. c.* p. 157.

Occurring near Philadelphia.

LEUCKART, R. (1) Zur *Bothriocephalus*-frage. CB. Bakt. Parasit. i, pp. 1–6 & 33–40.

Author proves the pike to be the intermediate host of this Cestode.

[LEUCKART, R.] (2) Die Uebergangsweise der *Ascaris lumbricoides* und der *Tænia elliptica*. *Op. cit.* ii, pp. 718–722.

Criticism of LUTZ.

——. (3) Neue Beiträge zur Kenntnis des Baues und der Lebensgeschichte der Nematoden. Abh. sächs. Ges. xiii, pp. 565–704, 5 pls.

——. (4) Ueber die Entwickelung der *Sphærularia bombi*. Biol. Centralbl. vi, pp. 282 & 283.

VON LINSTOW, O. (1) Helminthologische Untersuchungen. Zool. Jahrb. pp. 97–114, pl. ii.

Several new species of *Trematoda*, two of *Ascaris*, and one young Cestode.

——. (2) Rund- und Saug-Würmer (der Reise nach Turkestan). Fedtschenko's Zoogeograph. Untersuch. pt v. Moscow : 1886, 8vo.

Apparently in German and Russian. 24 n. spp. of Nematoda, including : *Aprocta*, n. g. ; 2 n. spp. of *Echinorhynchus* ; 6 n. spp. of *Trematoda*.

LINTON, E. (1) Notes on two forms of Cestoid Embryos. Am. Nat. xxi, pp. 195–201, pl. x.

°——. (2) Notes on a Trematode from the White of a newly-laid Hen's Egg (*Distomum ovatum*, Rud.). P. U. S. Nat. Mus. x, pp. 367–369, fig.

LOMAN, J. C. C. Ueber den Bau von *Bipalium*, Stimpson, nebst Beschreibung neuer Arten aus dem indischen Archipel. Bijdr. Dierk. xiv, pp. 63–85, pls. i (figs. 1–6) & ii.

A morphological and histological study, with new species of *Sphyrocephalus*.

LORETA, P. Echinococco del Fegato, resezione del Fegato, escisione della cisti, guarigione. Mem. Ac. Bologn. (4) viii, pp. 581–587.

Excision of *Echinococcus* from the human liver, and recovery of the patient.

LUDWIG, —. Ein Verwandte des Essigälchens in den Gährungsprodukten der Eichenrinde (*Rhabditis dryophila*). Monatl. Mittheil. v, p. 160, from Naturwissenschaftler.

LUKJANOW, S. M. Notizen über das Darmepithel bei *Ascaris mystax*. Arch. mikr. Anat. xxxi, pp. 293–302.

LÜTZ, A. Zur Frage der Invasion von *Tænia elliptica* und *Ascaris lumbricoides*. CB. Bakt. Parasit. ii, pp. 713–718.

Observations tending to show that these forms develop directly, and without intermediate host. [*Cf.* LEUCKART (2).]

MACALLUM, A. B. [See WRIGHT, R. R.]

MACÉ, —. L'heterogamie de l'*Ascaris dactyluris*. C.R. civ, pp. 306–308.

Supposed pædogenesis and parthenogenesis.

v. MARENZELLER, E. Polychäten der Angra-Pequena Bucht. Zool. Jahrb. iii, pp. 1–24, pl. i.

16 species, of which 1 is new to science.

MARSHALL, C. F. Observations on the Structure and Distribution of Striped and Unstriped Muscle in the Animal Kingdom, and a Theory of Muscular Contractions. Q. J. Micr. Sci. xxviii, pp. 75–107, pl. vi.

Vermes, p. 86.

VON MARTENS, E. [See SCHULZE, F. E. (2).]

MASSA, C. Una nuova specie di sanguissuga del Modenese. Atti Soc. Mod. (3) iii, p. 124.

Occurrence of *Clepsine marginata* at Modena.

°°MECZNIKOW, E. Embryologische Studien an Medusen. Ein Beitrag zur Genealogie der Primitiv-organe. Wien: 1886.

Remarks on *Trichoplax* and the *Acœla*.

MEYER, E. Studien über den Körperbau der Anneliden. MT. z. Stat. Neap. vii, pp. 592–741, pls. xxii–xxvii, 3 woodcuts.

This first memoir of a series deals with the nephridio-ducts and gonoducts of the Terebelloids (p. 596), *Cirrhatulidæ* (p. 680), *Serpulaceæ*, and *Hermellæ* (p. 706).

MICHAELSEN, W. Enchytræiden-Studien. Arch. mikr. Anat. xxx, pp. 366–378, pl. xxi; translated in Ann. N. H. (5) xx, pp. 417–427.

2 new species are described and figured. Synopsis of genera, p. 376.

M'INTOSH, W. C. Report on *Cephalodiscus dodecalophus*. Chall. Rep. Zool. xx, 37 pp., 7 pls., 2 woodcuts.

In an appendix, pp. 40–47, S. J. HARMER discusses the homologies and affinities, placing it in the *Hemichordata* of Bateson.

MÖBIUS, K. (1) Ein Fadenwurm aus einem Hühnerei. *Heterakis inflexa*, Rud. Schr. Nat. Ver. Schleswig, vii, p. 19.

——. (2) Systematische Darstellung der Thiere des Plankton gewonnen in der westlichen Ostsee und auf einer Fahrt von Kiel in den Atlantischen Ocean. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 109–126, pls. vii & viii.

Vermes, p. 117.

°MONIEZ, R. Sunto di alcuni lavori sopra Parassiti. Boll. Soc. Adr. ix, 6 pp.

MONTICELLI, S. (1) Osservazioni intorno ad alcune specie di Acantocefali. Boll. Soc. Nap. i, pp. 19–29.

Regards the *Echinorhynchus ruber* of Collett as identical with *E. turbinella*; notes on other species.

——. (2) Note elmintologiche; Sul nutrimento e sui parasiti della Sardina (*Clupea pilchardus*, C. V.), del Golfo di Napoli. *T. c.* pp. 85–88.

Notes on the Cestodes and Trematodes of the Sardine.

NANSEN, F. Anatomie und Histologie des Nervensystems der Myzostomen. Jen. Z. Nat. xxi, pp. 267–321, pl. xix.

NEYT, A. [See VAN BENEDEN, E.]

Oerley, L. (1) Morphological and Biological Observations on *Criodrilus lacuum*, Hoffmeister. Q. J. Micr. Sci. xxvii, pp. 551–560, pl. xxxviii. figs. 1–8.

Notes on cocoons, regeneration, &c.

——. (2) A Magyarországi Piőczák Faunája (Fauna Hirudinearum Hungariæ). Math. term. köz. xxii, pp. 63–115, 1 woodcut.

Definitions in Magyar and Latin. Abstract in Math. Nat. Ber. Ung. v, pp. 70 & 71. The new species only are recorded here.

——. (3) A Rhabditisek Magánurajza. (Monograph of Rhabdifides.) *Op. cit.* xxi (1885), pp. 1–135, 6 pls.

Parona, C. (1) Elmintologia Sarda.—Contribuzione allo studio dei Vermi parassiti in animali di Sardegna. Ann. Mus. Genov. (2) iv, pp. 275–384, pls. v–vii.

Very many species, besides the new ones recorded below, are discussed, in the groups Cestoda, Trematoda, Nematoda, Acanthocephali. Lists of Sardinian parasites and hosts, pp. 369 & 372; index, p. 383.

——. (2) Res Ligusticæ, II.—Vermi parassiti in animali della Liguria. *T. c.* pp. 483–501.

List of the parasites and their hosts.

°——. (3) Intorno al *Monostomum orbiculare* del *Box salpa*. Ann. R. Acc. Agric. Torino, xix; also separately, 15 pp. Torino: 1887, 8vo.

Parona, E. (1) Sur la question du *Bothriocephalus latus* (Bremser), et sur la priorité dans l'étude de ses larves en Italie. Arch. Ital. Biol. ix, pp. 214–217.

Abstract and translation of a paper in Gazz. med. ital. Lombardia. 1887.

°——. (2) L'Anchilostomiasi nelle zolfare di Sicilia. Ann. Univ. Medic. Mil. cclxxvii, pp. 464–468.

°——. (3) Intorno la genesi del *Bothriocephalus latus* (Bremser), e la sua frequenza in Lombardia. Arch. Sci. Med. Torino, xi, pp. 41–95, 1 pl.

°°Pernice, B. Tre casi di anchilostomiasi nella zolfatare in Sicilia. Morgagni. Milano, 1886, No. 7.

Peron, A. Notes pour servir à l'Histoire du Terrain de craie dans le Sud-Est du bassin Anglo-Parisien. Bull. Soc. Yonne, xli (sci. nat.), pp. 145–366, pls. i–iii.

Vermes, pp. 272–279.

°°Perroncito, E. (1) Sulla frequenza della *Tænia mediocanellata* nell' uomo, e la relativa scarsezza del cisticerco nelle carni bovine. Altre pruove sulla resistenza della uova della *Tænia mediocanellata*. Giorn. Acc. med. Torino, xlix, pp. 125 & 126.

°°——. (2) Sulla cachessia ittero-verminosa. Ann. R. Acc. Agric. Torino, xxviii.

Notes on *Cestoda* and *Nematoda*.

PLATE, L. Ueber einige ectoparasitische Rotatorien des Golfes von Neapel. MT. z. Stat. Neap. vii, pp. 234–263, pl. viii.

A new genus, with 4 new species, allied to *Seison*; the anatomy very fully described. Discussion of the Seisonidæ, including *Seison*, *Paraseison*, n. g., and *Saccobdella*.

POIRIER, J. Note sur une nouvelle espèce de Distome parasite de l'Homme, le *Distomum rathouisi*. Arch. Z. expér. (2) v, pp. 203–211, pl. xiii.

Not far removed from *D. hepaticum*.

POUCHET, G. Recherches sur un *Tænia solium* fenêtré. Semaine medicale, vi, p. 65.

PRINCE, E. E. On the Ova of *Tomopteris onisciformis*. Rep. Brit. Ass. 1887, p. 769.

Several potential ova serve as food-material for the ultimate ovum.

VAN REES, J. *Myoryctes weismanni*. Tijdschr. Nederl. Dierk. Ver. (2) i, p. cxxxi.

Nematode in muscles of Frog.

REINHARD, W. Kinorhyncha (*Echinoderes*), ihr anatomischer Bau und ihre Stellung im System. Z. wiss. Zool. xlv, pp. 401–467, pls. xx–xxii, 2 woodcuts.

An account of the literature of the subject, and a general morphological description, are followed by a description of 9 new species, and a chapter on the systematic position. The author erects *Echinoderes* into a separate class, the *Kinorhyncha*, on morphological grounds in default of embryological data.

REPORT (First) on the Marine Fauna of the South-west of Ireland. P. R. Irish Ac. (2) iv, pp. 599–638.

Vermes, pp. 621–623.

REYBURN, R. *Trichina spiralis*. Am. Micr. J. viii, pp. 67–69.

Popular account.

RICHTERS, F. *Bipalium kewense* (Moseley) eine Land Planarie des Palmenhauses zu Frankfurt-a.-M. Zool. Gart. 1887, pp. 231–234, 1 woodcut.

RIETSCH, M. Etude sur les Géphyriens armés ou Échiuriens. Rev. Sci. (3) xl, pp. 436–438.

Abstract of a thesis.

RITZEMA, BOS. J. Untersuchungen über *Tylenchus devastatrix*, Kühn. Biol. Centralbl. vii, pp. 232–243, 257–271, 646–659.

A full account of the Nematode of the rye, and of allied species, with the plants on which it may be parasitic.

ROHDE, E. Histologische Untersuchungen über das Nerven-system der Chætopoden. Zool. Beitr. ii, pp. 1–81, pls. i–vii.

A detailed histological study. The "giant-fibres" are proved to be nervous structures.

ROHON, J. V., & VON ZITTEL, K. A. Ueber Conodonten. SB. Ak. München, 1886, pp. 108–136, pls. i & ii.

Refer these fossils to mouth-parts of *Chætopoda*.

ROSA, D. (1) Sul *Criodrilus lacuum*. Mem. Ac. Tor. xxxviii, pp. 167–180, 1 pl.

Anatomical description and figures.

——. (2) *Microscolex modestus*, n. g. & sp. Boll. Mus. Zool. Torino, ii, No. 19, 2 pp., 1 woodcut.

——. (3) Il *Lumbricus eiseni* in Italia. *Op. cit.* No. 22, 2 pp.

——. (4) Il *Neoenchytræus bulbosus*. *Op. cit.* No. 29, 3 pp.

——. (5) Note di Biologia Alpina.—II. La distribuzione verticale dei lombrichi sulle Alpi. *Op. cit.* No. 31, 3 pp.

With a table of vertical range of Italian species. *Allolobophora alpina* reaching 2300 m. above sea-level.

——. (6) *Homogaster redii*, n. g. & sp. *Op. cit.* No. 32, 1 p.

°DA ROSSI, G. *Phreoryctes menkeanus*. JB. westf. Ver. xv, p. 29.

ROULE, L. Sur la formation des feuillets blastodermiques chez une Annélide polychète. C.R. cv, pp. 236 & 237.

Early development of *Dasychone*; regards mesoblast as formed from hypoblast at the blastopore.

RUIJS, J. M. Zoologische Bijdragen tot de Kennis der Karazee. I. Inleiding en algemeene mededeelingen. Bijdr. Dierk. xiii, pp. 1–38.

List of *Vermes*, p. 29.

RYWOSCH, D. Ueber die Geschlechtsverhältnisse und den Bau der Geschlechtsorgane der Microstomiden. Zool. Anz. x, pp. 66–69.

The chain-forms present a case of successive hermaphroditism, the female organs developing first. Other observations are recorded.

SAINT-JOSEPH, —. Les Annélides polychètes des côtes de Dinard. Ann. Sci. Nat. (7) i, pp. 127–270.

°°DE SAINT-LOUP, R. (1) Sur les fossettes céphaliques de Némertes. C.R. cii, pp. 1576–1578.

——. (2) Sur quelques points de l'organisation des Schizonémertiens. *Op. cit.* civ, pp. 237–239.

SALENSKY, M. Études sur le développement des Annélides. Arch. Biol. vi, pp. 589–654, pl. xxiv.

Three larval forms—Trochogastrula, Trochophore, Trochoneurula—indicate phylogenetic stages in the history of the group.

SANGALLI, G. Communicazione preventiva sopra un caso di otto tenie mediocanellate. Rend. Ist. Lombardo (2) xix, pp. 612 & 613.

°°SCHACK, F. Anatomisch-histologische Untersuchung von *Nephthys cæca*, Fabr. Ein Beitrag zur Kenntnis der Fauna der Kiele Bucht. Inaug. Diss. Kiel: 1886 (?) 39 pp.

SCHARFF, R. On *Ctenodrilus parvulus*, n. sp. Q. J. Micr. Sci. xxvii, pp. 591–603, pl. xli.

Notes on anatomy and fissiparity.

SCHAUINSLAND, H. (1) Die Körperschichten und deren Entwicklung bei den Plattwürmern. SB. Ges. Morph. ii, pp. 7–10.

Regards an epiblastic layer as completely absent in *Cestoda* and *Trematoda*.

——. (2) Ueber das Urogenital-system der Würmer. *Op. cit.* iii, pp. 13–17.

General discussion of the relations of nephridial and generative ducts, and their relations to the cœlom.

——. (3) Zur Anatomie der Priapuliden. Zool. Anz. x, pp. 171–173.

Continuation of researches recorded last year, dealing with the nervous system.

SCHMIDT, F. (1) Eine neue Species des Genus *Graffila*, v. Ihering. SB. Ges. Dorp. viii, pp. 144–146 ; Arch. f. Nat. lii (1) pp. 304–318, 2 pls.

——. (2) Zwei Fälle von Missbildung bei Lumbriciden. SB. Ges. Dorp. viii, pp. 146 & 147.

——. (3) Beiträge zur Kenntniss der Geschlechtsorgane einiger Cestoden. Z. wiss. Zool. xlvi, pp. 155–187, pls. xvi & xvii.

Author studied *Bothriocephalus latus* and *Trianophorus nodulosus*, and concludes that the whole apparatus is formed from parenchyma cells of embryonal character, and starts from several centres. The duct-apparatus is the first to appear.

SCHNEIDER, A. Sur l'Ophélie du Pouliguen (*O. neglecta*). Tablett. Zool. ii, pp. 95–104, 1 pl.

°°SCHRÖDER, G. Anatomisch-histologische Untersuchung von *Nereis diversicolor*, O. F. Müller. Inaug. Diss. Kiel: 1886 (?), 43 pp.

SCHULZE, F. E. (1) Ueber lebende *Bipalium*. SB. nat. Fr. 1886, pp. 159 & 160.

——. (2) Einige Palolo-Würmer. *Op. cit.* 1887, p. 16 ; and remarks by VON MARTENS, p. 17.

SCHWEDER, G. Der breitgliedrige Bandwurm. CB. Ver. Riga, xxix, pp. 24–29.

Summary of the researches of Braun and Küchenmeister.

SEGRÈ, R. [See GRASSI, B. (8).]

SEIFERT, O. Ueber *Ankylostomum duodenale*. Verh. Ges. Würzb. (n.f.) xxi, 12 pp., 1 pl.

Chiefly medical account of this nematode.

SEKERA, E. Příspěvky ku známostem o turbellariích sladkovodních (Contributions to the knowledge of freshwater *Turbellaria*). SB. böhm. Ges. 1887, pp. 154–174, 1 pl.

Study of *Derostoma typhlops*.

SELENKA, E. On the Gephyreans of the Mergui Archipelago, collected for the Trustees of the Indian Museum by Dr. John Anderson. J. L. S. xxi, pp. 220–222.

Four spp., of which one *Sipunculus* is new to science.

°SIEVERS, L. Schmarotzer-Statistik aus den Sektionsbefunden des pathologischen Instituts zu Kiel, vom Jahre 1877 bis 1887. Inaug. Diss. Univ. Kiel, 1887, 24 pp.

°SIMONELLI, V. Sulla struttura microscopica della *Serpula spirulæa*. Atti Soc. Tosc. (p.v.) v, pp. 293–295.

SMITH, W. W. Notes on New Zealand Earthworms. Tr. N. Z. Inst. xix, pp. 123–139.

Habits, distribution, &c.

°°SODERO, G. Nuove ricerche sulla forma e struttura del cisticerco della cellulosa. Morgagni. Milano, xxvii, pp. 650–662, 10 figs.

STEEL, J. H. Parasites in the Wild Ass of Cutch. J. Bomb. N. H. Soc. ii, pp. 30–32.

STEVENS, T. S. A Key to the *Rotifera*. Am. Micr. J. viii, pp. 64–67, 106–109, & 125–128; °J. Trenton N. H. Soc. 1887, pp. 26–43.

Synoptic tables of genera and species, for quick identification.

STOKES, A. C. Observations sur le *Chætonotus*. J. Microgr. xi, pp. 77–85, 150–153, 560–565, 2 pls.

Anatomical and systematic account of the genus.

ŠTOLC, A. Příspěvky ku studiu Naidomorph (Contributions to the study of Naidomorphæ). SB. böhm. Ges. 1887, pp. 143–154, 1 pl.

°STOSSICH, M. Brani di Elmintologia tergestina. Ser. 4, Boll. Soc. Adr. ix, 1887, 7 pp., 1 pl.; Ser. 5, *ibid.*, 9 pp., 1 pl.

STRUBELL, A. Ueber den Bau und die Entwicklung von *Heterodera schachtii*, Schmidt. Zool. Anz. x, pp. 42–46 & 62–66.

A regular metamorphosis, with change of habitat.

TASCHENBERG, O. [See KÜCHENMEISTER, F. (1).]

TRIMEN, R. On *Bipalium kewense* at the Cape. P. Z. S. 1887, pp. 548–550.

TRINCHESE, S. Nuove osservazioni sulla *Rhodope veranii*, Köll. Rend. Ac. Nap. (2) i, pp. 131–137.

Places it near *Rhabdocœlida*.

URQUHART, A. T. On the Work of Earthworms in New Zealand. Tr. N. Z. Inst. xix, pp. 119–123.

VAILLANT, L. Remarques sur le genre *Ripistes* de Dujardin. Bull. Soc. Philom. (7) x, pp. 157 & 158.

VEJDOVSKÝ, F. (1) Studien über Gordiiden, II. Z. wiss. Zool. xlvi, pp. 188–210, pl. xviii.

Author continues the previous observations, dealing chiefly with the female generative organs, and attacks Villot's recent memoir (q. v.).

[VEJDOVSKÝ, F.] (2) Die Embryonalentwicklung von *Rhynchelmis* (*Euaxes*). SB. böhm. Ges. 1886, p. 227–239.

Preliminary note on the early stages only.

——. (3) Vývoj a morfologie exkrečních orgánův (the Morphology of the Excretory System). *Op. cit.* 1887, pp. 697–717.

——. (4) Das larvale und definitive Excretions-system. Zool. Anz. x, pp. 681–685.

Distinguishes the larval excretory organ, the pronephridium (described for *Rhynchelmis*), and the true permanent nephridium.

VIERORDT, H. Abhandlung über den multiloculären *Echinococcus*. Freiburg i. B. : 1886 ?, 172 pp.

VIGNAL, W. Sur les éléments du liquide de la cavité générale des Siponcles (*Sipunculus nudus*). CR. Ass. Fr. Sci. 1886, pt. 2, pp. 592–593.

VILLOT, A. (1) Sur le développement et la détermination spécifique des Gordiens vivant à l'état libre. Zool. Anz. x, pp. 505–509.

Insists on the different appearance of *Gordiidæ* at different ages, and regards many of CAMERANO's (2, 3) species as immature forms, &c.

——. (2) Revision des Gordiens. Ann. Sci. Nat. (7) i (1886), pp. 271–318, 3 pls.

——. (3) Sur l'anatomie des Gordiens. *Op. cit.* ii, pp. 189–212.

Correction of errors, and defence against criticisms by Vejdovský.

VON WAGNER, F. *Myzostoma bucchichii*, n. sp. Zool. Anz. x, pp. 363 & 364.

°WEBER, R. Beitrag zur Statistik der Echinokokkenkrankheit. Inaug. Diss. Kiel : 1887, 8vo, 20 pp.

WEBSTER, H. E. (1), & BENEDICT, J. E. The *Annelida Chætopoda* from Eastport, Maine. Rep. U. S. Fish Comm. 1887, pp. 707–755, 8 pls.

A very large number of new genera and species are described and figured, and a list of older species given.

°WEBSTER, H. E. (2) *Annelida* from Bermuda collected by G. Brown Goode. Jones & Goode's Contrib. Nat. Hist. Bermudas, i, pp. 305–327, 6 pls.

13 n. spp., 1 n. g. *Protulides*.

WEISMANN, A., & ISCHIKAWA, C. Ueber die Bildung der Richtungskörper bei thierischen Eiern. Ber. Freiburg. Ges. iii, pp. 1–44, pls. i–iv.

Proof of the disputed parthenogenesis of *Rotifera*, and account of the formation of polar bodies in the parthenogenetic ova.

WELDON, W. F. R. (1) Preliminary Note on a *Balanoglossus* larva from the Bahamas. P. R. Soc. xlii, pp. 146–150, 3 woodcuts ; and correction-note, *id. t. c.* p. 473.

[WELDON, W. F. R.] (2) On *Haplodiscus piger*. Rep. Brit. Ass. 1887, p. 740.

Note on a problematic metazoan organism from the Bahamas.

WELTNER, W. *Dendrocœlum punctatum* (Pall.) bei Berlin. SB. Ak. Berlin, 1887, pp. 795–804, pl. xiv.

With notes on the recently-hatched young.

°°WERNICKE, R. Die Parasiten der Haus-thiere in Buenos Ayres. Deutsche Zeitschr. Thiermed. xii, pp. 304–307.

WHITMAN, C. O. A Contribution to the History of the Germ-Layers in *Clepsine*. Journ. Morph. i, pp. 105–182, 3 pls.

A detailed embryological study, with discussion on larval and permanent nephridia, and other general points.

WILSON, E. B. (1) Origin of the Excretory System in the Earthworm. P. Ac. Philad. 1887, pp. 49 & 50.

Abstract only; the author attempts a homology between the "nephridial row" of *Lumbricus*, and the Wolffian (segmental) duct of *Vertebrata*.

——. (2) The Germ-bands of *Lumbricus*. Journ. Morph. i, pp. 183–192, 1 pl.

Expansion of (1).

WRIGHT, R. R., & MACALLUM, A. B. *Sphyranura osleri*: a Contribution to American Helminthology. *T. c.* pp. 1–48, 1 pl.

Morphological study of this ectoparasitic Trematode.

ZACHARIAS, O. (1) Neue Untersuchungen über die Copulation der Geschlechts-producte und den Befruchtungsvorgang bei *Ascaris megalocephala*. Arch. mikr. Anat. xxx, pp. 111–182, pls. viii–x; *cf.* Biol. Centralbl. vii, pp. 659–662.

Methods, p. 119; the generative elements, p. 124; copulation of the cells, p. 138; extrusion of polar bodies, p. 148; fertilisation, p. 158; segmentation, p. 164. Author finds that Flemming's scheme of karyokinesis (wreath, star, metakinesis, star, wreath) holds good.

——. (2) Die Befruchtungserscheinungen am Ei von *Ascaris megalocephala*. Anat. Anz. ii, pp. 787–792.

——. (3) Zur Kenntnis der Fauna des Süssen und Salzigen Sees bei Halle a/S. Z. wiss. Zool. xlvi, pp. 217–232.

Vermes, p. 224.

——. (4) Faunistische Studien in westpreussischen Seen. Schr. Ges. Danz. (2) vi, pt. iv, pp. 43–72, pl. i.

Rotifera, pp. 60–68, with account and figures of the male *Asplanchna helvetica*. *Turbellaria*, pp. 68 & 69.

——. (5) Ueber die feinere Vorgänge bei der Befruchtung des Eies von *Ascaris megalocephala*. Zool. Anz. x, pp. 164–166; and Tag. deut. Nat. Vers. lx, pp. 249 & 250.

ZELINKA, C. Studien über Räderthiere.—II. Der Raum-parasitismus und die Anatomie von *Discopus synaptæ*, nov. gen., nov. spec. Zool. Anz. x, pp. 465–468.

The animal, formerly described by Laukester (Q. J. Micr. Sci. viii, p. 53), lives on the exterior of *Synapta*. Author refers the rotiferal organ of *Philodinidæ* to the ciliated ring of the Trochosphere.

ZELLER, E. Ueber den Geschlechtsapparat des *Diplozoon paradoxum*. Z. wiss. Zool. xlvi, pp. 233–239, pl. xix.

The essential divergence from the Trematode type is, that vas deferens and Laurer's canal come to lie in permanent connection with one another at their openings.

VON ZITTEL, K. A. [See ROHAN, J. V.]

ZSCHOKKE, F. (1) Studien über den anatomischen und histologischen Bau der Cestoden. CB. Bakt. Parasit. i, pp. 161–165 & 193–199.

Divides the *Taniæ* into four main groups, which may indicate future rearrangement of their systematic.

——. (2) Helminthologische Bemerkungen. MT. z. Stat. Neap. vii, pp. 264–271.

Notes on the distribution and number of endoparasitic worms in 53 species of fish from the Bay of Naples.

——. (3) Der *Bothriocephalus latus* in Genf. CB. Bakt. Parasit. i, pp. 377–380 & 409–415.

Experiments showing the derivation of the adult from the cysts of freshwater fish.

——. (4) Le développement du *Scolex polymorphus*. Arch. Sci. nat. xvi, pp. 354–356.

Regards it as larva of *Calliobothrium* sp.

——. (5) Sur la distribution des vers parasites dans les poissons marins. *T. c.* p. 356.

Parasites more numerous and of more species in *Selachii* than in *Teleostei*.

II.—SUBJECT-INDEX

TO LIST OF PUBLICATIONS.

DISTRIBUTION.

Scandinavia, AURIVILLIUS.
Dublin Bay, HADDON (1).
Ireland, REPORT on Fauna of S.W.
Baltic, HENSEN, MÖBIUS (2).
Naples (*Rotif.*), PLATE.
Sardinia (paras.), PARONA (2).
Liguria (paras.), PARONA (3).
Freshwater *Rotifera*, IMHOF (1,2).
Halle, ZACHARIAS (3).
Prussia (*Rotif. Turb.*), ZACHARIAS (4).
Hungary (*Hirud.*), OERLEY (2).

Kara Sea, Ruijs.
Turkestan (paras.), von Linstow (2).
Mergui (*Geph.*), Selenka.
Palolo, Schulze.
Angra Pequena (*Polych.*), v. Marenzeller.
Maine (*Chætop.*), Webster.
"Vettore Pisani" (*Opheliacea*) Kükenthal (1).

Morphology.

General Anatomy.

Cestoda, Zschokke (1).
Temnocephala, Haswell (1).
Bilharzia, Fritsch, Chatin (2).
Derostoma, Sekera.
Bipalium, Bergendal, Loman.
Dendrocœla, Hallez (2).
Langia, Joubin.
Schizonemertea, Saint-Loup (1,2)
Gordius, Vejdovský (1).
Heterodera, Strubell, Girard (1, 2).
Echinorhynchus, Koehler (2).
Chætonotus, Stokes.
Echiuri, Rietsch.
Priapulidæ, Schauinsland (3).
Criodrilus, Rosa (1), Benham (2), Oerley (1).
Eudrilus, Beddard (6).
Earthworms, various, Benham (1).
Allurus, Beddard (2).
Oligochæta, Dieffenbach.
Polychæta, Cunningham.
Chætopterus, Joyeux-Laffuie (1).
Nereis, Schröder.
Nephthys, Schack.
Spinther, von Graff (3).
Pontobdella, Dutilleul (1).
Polygordius, Fraipont.
Cephalodiscus, M'Intosh.
Echinoderes, Reinhard.

Excretory and Reproductive Systems.

Vermes in general, Schauinsland (2), Vejdovský (3)
Cestoda, Schmidt (3).
Diplozoon, Zeller.
Bilharzia, Chatin (3).
Microstomidæ, Rywosch.
Chætopoda, Beddard (1, 8), Lehmann, Meyer, Wilson (1, 2).
Acanthodrilus, Beddard (6).
Moniligaster, Beddard (9).
Lanice, Cunningham.
Hirudinea, Dutilleul (2, 4).

Nervous System.

Opheliacea and *Archiannelida*, Kükenthal (2).
Myzostoma, Nansen.

Embryology and Larval Forms.

Spermatogenesis (*Nemert.*), Lee.
Fertilization, &c., of ovum, Boveri (1–5), Zacharias (1, 2, 5), van Beneden, van Gehuchten, Carnoy (1–4).
Development of germinal cells, Hamann.
Platyhelminthes, Schauinsland (1).
Cestoda, Grassi (3), Leuckart (2), Lütz, Zschokke (4).
Trematoda, Heckert.
Turbellaria, Hallez (3), Weltner.
Nematoda, Strubell, Girard (1, 2), Leichtenstern (1–3), Leuckart (2, 4), Hallez (1), Grassi (5), Lütz, Macé, Laboulbène, Vejdovský (2).

Echinorhynchus, KAISER.
Polygordius, FRAIPONT.
Annelida, SALENSKY, BERGH.
Polychæta, HASWELL (2), PRINCE, ROULE.
Oligochæta, BEDDARD (5), WILSON (1, 2).
Hirudinea, DUTILLEUL (2), CHWOROSTANSKY, WHITMAN.
Balanoglossus, WELDON (1).

PHYSIOLOGY.

Sense of smell, *Hirudinea*, BOURNE (1), *Turbellaria*, LANDSBERG (1).
Special sense organs, DEWOLETZKY.
Cœlomic fluid, GROBBEN (2).

HISTOLOGY. [*Vide* also MORPHOLOGY.]

For observations on the fertilisation, etc., of the ovum, see under EMBRYOLOGY.
Muscle, EMERY, MARSHALL, JOURDAN (2), KOEHLER (4, 5).
Nervous system, HALLEZ, ROHDE.
Epidermis and derivatives, JOURDAN (1).
Epithelium of intestine, LUKJANOW.
Genesis of cuticle, DUTILLEUL (3).
Cuticle of *Gordius*, CAMERANO (4).

PHYLOGENY.

Trochosphere, FRAIPONT.
Balanoglossus, KOEHLER (1).
Larvæ of *Annelida*, SALENSKY.
Cephalodiscus, M'INTOSH.
Nemertina and *Vertebrata*, HUBRECHT.
Acœla, *Trichoplax*, MECZNIKOW.

MISCELLANEOUS.

ABNORMALITY—HARVEY GIBSON, GROBBEN (1), KIRK, SCHMIDT (2), BELL (2).
DIMORPHISM — *Dinophilus*, KORSCHELT.
FORMATION OF MOULD—KELLER.
AMPUTATION, REFLEX—GIARD (2).
PHOSPHORESCENCE—GIARD (1), ATKINSON, HARKER.
HETEROGENY—GRASSI (8).
PÆDOGENESIS—MACÉ.
PARTHENOGENESIS—WEISMANN.

III.—SYSTEMATIC.

General articles on *Vermes*, BLANCHARD (1, 3).

PLATYHELMINTHES.

Relation of the body-layers, SCHAUINSLAND (1).

CESTODA.

Generative organs, SCHMIDT (3).
Cestodes of the Sardine, MONTICELLI (2).
General account, HOYLE (1).
Notes on two embryos, LINTON (1).
Anatomy and systematic, ZSCHOKKE (1).
Cysts of *Cestoda*, official sanitary report, EULENBERG.
Tetrabothrium minimum (larva), n. sp., VON LINSTOW (1), p. 113.
Cysticercus megabothrius, CRETY; *acanthotetra*, n. sp., PARONA, C (1), p. 317; *cellulosæ*, SODERO.
Piestocystis dithyridium, CRETY.
Tænia marchii, n. sp., PARONA, C. (1), p. 297; *caroli*, n. sp., *id.* p. 301; *gennaria*, n. sp., *id.* p. 304: all from Birds.
Dittocephalus, n. g., with n. sp. *linstowi*, from a *Squalus*; *id.* p. 321.
Tænia, short notes on several n. spp., *simplicissima*, *amboplitis*, *micropteri*, *loliginis*, LEIDY (1); *seghettata*, n. sp., BERGONZINI.
Echinococcus, excision from liver; LORETA: statistics of; WEBER, FÜRBRINGER: account of; VIERORDT.
Tænia nana, direct development; GRASSI (3): account of; GRASSI (1, 2, 7), BLANCHARD (2): *T. flavopunctata* of Parona, identical with *leptocephala* (Creplin); GRASSI (4): *saginata*, abnormal; GROBBEN (1): *elliptica*, direct development; LEUCKART (2), LÜTZ: *latissimus*, n. sp., BUGNION: *mediocanellata*, biological notes; PERRONCITO (1), SANGALLI: *solium*, POUCHET.
Calliobothrium, relation to *Scolex polymorphus*; ZSCHOKKE (4).
Bothriocephalus latus, the general question of the intermediate host, &c.; PARONA, E. (1, 5), BRAUN (1, 2), LEUCKART (1), ZSCHOKKE (3), SCHWEDER, KÜCHENMEISTER (1, 2), GRASSI (9).

TREMATODA.

Trematoda of the Sardine, MONTICELLI (2).
General account, HOYLE (2).
For 6 n. spp., VON LINSTOW (2).
Multiplication of *Distoma*, FIELDE.
Distoma rathouisi, n. sp., POIRIER; *halosauri*, n. sp., BELL (1); *endolobum*, VON LINSTOW, p. 97; *neglectum*, n. sp., intestine of *Rana*, *id.* p. 101; *ascidia*, *id.* p. 102; *oligoon* and *polyoon*, n. spp., intestine of *Gallinula chloropus*, *id.* p. 103: *homolostomum* (larva), n. sp., in *Limnæa stagnalis*, *id.* p. 104; *ovatum*, in hen's egg, LINTON (2).
Temnocephala undoubtedly a Trematode; *fasciata*, *quadricornis*, *minor*, *nova-zelandiæ*, all n. spp., parasitic on crayfish; HASWELL (1).
Bilharzia, anatomy; FRITSCH, CHATIN (2, 3): ova in cattle; BOMFORD: general notes; BELLELI.
Diplozoon, generative organs; ZELLER.

Histrionella setosicauda, n. sp., VON DADAY.

Leucochloridium paradoxum, anatomical and embryological notes; HECKERT.

Cercaria pugio, n. sp., from *Limnæa ovata*, and *vitrina*, n. sp., from *Zebrina detrita*; VON LINSTOW, (1) p. 105.

Stichocotyle nephropis, n. g. & sp., CUNNINGHAM (3).

Monostomum, notes; C. PARONA (3).

Sphyranura osleri, anatomical account; WRIGHT.

TURBELLARIA.

Some anatomical points, HALLEZ (2).

Development, HALLEZ (3).

General account of parasitic forms, BRAUN (5).

Sense organs, BÖHMIG (1).

For *Dinophilus* and other doubtful forms, see INCERTÆ SEDIS, *infrà*.

Bipalium kewense, in New South Wales, FLETCHER (1); Frankfurt, RICHTERS; Cape, TRIMEN; general morphological account; LOMAN, BERGENDAL.

Cœloplana of Moseley to fall under *Geoplana*; FLETCHER (3).

Geoplana varieyata, *id.* p. 364, *sulphurea*, p. 365, *quinquelineata*, p. 366, *viridis*, p. 367, *ornata*, p. 368, *virgata*, *munda*, p. 369, *rubicunda*, p. 370, all n. spp.

Rhynchodemus moseleyi and *coxii*, *id.* p. 371; *obscurus*, p. 372, *guttatus* and *trilineatus*, p. 373, *niger*, p. 374, all n. spp.

Sphyrocephalus vittatus, *marginatus*, *niger*, (?) all n. spp., LOMAN, pp. 84 & 85.

Planaria fissipara, n. sp., VON KENNEL; *iheringii*, n. sp., BÖHMIG (2).

Graffila brauni, n. sp., SCHMIDT (1).

Derostoma typhlops, anatomy, &c.; SEKERA.

Stenostoma, ciliated pits; LANDSBERG (1).

Microstomidæ, generative organs; RYWOSCH: general account, LANDSBERG (2).

On some *Triclada*: IJIMA.

NEMERTEA.

Lateral organs as seats of special sense, DEWOLETZKY.

Anatomical points of *Schizonemertini*, SAINT-LOUP (1, 2).

Phylogenetic relations to *Vertebrata*, HUBRECHT.

Spermatogenesis, LEE.

Sp. *Langia ovata*, n. sp., JOUBIN.

Cerebratulus (*Lineus*) *viridis*, points in anatomy; SAINT-LOUP, (2) p. 237.

Ophiocephalus (*Borlasia*) *elizabethæ*, *id.* p. 238.

NEMATODA.

Structure of intestinal epithelium, Lukjanow.

For the maturation, fertilisation, &c., of the ovum of *Ascaris megalocephala*, see Subject-Index, *sub voce* Embryology.

Embryology of the group, Hallez (1).

Direct development of *Trichocephalus* and *Ascaris*, Grassi (5); of *Ascaris*, Leuckart (2), Lütz.

Parasites in wild ass of Cutch, Steel.

Anchylostomiasis in Sicily, Parona, E. (2), Calandruccio, Pernice.

Trichinosis, Johne, Eulenberg, Reyburn.

For many n. spp., see von Linstow (2).

Ascaris phoxini, n. sp., in intestinal wall of *Phoxinus lævis*, von Linstow, (1) p. 106.

Anacryacanthus denudatus, also from *Phoxinus*, *id.* p. 108.

Spiroptera turdi, *id.* p. 109.

Strongylus blasii, n. sp., *id.* p. 110.

Filaria strumosa, *id.* p. 112.

Cephalobus bütschlii, *id.* p. 112.

Gordius tolosanus, anatomy, Vejdovský (1); for synopsis of species, &c., Camerano (1); revision of Italian species, Camerano (2); *alpestris*, n. sp., *id.* p. 156; *perronciti*, n. sp., *id.* p. 169; *rosæ*, n. sp., *id.* p. 170; *pioltii*, n. sp., *id.* p. 171; see also Camerano (3), and for cuticle, Camerano (4); *tricuspidatus* in Italy, Camerano (5). *Cf.* Villot (1–3), Camerano (6). *Gordius* in *Amblystoma*, Garman.

Rhabditidæ, monograph of, Oerley (3); *R. dryophila*, n. sp., Ludwig.

Filaria megacantha, n. sp., Leidy, (1) p. 20; *inermis*, n. sp., Grassi (6).

Ascaris tulura, n. sp., Leidy, (1) p. 21; *lumbricoides* in liver, Kartulis.

Heterodera schachtii, cysts of, Chatin (1); anatomy and embryology, Strubell, Girard (1, 2); see also Kühn (1, 2).

Rhabdonema intestinale, heterogeny, Grassi (8).

Heterakis inflexa in a hen's egg, Möbius (1); other spp. in the same position, Caruccio.

Ankylostomum duodenale, general account, Seifert; development, &c., Leichtenstern (1–3).

Tylenchus devastatrix, anatomy and life-history; Ritzema, Bos. J.

Aprocta, n. g., von Linstow (2).

Sphærularia bombi, development; Leuckart (4).

Myoryctes weismanni, n. sp., von Rees.

ACANTHOCEPHALI.

General account of *Echinorhynchus*, Koehler (2).

Development, Kaiser.

Echinorhynchus heterorhynchus, n. sp., Parona, C., (1) p. 367; cysts of *E. angustatus* and *proteus*, Koehler (3); histology of muscles, Koehler (4, 5); notes on *ruber*, *turbinella*, and other species, Monticelli (1); two new species, von Linstow (2).

ROTIFERA.

Synopsis of species, STEVENS.

Parthenogenesis, WEISMANN.

Paraseison, n. g., PLATE, p. 261 ; with n. spp. *asplanchnus*, p. 235, *nudus* and *proboscideus*, p. 255, *ciliatus*, p. 256.

Seison, redefined ; *id.* p. 261.

Saccobdella, redefined ; *id.* p. 262.

Asplanchna ebbesbornii, near Philadelphia, LEIDY (2) ; *helvetica*, figured, ZACHARIAS (4).

Taphrocampa selenura, n. sp., GOSSE, (1) p. 1 ; the following new species are also described here :—*Diglena ? silpha*, *Notommata ovulum*, *Furcularia melandocus*, *Mastigocera bicristata*, on p. 2; *Diaschiza* (?) *cupha*, *Mytilia teresa*, *Pterodina reflexa*, *Notholca jugosa*, and *rhomboidea*, on p. 3 ; *N. spinifera*, *polygona*, *Furcularia lophyra*, *Callidina pigra*, p. 4 ; *Synchæta longipes*, *Euchlanis oropha*, *Distyla striata*, *Asplanchna eupoda*, p. 5 ; *Salpina marina*, *Diaschiza* (?) *rhamphigera*, *Colurus dumnonius* [*damnonius* ?—REC.], *dicentrus*, *grallator*, p. 6 ; (*Colurus*) *Monura micromela*, p. 7, and GOSSE, (2) p. 367.

GOSSE (2) also describes as new : *Cathypna angulata*, p. 361 ; *C. diomis*, *latifrons*, *Diaschiza globata*, p. 362; *Monostyla mollis*, p. 363 ; *Dapidia stroma*, *Colurus leptus*, *Diglena* (?) *pachida*, p. 364 ; *D. suilla*, *Notommata potamis*, p. 365 ; *Proales othodon*, *prehensor*, p. 366.

More new species are to be found in GOSSE (3) : *Philodina microps*, p. 861 ; *Notommata theodora*, *limax*, p. 862 ; *Proales coryneger*, *Furcularia lactistes*, *molaris*, p. 863 ; *F. sphærica*, *stercea*, *eva*, p. 864 ; *Diglena aquila*, *rosa*, p. 865; *Distemma platyceps*, *Mastigocerca iernis*, *Diaschiza fretalis*, p. 866 ; *D. acronota*, *Distyla lipara*, *Metopidia pygmæa*, p. 867 ; *Dispinthera*, n. g., with n. sp. *capsa*, p. 868 ; *Monura bartonia*, *loncheres*, *Mytilia pœcilops*, p. 869; *M. producta*, p. 870 ; *Anuræa schista*, *Notholca labis*, p. 871.

Brachionus amphifurcatus, n. sp , IMHOF (1).

Ascomorpha, n. sp., *id. ibid.*

Discopus, n. g., with n. sp. *synaptæ*, anatomy, &c. ; ZELINKA.

Chætonotus, general account of the genus, STOKES, with n. sp. *sulcatus*, *concinnus*, p. 151, *loricatus*, p. 560, *rhomboides*, p. 561, *spinifer*, p. 562, *acanthodes*, *octonarius*, *spinosulus*, p. 564, *longispinosus*, p. 565.

GEPHYREA.

Thesis on *Echiuri*, RIETSCH.

"Urn-corpuscles" of *Sipunculus nudus* regarded as parasitic Protozoa, FABRE-DOMERGUE ; other cœlomic corpuscles, VIGNAL.

Sipunculus porrectus, n. sp., SELENKA.

Priapulidæ, nervous system, &c.; SCHAUINSLAND (3).

ANNULATA.

Excretory system, Beddard (1), Lehmann, Meyer, Wilson (1).
Histology of muscle, Jourdan (2).
Larval forms, Salensky.
Significance of cœlomic fluid, Grobben (2).
Larval and permanent excretory organs, Vejdovsky (4).
Development, Bergh.
Conodonta, as Annelid mouth-parts, Rohon.

ARCHIANNELIDA.

General account of the group, Fraipont.
Nervous system, Kükenthal (2).
Polygordius, defined ; Fraipont, p. 85 : *appendiculatus*, n. sp., p. 88 : *neapolitanus*, n. sp., p. 89.
Protodrilus, defined ; Fraipont, p. 85.

CHÆTOPODA.

For a large number of new forms and two new genera, see Webster (2), Benedict.
Nervous system, Rohde.

Oligochæta.

Studies in *Oligochæta*, Dieffenbach.
Phosphorescence in *Lumbricidæ*, Atkinson, Harker.
Dero, account of the genus and species ; Bousfield : *D. mülleri*, n. sp., p. 104.
Pronaidites carbonarius, n. g. & sp., and *Vermites lithographicus*, n. sp., Küsta.
Habits, &c., of New Zealand species of Earthworms, Smith, Urquhart.
Naidomorphæ, general study ; Stolc.
Rhynchelmis (*Euaxes*), development ; Vejdovsky (2).
Relations of setæ and nephridia in *Anteclitelliani* ; Borelli.
Vertical distribution of Alpine *Lumbricidæ* ; Rosa (5).
"Prostate" of *Oligochæta* ; Beddard (9).
Mesenchytræus, Michaelsen, p. 369 ; *beumeri*, p. 372 ; *gravidus*, n. sp., p. 372.
Buchholzia, *id.* p. 373 ; *fallax*, n. sp., p. 374.
Perichæta lawsoni, n. sp., Bourne, (2) p. 664, and the following n. spp.: *bivaginata* and (? *Pleurochæta*) *gracilis*, p. 666, *stuarti*, *harliarensis*, p. 667, *hulikalensis*, *mirabilis*, p. 668, *salettensis*, p. 669.

Perionyx saltans, n. sp., *id.* p. 669.

Moniligaster grandis, *uniquus*, n. spp., *id.* p. 671, and *sapphirinaoides*, *robustus*, *papillatus*, *ruber*, *minutus*, all new, *id.* p. 672.

Acanthodrilus multiporus, nephridia of; BEDDARD (1): bifid species; KIRK: generative organs; BEDDARD (6).

Eudrilus, reproductive organs; BEDDARD (4): *dubius*, n. sp., FLETCHER, (2) p. 379: structure of ovum; BEDDARD (5): *sylvicola*, n. sp., BEDDARD (6).

Allurus tetraedrus, anatomy; BEDDARD (2).

Cryptodrilus (?) *rubens*, n. sp., FLETCHER, (2) p. 381; *mediterreus*, *id.* p. 614; *fletcheri*, n. sp., BEDDARD (7).

Perissogaster, n. g., with sole n. sp. *excavata*, FLETCHER, (2) p. 383.

Perichæta exigua, FLETCHER, (2) p. 387; *monticola*, p. 390; *canaliculata*, p. 391; *stirlingi*, p. 395; *raymondiana*, p. 398; *hamiltoni*, p. 399; *wilsoniana*, p. 400; *fecunda*, p. 401, *bakeri*, *id.* p. 616, *dorsalis*, *id.* p. 618, all n. spp.; *houlleti*, setæ, BEDDARD (6); *aspergillum*, nephridia, BEDDARD (1).

Notoscolex gippslandicus, FLETCHER, (2) p. 603, *tasmanianus*, p. 607, *tuberculatus*, p. 611, all n. spp.

Photodrilus, n. g., with sole n. sp. *phosphoreus*; GIARD (1).

Criodrilus lacuum, ROSA (1), BENHAM (2), OERLEY (1).

Thamnodrilus, n. g., and sole n. sp., *gulielmi*; BEDDARD, (3) p. 154.

Moniligaster houteni, n. sp., HORST, p. 97; reproductive organs, BEDDARD (9).

Rhinodrilus tenkatei, n. sp., HORST, p. 101.

Eudrilus, notes on Surinam specimens; *id.* p. 247.

Acanthodrilus schlegelii and *ungulatus*, notes on general anatomy; *id.* p. 252: *büttikoferi*, notes on anatomy; *id.* p. 294.

Allolobophora oerleyi, n. sp., *id.* p. 294.

Lumbricus terrestris, var. *stagnalis*, general notes; *id.* p. 297: abnormality; SCHMIDT (2): *eiseni*, in Italy; ROSA (3): in ice, sp. indet.; KNAUS.

Microscolex, n. g., with n. sp. *modestus*; ROSA (2).

Neoenchytræus bulbosus, n. sp., ROSA (4).

Hormogaster, n. g., and n. sp. *redii*; ROSA (6).

Ctenodrilus parvulus, n. sp., SCHARFF.

Epitelphusa, n. g., with n. sp. *catanensis*, parasitic; DRAGO.

Ripistes (Duj.) = *Stylaria parasita* (Schmidt), and has priority: VAILLANT.

POLYCHÆTA.

Notomastus, with subgg., *Clistomastus* (810), and *Tremomastus* (814); and n. spp. *profundus* (817), *fertilis* (819), and *formianus* (820); EISIG, p. 807.

Dasybranchus gajolæ, n. sp., *id.* p. 828.

Mastobranchus, n. g., with sole n. sp. *trinchesii*, *id.* p. 833.

Heteromastus, n. g., with sole sp. *filiformis* (Clap.), *id.* p. 835.

Capitomastus, n. g., with sole sp. *minimus* (Langerh.), *id.* p. 857.

Opheliacea, nervous system of several genera; KÜKENTHAL (2): *O. neglecta*, n. sp., SCHNEIDER.

Travisia chiloensis, n. sp., *id.*, (1) p. 364.

Ammotrypane langii, n. sp., *id.* p. 365; *ingebrigtseni*, n. sp., Spitzbergen, *id.* p. 371.

Armandia weissenbornii, n. sp., *id.* p. 366; *exigua*, n. sp., *id.* p. 368.

Polyopthalmus ceylonensis, *id.* p. 370; *striatus*, n. sp., *id.* p. 371.

Lepidasthenia and *Nereis*, histology of nerve; HALLER.

Hermione and *Polynöe*, histology of epidermis and derivatives; JOURDAN (1).

Dasychone, development; ROULE.

Nereis, anatomy; SCHRÖDER.

Spinther oniscoides, p. 16, *miniaceus*, p. 19, *arcticus*, p. 24, described and figured; VON GRAFF (3).

Nephthys, muscle; EMERY; anatomy; SCHACK.

Chætopterus, anatomy; JOYEUX-LAFFUIE.

Eulalia bilineata, n. sp., WEBSTER, (1) p. 710.

Eteone trilineata, n. sp., *id.* p. 712.

Mystides viridis, n. sp., *id.* p. 712.

Podarke aberrans, n. sp., *id.* p. 713.

Gyptis vittata, n. sp., *id.* p. 715.

Taphus, n. g., with sole n. sp. *hebes*; *id.* p. 716.

Streptosyllis varians; *id.* p. 718.

Spharosyllis longicauda, n. sp., *id.* p. 720.

Paedophylax brevicornis, *id.* p. 721, *longicirris*, *id.* p. 722, both n. spp.

Autolytus solitarius, n. sp., *id.* p. 72.

Lumbrinereis acicularum, n. sp., *id.* p. 725.

Drilonereis magna, n. sp., *id. ibid.*

Scalibregma minutum, n. sp., *id.* p. 727.

Ephesia minuta, n. sp., *id.* p. 728.

Zorus, n. g., with sole n. sp. *sarsii*, *id.* p. 730.

Siphonostomum grubei, n. sp., *id.* p. 731.

Ethocles, n. g., and *typicus*, n. sp., *id.* p. 733.

Spionides, n. g., and *cirrhatus*, n. sp., *id.* p. 735.

Aricidea quadrilobata, n. sp., *id.* p. 739; *nolani*, n. sp., *id.* p. 740.

Tharyx, n. g., *id.* p. 741, with n. spp. *acutus* and *similis*, *id.* p. 742.

Cossura, n. g., and *longocirrata*, n. sp., *id.* p. 743.

Ledon, n. g., *id.* p. 743, and n. sp. *sexoculata*, *id.* p. 744.

Ampharete cirrhata and *trilobata*, n. spp., *id.* p. 747.

Vermilia and *Eupomatus*, development; HASWELL (2).

Lanice, nephridia; CUNNINGHAM (2).

Lepidonotus semitectus = *wahlbergi* (Kinberg); VON MARENZELLER, p. 3.

Hemilepidia erythrotænia figured; *id.* p. 4.

Neanthes latipalpa figured; *id.* p. 6.

Eriphyle capensis figured; *id.* p. 7.

Marphysa sanguinea, *id.* p. 11.

Arenicola maritima figured; *id.* p. 12.

Flabelligera luctator figured; *id.* p. 15.

Cirrhatulus tentaculatus figured; *id.* p. 16.

Nicomache m'intoshi, n. sp., *id.* p. 19.

Axiothea lyrocephala figured; *id.* p. 20.

Lepræa pterochæta, *id.* p. 21.
Nereis, bifid ; Bell (2).
Tomopteris, formation of ova ; Prince.
Serpula, histology ; Simonelli.
Siphonostoma diplochætos, anatomy ; Jourdan (3), Joyeux-Laffuie (2), Künstler.
Chloræma dujardini, Joyeux-Laffuie (2).
Eunice, histology ; Jourdan (4).

HIRUDINEA.

Sense of smell, &c. ; Bourne (1).
Respiration, and other notes ; Dutilleul (2).
Cuticular formation ; *id.* (3).
Hungarian species ; Oerley (2).
Formation of ova ; Chworostansky.
Trochæta cylindrica, n. sp., Oerley, (2) p. 91.
Nephelis verrucosa, n. sp., *id.* p. 94 , *mexicana*, n. sp., Dugès.
Clepsine megacephala (Apáthy and Oerley), n. sp., Oerley, (2) p. 99 ; *sabariensis*, n. sp., *id.* p. 101 ; *striata* (Apáthy and Oerley), n. sp., *id.* p. 102 ; *marginata*, Masca.
Hirudo medicinalis, abnormality ; Harvey-Gibson.
Pontobdella muricata, anatomy ; Dutilleul (1, 4).

MYZOSTOMIDÆ.

Myzostoma, nervous system ; Nansen : short accounts of 'Challenger' n. spp. ; von Graff (1) : additional new 'Challenger' species, von Graff (2), *nanseni*, p. 9, *longicirrhum*, *ambiguum*, p. 10, *furcatum*, *membranaceum*, p. 11, *beardi*, p. 12, *platypus*, p. 13 ; figures and additional descriptions of two former species. The supposed cysts on *Antedon* not due to this genus, pp. 15 & 16 ; and see also Carpenter. *M. bucchichii*, n. sp., von Wagner.

ENTEROPNEUSTA.

Balanoglossus larva ; Weldon (1) : *sarniensis*, n. sp., Koehler (1).
Cephalodiscus dodecalophus, anatomy and affinities ; M'Intosh.

INCERTÆ SEDIS.

Mesozoa.

Orthonectidæ, general account ; Braun (3).
Dicyemidæ, general account ; *id.* (4).

Kinorhyncha.

Erected by Reinhard, for *Echinoderes*. He describes the following n. spp.: *E. dentatus*, p. 438, *ponticus*, p. 440, *pellucidus*, *dubius*, p. 442, *parvulus*, p. 443, *spinosus*, p. 444, *kowalevskii*, p. 445, *metschnikoffi*, *acercus*, p. 446.

Paradoxites, Koehler (2).
Rhodope, relations to *Rhabdocœlida* ; Trinchese.
Haplodiscus, n. g., with sole n. sp. *piger* ; Weldon (2).
Trichoplax, phylogenetic relations ; Mecznikow.
Dinophilus, summary and criticism of recent views ; Korschelt.

CŒLENTERATA.

BY

J. Arthur Thomson, M.A., F.R.S.E.

List of Publications.

1. Argyll, Duke of. A Great Lesson. Nineteenth Century, xxii, pp. 293–309.

Historical and critical discussion of Coral-reefs.

2. The Australian Museum. [See Lendenfeld, R. von.]

3. Bale, W. M. The Genera of the *Plumulariidæ*, with Observations on various Australian Hydroids. Tr. R. Soc. Vict. xxii, pp. 73–110.

Notes on classification and structure; description of genera; review of recent publications; *Plumularia wattsii*, n. sp., *Aglaophenia lendenfeldi*, n. sp.

4. Bergh, R. S. Goplepolyper (Hydroider) fra Kara-Havet. Dijmphna-Togtets zool.-bot. Udbytte. Kjöbenhavns Univ. pp. 329–338, 1 pl. [3 n. sp.]

5. Bétencourt, A. Les Hydroida du Pas-de-Calais. Bull. Sci. Nord, 2 Sér. x, pp. 66 & 67.

6. Bornemann, J. G. Die Versteinerungen des Cambrischen Schichtensystems der Insel Sardinien nebst vergleichenden Untersuchungen über analoge Vorkommnisse aus andern Ländern. Nova Acta Ac. L.-C. Nat. cur., Bd. li, pp. 1–148, (photogr.) pls. i–xxxiii.

Archæocyathinæ, pp. 28–82. A. General and historical account. B. Observations on species previously recorded. C. Sardinian forms (pp. 46–82).

7. ——. Review of his Work by G. J. Hinde. Geol. Mag. iv (5), pp. 226–229.

8. *Bourgeat, E. Recherches sur les Formations Coralligènes du Jura méridional. Lille: 8vo, 186 pp., 7 pls.

9. Bourne, G. C. On the Anatomy of *Mussa* and *Euphyllia*, and the Morphology of the Madreporarian Skeleton. Q. J. Micr. Sci. xxviii, pp. 21–51, 2 pls.

General morphological observations. Suggested provisional arrangement of *Madreporaria*.

10. [Bourne, G. C.] The Anatomy of the Madreporarian Coral *Fungia*. Q. J. Micr. Sci. xxvii, pp. 293–324, 3 pls.

Anatomy; regular arrangement of tentacles and septa; mesenteries distinct and typical; no synapticula in upper portions of interseptal loculi; corroboration of v. Koch's theory, derivation of corallum from basal ectoderm; histology actinian-like; discussion of Cœlenterate mesoglæa.

11. Braun, M. Ueber Dicyemiden. Centralbl. Bakter. ii (13), pp. 386–390.

Summary of past researches (see *Vermes*).

12. ——. Die Orthonectiden. *Op. cit.* (9), pp. 255–261.

The present state of our knowledge (see *Vermes*).

13. Brischke, G. Bericht über eine zoologische Excursion nach Seerosen. Schr. Ges. Danz. vi, p. 73–91.

14. °Brooks, W. K. On a New Form of Reproduction in Medusæ. Mem. Nat. Ac. Sci., November.

15. Chun, C. Zur Morphologie der Siphonophoren. Zool. Anz. x, pp. 511–515, & 529–533.

Morphological study of the pneumatophore.

16. ——. Zur Morphologie der Siphonophoren. 2. Ueber die postembryonale Entwicklung von *Physalia*. Zool. Anz. x, pp. 557–561 & 574–577.

Post-embryonic development of *Physalia*. The air-sac and the gas-secreting "air-plate." Anatomy of parts and general morphological comparisons.

17. °Daday, J. E. v. Adatok a Balaton, &c. Beiträge zur Kenntniss der Plattensee Fauna. Budapest: 8vo, 5 pp.

18. Danielssen, D. C. Den Norske Nordhavns Expedition, 1876–1878. xvii. *Alcyonida*. Christiania: 4to, v & 169 pp., 23 pls., 1 map. [English in parallel column.]

New subfamily *Organinæ*, with zoanthodeme with little sarcosoma, long polyp-cells arranged in organ-pipe fashion, one species. 9 n. g.; 33 n. spp.

19. Dixon, G. Y. Notes on Two Irish Specimens of *Edwardsia timida* (Quatrefages). Sci. P. R. Dubl. Soc. v (1886), pp. 100–106, table and 1 pl.

20. Dubois, R. La mer phosphorescente et les animaux lumineux. Rev. Sci. xxxix, pp. 603 & 604.

21. Duncan, P. Martin. On a New Genus of *Madreporaria* (*Glyphastræa*), with Remarks on the Morphology of *Glyphastræa forbesii*, Ed. & H., from the Tertiaries of Maryland, U.S. Q. J. Geol. Soc. xliii (1), pp. 24–32, 1 pl.

Glyphastræa, n. g., *G. forbesii*, Ed. & H., sp.; amended.

22. [DUNCAN, P. MARTIN.] On the *Madreporaria* of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. J. L. S. xxi, No. 126, pp. 1–24.

23. EBNER, V. v. Ueber den feineren Bau der Skelettheile der Kalkschwämme nebst Bemerkungen über Kalkskelete überhaupt. SB. Ak. Wien. xcv, 1–5, pp. 55–152, 4 pls.

Inter alia, treats of skeleton of *Zoantharia*, *Alcyonaria*, *Hydromedusæ* (*Distichopora*).

24. EHLERS, E. Zur Auffassung des Polyparium ambulans (Korotneff). Z. wiss. Zool. xlv (3), pp. 491–498.

Suggestions as to Polyparium. Comparison with *Ricordea florida*. Regarded as a mouthless, single animal, derived from a unioral actinian, with degenerate tentacles, and adapted to its conditions of life in the "paranomal" development of band-like form. No personal examination of specimens.

25. ——. On the Interpretation of *Polyparium ambulans*, Korotneff (translation). Ann. N. H. xx, pp. 273–279.

26. ENGELMANN, T. W. Ueber die Function der Otolithen. Zool. Anz. x, pp. 439–444.

Follows Delage in regard to otoliths of Ctenophora. They are probably not auditory, but act as an automatic contrivance for keeping the axis of the body normally upright.

27. FEWKES, J. W. A New Rhizostomatous Medusa from New England. Am. J. Sci. xxxiii, pp. 119–125, 1 pl.

Nectopilema verrilli, n. g., family *Pilemidæ*, connecting *Eupilemidæ* and *Stomolophidæ*, only non-tentaculate member of group; Atlantic coast of N. America.

28. ——. A Hydroid Parasitic on a Fish. Nature, xxxvi, pp. 604 & 605.

Hydrichthys mirus, n. g. & sp.; on the outside of *Seriola*. Colony of two sets of individuals; sexual bodies (gonosomes) and "filiform bodies," no tentacles in either. Medusoid forms produced from the colony resembled *Sarsia*.

29. FISCHER, P. Sur la distribution géographique des Actinies du littoral méditerranéen de la France. C.R. cv, pp. 1183–1185.

Faunistic.

30. ——. Contribution à l'Actinologie Française. Arch. Z. expér. v (3), pp. 381–432.

Notes on and diagnoses of 35 species from Roscoff and Banyuls, with general notes on their geographical distribution.

31. FOWLER, G. H. The Anatomy of the *Madreporaria*, III. Q. J. Micr. Sci. xxviii, pp. 1–19, 2 pls.

Anatomy of *Turbinaria*, a colonial Perforate coral; of *Lophohelia*, an Imperforate form, colonial, but with separate calices; and of the two aberrant Imperforate genera *Seriatopora* and *Pocillopora*, in which the

calices are merged in cœnenchyma. (1) Absence of directive mesenteries in *Lophohelia*, thus different from all known *Hexactiniæ*; (2) retraction of tentacles of *Seriatopora* by inversion, unique among *Madreporaria*.

32. [Fowler, G. H.] The Anatomy of the *Madreporaria*, IV Q. J. Micr. Sci. xxviii, pp. 413–430, 2 pls.

Description of 7 species. *Seriatopora tenuicornis*, n. sp. Morphological results:—methods of body-wall support in cœnenchymatous and acœnenchymatous forms; ultimate attachment of polyp to corallum often consists of a series of laminated offsets of mesoglœa in the neighbourhood of the mesentery, such structures having been previously described as calicoblastic in function; sphincter muscles; follicle-cells round ovum in its mesogœal capsule; degradation of *Stephanaria*.

33. ——. On some New Types of Madreporarian Structure. Rep. Brit. Ass. pp. 759 & 760.

34. °Fromentel, de. Zoophytes-Terrain Crétacé, VIII. Livr. 33, 39 pp. pls. 181–192.

35. Goette, A. Entwicklungsgeschichte der *Aurelia aurita* und *Cotylorhiza tuberculata*. (Abhandlungen zur Entwicklungsgeschichte der Thiere. Viertes Heft.) Hamburg u. Leipzig (Voss) 1887 (Nov. 1886), 79 pp., 4 gr., 26 cuts, 9 chromolith. pls.

Evidence in favour of referring *Acraspeda* from *Hydrozoa* to "*Scyphozoa*" (*Actinozoa* and *Ctenophora*).

36. Grieg, J. A. Bidrag til de norske Alcyonarier. Bergens Mus. Aarsber. (for 1886), pp. 1–26, 9 pls.

37. Guppy, H. B. The Solomon Islands: their Geology, General Features, and Suitability for Colonization. London: 8vo.

38. Haacke, W. Die Scyphomedusen des St. Vincent Golfes. Jen. Z. Nat. xx, pp. 588–638, 3 pls.

New forms from the Gulf of St. Vincent:—(*a*) *Charybdea* (*Charybdusa*) *ralstonii*, n. sp. (with peculiar sense-organs); (*b*) *Cyanea muelleri-anthe*, n. sp.; (*c*) *Monorhiza hæckelii*, n. g. & sp. Geographical distribution discussed.

39. Haddon, A. C. On the arrangement of the Mesenteries in the parasitic larva of *Halcampa chrysanthellum* (Peach). Sci. P. R. Dubl. Soc. v, pp. 473–481, 1 pl.

Bibliography of *Actiniæ* parasitic on *Medusæ*. *Halcampa fultoni* = larva of *H. chrysanthellum*; *Philomedusa vogtii* and *Halcampa medusophila* probably = young of *Halcampella endromitata*; *Bicidium parasiticum* = a *Pecchia*; further *Halcampa clavus* and a young *Edwardsia*. Description, especially of mesenteries of *Halcampa chrysanthellum* (Peach). The larva is undoubtedly nearly allied to the *Edwardsiæ*, though the adult is Actinia like.

40. ——. Note on *Halcampa chrysanthellum*, Peach. Sci. P. R. Dubl. Soc. v (1886), pp. 1–12.

41. [Haddon, A. C.] Preliminary Report on the Fauna of Dublin Bay. P. R. Irish Ac. iv (1886), pp. 523–531. (*Cœlenterata*, pp. 524–528.)

Sarsia patersoni, n. sp.

42. ——. First Report on the Marine Fauna of the South-West of Ireland. *T. c.* pp. 599–638. (*Cœlenterata*, pp. 615–618.)

Halcampa arenacea, n. sp., *Chitonactis expansa*, n. sp.

43. °Hall, J., & Simpson, G. B. Corals and *Bryozoa*: containing descriptions and figures of species from the Lower Heidelberg, Upper Heidelberg, and Hamilton Groups. Palæontology of New York. Albany: 4to, 298 pp., 67 pls.

44. Hamann, O. Die wandernden Urkeimzellen und ihre Reifungstätte bei den Echinodermen. Z. wiss. Zool. xlvi, pp. 80–98, 1 pl.

Resemblance between Echinoderms and Hydroid Medusæ in migration of primordial germ-cells to definite maturation centres.

45. ——. Die Urkeimzellen (Ureier) im Tierreich und ihre Bedeutung. Jen. Z. Nat. xiv, pp. 516–538.

Pp. 518–520 brief *resumé* on origin of generative products in Cœlenterates.

46. Hartlaub, C. Zur Kenntnis der Cladonemiden. II. Mitth. Zool. — Anz. x, pp. 651–658.

Relations and classification of *Cladonemidæ*.

47. Hartog, M. M. The true nature of the Madreporic System of *Echinoderms*, &c. (see *Echinoderms*). Ann. N. H. xx, pp. 321–326.

Turgescence of Actinians and function of tentacles (pp. 325 & 326).

48. Hensen, V. Ueber die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thieren. v. Ber. Comm. wiss. Unters. deutsch. Meere, pp. 1–109, 6 pls., Anhang, xix pp., 8 tables.

List of captured Cœlenterates, with statistics of occurrence, pp. 64 & 65.

49. Hickson, S. J. On the Sexual Cells and the early Stages in the development of *Millepora plicata*. P. R. S. xliii, pp. 245–247.

50. Hincks, T. On the *Polyzoa* and *Hydroida* of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. J. Anderson, F.R.S., Superintendent of the Museum. J. L. S. xxi, No. 129, pp. 121–134, 1 pl.

Obelia andersoni, n. sp.; ? *Obelia bifurca*, n. sp.

51. Ishikawa, C. Ueber die Abstammung der männlichen Geschlechtszellen bei *Eudendrium racemosum*, Cuv. Z. wiss. Zool. xlv, 4, pp. 669–671, 3 cuts.

Young male germinal cells from ectoderm, though found in endoderm of quite young gonophores. Undecided whether all arise from the blastostyl ectoderm, or some from the stalk of the hydranth from which the blastostyle springs.

52. Jungersen, H. F. E. Kara-Havets Alcyonider. Dijmphna-Togtets zool.-bot. Udbytte. pp. 373–380, 2 pls. Udgivet af Kjöbenhavns Univ.

53. Kerschner, L. Keimzelle und Keimblatt. Z. wiss. Zool. xlv, 4, pp. 672–693.

From the basis of some study of the development of *Hydra*; general conclusions on biological problems.

54. Kirkpatrick, R. Description of a new Genus of *Stylasteridæ*. Ann. N. H. xix, pp. 212–214, 1 pl.

New genus of Stylasterids. *Phalangopora regularis*, n. g. & sp., allied to *Errina*, but with gastropores in single linear series, and with separation of gastropore and dactylozoid systems.

55. Koby, F. Monographie des Polypiers jurassiques de la Suisse. Partie 6, 7. Abh. schw. pal. Ges. xiii, pp. 305–352 & 353–400, 10 pls.

41 new species; new genera *Lithoseris*, *Dermoseris*.

56. Koch, G. v. Die Gorgoniden des Golfes von Neapel und der angrenzenden Meeresabschnitte. [Erster Theil einer Monographie Anthozoa Alcyonaria.] Herausgegeben von der Zoologischen Station zu Neapel. (Fauna und Flora des Golfes von Neapel, Monographie xv.) Berlin: gr. 4to, 99 pp., 10 pls., 25 zincogr., 14 cuts, 40/-.

General structure of *Alcyonaria* (1–15); of *Gorgonida* (18–30); tables of species (31–36); description of Naples forms; 4 n. sp.

57. Korotneff, A. Zwei neue Cœlenteraten. Z. wiss. Zool. xlv, pp. 468–490, 1 pl., 4 cuts.

Description of *Polyparium*. Absence of tentacles; presence of oral cones leading into a common cavity, but without œsophageal tube; apparent absence of radial septa; presence of peculiar septa dividing body into septa. Comparison with *Mæandrina*. *Tubularia parasitica*, n. sp., living on and adapted in form to a Gorgonian.

58. ——. Zur Anatomie und Histologie des *Veretillum*. Zool. Anz. x, pp. 387–390.

Differentiated nervous system; special cell-elements causing phosphorescence; sensitive cells; structure of septa; contrasts of sexual and sexless polyps.

59. ——. *Polyparium ambulans*: a new Cœlenterate (translation). Ann. N. H. xx, pp. 203–222, 1 pl.

60. Krukenberg, C. F. W. Die Beeinflussung des Salzgehaltes der lebenden Gewebselemente durch den Salzgehalt der Umgebung. Erste Abth. Der Wasseraustritt aus der Gallertscheibe der Medusen. Vergleichend-Physiol. Studien, ii, 4, pp. 1–58.

Relation between external and internal salinity. The pas[illegible] R. Dubl. water; its conditions, variations, and modification by re[illegible]

61. [KRUKENBERG, C. F. W.] Die nervösen Leitungsbahnen in dem Polypar der Alcyoniden. *T. c.* pp. 59–76, 1 pl.

Nervous physiology of *Xenia*; the relations of dependence between individuals and the colony. Criticism of Keller's observations on rhythmic contractions of *Xenia*, which Krukenberg denies.

62. ——. Die Farben der lebenden Korallen des Rothen Meeres. *T. c.* pp. 172–187, 1 pl.

Enumeration and examination of pigments from nine species of corals.

63. °KÜNSTLER, J. La Genitogastrula. J. Microgr. xi, pp. 28–35.

64. LACAZE-DUTHIERS, H. DE. Sur le développement des Pennatulide[s] (*Pennatula grisea*, &c.). C.R. civ, pp. 463–469.

65. LEIDY, J. Remarks on *Hydra*. P. Ac. Philad. iii, pp. 311–313.

L. Agassiz's *Hydra gracilis* and *H. carnea* not distinct from European *H. viridis* and *H. fusca*.

66. LENDENFELD, R. v. The Function of Nettle-cells. Q. J. Micr. Sci. xxvii, pp. 393–399, 1 fig.

Structureless peduncle of cnidoblast a support; granular peduncle a nerve-fibre; explosion due to contraction of plasmatic coat, which in *Physalia* is partially converted into network of muscular fibres.

67. ——. Die Nesselzellen. Biol. Centralbl. vii (8), pp. 225–232.

Mainly summarising previous researches.

67A. ——. The Australian Museum. Descriptive Catalogue of the Medusæ of the Australian Sea. Sydney: 8vo.

68. MACINTOSH, W. C. Commensalistic habits of the larval forms of *Peachia*. Ann. N. H. xx, pp. 101 & 102.

69. ——. On *Syncoryne decipiens*, Duj. *T. c.* pp. 99–101.

70. ——. Note on a peculiar Medusa from St. Andrew's Bay [? *Thaumantias melanops*]. Rep. Brit. Ass. (1886), pp. 710 & 711.

71. MACMUNN, C. A. Notes on the Chromatology of *Anthea cereus*. Q. J. Micr. Sci. xxvii, pp. 573–590, 2 pls.

Chlorophyll, as well as chlorofucin, from extracts of yellow cells; remarkable instability towards caustic alkalies. Denial of Krukenberg's view that the colouring matters of *Anthea* are allied to "hepatochromates."

72. MCMURRICH, J. P. Notes on *Actiniæ* obtained at Beaufort, N.C. Stud. Biol. Lab. J. Hopkins Univ. iv (2), pp. 55–63.

Notes on 9 species; *Sagartia pustulata*, *S. gracillima*, n. spp.

73. MARENZELLER, E. v. Ueber das Wachsthum der Gattung *Flabellum*, Lesson. Zool. JB. iii (1), pp. 25–50.

(*a*) The different modes of appearance of the septa. (*b*) Species in three groups: 1, *F. japonicum*, Mos.; 2, *F. pavoninum*, Lesson, *F. distinctum*, M. E. & H., *F. candeanum*, M. E. & H.; 3, *F. spinosum*, *F. irregulare*. (*c*) *Flabellum coalitum*, n. sp., described.

74. Marshall, C. F. Observations on the structure and distribution of striped and unstriped muscle in the Animal Kingdom, and a theory of muscular contraction. Q. J. Micr. Sci. xxviii (1), pp. 75–107, 1 pl.
Inter alia, notes on *Hydra*, *Medusa*, *Actinia*.

75. Martens, E. v. Eine recente Koralle aus Japan (*Endohelia japonica*). SB. nat. Fr. No. 2, pp. 14 & 15.

76. Mayer, P. Ueber "Stielneubildung" bei *Tubularia*. Zool. Anz. x, p. 365.
H. Klaatsch's [see Zool. Rec. xxiii] "fresh stalk formation" artificial.

76A. Mereschkovsky, K. S. Ob odnoe anomalie u meduz i veroartnom sposobe petaniar ix pomoschu ektoderma. Trudui St. Petersburg Nat. xi, pt. 1, p. 1–8, pl.
Some anomalies in medusæ and the probable means of nutrition by ectoderm. [Omitted from Zool. Rec. xviii.]

76B. ——. Predvarietelnei okhetoetroenie korallov. *Op. cit.* pt. 2, pp. 12–16.
Preliminary account of structure of corals. [Omitted from Zool. Rec. xviii.]

77. Möbius, K. Systematische Darstellung der Thiere des Plankton gewonnen in der westlichen Ostsee und auf einer Fahrt von Kiel in den Atlantischen Ocean bis jenseit der Hebriden. Ber. Comm. wiss. Unters. deutsch. Meere, v, pp. 110–124, 2 pls.
List of about 20 forms of *Actinozoa*, *Hydrozoa*, and *Ctenophora*.

78. Monaco, Prince Albert de. Sur les recherches zoologiques poursuivies durant la seconde campagne scientifique de l'Hirondelle. C.R. civ, pp. 452–454.
Inter alia, notes on shoals of *Pelagia noctiluca*.

79. Nicholson, H. A. On some new or imperfectly known Species of Stromatoporoids. Part III. Ann. N. H. xix, pp. 1–17, 3 pls.
Describes 12 species.

80. ——. On *Hemiphyllum siluriense*, Tomes. Geol. Mag. iv (4), pp. 173 & 174.
The above a sp. of *Calostylis*, no connection with *Cyathaxonia*, &c.

81. Nussbaum, M. Die Theilbarkeit lebendiger Materie. Das Genus *Hydra*. Arch. mikr. Anat. xxix, pp. 265–366, 8 pls.
Monograph of genus *Hydra*. 4 spp.: *H. viridis*, *H. grisea*, *H. fusca*, and less certainly *H. attenuata*. Full account of histology. Regeneration and wound-healing. No modification (in eversion-experiment) of endoderm into ectoderm, or *vice-versa*.

82. —— Ueber das Regenerationsvermögen abgeschnittener Polypenarme. SB. Nat. Ver. Bonn. xliv, 1, pp. 10 & 11.
Cut off tentacles of *Hydra*, being incomplete samples of cells, can[illegible] regenerate a body.

82A. ——. Ueber den Verdauungsprocess der [illegible] by [illegible] Sci. P. R. Dubl.

83. [Nussbaum, M.] Ueber die Lebenszähigkeit eingekapselter Organismen. Zool. Anz. x, pp. 173 & 174.

Hydræ unable to kill encapsuled *Daphnia* embryos.

84. ——. Résistance vitale des organismes encapsulés. Arch. slav. Biol. iii, pp. 265–267.

85. ——. Vorläufiger Bericht über die Ergebnisse einer mit Unterstützung der Königlichen Akademie ausgeführten Reise nach Californien. SB. Ak. Berlin, I, li, pp. 1051–1055.

Experiments on regeneration of *Actiniæ*. In 50 cases the tentacle zones perished; the basal halves regenerated.

86. Ortmann, A. Die Systematische Stellung einiger fossiler Korallen Gattungen und Versuch einer phylogenetischen Ableitung der einzelnen Gruppen der lebenden Steinkorallen. JB. Mineral, ii, pp. 183–205, 1 pl.

(1) General discussion of characters of skeleton of *Fungidæ*. (2) Description of *Cyclolites*, Lam., *Cyclolitopsis*, Reuss, *Anabacia*, M. E. & H., *Genabacia*, M. E. & H., *Omphalophyllia*, Laube, *Podabacia*, M. E. & H. (3) Phylogeny.

87. Penecke, K. A. Ueber die Fauna und das Alter einiger palæozoischer Korallriffe der Ostalpen. Z. geol. Ges. xxxix, Heft 2, pp. 267–276.

20 [2 n.] sp.

88. Pergens, E. Contributions à l'histoire des Bryozoaires et des Hydrozoaires récents. Soc. mal. Belg. (procès-verbal d. la Séance, 3 Sept., 1887).

89. °Perrier, E. Les Coralliaires et les Iles madréporiques. Paris: 8vo, 26 pp., figs.

90. Pfeffer, G. Zoologische Kleinigkeiten. Verh. Ver. Hamb. vi, pp. 97–131.

Includes following notes upon *Cœlenterata*.

91. ——. *Chirobelemnon*, eine neue, nicht festgewachsene Alcyonide. *Op. cit.* vi, pp. 99–101.

92. ——. Ueber die Alcyoniden-Gattungen *Nidalia*, Gray, und *Itephritus*, Koch. *T. c.* pp. 101–104.

93. ——. Ueber *Gorgonia pinnata*. *T. c.* pp. 104–106.

94. ——. *Gorgonia ornata*, nov. spec., von West Afrika. *T. c.* pp. 106 & 107.

95. Rathbun, R. Catalogue of the Species of Corals belonging to the Genus *Madrepora* contained in the United States National Museum. P. U. S. Nat. Mus. pp. 10–19; Am. Nat. xxi, pp. 1033–1034.

59 sp. *Madrepora*; 23 Porites; *P. brauneri*, n. sp.; 3 *Synaræa*.

96. Römer, F. Ueber die Gattungen *Pasceolus* und *Cyclocrinus*. JB. Mineral, 1 Bd. (Dec. 1887), pp. 74 & 75.

Identical genera, *Cyclocrinus* the older title.

97. Schlüter, C. Ueber *Scyphia* sc. *Receptaculites cornucopiæ*, Goldf. sp., und einige verwandte Formen. Ber. Deutsch. geol. Ges. xxxix, pp. 1–26, 2 pls.

98. Simpson, G. B. [See Hall, J.]

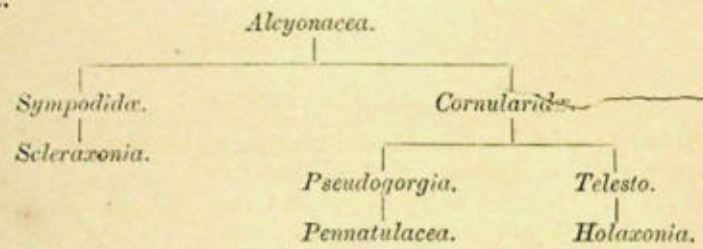
99. Spencer, J. W. Niagara Fossils. Part I. *Graptolitidæ* of the Upper Silurian System. Part II. *Stromatoporidæ* of the Upper Silurian System. Part III. Fifteen new Species of Niagara Fossils. Tr. St. Louis Acad. iv (4), pp. 555–610.

28 n. sp. Graptolites ; n. g. *Cyclograptus* ; 4 n. sp. Stromatoporoids.

100. Studer, T. Versuch eines Systemes der Alcyonarien. Arch. f. Nat. liii, pp. 1–74, 1 pl.

Discussion of the different types of colonies, of the spicular modifications, and of the differentiations of the polyps. Three divisions as usual —*Alcyonacea*, *Pennatulacea*, *Gorgonacea*, the last subdivided into *Scleraxonia* and *Holaxonia*. New family *Dasygorgidæ*, new subfamilies, genera, and species (see Chall. Rep. 1888).

101. ——. Système des Alcyonaires. Arch. Sci. nat. xviii (11), pp. 431 & 432.



102. ——. Ueber das System der Alcyonarien. Act. Soc. Helv. pp. 51–53.

103. ——. Ueber Bau und System der achtstrahligen Korallen. MT. Ges. Bern (SB.) pp. xiii & xiv.

104. Thomson, J. On the occurrence of Species of the Genus *Diphyphyllum*, Lonsdale, in the Lower Carboniferous Strata of Scotland, with a description of some new species and notices of varieties. Q. J. Geol. Soc. xliii (1), pp. 33–39.

History and vindication of the genus. *D. blackwoodi* and *D. cylindricum*, n. spp.

105. Thompson, d'A. W. The *Hydroida* of the Vega Expedition. Veg. exp. Vet. Bd. iv, 16 pp., 8 pls.

106. °Tichomirow, A. A. Zur Entwicklungsgeschichte der Hydroidpolypen (Russian). Moskau : 4to, 69 pp., 37 figs., 2 col. pls.

107. Tomes, R. F. On two species of Palæozoic *Madreporaria* hitherto not recorded as British. Geol. Mag. iv (3), pp. 98–100.

Hemiphyllum, n. g., *Cyathaxonia* ?, McCoy; *H. siluriensis*, McCoy sp. ; also describes *Cyathaxonia dalmani*, M. E. & H.

108. Varigny, A. de. Versuche an *Beroe ovata*, *Aurelia aurita*, und an Paguriden. Biol. Centralbl. vii, pp. 127 & 128.

Effects of alterations in chemical composition of medium on *Beroe ovata* and *Aurelia aurita*.

109. Vine, G. R. Notes on a species of *Entalophora* from the Neocomian clay of Lincolnshire. Ann. N. H. xix, pp. 17–19.

110. °Waagen, W. Salt Range Fossils. Vol. i. Productus Limestone Fossils. Part 6. *Coelenterata*. Pal. Ind. ser. xiii, 4to, 99 pp., 20 pls.

111. Walcott, C. D. Note on the Genus *Archæocyathus* of Billings. Am. J. Sci. xxxiv, pp. 145 & 146. (Terminology.)

112. Wilson, H. V. The Structure of *Cunoctantha octonaria* in the adult and larval stages. Stud. Biol. Lab. J. Hopkins Univ. iv, pp. 95–107, 3 pls.

Description of larva from bell-cavity of *Turritopsis nutricola*. Final position of tentacles in adult due to the outgrowth of intertentacular lobes and to the growth of the velum, not to migration of the tentacles from the umbrellar margin. The form has no canal system, therefore not among *Cunanthidæ*, as Hæckel places it; distinguished from *Solmaridæ*, too, by the possession of otopupæ; in the shape of umbrellar edge like *Peganthidæ*.

I.—HYDROZOA.

(*a*) Craspedota.

Bale (3), on *Plumulariidæ*, classification and structure.

Bergh (4), on Hydroids of Kara-Havet.

Chun (15, 16), on morphology and development of *Siphonophora*. Morphology of pneumatophore,—a modified Medusa, without gastric cavity, consisting of outer air-umbrella, and inner lamella, or air-sac. Constriction at lower pole called air-funnel. Discussion of *Apolemia uvaria*, *Stephanomia picta*, *Physalia hydrostatica*, *Rhizophysa filiformis*, &c. The heteromorphic medusoid appendage at the commencement of the trunk is cast off by *Calycophoridæ*; forms in other *Siphonophora* the pneumatophore.

Ehlers (24, 25), on *Polyparium ambulans*.

Fewkes (28), on *Hydrichthys mirus*, n. g. & sp., on a fish.

Hartlaub (46), on *Cladonemidæ*. Relations to *Ctenophora*. Rarity may be due to slight reproductivity of Medusa stage. Anatomy and general characters. Classification. Family *Cladonemidæ*, Hkl. i. Subfamily *Eleutheridæ*, with an apical cavity, *Eleutheria*, *Pteronema*, *Ctenaria*, *Dendronema*; ii, Subfamily *Cladonemidæ*, s. str. (better *Cladonemineæ*), with no apical cavity, *Cladonema*, *Zanclia*, *Gemmaria*. Histological notes, *e.g.*, abundant cnidoblasts of endoderm. Sexual cells apparently always from endoderm. Hermaphrodite, but either set of products may appear before the other.

Hickson (49), on *Millepora plicata*, sex-cells and early stages.

Hincks (50), on Mergui Hydroids; *Obelia andersonii*, ? *Obelia bifurca*, n. spp.

Ishikawa (51), on origin of male cells in Eudendrium.

Kirkpatrick (54), on *Phalangopora regularis*, n. g. & sp., from

Mauritius, a Stylasterid allied to *Errina*, but with regular arrangement of pores, and separation of gastropore and dactylopore systems.

Korotneff (57), on *Polyparium ambulans*, n. g., and *Tubularia parasitica*, n. sp.

Leidy (65), on *Hydra* sp.

MacIntosh (69), on *Syncoryne decipiens*.

Mayer (76), on supposed new stalk-formation in *Tubularia*.

Nussbaum (81), monograph of genus *Hydra*.

Nussbaum (82), on regeneration of polyp arms.

Nussbaum (82A), on digestion by *Hydra*.

Pergens (88), on recent *Hydrozoa*.

Thompson (105), on Hydroids of Vega.

Wilson (112), on structure of adult and larval *Cunoctantha*.

(*b*) Acraspeda.

Brooks (14), reproduction of *Medusæ*.

Fewkes (27), on new Rhizostomatous *Medusa* from New Haven harbour. *Nectopilema verrilli*, n. g., one of the *Pilemidæ*, connecting the *Eupilemidæ* and the *Stomolophidæ*. 6 velar lappets in each octant; no tentacles; 16 'scapulettes'; 8 oral arms, with numerous gelatinous filiform appendages.

Goette (35), on development of *Aurelia aurita* and *Cotylorhiza tuberculata*.

Goette (35), evidence in support of his proposal to separate *Acraspeda* from *Hydrozoa*, and unite them with *Actinozoa* and *Ctenophora* as '*Scyphozoa*.' Emphasis on the ectodermic stomodæum, the tæniolæ, stomach pouches, &c., in this connection.

Haacke (38), on *Scyphomedusæ*.

Haacke (38), on *Monorhiza hæckelii*, n. g., forming along with Lendenfeld's *Pseudorhiza* the family *Chaunostomidæ*. The Rhizostomatous condition much restricted, so that the appearance is deceptively like that of *Semostomeæ*.

Krukenberg (60), on relation of *Medusæ* to external salinity.

Monaco (78), on *Pelagia noctiluca*.

II.—ACTINOZOA.

1. ALCYONARIA.

Danielssen (18), on Norse *Alcyonida*. Subsection, *Alcyoninæ*: *Væringia mirabilis*, n. g. & sp.; *V. abyssicola*, n. sp.; *V. polaris*, n. sp.; *V. pygmæa*, n. sp.; *V. dryopsis*, n. sp.; *V. Jan-Mayeni*, n. sp.; *V. clavata*, n. sp.; *V. capitata*, n. sp.; *Duva arborescens*, n. sp.; *D. aurantiaca*, n. sp.; *D. frigida*, n. sp.; *D. glacialis*, n. sp.; *D. spitzbergensis*, n. sp.; *D. violacea*, n. sp.; *D. flava*, n. sp.; *D. cinerea*, n. sp.; *Drifa hyalina*, n. g. & sp.; *D. islandica*, n. sp.; *Nannodendron elegans*, n. g. & sp.; *Fulla schiertzi*, n. g. & sp.; *Nephthya flavescens*, n. sp.; *N. rosea*, n. sp.; *N. polaris*, n. sp.; *Gersemiopsis arctica*, n. g. & sp.; *Barathrobius*

gitatus, n. g. & sp. ; *B. palmatus*, n. sp. *Sarakka crassa*, n. g. & sp. ; *Nidalia arctica*, n. sp ; *Krystallofanes polaris*, n. g. & sp. Subsection *Organinæ* : *Organidus nordenskjöldi*, n. g. & sp. Subsection *Cornularinæ* : *Clavularia frigida*, n. sp. ; *Sympodium abyssorum*, n. sp.—9 n. g. 33 n. sp. n. subfam. *Organinæ*.

Grieg (36), on Norse *Alcyonaria*. *Sympodium hyalinum*, n. sp. ; *Stenogorgia rosea*, n. sp. ; *Danielssenia*, n. g., *D. irramosa*, n. sp. ; *Paramuricea elegans*, n. sp. ; *Protoptilum tortum*, n. sp. ; *Stichoptilum*, n. g., *S. arcticum*, n. sp.

Jungersen (52), on *Alcyonida* of the Kara Sea.

Koch (56). Structure of *Alcyonaria*, of *Gorgonida*, tables of species (31–36). Description of the Naples *Gorgonida* : *Gorgonella*, Val., *G. sarmentosa*, Esp. (Lam.), *G. bianci*, v. Koch ; *Muricea*, Lamouroux, *M. chamæleon*, v. Koch, *M. placomus*, Pall., *M. bebrycoides*, n. sp. ; *Bebryce*, Philippi, *B. mollis*, Philippi ; *Gorgonia*, Linné, *G. cavolini*, n. sp., *G. verrucosa*, Pall., *G. profunda*, n. sp. ; *Primnoa*, Lamouroux, *P. ellisii*, n. sp. ; *Isis*, Linné, *I. elongata*, Esper.

Koch (56), on classification of *Alcyonaria*, pp. 14–17, *op. cit.* and (after Studer) Nachtrag, pp. 97–99.

Koch (56), on the skeletal arrangements in *Alcyonaria*, *t. c.* pp. 11 & 12.

Korotneff (58), on structure of *Veretillum*.

Krukenberg (61), on nervous physiology.

Lacaze-Duthiers (64), on development of *Pennatulidæ*.

Pfeffer (90, 92), notes on *Alcyonida*.

Pfeffer (91), on free-living new genus of *Alcyonida*—*Chirohelemnon*.

Pfeffer (93), on *Gorgonida* : *Gorgonia ornata*, n. sp., *G. pinnata*, &c.

Studer (100–103) on System :—

Ord. I. *Alcyonacea*. Fam. 1, *Haimeidæ* ; 2, *Cornularidæ* ; 3. *Tubiporidæ* ; 4, *Xenidæ* ; 5, *Alcyonidæ* ; 6, *Nephthyidæ* ; 7, *Helioporidæ*.

Ord. II. *Pennatulacea*. Sect. 1, *Pennatulacea* ; 2, *Spicatæ* ; 3, *Renilleæ* ; 4, *Veretilleæ* ; 5, *Gœndaleæ*.

Ord. III. *Gorgonacea*. Sect. 1, *Scleraxonia*. Fam. 1, *Briareidæ* ; 2, *Suberogorgidæ* ; 3, *Melithæidæ* ; 4, *Corallidæ*.

Sect. 2, *Holaxonia*. Fam. 1, *Dasygorgidæ* ; 2, *Isidæ* ; 3, *Primnoidæ* ; 4, *Muriceidæ* ; 5, *Plexauridæ* ; 6, *Gorgonidæ* ; 7, *Gorgonellidæ*.

2. ZOANTHARIA.

Argyll (1), on Darwin's theory of coral-reefs.

Bourne (9), on Madrepore morphology.

Bourne (9), on provisional arrangement of Madrepores :—I. *M.* with 3n directive mesenteries, and with perfect radial symmetry (*Lophohelia*, *Mussa*, *Euphyllia*) ; II. *M.* with directive mesenteries, combined radial and bilateral (*Turbinaria*, *Rhodopsammia*, *Fungia*, &c.) ; III. *M.* with reduced

radial symmetry and marked bilateral arrangement of parts (*Madrepora*, *Pocillopora*, *Seriatopora*); iv. *M.* with basal pseudotheca and no 'Randplatte' (*Flabellum*).

Bourne (10), on anatomy and histology of *Fungia*.

Dixon (19), on *Edwardsia*.

Duncan (21), on *Glyphastræa*, n. g.

Duncan (22), on Mergui *Madreporaria*.

Fischer (30), on *Actiniæ*, systematic.

Fowler (31), on new types of Madreporarian structure.

Fowler (32), anatomical description of 7 sp. *Madreporaria*; *Seriatopora tenuicornis*, n. sp.; morphological results.

Guppy (37), on Solomon Islands coral-reefs.

Haddon (39, 40), on parasitic larva of *Halcampa chrysanthellum*.

Krukenberg (62), on coral pigments.

McIntosh (68), on commensal larval *Peachia*.

McMunn (71), on chromatology of *Anthea cereus*.

McMurrich (72), on 2 n. spp. of *Sagartia*, &c.

Marenzeller (73), on growth of *Flabellum*.

Martens (75), on *Endohelia japonica*.

Nicholson (80), on *Hemiphyllum*.

Nussbaum (85), on regeneration of *Actiniæ*.

Ortmann (86), on phylogeny of corals. From *Tetracoralla* (1), one line leads up from beginning of Jurassic through *Oculinidæ*; another, splitting at such (Triassic) forms as *Montlivaultia* and *Omphalophyllia*, leads up through *Astræidæ* and *Thamnastræidæ*. From the line of the latter a parallel line includes such forms as *Anabacia* and *Cyclolites*. *Microsolenia* and the *Actinaræa* of the Jurassic are at the base of a divergent branch, which leads up through the *Poritidæ*. A similar branch in the Cretaceous probably diverges into the *Fungidæ*.

Perrier (89), on coral islands.

Rathbun (95), on Madrepores of U. S. National Museum.

Tomes (107), on *Hemiphyllum*.

III.—CTENOPHORA.

Engelmann (26), on *Ctenophora*. Steering mechanism: when vertical position lost, otolith presses more strongly on one of the pinnate bands, from which cellular (nervous) cords convey the influence to the ctenophoral plates, which then right the animal.

Hartlaub (46), on relations of *Cladonemidæ* to *Ctenophora*.

(*a*) Structure.

Bourne (9), on anatomy of *Mussa* and *Euphyllia*.

Bourne (10), on structure of *Fungia*.

Chun (15), on morphology of *Siphonophora*.

Chun (16), on morphology of *Siphonophora*. The "air-plate" which in *Physalia* secretes the gas for the air-sac is homologous with the

econdary ectoderm in the pneumatophore of *Physophoridæ*. The (complicated) structure of the crest. Comparison of pneumatophore with other forms.

Danielssen (18), on anatomy and histology of *Alcyonida*. In *Væringia mirabilis* a group of large ganglion-cells on the uppermost part of the ventral surface of the gullet, with a prolongation rich in protoplasm, with subjacent smaller pellucid cells and very slender fibrils. In all the species examined a ciliated ventral groove, forming true œsophagus in *Gersemiopsis arctica*, n. g. & sp.; abundant unicellular mucous glands on œsophagus and on exterior of polyps.

Ebner (23), on minute structure of skeleton in *Zoantharia*, *Alcyonaria*, *Distichopora*.

Fowler (31, 32), on anatomy of *Madreporaria*.

Goette (35), on structure and origin of tæniolæ, and other organs.

Haddon (39), on mesenteries of *Halcampa*.

Koch (56), on the structure of *Gorgonida*, pp. 18–30.

Koch (56), on different kinds of budding:—

I. Stolons from the base only; (*a*) simple in *Cornularia*.
(*b*) united in basal plates, *Rhizoxenia*, *Gorgonia*.

II. Stolons from various points; (*a*) simple or fused in plates, *Telesto*, *Pennatula*, *Tubipora*.
(*b*) fused in irregular meshwork, *Alcyonium*, *Corallium*, *Sclerogorgia*.

Korotneff (57), on structure and histology of *Polyparium ambulans*.

Korotneff (58), on structure and histology of *Veretillum*. Elongated epithelial cells with filaments through musculature; sensitive cells; fine filaments and independent cell-bodies of muscular layer; between epithelium and latter, a diffuse system of bipolar and multipolar nerve-cells; muscular layer incompletely separate from epithelium; below muscular layer other nerve elements. Structure of septa and polyp wall. Abundance of luminous cells. The sexless individuals predominantly stinging polyps; when stinging organs are ejected the œsophagus is evaginated. Large sexual polyps all male; ova in four longitudinal canals in the rachis.

Lendenfeld (66), on structure of stinging-cells.

Marenzeller (73), on structure and growth of *Flabellum*.

Marshall (74), on muscular system.

Nussbaum (81), on histology of *Hydra*.

Studer (100), on structure of *Octocoralla*.

Wilson (112), on structure of *Cunoctantha*.

(*b*) Physiology.

Brooks (14), on a new form of reproduction in *Medusæ*.

Danielssen (18), on reproductive polyps of *Nephthya*. Special reproductive individuals; when elements are matured the tentacles curve in; the orifice is closed by mucus; the gullet becomes a uterus.

HAMANN (44), on resemblance between Hydromedusæ and Echinoderms in the migration of primordial germ cells.

HARTOG (47), on closure of oral slit in resting Actinians. Turgescence effected by osmosis. Apical pores of tentacles serve for discharge of surplus liquid, periodically or constantly in small quantities, rapidly and spasmodically on irritation.

ISHIKAWA (51), on origin of male cells in *Eudendrium*.

KOCH (56), on physiology of *Gorgonia cavolini*, n. sp. (pp. 66–68).

KOCH (56), on abnormalities in *Gorgonia cavolini* and *Isis elongata*.

KOROTNEFF (58), on *Veretillum*. The large sexual polyps are all male; probably primitively all the polyps were sexual, for ova are near asexual polyps, in four longitudinal rows attached to the internal axial canal of rachis.

KRUKENBERG (60). (1) On the relation in *Medusæ* between internal and external salinity. (2) On the rate and variations of the loss of water. (3) On the possibilities as to the manner (certainly not diffusion) by which the water passes out.

KRUKENBERG (61), on nervous tracts in *Xenia*. I. *Individual*: (*a*) Nerve strands penetrate entire body of polyp; (*b*) Stimuli from one half of the body to the other pass more readily by oral disc than by basal plate; (*c*) Stimuli pass more readily from base to mouth than in opposite direction. II. *Relation of individual to colony*: (*a*) All portions of the colony have contractile tissue under influence of a superficial ganglionic network; (*b*) The network is less developed on the merely supporting portions of the colony than in the oral disc and tentacles of the polyps; (*c*) Stimulation of a point on the stem passes much more readily in a transverse, than in a basal direction.

KRUKENBERG (62), on coral pigments.

LENDENFELD (66, 67), on function of stinging cells.

MACMUNN (71), on chromatology of *Anthea cereus*.

MARSHALL (74), on muscular contraction in *Hydra*, *Medusa*, *Actinia*.

NUSSBAUM (81), on physiology, regeneration, &c., of *Hydra*.

NUSSBAUM (82, 82A), on regeneration of polyp-arms.

NUSSBAUM (85), on regeneration of *Actiniæ*.

VARIGNY (108), on influence of medium.

(*c*) EMBRYOLOGY.

CHUN (16), on post-embryonal development of *Physalia*.

DANIELSSEN (18), on embryology of *Nephthya polaris* (pp. 94–99).

GOETTE (35), on development of *Aurelia aurita* and *Cotylorhiza tuberculata*. Really no alternation of generations; the *Ephyra* and the *Scyphomedusa* only a metamorphosed Scyphistoma; the Scyphistoma is in structure a perfect Anthozoon. "The cœlogastrula is a secondary embryonic form, in which gastrulation is completed by an inwandering of the endoderm into the cavity of the cœloblastula."

HICKSON (49), on early stages of *Millepora plicata*.

ISHIKAWA (51), on origin of male cells in *Eudendrium*.

KEESCHNER (53), general conclusions based on development of *Hydra*.

Koch (56), on development of *Gorgonia cavolini*, n. sp., pp. 69–82.
Künstler (63), on the genitogastrula.
Lacaze-Duthiers (64), on the development of *Pennatulidæ*.
Tichomirow (106), on development of Hydroids.
Wilson (112), on *Cunoctantha*.

(*d*) Parasitic.

Fewkes (28), on *Hydrichthys mirus*, n. g. & sp., parasitic on a fish.
Haddon (39, 40), on parasitic larva of *Halcampa chrysanthellum*, and other *Actiniæ*.
Korotneff (57), on *Tubularia parasitica*, n. sp.
McIntosh (68), on commensalistic habits of larval *Peachia*.

(*e*) Distribution in Space.

Bale (3), on Australian Hydroids.
Bergh (4), on Hydroids from Kara Sea.
Bétencourt (5), on Hydroids of Calais.
Daday (17), on Plattensee Fauna.
Duncan (22), on Mergui *Madreporaria*.
Fischer (29, 30), on *Actiniæ* of French coasts.
Haacke (38), on *Scyphomedusæ* of St. Vincent Gulf.
Haddon (41, 42), on Cœlenterates of Dublin Bay and S.W. of Ireland.
Hensen (48), statistics of occurrence of Cœlenterates (*cf.* Möbius).
Hincks (50), on Mergui Archipelago Hydroids.
Jungersen (52), on *Alcyonida* of Kara Sea.
McMurrich (72), on Beaufort *Actiniæ*.
Möbius (77), statistics of occurrence of *Actinozoa*, *Hydrozoa*, *Ctenophora*, in exploration from Kiel to the Hebrides.
Monaco (78), on Hirondelle expedition.
Nussbaum (85), on Californian *Actiniæ*.
Thompson (105), on Hydroids of Vega Expedition.

(*f*) Palæontology.

Bornemann, J. G. (6), on the position of *Archæocyathus*. Structure in all probability related to that of higher Cœlenterates.
Bornemann (6), on *Archæocyathinæ*. Three genera distinguished—*Archæocyathus*, *Coxinocyathus*, *Anthomorpha* (*Protopharetra* only a vegetative nurse phase). *Protopharetra*, *P. radiata*, *P. vesiculosa*, *P. densa*, *P. laxa*, n. spp.; 1 other described. *Archæocyathus*, *A. aduncus*, n. sp.; 9 others described. *Coxinocyathus*, 15 spp. described. *Anthomorpha*, *A. margarita* described. 33 photographed plates.
Bourgeat (8), on Jurassic corals.
Fromentel (34), on Cretaceous zoophytes.
Hall & Simpson (43), on Corals.
Koby (55), on Jurassic polyps.

NICHOLSON (79), on new or imperfectly known Stromatoporoids. *Clathrodictyon vesiculosum*, Nich. & Murr.; *Cl. variolare*, Rosen sp.; *Cl. linnarssoni*, Nich.; *Cl. striatellum*, D'Orb. sp.; *Cl. crassum*, Nich.; *Cl. fastigiatum*, Nich.; *Cl. regulare*, Rosen sp.; *Cl. cellulosum*, Nich. & Mur.; *Cl. ostiolatum*. Nich.; *Cl. laxum*, Nich.; *Cl. retiforme*, Nich. & Mur. sp.; *Stromatoporella* (?) *tuberculata*, Nich.

PENECKE (87), on palæozoic coral reefs; 2 n. sp.

RŒMER (96), *Pascealus* = *Cyclocrinus*.

SCHLÜTER (97), on *Scyphia* or *Receptaculites*.

SIMPSON. [See HALL (43).]

SPENCER (99), on *Cyclograptus*, n. g., 28 n. spp., Graptolites; 4 n. spp. Stromatoporoids.

THOMSON (104), on *Diphyphyllum*.

VINE (109), on *Entalophora* from Neocomian.

WAAGEN (110), on Salt Range *Cœlenterata*.

WALCOTT (111), on *Archæocyathus*.

SPONGIÆ.

BY

PROFESSOR W. J. SOLLAS, M.A., D.Sc., LL.D.

---

1. BELL, F. J. The Nervous System of Sponges. Zool. Anz. x, p. 241.

2. CARTER, H. J. On the Position of the Ampullaceous Sac and the Function of the Water-vascular System Canal in the *Spongida*. Ann. N. H. (5) xix, pp. 203–213.

3. ——. *Carterius stepanovii*, Petr. *T. c.* pp. 247 & 248.

4. ——. Description of *Chondrosia spurca*, n. sp., from the South Coast of Australia. *T. c.* pp. 286–288.

5. ——. On the Reproductive Elements of the *Spongida*. *T. c.* pp. 350–360.

6. ——. Report on the Marine Sponges, chiefly from King Island, in the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson. J. L. S. xxi, pp. 61–84, pls. v–vii.

7. DENDY, A. On the West Indian *Chalininæ*. P. Z. S. 1887, pp. 503–507.

8. ——. Report on a Zoological Collection made by the Officers of H.M.S. 'Flying Fish,' at Christmas Island, Indian Ocean. *T. c.* pp. 524–526, pl. xliv.

9. ——. The Sponge Fauna of Madras. A Report on a Collection of Sponges obtained in the Neighbourhood of Madras, by Edgar Thurston, Esq. Ann. N. H. (5) xx, pp. 153–165, pls. ix–xii.

10. ——. On a remarkable New Species of *Cladorhiza* obtained by H.M.S. 'Challenger.' *T. c.* pp. 279–282, pl. xv.

11. ——. The New System of *Chalininæ*, with some brief observations on Zoological Nomenclature. *T. c.* pp. 326–337.

See VOSMAER (45).

DENDY & RIDLEY. [See RIDLEY & DENDY.]

12. Duncan, P. M. A Reply to Dr. G. J. Hinde's communication "On the Genus *Hindia*, &c." Ann. N. H. (5) xix, pp. 260–264.

13. Ebner, V. v. Ueber den feineren Bau der Skelettheile der Kalkschwämme, nebst Bemerkungen ueber Kalkskelete ueberhaupt. SB. Ak. Wien, xcv, pp. 55–149, 4 pls.

14. ——. *Amphoriscus bucchichii*, n. sp. Zool. Jahrb. ii, pp. 981 & 982, with woodcut.

15. Fiedler, K. Ueber die Entwicklung der Geschlechtsproducte bei *Spongilla*. Zool. Anz. x, pp. 631–636 ; transl., Ann. N. H. (5) xx, pp. 435–440.

16. Fristedt, K. Meddelanden om Bohuslänska Spongior. Œfv. Ak. Förh. xliv, pp. 25–29.

17. Hardman, E. T. Note on Prof. Hull's paper. P. R. Soc. xlii, pp. 308–310.

18. Hinde, G. J. On the Genus *Hindia*, Duncan, and the name of its typical species (*fibrosa*), Roemer. Ann. N. H. (5) xix, pp. 260–264.

19. Hull, E. Note on Dr. Hinde's paper "On beds of Sponge-remains in the Lower and Upper Greensands of the South of England." P. R. Soc. xlii, pp. 304–308.

20. Johnston-Lavis & Vosmaer, G. C. J. On cutting Sections of Sponges and other similar structures with soft and hard tissues. J. R. Micr. Soc. (2) vii, pp. 200–204.

21. Kellicott, D. S. V. *Hydreomena traversata*, n. sp. Bull. Buff. Soc. Nat. Hist. v, pp. 45 & 46.

22. Lendenfeld, R. von. On the Systematic Position and Classification of Sponges. P. Z. S. 1886 (1887), pp. 558–662.

23. ——. Der gegenwärtige Stand unsrer Kenntniss der Spongien. Zool. Jahrb. ii, pp. 511–574.

24. ——. The Nervous System of Sponges. Rep. Brit. Ass. xxiii, 1886 (1887), p. 710, and Nature, xxxiv, p. 538 (1886).

25. ——. On the Structure and Life History of Sponges. Zool. (3) xi, pp. 223–232.

26. ——. Synocils, Sinnesorgane der Spongien. Zool. Anz. x, pp. 142–145, figs. 1–3 ; transl., Am. Nat. xxi, pp. 485 & 486.

27. ——. Errata in my paper on the Systematic Position and Classification of Sponges. Zool. Anz. x, p. 335.

28. ——. Die Chalineen des australischen Gebietes. Zool. Jahrb. ii, pp. 723–828, pls. xviii–xxvii.

29. ——. Mr. Dendy on the *Chalininæ*. Ann. N. H. (5) xx, pp. 428–432.

30. Levinsen, G. M. R. Kara-Havets Svampe (*Porifera*). Dijmphna-Togtets. zool.-bot. Udbytte, pp. 339–372, pls. xxix–xxxi.

31. Nassonow, N. W. O. [On Boring Sponges of the Family *Clionidæ*.] Nachr. k. Ges. Moskau, 1, pp. 236–248.

32. Noll, F. Ueber die Silicoblasten der Kieselschwämme. Tag. Deut. Nat. Vers. pp. 254 & 255, and Anat. Anz. ii, pp. 764 & 765.

33. ——. Die Naturgeschichte der Kieselschwämme. Ber. Senck. Ges. 1887, pp. 69–71.

34. Petr, F. Nové dodatky ku faunĕ českých hub sladkovodních [Fresh Contributions to the Fresh-water Sponge Fauna of Bohemia]. SB. böhm. Ges. 1887, pp. 121–132 & 203–214.

35. Potts, E. Fresh-water Sponges: a Monograph. P. Am. Phil. Soc. 1887, pp. i–iv & 158–279, pls. v–xii.

36. Priest, R. W. On the *Calcarea*. J. Quek. Club (2) iii, pp. 99–107, pl. viii.

37. Ridley & Dendy. Report on the *Monaxonida* collected by H.M.S. 'Challenger.' Challenger Report, xx, pp. lxviii & 275, 51 pls.

38. Roemer, F. *Trochospongia*, eine neue Gattung silurischer Spongien. JB. Mineral. ii, pp. 174–177, pl.

39. Schlüter, C. Ueber *Scyphia* oder *Receptaculites cornucopia*, Gold., und einige verwandte Formen. Z. geol. Ges. i, pp. 1–26, pls.

40. Schulze, F. E. Report on the *Hexactinellida* collected by H.M.S. 'Challenger.' Challenger Report, Zool. xxi, 513 pp., 104 pls. & map.

41. ——. Zur Stammesgeschichte der Hexactinelliden. Abh. Ak. Berl. 1887, 35 pp.

42. Sollas, W. J. Article "Sponges." Encycl. Brit. xxii, pp. 412–429.

43. Thomson, J. A. On the Structure of *Suberites domuncula*, Olivi (O.S.), together with a Note on Peculiar Capsules found on the Surface of *Spongelia*. Tr. R. Soc. Edinb. xxxiii, pp. 241–245, pls. xvi & xvii.

44. Topsent, E. Sur les prétendus prolongements périphériques des Cliones. C.R. cv, p. 1188.

45. Vosmaer, G. C. J. The Relationships of the *Porifera*. [Translated from Bronn's "Klassen & Ordnungen," by A. Dendy.] Ann. N. H. (5) xix, pp. 249–260.

46. ——. The Systematic Position of the Sponges. Abstr. of above in Am. Nat. xxi, pp. 581 & 582.

47. Weltner, W. Ueber die Spongillen der Spree u. des Tegelsee's bei Berlin. SB. nat. Fr. 1886, pp. 152–157.

48. Wierzejski, A. Bemerkungen uber Süsswasserschwämme. Zool. Anz. x, pp. 122–126; translated in Ann. N. H. (5) xix, pp. 298–302.

49. ——. Les Éponges d'eau douce de Galicie. Arch. Slav. Biol. ii, pp. 37–40.

50. Zahalka, C. Beiträge zur Kentniss der Phymatellen der böhmischen Kreide-formation. Bull. Pétersb. xxxi, pp. 464–473.

Anatomy.

The nomenclature of Sponge spicules has been entirely remodelled in the course of the present year; for the new terms reference must be made to the works of Schulze (40), Sollas (42), Ridley & Dendy (37), and Lendenfeld (22).

For the histological elements of Sponges, Sollas (42) proposes several new terms, of which the most important are the following: *pinacocytes*, for pavement epithelial cells; *choanocytes*, for flagellate collared cells; *collenchyme*, for the gelatinous connective tissue of the mesoderm; *collencytes*, for the connective tissue corpuscles; *myocytes*, for muscle cells; and *desmacytes*, for fusiform connective tissue cells.

Sollas (42) also proposes the following terms in the description of the chamber-system: *prosopyle*, for the inhalent aperture of a flagellated chamber; *apopyle*, for the exhalent aperture; when the prosopyle is prolonged into a special canal, this is a *prosodus*, the apopyle similarly may be continued into an *aphodus*. He distinguishes the following types of chamber-system: *eurypylous*, when the flagellated chambers communicate by a wide apopyle directly with an exhalent canal; *aphodal*, when they do so by the intermediation of an aphodus; *diplodal*, when a prosodus is developed in addition to an aphodus. To distinguish the rind and interior of the sponge he proposes the terms: *ectosome*, for the exterior, non-chamber-bearing layer; and *choanosome*, for the interior chamber-bearing region.

Carter (5) describes the ova of *Chondrosia spurca* as occurring in the flagellated chambers of the Sponge, one in each flagellated chamber of the interior region. In the ovigerous specimen no spermatozoa were observed; but in another devoid of ova, doubtful structures, possibly spermatozoa, occur, to the exclusion of ova.

Carter (2) states that in numerous instances pores or inhalent areas lead into excurrent canals, and considers that nutrient particles enter the flagellated chambers by their excurrent openings (apopyles). He calls attention to his previous descriptions of *Grayella cyathophora*, *Halichondria scabida*, *Axos spinipoculum*, *Teichonella labyrinthica*, *Geelongia vasiformis*, *Hircinia intertexta*, *Suberites insignis*, *Phlaeodictyum birotuliformis*; and confirms them by fresh observations on *Wilsonella australiensis*.

Lendenfeld (25) states that the supposed palpocils found by Stewart in *Grantia* are multicellular, several cells lying beneath a conical epithelial process, into which a fine filament extends from each; hence he proposes to term them "synocils." Lendenfeld supposes that synocils are retractile, and thus accounts for the fact that in no other instance have they been observed in the extended state shown in Stewart's preparations.

Fielder (15) states, in opposition to Goette, that the ovum of *Spongilla* is unicellular, its outlines are clear, and it possesses only a single nucleus, which by double staining can be clearly differentiated from yelk structures. The development of spermatozoa is on Polejaeff's second type; there is, therefore, no cover cell.

The chamber-system of a well-preserved Chalinine Sponge (*Pachychalina spinossima*, n. sp.) is described by DENDY (8) as referable to Vosmaer's third type [? *eurypylous*, Soll.—REC.].

THOMSON (43) describes the structure of *Suberites domuncula*. The ectoderm consists of pavement cells; the flagellated chambers are small, of an almost hemispherical form, and communicate directly with the finer branches of the canal system, which exhibits "the fourth degree of complexity;" sperm-morulæ and ova were observed in the same individual.

The same author describes "regenerative capsules" in *Spongelia*, and mentions the occurrence of similar aggregates in *Reniera*. In the first-named they form small knobs projecting from the surface of the Sponge, and supported by stalk-like processes of the horny skeleton.

TOPSENT (44) states that structures which have been regarded as peripheral prolongations of *Cliona* are parasitic plants.

PHYSIOLOGY.

SOLLAS (42) points out that direct observation disproves Polejaeff's *à priori* argument as to impossibility of the choanocytes acting as ingestive cells, and explains Lendenfeld's observations as indicating the removal by wandering cells of irritant matter from the Sponge; further, in the *Asconidæ*, ingestion must be performed by the choanocytes, as no other cells are available except the ectodermal pinacocytes.

The same author states that the spicules of Sponges are constantly being disengaged from the organism, and replaced by fresh ones; he thus accounts for the remarkable abundance of spicules in some ancient deposits.

CLASSIFICATION.

VOSMAER (45) concludes:—I. That the Sponges must not be classed with the *Cœlenterata*; they form a type of their own. II. They are probably descended from free-swimming ancestors, which, originally without supporting structures, ultimately developed a strong skeleton. III. These primitive forms lived at great depths. IV. Coincidentally with life at less depth, degeneration of the (siliceous) skeleton took place.

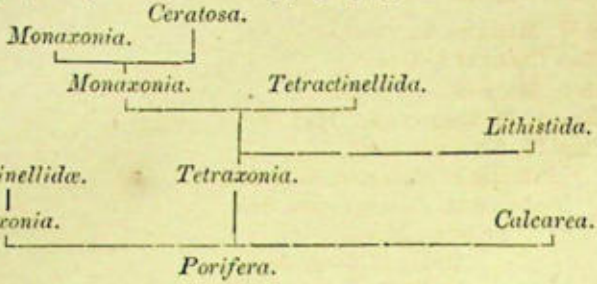
SOLLAS (42) points out that the existence of *Homoderma*, Ldf., proves that the replacement of choanocytes by pinacocytes was not the primary step in the evolution of the *Heterocœla* from the *Homocœla*, but a secondary change resulting from the outgrowth of radial tubes.

LENDENFELD (21) represents the relationship of the Sponges as follows:—

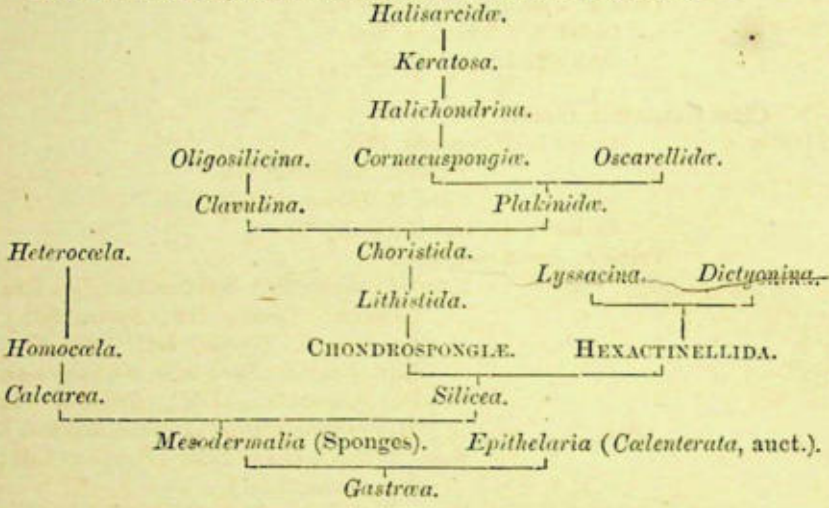
GRADE I. *Cœlentera.*

Organs derived from cells of the *Mesoglœa*:—	Organs derived from cells of the *Epithelia*:—
Phylum I. *Mesodermalia.*	Phylum II. *Epithelaria.*
A single class. *Spongiæ.*	

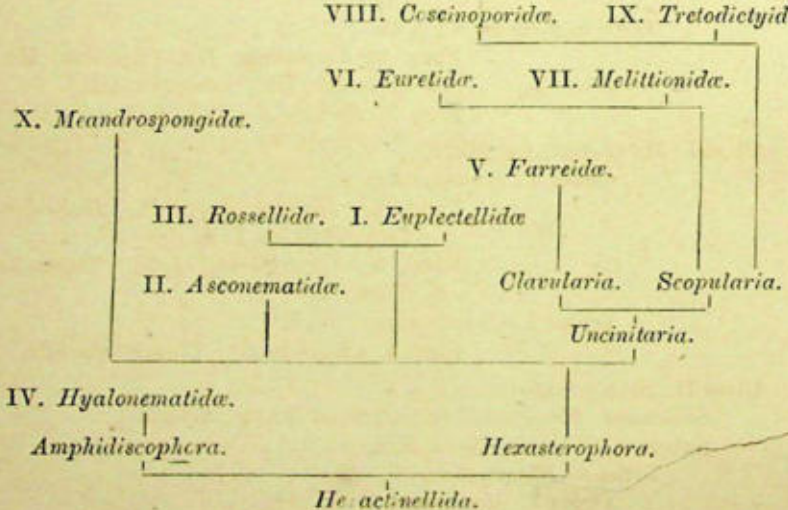
SCHULZE (40) adopts the following phylogeny :—



LENDENFELD (23) suggests a somewhat different phylogeny :—



SCHULZE (40) gives a complete phylogeny of the *Hexactinellida* :—



Sollas (42) gives the following classification of the Sponges :—

Branch A. Megamastictora.
Class Calcarea, Grant.
Branch B. Micromastictora.
Class I. Myxospongiæ, Hk.
Class II. Silicispongia.
Subclass I. *Hexactinellida*, Sdt.
Subclass II. *Demospongia*, Soll.
Tribe *a. Monaxonida.*
Order 1. *Monaxona.*
Order 2. *Ceratosa*, Grant.
Tribe *b. Tetractinellida*, Marshl.
Order 1. *Choristida*, Soll.
Order 2. *Lithistida*, Sdt.

Class Calcarea, Grant.
Order 1. *Homocœla*, Pol.
Fam. 1. *Asconidæ*, Hk.
Fam. 2. *Homodermidæ*, Ldf.
Order 2. *Heterocœla*, Pol.
Tribe *a. Syconaria*, Soll.
Fam. 1. *Syconidæ*. Subfam. *a. Syconina* [genera : *Sycetta*, Hk., *Sycon*, Sdt.]. Subfam. *b. Uteina*, Ldf. [*Grantina*, Ldf., *Ute*, Sdt., *Sycortusa*, *Amphoriscus*, Pol., *Grantina*, Ldf., *Grantia*, Fl., *Heteropegma*, Pol., *Anamixilla*, Pol.].
Fam. 2. *Sycleibidæ*, Ldf. [*Polejna*, Ldf., *Vosmaeria*, Ldf.].
Fam. 3. *Teichonellidæ*, Ctr. [*Teichonella*, Ctr.].
Tribe *b. Leuconaria*, Soll.
Fam. 1. *Leuconidæ*, Hk. [*Leucetta*, Hk, *Leucaltis*, Hk., *Leucortis*, Hk.].
Fam. 2. *Eilhardidæ*, Pol. [*Eilhardia*, Pol.].

Class I. Myxospongiæ, Hk.
Order 1. *Halisarcina.*
Fam. 1. *Halisarcidæ*, Sdt., *Halisarca*, Duj., *Bajalus*, Ldf.
Fam. 2. *Oscarellidæ*, Ldf., *Oscarella*, Vosm.
Order 2. *Chondrosina.*
Fam. 1. *Chondrosidæ* : *Chondrosia*, Sdt.

Class II. Silicispongiæ.
Subclass I. *Hexactinellida* [subdivided after Schulze].
Subclass II. *Demospongia*, Soll.
Tribe *a. Monaxonida.*
Order 1. *Monaxona.*

Fam. 1. *Tethyidæ*: *Tethya*, Lmk., *Chondrilla*, Sdt.
Fam. 2. *Polymastidæ*: *Polymastia*, Bk., *Thecaphora*, Sdt., *Trichostemma*, Sars.
Fam. 3. *Suberitidæ*: *Suberites*, Nardo, *Cliona*, Grant, *Poterion*, Sch.
Fam. 4. *Desmacidonidæ*: *Esperilla*, Vosm. *Desmacidon*, Bk., *Cladorhiza*.
Fam. 5. *Halichondridæ*: *Halichondria*, Fl., *Reniera*, Sdt., *Chalina*, Bk, *Pharetrospongia*, Soll.
Fam. 6. *Ectyonidæ*: *Plocamia*, Sdt., *Ectyon*, Gray, *Clathria*, Sdt.
Fam. 7. *Spongillidæ*: *Spongilla*, Lmk., *Ephydatia*, Lmk., *Parmula*, Ctr., *Potamolepis*, Marshall.

Order 2. *Ceratosa* [subdivisions after Polejaeff].

Tribe *b*. *Tetractinellida*, Marshl.

Order 1. *Choristida*, Soll.

Suborder 1. *Sigmatophora*, Soll.

Fam. 1. *Tetillidæ*: *Tetilla*, Sdt., *Craniella*, Sdt.
Fam. 2. *Samidæ*, Soll.: *Samus*, Gray.

Suborder 2. *Asterophora*, Soll.

Group 1. *Spirastrosa*, Soll.

Fam. 1. *Theneidæ*: *Thenea*, Gray, *Poecillastra*, *Normania*, Bk.
Fam. 2. *Pachastrellidæ*: *Plakortis*, F. E. S., *Dercitus*, Gray.

Group 2. *Euastrosa*, Soll.

Fam. 1. *Stellettidæ*: *Stelletta*, Sdt., *Ancorina*, Sdt., *Myriastra*, Soll.
Fam. 2. *Tethyidæ* (?).

Group 3. *Sterrastrosa*, Soll.

Fam. 1. *Geodinidæ*: *Geodia*, Lmk., *Pachymatisma*, Bk., *Erylus*, Gray, *Cydonium*, Müller.
Fam. 2. *Placospongidæ*, Gray: *Placospongia*, Gray.

Suborder 3. *Microsclerophora*, Soll.

Fam. 1. *Plakinidæ*, F. E. S.: *Plakina*, F. E. S.
Fam. 2. *Corticidæ*, Vosm.: *Corticium*, Sdt.
Fam. 3. *Thrombidæ*, Soll.: *Thrombus*, Soll.

Order 2. *Lithistida*, Sdt.

Suborder 1. *Tetracladina*.

Fam. 1. *Tetracladidæ*, Zit.: *Theonella*, Gray, *Discodermia*, Bocage, *Siphonia*, Lmk.

Suborder 2. *Rhabdocrepida*, Soll.
Fam. 1. *Megamorinidæ*, Zit., emend Soll.: *Corallistes*, Sdt., *Hyalotragus*, Zit., *Lyidium*, Sdt., *Doryderma*, Zit.
Fam. 2. *Micromorinidæ*, Soll.: *Azorica*, Ctr., *Verruclina*, Zit.
Suborder 3. *Anomocladina*, Zit., *Vetulina*, Sdt, *Astylospongia*, Roemer.

LENDENFELD (22) proposes the following classification :—

Class. I. SPONGIÆ, auct.

I. Subclass. *Calcarea*, Grant.
1. Order. *Calcispongiæ*, Blainville (the only order).
1. Suborder. *Homocœla*, Pol., emend.
1. Fam. *Asconidæ*, Hk. Genera :— *Leucosolenia*, Pol., *Ascetta*, *Ascissa*, *Ascilla*, *Ascaltis*, *Ascortis*, *Asculmis*, *Ascandra*, Hk.
2. Fam. *Homodermidæ*, Lendenfeld : *Ascaltis canariensis*, Hk., *Ascaltis lamarckii*, Hk., *Homoderma sycandra*, Ldf.
3. Fam. *Leucopsidæ*, Ldf. : *Leucopsis*, Ldf., and some species of *Pseudonardorus* forms.
2. Subord. *Heterocœla*, Pol., emend.
4. Fam. *Syconidæ*, Hk.
1. Subfam. *Syconinæ*, Ldf. : *Sycon*, Pol. Hæckel's subgenera of *Syconidæ* terminating in "aga," *Sycetta*, *Sycissa*, *Sycaltis*, *Sycortis*, *Syculmis*, *Sycandra*.
2. Subfam. *Uteinæ*, Ldf. : *Grantessa*, Ldf., *Ute*, Pol., *Amphoriscus*, Pol., and subgenera of Hæckel's *Syconidæ* terminating in "usa."
3. Subfam. *Grantinæ*, Ldf. : *Grantia*, *Heteropegma*, *Anaxmixilla*, Pol.
5. Fam. *Sylleibidæ*, Ldf.
1. Subfam. *Vosmaerinæ*, Ldf. : *Vosmaeria*, Ldf., *Leucetta*, Pol.
2. Subfam. *Polejnæ*, Ldf.: *Polejna*, Ldf., *Leucilla*, Pol.
6. Fam. *Leuconidæ*, Hk. : *Leucetta*, *Leucissa*, *Leucaltis*, *Leucortis*, *Leuculmis*, *Leucandra*, Hk., *Leuconia*, auct., *Leuconia* and *Pericharax*, Pol.
7. Fam. *Teichonidæ*, Ctr. : *Teichonella*, Ctr., *Eilhardtia*, Pol.

II. Subclass. *Silicea*, nov., = Non-*calcarea* of other authors.
1. Order. *Hexactinellida*, O. Sdt. [The classification of this order is taken from Schulze.]
2. Order. *Chondrospongiæ*, nov., = *Spiculispongiæ*, Vosmaer, with addition of the genus *Halisarca*.
1. Subord. *Tetraxonia*, Vosm. i. Group : *Lithistida*, Zittel [in the classification of this group the author follows Zittel]. ii. Group : *Choristida*, Soll.

1. Tribe. *Tetradina*, Soll.
   1. Subtribe. *Microcameræ*, nov.
      4. Fam. *Corticidæ*, Vosm.: *Corticium*, Sdt., *Thrombus*, Soll.
      5. Fam. *Pachastrellidæ*, Soll.: *Pachastrella*, Sdt., *Battersbya*, Bwk., *Dercitus*, Gray.
   11. Subtribe. *Macrocameræ*, nov.
      6. Fam. *Plakinidæ*, F. E. S.: *Plakina*, *Plakinastrella*, F. E. S., *Plakortis*, F. E. S., *Eupalax*, Soll. [? *Epallax*, Soll.—Rec.]
      7. Fam. *Oscarellidæ*, Ldf.: *Oscarella*, Vosm.
11. Tribe. *Trianina*, Soll.
   8. Fam. *Geodidæ*, Soll.: *Erylus*, Gray, *Caminus*, Sdt., *Cydonium*, Müll., *Synops*, Vosm., *Isops*, Soll., *Geodia*, Lmk., *Geodissa*, Ldf.
   9. Fam. *Stellettidæ*, Soll., with subfamilies after Sollas.
   10. Fam. *Thenceidæ*, Soll.
   11. Fam. *Tetillidæ*, Soll.: *Spiretta*, Ldf., *Tetilla*, Sdt., *Craniella*, Sdt., *Chrotella*, Soll., *Papirula*, Sdt., *Thalassomora*, Ldf.
   12. Fam. *Tethyopsillidæ*, nov.: *Tethyopsilla*, Ldf., *Protoleia*, R. & D.

3. Subord. *Monaxonida*. iii. Group: *Clavulina*, Vosm., emend.
   1. Fam. *Tethyidæ*, Vosm.
      1. Subfam. *Tethynæ*, nov.: *Tethya*, Lmk., *Tuberella*, Keller (*Tethiophæna*, Sdt.), *Tethyiosphæra*, Ldf., *Mastigophora*, Ldf., *Thalassodactylus*, Ldf.
      2. Subfam. *Tethiopsamminæ*, nov.: *Tethiopsamma*, Ldf. MS.
      3. Subfam. *Tethyoraphinæ*, nov.: *Tethyoraphis*, Ldf.
      4. Subfam. *Tethyamatinæ*, nov.: *Tethyamata*, Ldf.
   2. Fam. *Sollasellidæ*, Ldf.: *Sollasella*, Ldf.
   3. Fam. *Spirastrellidæ*, R. & D.: *Spirastrella*, Rid., *Raphyrus*, Bwk., *Papillina*, Sdt., *Cheirella*, Ldf., *Axos*, Gray, *Suberocona*, Ldf. (= fam. *Cheirellidæ*, Ldf.).
   4. Fam. *Suberamatidæ*, nov.: *Suberamata*, Ldf.
   5. Fam. *Suberitidæ*, Vosm., emend.: *Suberitella*, Ldf., *Suberites*, Nardo, *Suberopetros*, Ldf., *Plectodendron*, Ldf., *Polymastia*, Bwk., *Trichostemma*, Sars, *Tentorium*, Vosm. (*Thecaphora*, Sdt.), *Stylocordyle*, Wyv. T., *Quasillina*, Norman, *Cliona*, Grant, *Poterion*, Schlegel.

4. Subord. *Oligosilicina*, Ldf.
   1. Fam. *Chondrillidæ*, Ldf.: *Chondrilla*, Sdt.
   2. Fam. *Chondrosida*, Ldf.: *Chondrosia*, Nardo.

3. Order. *Cornacuspongiæ*, Vosm., emend.
   1. Subord. *Halichondrina*, Vosm.
      1. Fam. *Spongillidæ*, Ctr.: *Spongilla*, Lmk., *Ephydatia*, Lmk., *Tubella*, Ctr., *Uruguaya*, Ctr., *Parmula*,

Ctr., *Meyenia*, Bwk., *Heteromeyenia*, Potts: *Lubomirskya*, Dyb., *Lessepsia*, Keller, *Potamolepis*, Marshl.

2. Fam. *Homoraphidæ*, R. & D.
   1. Subfam. *Renierinæ*, auct.: *Halichondria*, Fl., *Petrosia*, Vosm., *Schmidtia*, Bals.-Crivelli, *Reniera*, Nar.
   2. Subfam. *Chalininæ*, R. & D.: i. Group. *Chalinoraphinæ*, Ldf.: *Chalinoraphis*, Ldf. ii. Group. *Hoplochalininæ*, Ldf.: *Hoplochalina*. iii. Group. *Cacochalininæ*, Ldf.: *Cacochalina*, Sdt., *Cladochalina*, Ldf., *Chalinopora*, Ldf., *Chalinella*, Ldf.. *Chalinopsis*, Sdt. iv. Group. *Pachychalininæ*, Ldf. *Chalinissa*, Ldf., *Pachychalina*, Sdt., *Ceraochalina*, Ldf. v. Group. *Plakochalina*, Ldf.: *Placochalina*, *Euplakella*, and *Antherochalina*, Ldf., *Cribrochalina*, Sdt., *Tragosia*, Gray, *Platychalina*, Ehlers. vi. Group. *Siphonochalininæ*, Ldf., *Spinosella*, Vosm., *Siphonochalina*, Sdt., *Tuba*, Duch. & Mich., *Sclerochalina*, Rid., *Toxochalina*, Rid., *Phylosiphonia*, Ldf., *Tubulodigitus*, Ctr., *Patuloscula*, Ctr., *Siphonella*, Ldf. vii. Group. *Arenochalininæ*, Ldf.: *Arenochalina*, Ldf. viii. Group. *Euchalininæ*, *Chalina*, auct., and *Dactylochalina*, *Euchalina*, *Euchalinopsis*, and *Chalinodrendron*, Ldf.

3. Fam. *Heteroraphidæ*, R. & D.
   1. Subfam. *Phlæodictyinæ*, Ctr.: *Rhizochalina*, Sdt., *Oceanapia*, Norman.
   2. Subfam. *Gelliinæ*, R. & D.: *Gellius*, Gray, *Gelliodes*, R. & D.
   3. Subfam. *Tedaniinæ*, R. & D.: *Tedania*, Gray, *Trachytedania*, Rid.
   4. Subfam. *Desmacellinæ*, R. & D., *Desmacella*, Sdt.
   5. Subfam. *Hamacanthinæ*, R. & D.: *Hamacantha*, Gray, *Vomerula*, Sdt.

4. Fam. *Desmacidonidæ*, auct.
   1. Subfam. *Esperellinæ*, R. & D.: *Esperia*, Nardo, *Esperella*, Vosm., *Esperiopsis*, Ctr., *Cladorhiza*, Sars, *Axoniderma*, R. & D., *Chondrocladia*, Wyv. T., *Desmacidon*, Bwk., *Homœodictya*, *Artemisina*, Vosm., *Phelloderma*, R. & D., *Sideroderma*, R. & D., *Iophon*, Gray, *Amphilectus*, Vosm., *Melonanchora*, Ctr., *Guitarra*, Ctr.
   2. Subfam. *Estyoninæ*, R. & D.: *Myxilla*, Sdt., *Clathria*, Sdt., *Rhaphidophus*, Ehlers, *Plumohalichondria*, Ctr., *Acarnus*, Gray, *Echinoclathria*, Ctr., *Clathrissa*, Ldf., *Thalassodendron*, Ldf., *Ceraospina*, Ldf.

5. Fam. *Axinellidæ*, auct. : *Dendropsis*, R. & D., *Thrinacophora*, R., *Hymeniacidon*, Bwk., *Phakellia*, Bwk., *Ciocalypta*, Bwk., *Acanthella*, Sdt., *Raspalia*, Nardo, *Spirophora*, Ldf.

2. Subord. *Keratosa*, Bwk., emend.

I. Tribe *Microcameræ*, Ldf.

1. Fam. *Spongidæ*, F. E. S.

1. Subfam. *Aulen· næ*, Ldf. : *Halme*, *Aphroditella*, *Halmopsis*, and *Aulena*, Ldf., *Psammaclema*, Marshl.

2. Subfam. *Chalinopsillinæ*, Ldf. : *Chalinopsilla* and *Antheroplax*, Ldf., *Dactylia*, Ctr.

3. Subfam. *Spongin · æ*, Ldf. : *Euspongia*, Bronn., *Cacospongia*, Sdt., *Hippospongia*, F. E. S., *Coscinoderma*, Ctr., *Spongodendron*, Ldf., and many of the species of *Spongia*, auct.

4. Subfam. *Spongissinæ*, Ldf. : *Spongissa*, Ldf.

2. Fam. *Aplysinidæ*, Ldf.

1. Subfam. *Aplysininæ* : *Luffaria*, D. & M., *Aplysina*, Nardo, *Luffarella*, Ldf. (MS.), *Dendrospongia*, Hyatt.

2. Subfam. *Aplysissinæ*, Ldf. : *Aplysissa*, Ldf.

3. Fam. *Hircinidæ*, Ldf.

1. Subfam. *Hircininæ*, Ldf. : *Hircinia*, Nardo, *Hircinopsis*, *Nodosina*, *Aphrotriche*, and *Stylolophus*, Ldf. (MS.), *Stematonemia*, Bwk., *Filifera*, Lbkn., *Sarcatragus*, Sdt., *Polytherses*, D. & M.

2. Subfam. *Hircinissinæ*, Ldf. i. Group. *Chalinocinieæ*, nov. : *Chalinocinia*, Ldf. ii. Group. *Hircinissæ*, nov. : *Hircinissa*, Ldf. (MS.).

II. Tribe *Macrocameræ*, Ldf.

4. Fam. *Spongelidæ*, Ldf.

1. Subfam. *Spongelinæ*, Ldf. : *Spongelia*, Nardo, *Dysidea*, Johnston, *Reteplax*, Ldf.

2. Subfam. *Psammin · æ*, nov. : *Psammapemma*, Marshall, *Psammella*, Ldf. (MS.), *Holopsamma*, Ctr.

3. Subfam. *Spongelissinæ*, Ldf. : *Dysideissa*, Ldf. (MS.).

4. Subfam. *Psammopessinæ*, nov. : *Psammopessa*, Ldf. (MS.), *Phorispongia*, Marshl., *Haastia*, Ldf. (MS.).

5. Fam. *Aplysillidæ*, Ldf.

1. Subfam. *Aplysillinæ*, Ldf. : *Darwinella*, F. Müller, *Aplysilla*, F. E. S., *Verongia*, Bwk., *Dendrilla*, Ldf.

2. Subfam. *Ianthellinæ*, nov., *Ianthella*, Gray.

6. Fam. *Halisarcidæ*, Vosm. : *Halisarca*, Sdt., *Bajalus*, Ldf.

LENDENFELD (28) proposes the following classification of the subfamily *Chalininæ* :—

Tribe 1. *Chalininæ reticulatæ*. *Chalininæ* with a reticulate supporting skeleton, and usually with a fine dermal skeleton.

Group 1. *Cacochalininæ*, form irregular or flap-like, fibres fine, spicules slender: *Cacochalina*, Sdt., *Chalinopora*, n. g., *Cladochalina*, Sdt., emend., *Chalinella*, n. g.

Group 2. *Pachychalininæ*, form lobate, digitate; spicules stout, fibres very thick, consistence hard: *Chalinissa*, n. g., *Pachychalina*, Sdt., emend., *Ceraochalina*, n. g., *Chalinopsis*, Sdt.

Group 3. *Placochalininæ*; thin, lamellar forms; rete narrow-meshed, consistence very hard. Genera: *Antherochalina*, n. g., *Euplacella*, n. g., *Placochalina*, n. g., *Platychalina*, Ehlers.

Group 4. *Gelliodinæ*, possessing microscleres, which have the form of hooks, double hooks, and spirals, with large subdermal chambers: *Gelliodes*, Rid., *Spirophora*, n. g.

Group 5. *Siphoninæ*, form more or less tubular, with a pseudogaster, microscleres when present, simple toxea: *Sclerochalina*, Sdt., *Phylosiphonia*, n. g., subg. *Toxochalina*, Rid., emend., and *Anatoxius*, Ldf., *Siphonochalina*, Sdt., emend., *Dasychalina*, R. & D., *Siphonella*, n. g.

Group 6. *Euchalininæ*, form digitate, spicules uniformly large, fairly numerous: *Dactylochalina*, Ldf., *Euchalinopsis*, n. g., *Euchalina*, n. g., *Chalinodendron*, n. g.

Group 7. *Arenochalininæ*, the chief skeletal fibres containing sand, the uniting fibres spicules: *Arenochalina*, n. g.

Group 8. *Chalinorhaphinæ*, form digitate, spicules very large and irregularly distributed: *Chalinorhaphis*, n. g.

Tribe 2. *Chalininæ dendroidæ*, with tree-like branched fibrous-reticulate skeleton and high conules.

Group 9. *Hoplochalininæ*, spicules numerous, obliquely-layered, projecting from the surface of the fibres, but completely covered by spongin: *Hoplochalina*, n. g.

DISTRIBUTION.

NORTH AMERICA.

POTTS (35). *Spongillidæ*: *Spongilla igloviformis*, n. sp., p. 202, Cedar Swamps, New Jersey.

SOUTH AMERICA.

POTTS (35). *Spongillidæ*: *Meyenia minuta*, n. sp., p. 218, River Beni, E. Bolivia, S. Am.; *Heteromeyenia ryderi*, var. *walshii*, n. var., p. 246,

Mass., U.S.A., and var. *baleni*, n., p. 247, New Jersey, Florida ; *Parmula brownii*, var. *tuberculata*, n. var., p. 258, Bend River, E. Bolivia, *P. rushyi*, n. sp., p. 259, Bend River, E. Bolivia.

NORTH ATLANTIC OCEAN.

F. E. SCHULZE (40). *Hexactinellida* : *Euplectella suberea*, Wyv. T., Stns. 4, 5, 600 & 1090 fath. ; *E. nodosa*, n. sp., Stn. 56, off Bermudas ; *Malacosaccus unguiculatus*, n. g., Stn. 348, 2450 fath. ; *Rhabdodictyum delicatum*, Sdt., Stn. 56, *Sympagella nux*, Sdt., Stn. 94, 100–128 fath. ; *Aulocalyx irregularis*, n. sp., Stn. 56, 1075 fath. ; *Hyalonema toxeres*, Wyv. T., Stn. 24, 390 fath. ; *Stylocalyx thomsoni*, Marshl., Stn. 73, 1000 fath. ; *Hyalonema lusitanicum*, B. de B., Stn. 4, 600 fath. ; *Poliopogon amadou*, Wyv. T., Stn. 3, 1525 fath. ; *Farrea occa*, Ctr., Stn. 24, 390 fath. ; *Farrea* sp., Stns. 23, 56, 450, 1075 fath. ; *Lefroyella decora*, Wyv. T., Stn. 33, 435 fath. ; *Aphrocallistes bocagei*, P. Wright, Stns. 23, 24, 56 450, 390, 1075 fath. ; *Chonelasma*, n. g. & sp., Stns. 23, 56, 450, 1075 fath. ; *Dactylocalyx patella*, n. sp., Stn., 56, 1075 fath. ; *Myliusia callocyathus*, Gray, Stn. 24, 390 fath.

RIDLEY & DENDY (37). *Monaxonida* : *Reniera implexa*, Sdt., var., Stn. 75, 450 fath. ; *Rhizochalina fistulosa*, Bk., Stn. 73, 1000 fath. ; *Gellius angulatus*, Bk., Stn. 75, 450 fath. ; *Talania digitata*, n. var. *bermudiensis*, Bermuda, W. Indies, *Desmacella annexa*, Sdt., Stn. 24, 390 fath. ; *Artemisina suberitoides*, Vosm., Stn. 49, 85 fath. ; *Suberites carnosus*, Johnst., Stn. 75, 450 fath. ; *Polymastia robusta*, Bk., Stn. 49, 83 fath. ; *Hymeniacidon caruncula*, Bk., Cape Verde Is., shallow water, *Tentorium semi-suberites*, Sdt., Stn. 49, 85 fath., Stn. 50, 1250 fath., Inaccessible Is., 60–70 fath. ; *Suberites stipitata*, Ctr., Stn. 49, 85 fath., Stn. 147, 1600 fath., Bahia, 7–20 fath. ; *Quasillina brevis*, Bk., Stn. 49, 85 fath.

DENDY (7) describes from the West Indies the following :—*Monaxonida* : *Pachychalina variabilis*, n. sp., *Siphonochalina spiculosa*, n. sp., *S. procumbens*, Carter, = *Patuloscula procumbens*, Carter ; *S. ceratosa*, n. sp., *Spinosella sororia* = *Tuba sororia* and *Siphonochalina papyracea*, Sdt., *Spinosella sororia*, var. *dilatata*, n. var. *fruticosa*, n. var. *elongata*, n. var. *Spinosella plicifera* = ? *Spongia plicifera*, Lamarck, and *Tuba plicifera*, D. & M., *Spinosella maxima*, n. sp., *Spinosella velata*, n. sp.

LEVINSEN (30) describes from the Kara Sea the following :—*Calcarea* : *Leucosolenia fabricii*, Sdt., n. var., A. & R., 40–82 fath. ; *L. blanca*?, Mikl., 80 fath. ; *Sycon arcticum* (H.), 70 fath. *Tetractinellida* : *Thenea muricata*, Bwk., 44–56 fath. ; *Tetilla polyura*, Sdt., 49–81 fath. *Monaxonida* : *Polymastia penicillus*, Mont., 53–91½ fath. ; *Stylocordyla borealis*, Loven, 44–75 fath. ; *Pachychalina caulifera*, Vosm., 6 fath. ; *P.? compressa*, Sdt., *Reniera clavata*, n. sp., 74 fath. ; *Halichondria bibula*, Sdt., 7–10 fath. ; *H. assimilis*, n. sp., 7–68 fath. ; *Cribrochalina sluiteri*, Vosm., 10–80 fath. ; *Gellius capilliferus*, n. sp., 78 fath. ; *Esperella vosmaeri*, n. sp., 65 fath. ; *E. picea*, Vosm., 73 fath. ; *E. clavigera*, n. sp., 80 fath. ; *E. cupressiformis*, Ctr., var. *robusta*, var. *lycopodium*, n. vars., 51–81 fath. ; *E. infundibulum*, n. sp., 50–70 fath.

South Atlantic Ocean.

F. E. Schulze (40). *Hexactinellida* : *Euplectella suberea*, Wyv. T., Stn. 124, 1600 fath. ; *Holascus stellatus*, n. g. & sp., Stn. 325, 2650 fath. ; *Rossella antarctica*, Ctr., Stn. 320, 206–300 fath. ; *Caulocalyx tener*, n. g. & sp., Stn. 333, 2025 fath., *Hyalonema tenue*, n. sp., Stn. 323, 1900 fath. ; *Hyalonema*, sp., Stn. 333, 2025 fath. ; *Pheronema carpenteri*, Wyv. T., Stn. 124, 1600 fath. ; *Farrea*, sp., Stn. 135 E., 1000 fath ; *Aphrocallistes bocagei*, P. Wright, Stn. 343, 425 fath.

Ridley & Dendy (37). *Monaxonida* : *Halichondria caduca*, Bk., S.W. Patagonia, *Halichondria*, sp., Stn. 320, 600 fath. ; *Reniera aquaeductus*, var. *infundibuliformis*, n. var., Stn. 307, 140 fath. ; *Rhizochalina* (?) *singaporensis*, Ctr., Stn. 135 (?), 360 fath. ; *Oceanapia robusta*, Bk., Bahia, shallow water, *Gellius carduus*, var. *magellanica*, n. var., Stn. 311, 245 fath. ; *Gellius*, sp., Stn. 320, 600 fath. ; *Gelliodes licheniformis*, Lmk., Stn. (?) 135, 60 fath. ; *Toxochalina robusta*, Rid., Bahia, 7–20 fath. ; *Tedania tenuicapitata*, Rid., Stn. 308, 175 fath., Stn. 311, 245 fath., Stn. 314, 70 fath. ; *Esperella magellanica*, Rid., Stn. 313, 55 fath. ; *Esperiopsis edwardii*, Bk., n. var. *americana*, Stn. 313, 55 fath., *Iophon pattersoni*, Bk., Stn. 308, 175 fath., Stn. 311, 245 fath., and Tristan da Cuhna ; *Myxilla plumosa*, Montagu, var. *fusifera*, n. var., Bahia, shallow water ; *Rhaphidophlus gracilis*, Rid., Bahia, 7–20 fath. ; *R. lobatus*, Vosm., var. *horrida*, n. var., C. Good Hope, 10–20 fath. ; *Hymeniacidon*, sp., Stn. 313, 55 fath. ; *H.* (?) *hyalina*, n. sp., S.W. Patagonia, *Phakellia ventilabrum*, Bk., var. *connexiva*, n. var., Stn. 122c, 400 fath. ; *Axinella erecta*, Ctr., Inaccessible Is., 90 fath., *A. echidnea*, n. var., Rid., Bahia, shallow water, *Suberites carnosus*, *Petrosia similis*, var. *massa*, n. var., Stn. 314, 70 fath.

Indian Ocean.

Carter (6). *Ceratosa* : *Spongia officinalis*, auct. *Hircinia* (*Polytherses*), sp., *Cacospongia*, sp., *Dysidea ramoglomerata*, n. sp., and n. vars. *ramotubulata* and *granulata*. *Monaxona* : *Chalina oculata*, var. *fibrosa*, n. var., *C. spinifera*, n. sp., *Dictyocylindrus hispidus*, Bk., *D. aceratus*, n. sp., *Microciona acerato-obtusa*, n. sp., *Axinella virgultosa*, n. sp., and var. *massa*, n. var., *Halichondria panicea*, Johnst., *Phleodictyon isodictyiforme*, Ctr., *Isodictya simulans*, var. *cancellata*, n. var., with subvars. *fusca* and *albida*, *I. densa*, Bk., with vars. *incrustans* and *tubuloramosa*, n. vars., *Thalysias tener*, Ctr., *Reniera crateriformis*, Ctr., *Fibularia ramosa*, Ctr., *Halichondria birotula*, Higgin, *Esperia plumosa*, Ctr., *E. indica*, n. sp., *Suberites carnosa*, Jhstn., *S. coronarius*, Ctr., *S. trincomaliensis*, n. sp., *Spirastrella cunctatrix*, Sdt., *Cliona ensifera*, Soll., *C. stellifera*, ? n. sp., *C. sceptrellifera*, n. sp., *C. bacillifera*, n. sp., *Reniera digitata*, Sdt., *Halichondria incrustans*, var., *Amorphinopsis excavans*, n. g. & sp., *Donatia lyncurium*, auct. *Tetractinellida* : *Samus anonyma*, Gray, *S. simplex*, Ctr., *Stelletta bacillifera*, n. sp., *Tethya cranium*, var. *robustum*, n. var. *T. dactyloidea*, Ctr., *T. merguiensis*, n. sp.

Dendy (8). *Pachychalina spinosissima*, n. sp., Christmas I.

Dendy (9), from Madras, shallow water : — *Monaxonida* : *Suberites*

inconstans, n. sp., *S. inconstans*, n. var. *globosa*, n. var. *mæandrina*, and n. var. *digitata*, *Halichondria panicea*, Johnst., var., *Tedania digitata*, Sdt., *Iotrochota baculifera*, Rid., var. *flabellata*, n. var., *Axinella donnani*, Bk., *Phakellia ridleyi*, n. sp., *Raspalia fruticosa*, n. sp., *R. thurstoni*, n. sp. *Ceratosa* : *Hircina clathrata*, Ctr., *H. vallata*, n. sp., *Hippospongia*, sp.

SOUTH INDIAN OCEAN.

F. E. SCHULZE (40). *Hexactinellida* : *Holascus fibulatus*, n. sp., Stns. 146, 147, 160, 1375, 1600, & 2600 fath. ; *Holascus polejaevii*, n. sp., Stn. 157, 1950 fath. ; *Malacosaccus rastus*, n. sp., Stn. 146, 1375 fath. ; *Aulascus johnstoni*, n. g. & sp., Stn. 145A, 310 fath. ; *Polyrhabdus oviformis*, n. g. & sp., Stn. 156, 1975 fath. ; *Balanites pipetta*, n. g. & sp., Stn. 157, 1950 fath. ; *Caulophacus latus*, n. g. & sp., Stn. 147, 1600 fath. ; *Rossella antarctica*, Ctr., Stns. 145, 149H, 150, 310, 120, 150 fath. ; *Acanthascus grossularia*, n. g. & sp., Stn. 148, 210 fath. ; *Bathydorus spinosus*, n. g. & sp., Stn. 147, 1600 fath., *Aulocalyx irregularis*, n. g. & sp., Stn. 145A, 310 fath. ; *Hyalonema conus*, n. sp., Stn. 158, 1800 fath. ; *Stylocalyx claviger*, n. subg. & sp., Stn. 147, 1600 fath ; *Farrea* sp., Stn. 147, 1600 fath. ; *Chonelasma lamella*, n. sp., Stn. 148A, 550 fath. ; *Hexactinella* sp., Stn. 148A, 550 fath.

RIDLEY & DENDY (37). *Monaxonida* : *Halichondria panicea*, Johnst., Kerguelen, 10–100 fath. ; *Halichondria* sp., Marion Is., 50–75 fath. ; *Axinella erecta*, Stn. 145A, 310 fath., Stn. 147, 1600 fath., & Stn. 148A, 550 fath. ; *Suberites microstomus*, n. sp., Stn. 150, 150 fath. ; *S. antarcticus*, Ctr., Kerguelen, 75 fath.

NORTH PACIFIC OCEAN.

F. E. SCHULZE (40). *Hexactinellida* : *Euplectella aspergillum*, Owen, Stn. 209, 95–100 fath. ; *Holascus ridleyi*, n. sp., Stn. 211, 2225 fath. ; *Caulophacus elegans*, n. sp., Stn. 241, 2300 fath., *Caulophacus* sp., Stn. 246, 2050 fath. ; *Polyophus philippinensis*, Gray, Stn. 209, 95–100 fath. ; *Bathydorus fimbriatus*, n. sp., Stns. 241, 248, 2300, 2900 fath. ; *Crateromorpha meyeri*, Gray, Stn. 209, 95–100 fath. ; *Aulochone lillium*, n. sp., Stn. 214, 500 fath. ; *Hyalonema gracile*, n. sp., Stn. 211, 2225 fath. ; *Stylocalyx apertus*, n. sp., Stn. 232, 345 fath. ; *S. depressus*, n. sp., Stn. 246, 2050 fath. ; *Hyalonema robustum*, n. sp., Stn. 241, 2300 fath. ; *Hyalonema* sp., Stns. 205, 241 ; *Semperella schulzii*, Semper, Stn. 209, 95–100 fath. ; *Farrea occa*, Ctr., Stn. 207, 700 fath. ; *Eurete schmidtii*, n. sp., Stn. 201, 102 fath. ; *Aphrocallistes ramosus*, Stn. 210, 375 fath.

RIDLEY & DENDY (37). *Monaxonida* : *Halichondria panicea*, Johnst., Japan, *Chondrocladia concrescens* (?), Sdt., Stn. 248, 2900 fath. ; *Myxilla rosacea*, Lbkn., var. *japonica*, Stn., Japan, 8–50 fath. ; *Acarnus ternatus*, Rid., Tahiti, 20 fath.

SOUTH PACIFIC OCEAN.

F. E. SCHULZE (40). *Hexactinellida* : *Euplectella crassistellata*, n. sp., Stn. 274, 2750 fath. ; *Taegeria pulchra*, n. g. & sp., Stn. 174C, 61 fath. ;

Walteria flemingii, n. g. & sp., Stn. 170A, 630 fath.; *Dictyocalyx gracilis*, n. g. & sp., Stn. 281, 2385 fath.; *Hyalostylus dives*, n. g. & sp., Stn. 289, 2550 fath.; *Trachycaulus gurlitti*, n. g. & sp., Stn. 289, 2550 fath.; *Lanuginella pupa*, Sdt., Stn. 192, 129–140 fath.; *Polylophus philippensis*, Gray, Stns. 192, 209, 95–100 fath.; *Acanthascus dubius*, n. sp., Stn. 310, 400 fath.; *Bathydorus stellatus*, n. sp., Stn. 307, 140 fath.; *B. baculifer*, n. sp., Stn. 286, 2335 fath.; *Rhabdocalyptus roeperi*, n. g. & sp., Stn. 310, 400 fath.; *Crateromorpha thierfelderi*, n. g. & sp., Stn. 192, 129–140 fath.; *C. murrayi*, n. sp., Stn. 192, 129–140 fath.; *C. tumida*, n. sp., Stn. 194A, 300 fath.; *Aulochone cylindrica*, n. g. & sp., Stn. 171, 600 fath., *Euryplegma auriculare*, n. g. & sp., Stn. 170A, 630 fath.; *Hyalonema divergens*, n. sp., Stn. 271, 2425 fath.; *H. poculum*, n. sp., Stn. 300, 1375 fath.; *Stylocalyx depressus*, n. sp., Stn. 271, 2425 fath., Stn. 246, 2050 fath.; *S. globus*, n. sp., Stn. 194A, 360 fath.; *S. elegans*, n. sp., Stn. 271, 2425 fath.; *Hyalonema*, sp., Stns. 184, 271, 1400, 2425 fath.; *Pheronema globosum*, n. sp., Stn. 192, 129–140 fath.; *P. giganteum*, n. sp., Stn. 192, 129–140 fath.; *Poliopogon gigas*, n. sp., Stn. 170A, 630 fath.; *Semperella schulzii*, Semper, Stn. 325, 140 fath.; *Farrea occa*, Ctr., Stns. 293, 207, 700 fath.; *F. clavigera*, n. sp., Stn. 194A, 200–360 fath.; *Eurete semperi*, n. sp., Stn. 192, 129–140 fath.; *E. farreopsis*, Ctr., Stn. 192, 129–140 fath.; *E. carteri*, n. sp., Stn. 192, 129–140 fath.; *E. marshalli*, n. sp., Stn. 192, 129–140 fath.; *Chonelasma lamella*, n. sp., Stn. 170A, 630 fath.; *C. hastatum*, n. sp., Stn. 170A ?, 630 fath.; *Hexactinella lata*, n. sp., Stn. 192, 129–140 fath.; *Cyrtaulon solutus*, n. g. & sp., Stn. 192, 129–140 fath.; *Fieldingia lagettoides*, S. Kent, Stn. 192, 129–140 fath.; *Myliusia callocyathus*, Gray, Stn. 192, *Aulocystis zitteli*, Marshl., Stn. 192.

Ridley & Dendy (37). *Monaxonida*: *Halichondria solida*, R. & D., n. var. *rugosa*, Api, 60–70 fath.; *Halichondria* sp., Stn. 203, 12–20 fath.; *Petrosia variabilis*, Rid., var., Stn. 208, 18 fath; *Reniera cinerea*, Grant, Stn. 209, 95 fath.; *Chalina palmata*, Lmk., Stn. 186, 8 fath., and var. *pergamentacea*, Rid., Stn. 162; *Rhizochalina fistulosa*, Bk., Stn. 188, 28 fath.; *Gellius varius*, Bk., Stn. 208, 18 fath.; *Gelliodes fibulata*, Rid., Torres Straits, 3–11 fath.; *Tedania digitata*, Sdt., Port Jackson, 6–35 fath., and n. var. *fibrosa*, Port Jackson, 7 fath.; *Esperella parishii*, Bk., Stn. 208, 18 fath.; *E. gelatinosa*, Rid., Torres Straits, 3–11 fath.; *Cladorhiza abyssicola*, Sars, n. var. *rectangularis*, Stn. 274, 2750 fath., and n. var. *linearis*, Stn. 281, 2385 fath.; *Desmacidon fruticosus*, Montagu, Stn. 163A, 120 fath.; *Iophon omnicorus*, n. sp., Stn. 163A, 150 fath.; *Clathria aculeata*, Rid., Stn. 186, 8 fath.; *C. decumbens*, Rid., Torres Straits, 3–11 fath., Stn. 188, 28 fath.; *Plumohalichondria mamillata*, Ctr., Stn. 162, 38 fath.; *Echinoclathria favus*, Ctr., Stn. 162, 38 fath.; *Acanthella* (?) *stipitata*, Ctr., Stn. 186, 8 fath.; *Suberites carnosus*, off Port Jackson, 6–15 fath.; *Spirastrella decumbens*, Rid., Stn. 208, 18 fath.; *Petrosia similis*, R. & D., n. var. *compacta*, Stn. 208, 18 fath.

Carter (2). *Wilsonella echinonematissima*, n. sp., p. 210, Western Port, Australia.

Dendy (10). *Cladorhiza pentacrinus*, n. sp., p. 281, Stn. 169, N.E. from New Zealand, 700 fath.

AUSTRALIAN COAST.

LENDENFELD (28). *Chalininæ* : *Cacochalina rubra*, n. sp., *C. globosa*, n. sp., *C. velinæ*, n. sp., *C. pandæa*, n. sp., *C. macrorhaphis*, n. sp., *C. truncatella*, n. sp., n. vars. *laxa*, *molissima*, *C. typica*, n. sp., *Chalinopora claviformis*, Ldf., *C. laxa*, n. sp., *C. tenella*, n. sp., *C. conulata*, n. sp., *C. paucispina*, n. sp., *C. typica*, n. sp., n. vars. *tenuispina*, *megarhaphis*, *C. lutea*, n. sp., *C. raphidiophora*, n. sp., *C. lamella*, n. sp., *C. subarmigera*, Ldf., *C. siphonopsis*, n. sp., *C. retepora*, n. sp., *C. truncata*, n. sp.; *Cladochalina aurantiaca*, n. sp., *C. mollis*, n. sp., *C. euplax*, n. sp., *C. dendroides*, n. sp., *C. mammillata*, n. sp., *C. tenuirhaphis*, n. sp., *C. elegans*, n. sp. ; *Chalinella macropora*, n. sp., *C. tenella*, n. sp. ; *Chalinissa communis*, n. sp., n. vars. *flabellum* and *digitata*, *C. macropora*, n. sp., *C. tenuifibris*, n. sp., *C. serpens*, n. sp., *C. elegans*, n. sp., *C. rigida*, n. sp., *C. elongata*, n. sp., *C. ramosa*, n. sp., *C. megalorhaphis*, Ldf., *C. oblata*, Ldf., *C. macrodactyla*, Ldf. ; *Pachychalina elongata*, R. & D., *P. spinulosa*, n. sp., *P. punctata*, R. & D., *P. paucispina*, n. sp., *P. ramulosa*, n. sp., and n. vars. *lamella* and *digitata*, *P. manus*, n. sp., *P. macrospina*, n. sp., *P. elegans*, n. sp., *P. rigida*, n. sp., *P. oculata*, n. sp. ; *Ceraochalina papillata*, n. sp., vars. *pergamentacea*, *armigera*, *macropora*, *intermedia*, *micropora*, *C. finitima*, Ldf.; *C. nuda*, Ldf., vars. *oxeus*, *oxystrongylus*, *C. typica*, n. sp., *C. levis*, n. sp., *C. microrhaphis*, n. sp., *C. multiformis*, n. sp., n. vars. *meandra*, *lamella*, *elegans*, *digitata*, *mollis*, *dura*, *C. reteplax*, n. sp., *C. tenella*, n. sp., *C. euplax*, n. sp., *C. extrema*, n. sp. ; *Antherochalina crassa*, n. sp., *A. elegans*, n. sp., *A. frondosa*, n. sp., *A. renieroides*, n. sp., *A. dura*, n. sp., *A. concentrica*, n. sp., *A. perforata*, n. sp., *A. tenuispina*, n. sp.; *Euplacella australis*, n. sp., *E. frondosa*, n. sp., *E. mollissima*, n. sp. ; *Placochalina arenosa*, Ldf., *P. pedunculata*, n. sp., vars. *dura*, *poculum*, *mollis* ; *Gelliodes fibulata*, Rid., *G. tubulosa*, n. sp., *G. poculum*, R. & D. ; *Spirophora digitata*, n. sp., *S. bacterium*, n. sp. ; *Toxochalina foliodes*, Ldf. ; *Phylosiphonia robusta*, Ldf., *P. murata*, *P. superba*, n. sp., *P. annulata*, Ldf., *P. spiculifera*, n. sp., *P. stalagmitis*, n. sp., *P. pumila*, Ldf., *P. tenuispina*, n. sp., *P. intermedia*, Ldf., *P. rigida*, n. sp., *P. elegans*, n. sp. ; *Siphonochalina bullata*, Ldf., *S. laxa*, n. sp., *S. confœderata*, Ldf., *S. compressa*, n. sp., *S. tenella*, Ldf., *S. typica*, n. sp., *S. elastica*, n. sp., *S. paucispina*, n. sp., *S. axialis*, n. sp., *S. pumila*, n. sp., *S. extensa*, n. sp., n. vars. *dura*, *elegans*, *S. oculata*, n. sp., n. vars. *macropora*, *micropora*, *Siphonella truncata*, n. sp., *S. tuberculata*, n. sp., *S. micropora*, n. sp., *S. communis*, n. sp., *S. ramosa*, n. sp. ; *Dactylochalina arenosa*, Ldf., *D. conica*, n. sp., *D. villosa*, n. sp., *D. mollis*, n. sp., *D. cylindrica*, Ldf., *D. candelabrum*, n. sp., *D. conulata*, n. sp., *D. reticulata*, Ldf., *D. australis*, Ldf., *D. polychotoma*, Ldf., n. vars. *angulata*, *compressa*, *moniliformis*, *oculata*, *robusta*, *trichotoma*, *typica* ; *Euchalinopsis oculata*, Ldf., *E. reticulata*, n. sp., *E. dendroides*, n. sp., *E. minima*, n. sp. ; *Euchalina rigida*, n. sp., *E. reticulata*, n. sp., *E. cortica*, n. sp., *E. typica*, n. sp., *E. paucispina*, n. sp., *E. macropora*, n. sp., *E. exigua*, n. sp., n. vars. *simplex*, *arborea*, *E. phillipensis*, n. sp. ; *Chalinodendron exiguum*, n. sp., *C. elegans*, n. sp., *C. minimum*, n. sp., *C. dendrilla*, n. sp., *C. ramosum*, n. sp. ;

Arenochalina mirabilis, n. sp.; *Chalinorhaphis armata*, n. sp., *C. pauci-spicula*, n. sp., *C. densa*, n. sp., *C. digitata*, n. sp.; *Hoplochalina incrustans*, n. sp., *H. dendrilla*, n. sp., *H. tenella*, n. sp., *H. renieroides*, n. sp.

NEW SPECIES AND SYNONYMY.

Lendenfeld (28) gives a full account of the synonymy of the *Chalininæ*; it is too long to abstract, but indispensable to the proper understanding of his terminology. Dendy (11) protests against what he regards as Lendenfeld's system of assigning species to the wrong author; and Lendenfeld (29) defends himself. For new species in this subfamily, see under "Geographical Distribution."

Carter (3) identifies *Carterius stepanovii*, Petr., from Bohemia, with *Carterius tubisperma*, Mills (1881), = *Spongilla tentasperma*, Potts, and *Carterius tenuisperma*, Potts (1880), from the Niagara river.

Wierzejski (48) criticises observations of Vejdovsky and Noll on Fresh-water Sponges; agrees in considering *Spongilla glomerata*, Noll, as identical with *Spongilla fragilis*, Leidy, but maintains that *Meyenia mulleri* is distinct, and generically so, from *Spongilla fluviatilis*.

Carter (4) describes *Chondrosia spurca*, n. sp.; later (5) Carter identifies this with *Halichondria reticulata*, Ctr. (Ann. N. H. 1886, xviii, p. 274).

Dendy (10) describes *Cladorhiza pentacrinus*, n. sp.; it presents a curious resemblance to a Pentacrinoid larva.

Ebner (14) describes *Amphoriscus bucchichii*, n. sp.

For new species described by F. E. Schulze (40), Ridley & Dendy (37), Carter (6), Dendy (7, 8, 9), Lendenfeld (28), Levinsen (30), and Potts (35), see under the heading "Geographical Distribution."

Fossil Sponges.

Roemer (38) institutes a new genus, *Trochospongia*.

PROTOZOA.

BY

J. ARTHUR THOMSON, M.A., F.R.S.E.

I.—LIST OF PUBLICATIONS.

1. ANDRUSOV, V. J. Infusorii Kerchenskoi buxte. - Trudui St. Petersburg Nat. xvii, pp. 236–259, 2 pls. [Omitted from Zool. Rec. xxiii.]

Infusoria of the Bay of Kertch.

1A. BALBIANI, E. Observations relatives à une Note récente de M. Maupas, sur la multiplication de la *Leucophrys patula*. C.R. civ, pp. 80–83.

Historical criticism of Maupas' observations on *Leucophrys*. Notes on *Trichorhynchus tuamotuensis*, n. g., n. sp. (Bouchon-Brandely). Encystation, division into two or four, liberation, repetition of process. When nutrition fails, all encyst and remain so, either entire or divided into two or four.

2. ——. Évolution des Micro-organismes animaux et végétaux. Leçons faites au Collège de France. J. Microgr. xi, pp. 51–62, 134–142, 170–177, 196–205, 233–240, 365–373, 393–406, 434–446, 463–476, 499–511, & 534–544.

3. °BAUMGARTEN, P. Jahresbericht über die Fortschritte in der Lehre von den pathogenen Microorganismen umfassend Bakterien, Pilze und Protozoen. Braunschweig: 2 Jhrg., 8vo, viii and 458 pp., 11/ .

4. BERGH, R. S. Ueber den Theilungsvorgang bei den Dinoflagellaten. Zool. Jahrb. ii, 1, pp. 73–86, 1 pl.

5. BLANCHARD, R. Bibliographie des Hématozoaires. Bull. Soc. Z. Fr. xii, pp. 500–507.

6. BLOCHMANN, F. Zur Kenntnis der Fortpflanzung von *Euglypha alveolata*, Duj. Morph. JB. xiii, 1, pp. 173–183, 1 pl.

Bud-like reproduction. Failures in the process. Conjugation and subsequent encystation.

7. BOVIER-LAPIERRE, E. Observations sur les Noctiluques. C.R. Soc. Biol. iii, pp. 549–553.

8. Brady, H. B. A Synopsis of the British Recent *Foraminifera*. J. R. Micr. Soc. pt. 6, pp. 872–927.

Exclusion of interlopers, p. 873 ; generic changes, p. 874 ; bibliography, pp. 875 & 876 ; catalogue and localities, pp. 876–927.

9. Braun, M. Bericht über die wissenschaftlichen Leistungen in der Naturgeschichte der Protozoen in den Jahren 1882 und 1883. Bericht über die wissenschaftlichen Leistungen in der Naturgeschichte der niederen Thiere. Arch. Naturg. Neue Folge Bd. i. Berlin: 1887, pp. 45–116.

10. ——. Ueber eine neue Gattung parasitischer Infusorien. Centralbl. Bacteriol. i, pp. 204 & 205.

Aecobium, supposed new genus of parasitic Infusorians, in foul water, cæcal contents of pig, fæces of typhus patients, and even in urine; but probably only the separated capitulum of a known form of *Vorticellidæ*.

11. Bronn. [See Bütschli, O.]

12. Bütschli, O. Bronn's Klassen und Ordnungen des Thierreichs. Bd. i. *Protozoa*. Lief. 35–41, pp. 1089–1280, 8 pls. Leipzig: 8vo, each Lief. 1/6.

12a. ——. Lief. 35, 36, & 37, pp. 1089–1168, 4 pls.

Completion of account of *Noctiluca*. Characteristics and history of *Infusoria* proper.

12b. ——. Lief. 38, 39, & 40, pp. 1169–1232, 4 pls.

Continuation of history. General morphology of *Ciliata*. Survey of general system.

12c. ——. Lief. 41, pp. 1233–1280, 10 figs.

Continuation of general morphology of *Ciliata*. Discussion of special structure.

13. ——. Classification des Flagellés. J. Microgr. xi, 7, pp. 246–249.

14. Canavari, —. Di alcuni tipi di Foraminiferi appartenenti alla famiglia delle "*Nummulinidæ*" raccolti nel Trias delle Alpi Apuane. Atti Soc. Tosc. v, pp. 184–186.

15. °Canestrini, R. Prelezione al corso di Protistologia, tenuta nell' Università di Padova il 9 dicembre 1886. (Estr. dall' Ateneo Veneto, Genn.-Febr. 1887.) Venezia : 8vo, 18 pp.

16. °Castracane, F. I tripoli marini nella valle Metaurense. Boll. Soc. Geol. Ital. v (1886), pp. 343–350.

17. Cragin, F. W. First Contribution to a knowledge of the Lower *Invertebrata* of Kansas. Bull. Washb. Coll. ii, No. 8, pp. 27–32.

4 n. sp., Infusorians.

18. Daday, J. E. v. A Tintinnodeak szervezeti viszonyai. Math. term. köz. xxii, pp. 159–208, 2 pls. [*Cf.* Monographie der Familie der Tintinnodeen ; see 1888, MT. z. Stat. Neap. vii, pp. 473–591.]

°19. ——. Adatok a Balaton, &c. Beiträge zur Kenntniss der Plattensee Fauna. Budapest: 8vo, 5 pp.

20. Dallinger, W. H. The President's Address. J. R. Micr. Soc. ii, pp. 185-199, 1 pl.

Thermostatic observations on Monads. In certain points in the endurance of cumulative thermal elevation a distinct physiological change is brought about with greater or less difficulty, which seems to be directly correlated to the power of adaptation to a given measure of heat increment. These organisms generally flourish at 65°, and are killed at 140°F. They became adapted to 158°F, and were killed on transference to 60°, or *vice versâ*.

21. Dangeard, P. A. Sur l'importance du mode de nutrition du point de vue de la distinction des animaux et des végétaux. C.R. cv, pp. 1076–1078.

The relationships of *Chytridineæ* and *Chlamydomonadineæ*.

22. ——. Recherches sur les organismes inférieurs. Thèse de la Faculté des Sciences de Paris. Summarised in Rev. Sci. xl, pp. 629 & 630.

23. Danilewsky, B. Recherches sur la Parasitologie du Sang. Les Hématozoaires des tortues. Arch. slav. Biol. iii, pp. 33-49, 157–176, & 370–417, 2 pls.

Blood-parasite of *Emys lutaria*. *Hæmogregarina* (*Testudinis*) *stepanowi* provisionally ranked among Monocystid *Sporozoa*. In kidney of tortoise pseudonavicellæ, Gregarinoid spores. All stages in the marrow. The developmental and parasitic history.

24. ——. De la question de l'identité des parasites pathogènes du sang chez l'homme avec les hématozoaires chez les animaux sains. Arch. slav. Biol. iii, pp. 257–264.

Affirmative answer.

25. Danysz, J. Un nouveau Péridinien et son évolution. *T. c.* pp. 1–5.

Gymnodinium musæi, n. sp. Its characteristics and reproduction.

26. ——. Contribution à l'étude de l'évolution des Péridiniens d'eau douce. C.R. cv, pp. 238–240.

Uniformity in developmental history in widely separate genera. Rather plants than animals. Stages in development. Description of spores. 3 n. spp.

27. Dawson, J. W. On New Facts relating to *Eozoon canadense*. Rep. Brit. Ass. p. 702 ; Nature, xxxvi, p. 574.

28. °Deecke, W. Les Foraminifères de l'Oxfordien des environs de Montbéliard (Doubs.). Mém. Soc. ém. Montbéliard, vol. xvi, 47 pp. (1886).

29. Eberth, C. J. Ueber *Thalassicolla cærulea*. Arch. mikr. Anat. xxx, pp. 27–31, 2 pls.

Minute structure of the various regions.

30. Ebner, V. v. Ueber den feineren Bau der Skelettheile der Kalkschwämme nebst Bemerkungen über Kalkskelete überhaupt. SB. Ak. Wien, xcv, 1–5, pp. 55–152, 4 pls.

Inter alia, treats of Foraminifer shells.

31. Entz, G. Beiträge zur Kenntniss der feineren Organisation der Amœben. Orvos-termeszettudományi Ertesitö. (Term. Szak) xii, pp. 252–254.

32. Fabre-Domergue, —. Sur la structure réticulée du protoplasma des Infusoires. C.R. civ, pp. 797–799.

Reticulation of the protoplasm of *Paramœcium*, *Vorticella*, and other Infusorians. Distinction between structural peripheral reticulum and definite cuticular membrane. *Oxytrichidæ* really naked.

33. Fielde, A. M. Chinese Rhizopods. P. Ac. Philad. i, p. 31, ii, pp. 122 & 123.

22 forms from Swatow identified with American forms.

34. Fokker, M. Sur les Hématocytes. C.R. cv, pp. 353–356.

35. °Folin, A. de. Quelques aperçus sur le sarcode des Rhizopodes réticulaires. Paris : 4to, 8 pp. (From La Naturaliste.)

35a. °——. Les Rhizopodes réticulaires. Paris : 8vo, 26 pp., 20 figs., 2/-.

36. Forel, H. La pénétration de la lumière dans des lacs d'eau doux. Arch. Sci. nat. xvii, pp. 60–62.

Cycle of micro-organisms in fresh-water lakes.

36a. ——. Les micro-organismes pélagiques des lacs de la région sub-alpine. Rev. Sci. xxxix, pp. 113–115.

37. Fornasini, C. Di alcuni Foraminiferi provenienti dagli strati miocenici dei dintorni di Cagliari. Boll. Soc. Geol. Ital. vi, pp. 26–32.

38. ——. Foraminiferi illustrati da Bianchi e da Gualtieri. *T. c.* pp. 33–53.

38a. ——. *Textularia gibbosa* e *T. tuberosa*. *T. c.* pp. 159–162, 1 pl.

39. ——. Foraminiferi illustrati da Soldani e citati degli autori. *Op. cit.* v, pp. 131–254.

40. ——. Di alcuni biloculine fossili negli strati a *Pecten hystrix* del Bolognese. *T. c.* pp. 255–264, 2 pls.

41. ——. Sulla *Glandulina æqualis* di Reuss. *T. c.* pp. 337–342.

42. ——. Varietà de Lagena fossile negli strati a *Pecten hystrix* del Bolognese. *T. c.* pp. 350–354, 1 pl.

42a. ——. Di alcuni Foraminiferi provenienti della spiaggia di Civita Vecchia. *T. c.* pp. 369–373.

42b. ——. Intorno di caratteri esterni delle Textularie. *T. c.* pp. 374–378, 1 pl.

42c. ——. Indice delle Textularie Italiani. *T. c.* pp. 379–398, 1 pl.

42d. ——. Sulle Textularie "abbreviati." *T. c.* pp. 399–401, 1 pl.

44. Giard, A. Synopsis de la Faune marine de la France septentrionale. Bull. Sci. Nord. x, pp. 142–146. [*Cf.* C.R. civ, p. 1191.]

Podarcella cancerillæ, n. g. & sp., stalked Arcellid parasitic on *Cancerilla*, parasitic on *Amphiura squamata*.

44A. Gobe, X. O grupe Amœboideœ. Trudui St. Petersburg Nat. xvi, pp. 1–36. [Omitted from Zool. Rec. xvi.]

45. Gourret, P., & Rœser, P. Les Protozoaires du vieux-port de Marseille. (Suite et fin.) Arch. Z. expér. iv (4), pp. 449–534.

20 new species.

46. Grassi, B. Les Protozoaires parasites de l'homme. Arch. Ital. Biol. ix, Fasc. i, pp. 4–6.

Commensal and innocuous character of *Protozoa* found in man. Discussion of *Amœba coli*, various mono-cercomonads, *Megastoma* (flagellate), *Balantidium coli*. Protozoan character of Pfeiffer's *Monocystis* and *Plasmodium malariæ* disputed.

47. Gratacap, L. P. Eozoonal Rock of Manhattan Island. Am. J. Sci. xxxiii, pp. 374–378.

48. Greenwood, M. On the Digestive Process in some Rhizopods. Part II. J. Physiol. viii (5), pp. 263–287, 2 pls.

49. Grenfell, J. G. On New Species of *Scyphidia* and *Dinophysis*. J.R. Micr. Soc., pt. 4, pp. 558–560, 1 pl.

Scyphidia amœbæa, n. sp., on tails of sticklebacks, sometimes attached by pseudopodia. Reproduction by transverse fission; theoretical importance of this. *Dinophysis semicarinata*, n. sp.

50. Gruber, A. Ueber die Bedeutung der Conjugation bei den Infusorien. Ber. Freiburg Ges. ii (1), pp. 31 & 32.

Copulation of paranuclear elements.

51. ——. Der Conjugationsprocess bei *Paramœcium aurelia*. *Op. cit.* (2), pp. 43–59, 2 pls.

Details in regard to copulatory exchange of paranuclear elements. Corroboratory, but independent of Maupas.

52. ——. Kleinere Mittheilungen über Protozoen-Studien. *Op. cit.* (3), pp. 149–164, 1 pl.

(1) Encystation in *Euglypha alveolata*. (2) Division of *Difflugia*. (3) Nervous system of Infusorians. (4) The specific differences among *Amœbæ*.

53. ——. Die Urahnen des Thier- und Pflanzenreichs. Humboldt, vi, pp. 254–257 & 296–298.

55. ——. Ueber künstliche Theilung bei *Actinosphærium*. Zool. Anz. x, pp. 346 & 347.

Neglected observation by K. Brandt as to development of artificially fragmented *Actinosphærium*.

56. Guerne, J. de. [See Pouchet, G.]

57. ——. Sur la nourriture de la Sardine. C.R. civ, pp. 712–715.

Abundance of *Peridinea*.

58. HAECKEL, E. Report on the *Radiolaria* collected by H.M.S. 'Challenger' during the years 1873–1876. Chall. Rep. Zoology, vol. xviii. Part XL. Two parts and volume of plates. Part I. viii, clxxxviii, and 1–888 pp. (*Porulosa*). Part II. pp. 889–1803 (*Osculosa*), pls. 140, about 1600 figs., 1 map.

General (i–clxxxviii):—I. Anatomical. II. Biogenetical—ontogeny and phylogeny. III. Physiological. IV. Chorological—geographical and geological. V. Bibliographical.

Systematic:—A. *Porulosa*. I. *Spumellaria* vel. *Peripylea*, 6 orders. II. *Acantharia* vel. *Actipylea*, 4 orders. B. *Osculosa*. III. *Nassellaria* vel. *Monopylea*, 6 orders. IV. *Phaeodaria* vel. *Cannopylea*, 4 orders.

59. ——. Die Radiolarien (*Rhizopoda Radiolaria*). Eine Monographie. Zweiter Theil. Also as Grundriss einer allgemeinen Naturgeschichte der Radiolarien. Berlin: gr. 4to, xviii and 248 pp, 64 pls., 1 map.

60. HAEUSLER, R. Die Lageninen der Schweizerischen Jura- und Kreideformation. JB. Mineral, i (2), pp. 177–189.

61. ——. Bemerkungen über einige liasische Milioliden. *T. c.* pp. 190–194.

62. ——. Notes on some *Foraminifera* from the Hauraki Gulf. Tr. N. Z. Inst. xix, pp. 196–200.

List of 41 species. *Miliolina aucklandica* and *M. polymorpha*, n. spp.

62A. ——. Notes sur quelques foraminifères des marnes à bryozoaires du Valanginien de Ste. Croix. Bull. Soc. Vaud. xxii, pp. 260–266.

Notes on 37 species.

63. HEILPRIN, A. Explorations on the West Coast of Florida, and in the Okeechobee Wilderness. Trans. Wagner. Inst. Sci. Philad. i, pp. 1–134.

Cerithium hillsboroensis, n. sp., *C. cornutum*, n. sp., and other species pp. 124–127. Nummulitic rocks, pp. 57–63, &c.

64. HENNEGUY, L. F. Formation des spores de la gregarine du lombric. CR. Soc. Biol. No. 26, pp. 439-442.

Details of spore-formation; occurrence of indirect division.

65. HENSEN, V. Über die Bestimmung des Plankton's oder des im Meere treibenden Materials an Pflanzen und Thieren. Ber. Komm. wiss. Unters. deutsch. Meere, pp. 1–109, 6 pls; Anhang xix pp., 8 tables.

List of captured *Dinoflagellata*, *Radiolaria*, *Foraminifera*, &c., with statistics of occurrence, pp. 67–79.

66. IMHOF, O. E. Ueber die microscopische Thierwelt hochalpiner Seen (600–2780 m. ü. M.). Zool. Anz. x, pp. 13–17.

Faunistic.

67. ——. Ueber die microscopische Thierwelt hochalpiner Seen (600–2780 m. ü. M.). *T. c.* pp. 33–42.

Faunistic.

67A. [IMHOF, O. E.] On the Microscopic Fauna of elevated Alpine Lakes (600–2780 metres above the sea). Translation, Ann. N. H. xix, pp. 276–286.

68. ——. Notizen über die pelagische Fauna der Süsswasserbecken. Zool. Anz. x, pp. 604–606.

Inter alia—Acanthocystis viridis; *Dinobryon divergens*, Imh., *D. elongatum*, Imh.; *Ceratium longicorne* (?), *C. hirundinella*, O. F. Müller, *C. cornutum*, Ehrbg.; *Codonella cratera*, Leidy; *Peridinium* sp.

69. ——. Animaux microscopiques des eaux douces. Arch. Sci. nat. xviii, No. 11, pp. 429–431.

70. ——. Studien über die Fauna hochalpiner Seen insbesondere des Kantons Graubünden. JB. Nat. Ges. Graubünden, xxx, pp. 45–164.

71. JONES, T. RUPERT. On *Nummulites elegans* and other English Nummulites. Q. J. Geol. Soc. xliii (2), pp. 132–149.

Relationships and synonymy. Distinctions of *Nummulites elegans*, Sowerby; *N. variolarius* (Lamarck); *N. lævigatus* (Bruguière). The unity of the genus.

72. JONES, T. R., & SHERBORN, C. DAVIES. Remarks on the *Foraminifera*, with especial reference to their Variability of Form, illustrated by the Cristellarians. Part ii. J. R. Micr. Soc. pt. 4, pp. 545–547.

73. KEEPING, H. On the discovery of the *Nummulina elegans* Zone at Whitecliff Bay, Isle of Wight. Geol. Mag. iv (2), pp. 70–72.

74. KELLICOTT, D. S. Notice of some Fresh-water *Infusoria*. Microscope, vii, pp. 226–233, 4 figs.

4 n. sp.: *Podophrya inclinata*, *P. flexilis*; *Carchesium granulatum*; *Opercularia humilis*.

75. KERSCHNER, L. Keimzelle und Keimblatt. Z. wiss. Zool. xlv (4), pp. 672–693.

Inter alia—discussion of general problems of reproduction, differentiation, heredity, &c., in the *Protozoa*.

76. KHAWKINE, W. Recherches biologiques sur l'*Astasia ocellata*, n. sp., et l'*Euglena viridis*, Ehr. Ann. Sci. Nat. i, pp. 319–376, 1 pl.

The resemblances and differences between *Astasia ocellata* and *Euglena viridis*; the "chlorophyll" of the latter the sole essential distinction; the mucus secretion, the more passive life, the reproductive groups, the greater success, are associated differences.

77. KIRK, T. W. New *Infusoria* from New Zealand. Ann. N. H. xix, pp. 439–441.

Opercularia parallela, n. sp.; *Acineta simplex*, n. sp.; *Vorticella oblonga*, *V. zealandica*, n. spp.

78. KLEBS, G. Ueber die Organisation der Gallerte bei einigen Algen und Flagellaten. Unters. bot. Inst. Tübingen i, 2; Review Botan. Ztg. 34, pp. 559–565.

79. Kunstler, J. La structure réticulée des Protozoaires. C.R. civ, pp. 1009–1011.

Protoplasm vacuolar or alveolar rather than reticulate. Description of *Dumontia apheliarum*. Food-vacuoles surrounded by proteid layer.

80. ——. *Diplocystis schneideri*, n. g. & sp. Tabl. Zool. ii, pp. 25–66, 1 pl.

Diplocystis schneideri, n. g. & sp., aberrant type, with affinities both to *Gregarinida* and *Coccidia*, in body-cavity of cockroach. Adults may be 2 mm. long, like two monocystids united by corresponding ends. Double membrane, the outer probably formed by host. Striæ due to minute structure of cuticle. Internal structure. Development.

81. Lindner, O. Biol. Centralbl. vi, pp. 733 & 734. [See 1886.]

New peritrichous *Vorticella*-like Infusorian with parasitic habit.

82. Loeff, A. van der. Ueber Proteiden oder Amöben bei *Variola vera*. Monatschft. prakt. Dermatol. vi, 10, pp. 447–449, 2 cuts.

83. Malagoli, M. Foraminiferi delle arenarie di Lama Mocogno : osservazioni microlitologiche. Atti (Rend.) Soc. nat. Modena : ser. iii, vol. iii, pp. 106–111, 1 pl.

84. °Mariani, E. Foraminiferi pliocenici di Tronconero presso Casteggio. Rend. Ist. Lomb. (2) xx, pp. 478–481.

85. Marshall, C. F. Observations on the structure and distribution of striped and unstriped muscle in the animal kingdom, and a theory of muscular contraction. Q. J. Micr. Soc. xxviii, pp. pp. 75–107, 1 pl.

Inter alia—Amœba and *Vorticella* discussed.

86. Maupas, E. Réponse à M. Balbiani à propos de la *Leucophrys patula*. C.R. civ, pp. 308–310.

In abundant food, fission ; with scanty food, metamorphosis without encystation, followed by six successive divisions, which have for their end conjugation.

87. ——. Sur la puissance de multiplication des Infusoires ciliés. *T. c.* pp. 1006-1008.

Conditions of reproduction ; differences of diet ; rate of reproduction, &c.

88. ——. Sur la conjugaison des Ciliés. Troisième note. *Op. cit.* cv, pp. 175–177.

Treats of *Onychodromus grandis* and *Stylonichia grandis*. Diagram. Previous results confirmed. List of species in which exchange and fusion of paranuclear elements have been observed.

89. ——. Théorie de la sexualité des Infusoires ciliés. *T. c.* pp. 356–359.

Conjugation essential for species, dangerous for individual. The cycles of continued division without conjugation are limited, and if too prolonged (in the absence of unrelated forms with which conjugation possible) ends in loss of powers of nutrition and reproduction. It is a rejuvenescence of the species.

pep. [MAUPAS, E.] Sur la conjugaison du *Paramæcium bursaria*. *T. c.* 9 pp. 955–957.

Historical note on Balbiani's figures of the conjugation of male and female elements (1858). Re-affirmation of Maupas' stages of conjugation.

90A. MERESCHKOVSKY, K. C. Materiale dla faune infusorii Chernova Morya. Trudui St. Petersburg Nat. xi, pp. 23–35. [Inadequately quoted in Zool. Rec. xvii.]

91. MEYER, O. On Invertebrates from the Eocene of Mississippi and Alabama. P. Ac. Philad. pp. 51–56, 1 pl.

Inter alia—11 spp. *Foraminifera*.

92. MÖBIUS, K. Das Flaschenthierchen, *Folliculina ampulla* beschrieben und abgebildet. Abh. Ges. Hamb. x, 12 pp., 1 pl. Also sep., Hamburg: 4to, 14 pp., 1 pl.

93. ——. Ueber direkte Teilung des Kernes bei der Querteilung von *Euplotes harpa*, Stn. SB. Ges. Nat. Berlin, No. 6, pp. 102 & 103.

94. ——. Systematische Darstellung der Thiere des Plankton gewonnen in der westlichen Ostsee und auf einer Fahrt von Kiel in den Atlantischen Ocean bis jenseit der Hebriden. Ber. Komm. wiss. Unters. deutsch. Meere, v, pp. 110–124, 2 pls.

List of *Ciliata*, *Radiolaria*, *Foraminifera*. *Tintinnus fistularis*, n. sp., *T. serratus*, n. sp., *Distyocha* (Radn.) *fornix*, n. sp., *Xanthidium multispinosum*, n. sp. [to *Desmidiaceæ* possibly].

95. MONIEZ, R. Sur des parasites nouveaux des Daphnies. C.R. civ, pp. 183–185.

96. ——. Revision des Microsporidiés. Centralbl. Bakter. ii, pp. 125 & 126; C.R. civ, pp. 1312–1314.

97. ——. Note sur le genre *Gymnospora*, type nouveau de Sporozoaire. Bull. Soc. Z. Fr. xi (4) (1886), pp. 587–594, 10 figs.

98. NEUMAYR, M. Die natürlichen Verwandtschaftsverhältnisse der schalentragenden Foraminiferen. SB. Ak. Wien, xcv, pp. 156–186, 1 pl.

Three phylogenetic grades: (*a*) the quite irregular and primitive *Astrorhizidæ*; (*b*) the series with merely agglutinated shells; (*c*) the compactly shelled forms.

99. NORDQVIST, O. Die pelagische und Tiefsee-Fauna der grösseren finnischen Seen. Zool. Anz. x, pp. 339–345.

Inter alia—*Ceratium furca*, Ehrb.; *Dinobryon*, 2 sp.; *Acineta*, sp.; *Vorticella*, sp.

100. PARONA, C. Protistes parasites du *Ciona intestinalis* (Fin.). J. Microgr. xi, pp. 25–28.

Elvirea, n. g., parasitic on alimentary tract of *Ciona*, with affinities with *Dallingeria* and *Trimastix*. There are three flagella—one active, two trailing; the animal is always free, and without undulating membrane. Discussion of other *Trimastigidæ*.

101. Pfeiffer, L. Ein neuer Parasit des Pockenprocesses aus der Gruppe *Sporozoa* (Leuckart). Monatschft. prakt. Dermatol. vi, 10, pp. 435–447, 2 pls. [*Cf.* J. R. Micr. Soc. 1887, p. 978.]

Monocystis epithelialis, new *Coccidium*-like parasite from pocks of various mammals.

101a. ——. Über Parasiten im Bläscheninhalt von Varicella und von Herpes Zoster und über die Beziehungen derselben zu ähnlichen Parasiten des Pockenprozesses. Monatschft. prakt. Dermatol. vi, 13, pp. 589–592, 1 pl.

Coccidia or *Amœbæ* (?).

101b. *——. Neuer Parasit des Pockenprocesses aus der Gruppe der Sporozoen. CB. ärztl. Ver Thüringen. No. 2, 12 pp., 2 pls.

101c. ——. Beiträge zur Kenntniss der pathogenen Gregarinen. Z. f. Hygiene, iii, 3, pp. 469–486.

102. Philippson, A. Ueber das Vorkommen der Foraminiferen Gattung *Nummoloculina* Steinmann in der Kreideformation der Ostalpen. JB. Mineral. Bd. ii, Heft. 2, pp. 164–168, 7 cuts.

Nummoloculina regularis, n. sp.

103. Pouchet, G. Quatrième contribution à l'histoire des Péridiniens. J. de l'Anat. Phys. xxiii, pp. 87–112, 2 pls.

Historical notes. The genus *Gymnodinium*, 5 spp. Remarkable ovum-like body in *Polykritos auricularia*, Bergh.

104. Pouchet, G., & Guerne, J. de. La question de la Sardine. Rev. Sci. xxxix, pp. 737–746; trans., Ann. N. H. xix, pp. 323 & 334; *cf.* C.R. civ, pp. 712–715.

Peridinea found in extraordinary abundance in viscera of Sardines.

105. Richard, J. Sur la faune pélagique de quelques lacs d'Auvergne. C.R. cv, pp. 951–953.

Inter alia, *Cilioflagellata—Ceratium longicorne*, Perly.

106. Rœser, P. [See Gourret, P.]

107. Rüst, —. Ueber neuentdeckte Radiolarien der Kreide und einiger älterer Schichten. Jen. Z. Nat. xx, 4 (SB. Ges. Jen. pp. 143–145).

Occurrence of Radiolarians in Lower Silurian.

108. Rzehak, A. Die Foraminiferenfauna der Neogenformation der Umgebung von Mähr.-Ostrau. Verh. Ver. Brünn, xxiv, p. 77, 1 pl.

108a. ——. Die Foraminiferenfauna des Oligocänthones von Nikoltschitz. Ver. geol. Reichsanst. No. 3, pp. 87 & 88.

108b. ——. Die Foraminiferenfauna des blauen Oligocänthones von Nikoltschitz in Mähren. *T. c.* pp. 133–135.

109. Salensky, W. Etudes sur le développement du Vermet. Arch. Biol. vi, pp. 655–759 (719–732), 8 pls. [*Cf.* Biol. Centralbl. vi (1886), pp. 514–525.]

Origin of *Metazoa*, from *Volvox*-like colony of Flagellates, with nutritive animal cells, with reproductive cells falling into a genitocœl, with a

persistent orifice forming a genito-gastrula. Those internal parthenogonoids which had not room to become mature would form nutrient cells of inner layer (phagogenitoblast); the amœboid outer cells form the external kynoblast. For the nutrient cells it would be advantageous that the orifice remained open. The blastopore is the remnant of the colonial orifice. The blastula formed by delamination or by immigration is palingenetic; the gastroblastula, &c., kœnogenetic.

110. Schewiakoff, W. Ueber die karyokinetische Kerntheilung der *Euglypha alveolata*. Morph. JB. xiii, pp. 193–258, 2 pls., 3 cuts.

Description of intimate changes in division. Comparison with karyokinesis in other *Protozoa* tends to show considerable manifoldness.

111. Schill, J. F. Antony van Leeuwenhoek's Entdeckung der Microorganismen. Zool. Anz. x, pp. 685 & 686.

Historical. Leeuwenhoek's discovery dates from 1674.

112. Schlumberger, C. Note sur le genre *Planispirina*. Bull. Soc. Z. Fr. xii, pp. 475–488, 1 pl.

For *Planispirina edwardsi*, n. sp., *P. sigmoidea*, Brady, *P. celata*, Costa, and other related forms, n. g., *Sigmoilina*.

113. ——. Note sur les *Biloculina bulloides*, d'Orb., et *Biloculina ringens*, Lamk. Bull. Soc. géol. Fr. xv, pp. 573–584, 1 pl.

114. Schneider, A. Description de Rhizopodes nouveaux ou peu connus. Tablett. Zool. ii, pp. 1–3.

115. ——. Coccidies nouveaux ou peu connus. *T. c.* pp. 5–18.

5 (1 new) species.

116. ——. *Pericometes digitatus*. *T. c.* pp. 19–23, 2 pls.

N. g., n. sp.

117. ——. Grégarines nouvelles ou peu connus. *T. c.* pp. 67–85.

4 n. spp. N. gg., *Pterocephalus*, *Anthocephalus*.

118. Schütt, F, Ueber die Sporenbildung mariner Peridineen. Ber. Deutsch. Bot. Ges. v, pp. 364–374, 1 pl.

(1) Division of *Ceratium fusus* and *C. furca*. (2) Division in resting stage, of a "sporangium" into two (flagellate) "swarm-spores," in *Peridinium acuminatum*, Ehrbg. Comparison with Diatoms. Naked forms probably only stages in history of encased types. That the *Peridineæ* are not animals is strengthened by the fact of the above mode of reproduction.

119. Sedgwick, A. The development of the Cape Species of *Peripatus*. Q. J. Micr. Sci. xxvii, pp. 467–550, 4 pls.

The plausibility of the ancestral Metazoon being a multi-nucleated Infusorian-like animal. Criticism of the speculations of Metschnikoff as to blastula, &c.

120. Sherborn, C. Davies. [See Jones, T. Rupert.]

121. Saint-Joseph, le Baron de. Les Annélides polychètes des côtes de Dinard. Ann. Sci. Nat. i, pp. 127–270, 6 pls.

1 n. sp. Infusorian.

122. Stokes, A. C. Notices of New American Fresh-water *Infusoria*. J. R. Micr. Soc. i, pp. 35–40, 1 pl.

N. spp.: *Tetraselmis limnetis*, *Petalomonas pleurosigma*, *Chloropeltis monilata*, *Chrysomonas pulchra*, *Zygoselmis mutabilis*, *Strombidium gyrans*, *Mesodinium fimbriatum*, *Pyxidium vernale*, *P. invaginatum*, *Vaginicola annulata*, *Lagenophrys labiata*.

123. ——. Some New Hypotrichous *Infusoria* from American Fresh Waters. Ann. N. H. xx, pp. 104–114, 1 pl.

Litonotus vermicularis, *Chilodon vorax*, *Loxodes magnus*, *Onychodromopsis*, n. g., *O. flexilis*, *Holosticha vernalis*, *Tachysoma*, n. g., *Tachysoma agile*, *T. mirabile*, *T. parvistylum*, *Oxytricha bifaria*, *O. hymenostoma*, *O. acuminata*, *O. caudata*, *Histrio inquietus*, *H. complanatus*, *Euplotes variabilis*: all n. spp.

124. ——. Notices of New Fresh-water *Infusoria*. P. Am. Phil. Soc. xxiv, pp. 244–255, 1 pl.

Description of 26 new species, and 3 new genera, *Urceolopsis*, *Saprophilus*, *Bothriostoma*.

125. ——. Notices of New Fresh-water *Infusoria*, vi. Am. Micr. J. viii, pp. 141–147.

13 n. spp.

126. ——. The Adoral cilia of the *Hypotricha*. *T. c.* p. 91.

127. Terrigi, G. I Rizopodi (Reticolari) viventi nelle acque salmastre dello Stagno di Orbetello. Atti Acc. Rom. iii, pp. 579–581.

128. °Tutkowsky, P. i. Die Foraminiferen aus den Tertiär- und Kreidebildungen von Kiew. ii. Die Foraminiferen des blaulichen Thones aus einer Brunnen-Bohrung in Kiew. (Russian). Kiew: 8vo, 62 pp., 9 pls.

128a. Tzenkovsky, L. Otchet o Belomorskoi ekskursii 1880 g. Trudui St. Petersburg Nat. xii, pp. 130–171. [Omitted from Zool. Rec. xviii.]

5 new genera.

129. Warpachowsky, N. Eine neue Form von *Opalina* (*spiculata*). Mél. biol. xii (5), pp. 577–579.

130. Wegmann, H. Notes sur l'organisation de la *Patella vulgata*, L. Rec. Z. Suisse, iv, pp. 269–303, 2 pls.

An Infusorian parasite on gills.

131. Weldon, W. F. R. On the Structure of *Haplodiscus piger*. Rep. Brit. Ass. p. 740; Nature, xxxvi, p. 592.

Compares this remarkable organism to a Foraminifer, such as *Haliphysema*, which had developed sexual organs. Non-ciliated cuticle; tunic of nucleated protoplasm, with processes through the cavity of the body; in the centre a solid mass of protoplasm continuous with the somatic reticulum, alimentary in function, and opening by a small ventral slit; at anterior edge a brain, with short nerve-cord. Hermaphrodite, ovaries on each side of mouth, single testis in median dorsal line. Abundant yellow cells.

132. Whitelegge, T. List of the Fresh-water *Rhizopoda* of N. S. Wales. Part i. P. Linn. Soc. N.S.W. i (2) pp. 497–504.

133. °Woodward, A. The Bibliography of the *Foraminifera*, Recent and Fossil, including *Eozoon* and *Receptaculites*, 1565—Jan. 1, 1886. St. Paul, Minnesota : 1886, 8vo, 137 pp.

134. Wright, J. First Report on the Marine Fauna of the South-west of Ireland. P. R. Irish Ac., 2, iv, pp. 607–614 (1886).

134a. Wright, J. *Foraminifera* of the Belfast Naturalists' Field Club's Cruise off Belfast Lough, in the Steam-tug 'Protector,' June, 1885 also *Foraminifera* found by Dr. Malcomson at Rockport, Belfast Lough. Rep. Belfast N. H. Club, 1885–6, Appendix, pp. 317–325, pl. xxvi (1886).

135. Zacharias, O. Zur Kenntnis der pelagischen und littoralen Fauna norddeutscher Seen (mit Beiträgen von S. A. Poppe). Z. wiss. Zool. xlv (2), pp. 255–281, 1 pl.

Inter alia, notes on *Ceratium hirundinella*, Bergh., *C. furca*, Clap. & Lachm., *Epistylis lacustris*, Imhof.

136. ——. Faunistiche Studien in westpreussischen Seen. Nat. Ges. Danzig. vi (4), pp. 43–72.

137. ——. Ueber die niedere Thierwelt holsteinischer Seen. MT. Ver. Frankfurt-a.-O. v, pp. 131–133 & 155–157.

I.—GYMNOMYXA.

Blochmann (6), on reproduction of *Euglypha*.

Brady (8). Synopsis of British recent *Foraminifera*.

Brady (8), on British *Foraminifera*, more important generic and specific changes :—*Biloculina contraria* and *Hauerina compressa* to *Planispirina contraria*. *Reophax moniliformis* to *R. findens*. *Textularia difformis* to *Bolivina difformis*, and *T. pygmæa* to *B. dilatata*. *Cassidulina pulchella* and *C. oblonga* to *C. lævigata* and *C. crassa*. *Lagena jeffreysii* to *L. hispida*, and *L. lyellii* to *L. sulcata* and *L. costata*. *Nodosaria* (Dent.) *guttifera* to *N. pyrula*. *Marginulina litnus* to *Cristellaria elongata*. *Polymorphina orbignii*, fistulose specimens referred to their several species. *Discorbina obtusa* to *D. wrightii*, and *D. ochracea* to *Trochammina ochracea*. *Pulvinulina sacculata*, outside British area.

Brady (8), on interlopers among British *Foraminifera* :—*Peneroplis planatus*, *Vertebralina striata* (from uncleaned sieves); *Cristellaria strigilata* (*C. subarcuatula*, var. *costata*, Will), *Frondicularia complanata* (*F. spathulata*, Will), *F. archiaciana*, and *Nummulites radiata* (*N. planulata*, Will), "derived" fossils from early Tertiary and Cretaceous.

Canavari (14). Triassic *Foraminifera*.

Dawson (27). *Eozoon*.

Deecke (28). *Foraminifera* of Oxford strata.

Eberth (29), on structure and life-history of *Thalassicolla cærulea*.

EBNER (30), on shell elements of *Foraminifera*

ENTZ (31), on structure of *Amœbæ*.

FIELDE (33). Swatow Rhizopods.

FOLIN (35, 35A). General.

FORNASINI (37). Miocene Foraminifers.

GIARD (44), on *Podarcella cancerillæ* (Giard), n. g. & sp., parasitic.

GRASSI (46), on *Amœba coli*.

GREENWOOD (48), on phenomena of ingestion, digestion, and excretion in *Amœba* and in *Actinosphærium*.

GRUBER (52), on specific differences among *Amœbæ*, division of *Difflugia*, &c.

GRUBER (55). Historical, on artificial division of *Actinosphærium*.

HÆCKEL (58). Monograph of the *Radiolaria* :—

A. PORULOSA (*Holotrypasta*).

I. *Spumellaria* (*Peripylæa*).

II. *Acantharia* (*Actipylæa*).

B. OSCULOSA (*Merotrypasta*).

III. *Nassellaria* (*Monopylæa*).

IV. *Phæodaria* (*Cannopylæa*).

I. *Spumellaria* n. gg.—*Actissa, Lampoxanthium, Belonozoum, Stigmosphæra, Pharyngosphæra, Buccinosphæra, Odontosphæra, Chænicosphæra, Trypanosphæra, Caminosphæra, Solenosphæra, Otosphæra, Coronosphæra, Saturninus, Staurolonchidium, Stauroxiphos, Hexastylarium, Hexacontarium, Cubosphæra, Cubaxonium, Coscinomma, Elatomma, Leptosphæra, Astrosphæra, Caryomma, Arachnopila, Spongiomma, Spongothamnus, Centrocubus, Octodendron, Cenellipsis, Axellipsis, Ellipsidium, Axoprunum, Ellipsostylus, Lithapium, Pipetella, Druppula, Druppocarpus, Prunulum, Prunocarpus, Cromyodruppa, Cromyocarpus, Lithatractus, Druppatractus, Stylatractus, Xiphatractus, Cromyatractus, Pipetta, Pipettaria, Spongellipsis, Spongocore, Spongoprunum, Spongodruppa, Spongatractus, Spongoliva, Spongoxiphus, Cyphantha, Cyphonium, Cyparsis, Cyphocolpus, Cyphinidium, Cannartiscus, Cannartidium, Panartus, Peripanartus, Panicium, Peripanicium, Peripanarium, Desmocampe, Desmartus, Zygocampe, Cenodiscus, Stylodiscus, Theodiscus, Crucidiscus, Trochodiscus, Distriactis, Echinactura, Archidiscus, Axodiscus, Stomatodiscus, Trigonastrum, Stauralastrum, Tessarastrum, Pentophiastrum, Triolena, Triodiscus, Pylolena, Pylodiscus, Discogonium, Discopyle, Spongolena, Rhopalodictya, Cenolarcus, Larcarium, Coccolarcus, Larcidium, Spongolarcus, Stypolarcus, Larnacilla, Larnacidium, Larnacalpis, Larnacantha, Larnacoma, Larnacospongus, Larnacostupa, Monogonium, Dizonium, Trizonium, Pylozonium, Tholactus, Tholodes, Amphitholus, Amphitholonium, Tholostaurus, Tholoma, Staurotholus, Staurotholonium, Tholocubus, Tholonium, Cubotholus, Cubotholonium, Zonarium, Zoniscus, Zonidium, Larcospira, Pylospira, Tholospira, Spironium, Streblonia, Streblacanthus, Streblopyle, Sorolarcus.*

II. *Acantharia.—Actinastrum, Chiastolus, Pristacantha, Belonostaurus, Zygostaurus, Quadrilonche, Astrocapsa, Porocapsa, Cannocapsa, Cenocapsa, Diporaspis, Hystrichaspis, Coscinaspis, Zonaspis, Dodecaspis, Hylaspis, Pantopelta, Octopelta, Dictyaspis, Hexalaspis, Hexaconus, Hexonaspis, Hexocalpus, Diplocolpus.*

III. *Nassellaria.*—*Nassella, Plagoniscus, Polyplagia, Plectaniscus, Archicircus, Cortina, Stephanium, Semantis, Semantrum, Semantidium, Cortiniscus, Stephaniscus, Semantiscus, Toxarium, Octotympanum, Tympaniscus, Dystympanum, Pseudocubus, Circotympanum, Hexaspyris, Cantharospyris, Androspyris, Sphærospyris, Botryopera, Euscenium, Cystophormis, Carpocanistrum, Phænocalpis, Phænoscenium, Tripocystis, Spongomelissa, Sethamphora, Spongopyramis, Anthocyrtoma, Anthocyrtium, Sethocyrtis, Corocalyptra, Phormocyrtis, Hexalatractus, Theoconus, Lophoconus, Theocyrtis, Lophocyrtis, Theocampe, Phrenocodon, Stichopilidium, Pteropilium, Phormocampe, Cystophormis, Artostrobus.*

IV. *Phæodaria.*—*Cannobelos, Catinulus, Cannopilus, Aulactinium, Auloceros, Aulospathis, Aulodendron, Orona, Orosphæra, Oroscena, Oroplegma, Sagena, Sagosphæra, Sagoscena, Sagmarium, Sagmidium, Sagoplegma, Aularia, Auloscenia, Aulophacus, Aulatractus, Aulonia, Aulastrum, Pharyngella, Cortinetta, Medusetta, Euphysetta, Gorgonetta, Polypetta, Circogonia, Circorrhegma, Tuscarusa, Tuscaridium, Conchasma, Conchellium, Conchonia, Cœlodoras, Cœlodasea, Cœlotholus, Cœlographis, Cœlospathis, Cœlodecas, Cœlostylus, Cœloplegma, Cœlagalma.*

HAEUSLER (62). *Foraminifera.*

RUPERT JONES (71), on *Nummulites.*

RUPERT JONES & SHERBORN (72), on variability of *Foraminifera.*

Synoptical table showing the varietal modifications of *Crystellaria calcar* (Linné), whether keel-less, keeled, rowelled, out-spread, trihedral, or elongate. "The infinite number of varieties, whose only claim to 'specific' position consists in the varying curvature of the shell."

VAN DER LOEFF (82). *Amœbæ* in *Variola vera.*

NEUMAYR (98), on phylogenetic grades of *Foraminifera.*

SCHEWIAKOFF (110), on karyokinesis in *Euglypha.*

SCHLUMBERGER (112), on *Sigmoilina*, n. g., for *Planispira edwardsi*, n. sp., *P. sigmoidea*, Brady, *P. eclata*, Costa, &c.

SCHNEIDER (114), on new Rhizopods.

TERRIGI (127), *Foraminifera* of brackish water.

TZENKOVSKY (128A), *Wagneria mereschkovskii*, n. g. & sp. *Heliozoon*; *Gobiella borealis*, n. g. & sp., *Moneron.*

WHITELEGGE (132), on fresh-water Rhizopods of N. S. Wales.

WOODWARD (133), bibliography of *Foraminifera.*

II.—SPOROZOA.

BLANCHARD (5). Bibliography of *Hæmatozoa.*

DANILEWSKY (23). Hæmogregarines of tortoise. Abundant in the marrow. Passage from alimentary canal or urinogenital organs to leucocytes or entrance into hæmatoblasts.

DANILEWSKY (23). *Hæmogregarina* (*Testudinis*) *stepanowi* in blood corpuscles of *Emys.*

DANILEWSKY (24), on identity of pathogenic parasites in man and normal hæmatozoa of other animals.

FOKKER (34), on *Hæmatocytes.*

Grassi (46), on non-Protozoon nature of Pfeiffer's *Monocystis* in man &c.

Henneguy (64), on spore-formation in *Monocystis agilis* and *M. magna* of earthworm.

Kunstler (80), on *Diplocystis schneideri*, n. g. & sp., in body-cavity of cockroach ; affinities both to *Gregarinida* and *Coccidia*.

Moniez (96), on *Microsporidia*. Specific notes. *Nosema helminthorum* in unarmed *Tæniæ* ; *N. anomala* should probably be excluded ; *N. heteroica* found by Vlacovich in *Coluber carbonarius* ; in *Cyclops*, *N. parva* and *N. virgula*. Necessary to exclude from *Microsporidia*, *Amœbidium* and *Botellus*, *Lecaniascus polymorphus* (*Ascomycete*), the parasite found by Balbiani in *Tortrix viridianus*, and those found by Leydig in the bee.

Moniez (97), on *Gymnospora*.

Pfeiffer (101). *Monocystis epithelialis*, n. sp., from pock-process of mammals.

Pfeiffer (100a-c), on *Sporozoon* of small-pox, &c.

Schneider (115), on new *Coccidia*.

Schneider (116), on *Pericometes*, n. g., &c.

Schneider (117), on n. gg. *Pterocephalus*, *Anthocephalus*.

III.—INFUSORIA.

Andrusov (1), new genera and species from Bay of Kertch. *Vorticella claparedii*, *Zoothamnium ponticum*, *Stichochæta mereschkovskii*, *Urostyla rubra*, *Podophrya marina*, n. spp., *Styloplotes appendiculatus*, n. var., *Pamplota wagneri*, n. g. & sp.

Balbiani (1a), on *Trichorhynchus tuamotuensis*, n. g., with tuft of long, stiff, diverging cilia round conical protuberance above mouth.

Balbiani (2), on life-histories of micro-organisms.

Bergh (4), on division of Dinoflagellates.

Bovier-Lapierre (7), on *Noctiluca*.

Braun (10), on *Ascobium*, supposed n. g. of parasitic Infusorians.

Bronn (11). See Bütschli.

Bütschli (12a), *Noctiluca*.

Bütschli (12a, b, c). *Infusoria* generally—morphology, structure, history of research, bibliography, system.

Bütschli (13), on classification of *Flagellata*.

Cragin (17), on 4 n. spp. *Infusoria* from Kansas.

Daday (18). *Tintinnodeæ*.

Dallinger (20), on Monads ; thermostatic observations.

Dangeard (21), on relationships of *Chytridineæ* and *Chlamydomonadineæ*.

Danysz (25), on life-history of *Gymnodinium musæi*, n. sp.

Gymnodinium musæi, n. sp. Flattened ellipsoidal form, no cuticular envelope ; two unequal parts separated by transverse groove ; irregular ocular prominence and two flagella at middle of one side where groove is obliterated. Reproduction.

Danysz (26), on life-history and species of fresh-water *Peridineæ*.

Gymnodinium glaciale, n. sp. ; *G. muscvi*, Danysz ; *Glenodinium rhomboideum*, n. sp. ; *G. truncatum*, n. sp.

Danysz (26). Development of *Peridineæ*. Active individuals divide, becoming smaller and smaller Fission followed by spore-formation. Spores with two membranes, the outer two-layered (chitinised cellulose outside, cellulose inside), the inner simply the hyaline membranous layer of the protoplasm. Contained chromoleucites, oil and fatty bodies.

Fabre-Domergue (32), on structure of *Infusoria*.

Grassi (46), on *Infusoria* as human commensals.

Grenfell (49), on *Scyphidia amœboea*, n. sp., with pseudopodic attachment to tail of stickleback, with reproduction by transverse division.

Grenfell (49), on *Dinophysis semicarinata*, n. sp.

Gruber (50, 51), on conjugation.

Guerne (57). *Peridinea* as food of sardines.

Hensen (65), on the remarkable difference in the size of *Ceratium* at different seasons.

Kellicott (74), on *Podophrya inclinata*, *P. flexilis*, *Carchesium granulatum*, *Opercularia humilis*, n. spp.

Khawkine (76), on biology of *Astasia* and *Euglena*.

Kirk (77), on *Acineta simplex*, n. sp.

Kirk (77), on n. spp. *Vorticella oblonga*, *V. zealandica*, *Opercularia parallela*.

Klebs (78), on gelatinous substance of Flagellates.

Lindner (81), on new *Vorticella*-like parasite.

Maupas (86–90), on reproduction, conjugation, &c., of *Ciliata*.

Mereschkovsky (90a). *Infusoria* of Black Sea.

Möbius (92). Account of *Folliculina ampulla*.

Möbius (93), on division of *Euplotes*.

Parona (100), on parasitic Flagellates ; *Elvirea*, n. g.

Pouchet (103), on *Peridineæ*.

Pouchet (103), on *Gymnodinium* ; 5 species. *Polykritos auricularia*, Bergh, with a remarkable ovoid body.

Pouchet & de Guerne, J. (104). Peridinians as food of sardines.

Salensky (109), on *Volvox*-like colony as origin of *Metazoa*.

Schütt (118), on spore-formation and life-history of marine *Peridineæ*.

Stokes (122), on new American fresh-water *Infusoria* ; 11 n. spp.

Stokes (123), on new *Hypotricha*. *Onychodromopsis*, n. g. (with soft flexible uncuirassed body) ; *O. flexilis*, n. sp. *Tachysoma*, n. g. (with soft, flexible body, between *Oxytricha* and *Histrio*) ; *T. agile*, *T. mirabile*, *T. parvistylum*, n. spp. Also *Litonotus cermicularis*, *Loxodes magnus*, *Oxytricha bifaria*, *O. hymenostoma*, *O. acuminata*, *O. caudata*, *Histrio inquietus*, *H. complanatus*, *Euplotes variabilis*, *Chilodon vorax*, n. spp. Habits of the last.

Stokes (124). New fresh-water *Infusoria*. *Hexamita spiralis*, *Petalomonas dorsalis*, *P. sulcata*, *Urceolopsis*, n. g. (for *Urceolus sabulosus*), *Trachelomonas urceolata*, *T. verrucosa*, *T. acanthostoma*, *Anisonema solenota*, *Protopteridinium limbatum*, *Holophrya ornata*, *Saprophilus*, n. g., *Saprophilus agitatus*, *Bothriostoma*, n. g., *Bothriostoma undulans*, *Hymenostoma magna* [*um*], *Vorticella pusilla*, *V. mollis*, *V. aqua*[*æ*] *dulcis*, *V. platysoma*,

Opercularia allensi, *O. vestita*, *Thuricola kellicottiana*, *Platycola cælochilus*, *Lagenophrys patina*, *Histrio erethisticus*, *Solenophrya odontophora*, *Acineta bifaria*, *A. macrocaulis*, *A. acuminata*.

STOKES (125), on 13 n. spp. fresh-water Infusorians. *Anthophysa stagnatilis*, *Hexamita gyrans*, *Chloromonas pulcherrima*, *Balinitozoon gyrans*, *Gerda vernalis*, *Rhabdostyla vernalis*, *R. chæticola*, *Vorticella similis*, *V. vernalis*, *V. parasita*, *V. conica*, *Epistylis tincta*, *Lagenophrys obovata*.

STOKES, A. C. (126), on the adoral cilia of *Hypotricha*.

TZENKOVSKY (128A), on *Multicilia marina*, *Exuviaella marina*, n. gg. & spp., *Daphnidium boreale*, *Peridinium rubrum*, n. spp.

WARPACHOWSKY (129), on *Opalina spiculata*, n. sp.

a. GENERAL.

BALBIANI (2). Evolution of micro-organisms.

BRAUN (9). Bibliographic.

BRONN (11). *Cf.* BÜTSCHLI.

BÜTSCHLI (12). Continuation of his *Protozoa*. General discussion of *Infusoria*.

CANESTRINI (15), on course of Protistology.

DANGEARD (22). General.

GRUBER (53), on primitive *Protozoa*.

HÆCKEL (58). General considerations.

RUPERT JONES & SHERBORN (72). Variability of *Foraminifera*.

KERSCHNER (75). General problems.

SALENSKY (109), on origin of *Metazoa* from *Volvox*-like colony.

SCHILL (111), on Leeuwenhoek's discovery of micro-organisms (1674).

SEDGWICK (119), on ancestral Metazoon.

WELDON (131), on *Haplodiscus* compared with a Foraminifer.

b. STRUCTURE.

EBERTH (29), on minute structure of *Thalassicola*. Pores of central capsule ; 3 zones of intra-capsular protoplasm; nature of hyaline spherules; structure of nucleus with narrow-meshed framework, and connected by fine threads with the 15–20 roundish irregular nucleoli.

EBNER (30), on limy skeleton.

ENTZ (31). Histology of *Amœbæ*.

FABRE-DOMERGUE (32), on reticulation of protoplasm.

FOLIN (35), on protoplasm of *Reticularia*.

GRUBER (52), on nervous system of Infusorians, &c.

HÆCKEL (58), on Radiolarian structure.

KUNSTLER (79), on alveolar structure of protoplasm, &c.

KUNSTLER (80), on structure of *Diplocystis schneideri*, n. g. & sp. Like two monocystids joined, with double membrane, outer probably extrinsic, inner is the cuticle or epicyte; striæ irregular, due to minute structure of latter ; transparent ectoplasm (?) ; reticular, granulated endoplasm.

MARSHALL (85), on *Amœba* and *Vorticella* in relation to contractility.

SALENSKY (109), on ancestral Metazoon.
SEDGWICK (119). *Idem.*
STOKES (126), on adoral cilia of *Hypotricha*.

c. PHYSIOLOGY.

BALBIANI (1), on relation between nutrition and reproduction in *Trichorhynchus*, n. g.

DALLINGER (20), on thermal adaptation of Monads.

DANGEARD (21), on nutrition of *Protozoa* and *Protophyta*.

GREENWOOD (48), on digestion in Rhizopods, by fluid poured out on the nutritive particles; a fluid which has no action on cuticle, or cellulose, or siliceous walls, and cannot, apparently, digest fat or starch, and is neutral in reaction.

HÆCKEL (58), on physiology of *Radiolaria*.

KERSCHNER (75), on general physiology illustrated in the *Protozoa*.

KHAWKINE (76), on the differences between *Euglena* and *Astasia*. The chlorophyll of *Euglena* means abundant nutrition, this leads to the immobile stage; one of the products is the exuded mucus; the results of reproduction form groups. *Astasia* is more active, has less to spare for reproduction, and has less chance in famine and other unfavourable conditions.

MARSHALL (85), on contractility.

MAUPAS (87, &c.). Nutrition and reproduction. Herbivorous, carnivorous, omnivorous *Ciliata*. *Cryptochilum*, *Paramœcium*, *Colpoda*, *Tillina*, *Colpidium*, and *Vorticella* feed on *Schizomycetes* and small zoospores; *Stentor*, *Euplotes*, and many *Oxytrichæ* are omnivorous; *Enchelys*, *Didinium*, *Lacrymaria*, *Leucophrys*, *Trachelidæ*, and *Coleps* are carnivorous. The herbivorous population is followed by the carnivorous with approximate regularity.

d. REPRODUCTION.

BALBIANI (1). Criticism of Maupas; reproduction in *Trichorhynchus*, n. g.

BERGH (4), on division in *Dinoflagellata*.

BLOCHMANN (6), on budding of *Euglypha*. This often aborts, bud dies, its dead nucleus may be retracted into original shell and then extruded. Conjugation described, followed by division or encystation; or two may fuse and encyst.

DANYSZ (25), on reproduction of *Gymnodinium musæi*, n. sp. (*a*) Successive divisions; (*b*) formation of spores after fusion of two individuals of minimum size.

DANYSZ (26), on fission and spore-formation in *Peridineæ*.

GRENFELL (49). Division in *Scyphidia*.

GRUBER (50, 51), on conjugation.

GRUBER (52). Division of *Difflugia*, &c.

GRUBER (54), on sexual reproduction and conjugation.

GRUBER (55), on artificial division in *Actinosphærium*.

HÆCKEL (58), on reproduction of *Radiolaria*.

HENNEGUY (64), on spore-formation in *Monocystis*. Corroboration of Schneider's results. Karyokinetic division of nucleus of cyst, migration outwards of nuclei; in other cases whole content of cyst divides into a few masses, and within these the nuclei multiply and migrate. In *Monocystis agilis* only microspore cysts observed. The nucleus of both macrospores and microspores divides by karyokinesis; the results form eight units round residual core of Schneider.

KERSCHNER (75), on reproduction, heredity, &c., illustrated in *Protozoa*.

KHAWKINE, W. (76), on mechanism of reproduction in *Euglena* and *Astasia*. Assimilation obtains more largely in endo- than in ectoplasm, and provokes during abundant nutrition an unstable equilibrium and positive pressure between contents and surface. In famine a "vegetative pressure" between the parts. *Astasia* (without chlorophyll) has a more active life, and has less to spare for reproduction than *Euglena*.

KUNSTLER (80), on development and formation of nuclei in *Diplocystis*, n. g.

MAUPAS (86), conditions of multiplication. In history of *Leucophrys*, with abundant nutrition, fission obtains; when food scarce, metamorphosis occurs without encystation, followed by six successive divisions which have for their end conjugation.

MAUPAS (87), conditions and variations in reproduction. Reproductive power of *Ciliata* depends (1) on the quality and quantity of food, (2) on the temperature, (3) on the alimentary adaptation of the buccal organ. In favourable nutrition, *Stylonichia pustulata* divides once in 24 hours at a temperature of 7°–10° C., twice at 10°–15°, thrice at 15°–20°, four times at 20°–24°, and five times at 24°–27° C. At a temperature of 25°–26° C., a single *Stylonichia* would in 7½ days have a progeny of a hundred billion, weighing 100 kg. With a vegetarian diet the rate is much less, and the size smaller.

MAUPAS (88, 90), on details of conjugation. Phenomena of fertilization now observed in 9 spp. of Ciliated Infusorians—*Paramœcium caudatum*, *P. aurelia*, *Stylonichia pustulata*, *Onychodromus grandis*, *Spirostomum teres*, *Leucophrys patula*, *Euplotes charon*, *Loxophyllum fasciola*, and *Paramœcium bursaria* (by Balbiani).

MAUPAS (89), on specific as opposed to individual advantage in conjugation.

MÖBIUS (93), on direct division of nucleus in *Euplotes*.

SALENSKY (109), phylogenetic importance of reproduction.

SCHEWIAKOFF (110), on karyokinesis of *Euglypha*.

SCHÜTT (118), on spore-formation in *Peridineæ*.

c. PARASITIC (see also *Sporozoa*).

BAUMGARTEN (3), on parasitic *Protozoa*, &c.

BLANCHARD (5). *Hæmatozoa*—bibliography.

BRAUN (10), on *Ascobium*, supposed new genus of parasitic Infusorians.

GIARD (44), on *Podarcella cancerillæ*, n. g., on *Cancerilla*, which again on *Amphiura squamata*.

GRASSI (46), on *Protozoa* parasitic in man.

GRENFELL (49), on *Scyphidia amœbæa*, n. sp., parasitic on tails of sticklebacks.

LINDNER (81), on new *Vorticella*-like parasite.

VAN DER LOEFF (82). *Proteidæ* or *Amœbæ* in *Variola vera*.

MONIEZ (95). Parasites of Daphnids.

PARONA (100), on parasitic *Flagellata*.

PFEIFFER (101A–C), on parasites in small-pox, &c.

WEGMANN (130). Parasitic *Infusoria* on gills of limpet.

f. FAUNISTIC.

CRAGIN (17). Kansas *Infusoria*.

DADAY (19), on Plattensee.

FIELDE (33), on Swatow Rhizopods.

FOREL (36), on fresh-water lakes.

GOURRET & ROESER (45), on *Protozoa* of Marseilles.

HAEUSLER (62), on *Foraminifera* of Hauraki Gulf.

HEILPRIN (63), on fauna of Florida, &c.

HENSEN (65). *Dinoflagellata*, *Radiolaria*, *Foraminifera*, &c.

IMHOF (66–70), on Fauna of Alpine lakes. *Ceratium hirundinella*, O. F. Müller, *C. cornutum*, Ehrbg.; *Dinobryon divergens*, Imhof, *D. sociale*, Ehrbg., *D. petiolatum*, Duj., *D. sertularia*, Ehrbg., *D. sertularia*, var. *alpinum*, Imh., *D. elongatum*, Imh.; *Epistylis lacustris*, Imh.; *Peridinium privum*, Imh., *P. tabulatum*, Ehrbg., *P.* sp.; *Vorticella* sp.; *Salpingœca convallaria*, Stein; *Stentor* sp. *Ceratium hirundinella* up to 1993 m.; *Peridinium* to 2222 m.; *Dinobryon* to 2500 m.

KIRK (77). New Zealand *Infusoria*.

MERESCHKOVSKY (90A). Black Sea.

MÖBIUS (94). Baltic.

NORDQVIST (99), on Finland lakes.

RICHARD (105), on Auvergne lakes.

STOKES (122, &c.). American fresh-water *Infusoria*.

TERRIGI (127). Marsh Rhizopods.

TZENKOVSKY (128A). *Infusoria* of White Sea.

WHITELEGGE (132). Rhizopods of N.S. Wales.

WRIGHT (134, 134A), on S.W. of Ireland.

ZACHARIAS (135), on *Protozoa*, &c., of North German lakes

ZACHARIAS (136). West Prussian lakes.

ZACHARIAS (137), on Holstein lakes.

g. PALÆONTOLOGY.

CANAVARI (14), on Triassic *Foraminifera*.

CASTRACANE (16), on Tripoli deposit.

DAWSON (27), on *Eozoon*.

DEECKE (28). *Foraminifera* of Oxford strata.

FORNASINI, C. (37–42), on *Foraminifera*.
GRATACAP (47), on Eozoonal rock.
HAEUSLER (60, 61), on *Foraminifera* of Jurassic, Cretaceous, Liassic
RUPERT JONES (71), on English *Nummulites*.
KEEPING (73), on a *Nummulina* zone.
MALAGOLI (83). *Foraminifera*.
MARIANI (84), on Pliocene *Foraminifera*.
MEYER (91), on Eocene *Foraminifera*.
PHILIPPSON (102), on Cretaceous *Foraminifera*.
RÜST (107), on Radiolarians from Lower Silurian, Chalk, &c.
RZEHAK (108, 108A, 108B), on Oligocœne *Foraminifera*.
SCHLUMBERGER (113), on *Biloculina*.
TUTKOWSKY (128), on Cretaceous and Tertiary *Foraminifera*.

INDEX TO

GENERA AND SUBGENERA RECORDED AS NEW IN THIS VOLUME,

INCLUDING NEW NAMES FOR GENERA ALREADY CHARACTERIZED.

Abderites, *Ameghino*, Mamm. 54
Ablapsis, *Reitter*, Ins. 140
Acanthascus, *F. E. Schulze*, Spong. 16
Acanthochthebius, *Kuwert*, Ins. 96
Acanthognathus, *Mayr*, Ins. 189
Acanthomysis, *Czerniavsky*, Crust. 21
Acanthoproctus, *Karsch*, Ins. 319
Acanthornis, *Legge*, Aves 54
Acanthostichus, *Mayr*, Ins. 187
Acaremys, *Ameghino*, Mamm. 36
Acdestis, *Ameghino*, Mamm. 54
Acis, *Berlese*, Arachn. 18
Acleros, *Mabille*, Ins. 229
Acmosara, *Meyrick*, Ins. 275
Acrocyon, *Ameghino*, Mamm. 24
Acropteroxys, *Gorham*, Ins. 175
Acrotherium, *Ameghino*, Mamm. 39
Acothyreus, *Ashmead*, Ins. 205
Actænia, *Ragonot*, Ins. 262
Actinastrum, *Hæckel*, Prot. 14
Actissa, *Hæckel*, Prot. 13
Acyon, *Ameghino*, Mamm. 24
Adelosemia, *Ragonot*, Ins. 268
Adelotherium, *Ameghino*, Mamm. 43
Adelphagus, *Saussure*, Ins. 320
Adelphomys, *Ameghino*, Mamm. 36
Adelphotherium, *Ameghino*, Mamm. 39
Adeonellopsis, *MacGillivray*, Pol. 14
Adinotherium, *Ameghino*, Mamm. 40
Adoretopsis, *Fairmaire*, Ins. 126
Adrastotherium, *Ameghino*, Mamm. 43
Aeschrocoris, *Bergroth*, Ins. 301
Agabidius, *Seidlitz*, Ins. 94
Agamopus, *Bates*, Ins. 119
Aganacanthus, *Traquair*, Pisces 11 (xxi)*
Aglaino, *Staudinger*, Ins. 234
Agnaptoria, *Reitter*, Ins. 140
Agustylus, *Ameghino*, Mamm. 24
Ailurictis, *Trouessart*, Mamm. 25
Alastor, *Weithofer*, Mamm. 30
Allanalges, *Trouessart*, Arachn. 27
Allodonta, *Staudinger*, Ins. 241
Allops, *Marsh*, Mamm. 42
Alytus, *Jacoby*, Ins. 170
Amalivaca, *Distant*, Ins. 307
Amathuxidia, *Staudinger*, Ins. 217
Amaxidia, *Staudinger*, Ins. 217
Amiichthys, *Jordan*, Pisces 15
Amorphinopsis, *Carter*, Spong. 15
Amphilaphurus, *A. S. Woodward*, Pisces 12
Amphimeloides, *Jacoby*, Ins. 170
Amphinerita, *Martens*, Moll. 79
Amphiscopus, *Westerlund*, Moll. 62
Amphitholonium, *Hæckel*, Prot. 14
Amphitholus, *Hæckel*, Prot. 14
Amphitylus, *Osborn*, Mamm. 56
Amuria, *Staudinger*, Ins. 234
Amygdaloptera, *Gumppenberg*, Ins. 260
Anæretus, *Dugès*, Ins. 159
Analloptes, *Trouessart*, Arachn. 28
Anapagurus, *Henderson*, Crust. 20
Anatherium, *Ameghino*, Mamm. 24
Anchylarthron, *Brendel*, Ins. 107
Ancylodes, *Ragonot*, Ins. 268
Ancylometis, *Meyrick*, Ins. 275
Androspyris, *Hæckel*, Prot. 15
Aneucamptus, *Sharp*, Ins. 103
Anhanga, *Distant*, Ins. 299

* The roman numerals in brackets refer to previous volumes of the RECORD, from the indexes of which the generic names in question have been omitted.

Ankistrophorus, *Walsingham*, Ins. 274
Anomalophylla, *Reitter*, Ins. 123
Anomomera, *Fairmaire*, Ins. 168
Anomophthalmus, *Fairmaire*, Ins. 90 (xxi)
Anoristia, *Ragonot*, Ins. 268
Antherochalina, *Lendenfeld*, Spong. 13
Anthobiodes, *Weise*, Ins. 169
Anthocephalus, *Schneider*, Prot. 16
Anthocyrtium, *Hæckel*, Prot. 15
Anthocyrtoma, *Hæckel*, Prot. 15
Aphaonus, *Reitter*, Ins. 92
Aphrotriche, *Lendenfeld*, Spong. 12
Aporosaura, *Boulenger*, Rept. 12
Aporolaus, *Bates*, Ins. 123
Aporrhipis, *Pascoe*, Ins. 149
Apothinus, *Sharp*, Ins. 107
Aprocta, *Linstow*, Verm. 28
Apsinota, *Wulp*, Ins. 297
Arachnopila, *Hæckel*, Prot. 14
Archæomysis, *Czerniavsky*, Crust. 21
Archæoteuthis, *Wettstein*, Pisces 16
Archicarabus, *Seidlitz*, Ins. 88
Archicircus, *Hæckel*, Prot. 15
Archidiscus, *Hæckel*, Prot. 14
Arenochalina, *Lendenfeld*, Spong. 13
Arcoptera, *Heilprin*, Moll. 81
Arctomysis, *Czerniavsky*, Crust. 22
Argyromya, *Fischer*, Moll. 85
Aria, *Ragonot*, Ins. 268
Aridelus, *Marshall*, Ins. 196
Aristosuchus, *Seeley*, Rept. 21
Armenosoma, *Waterhouse*, Ins. 131
Arnyllium, *Reitter*, Ins. 48 (xxi)
Artostrobus, *Hæckel*, Prot. 15
Ascobium, *Braun*, Prot. 20
Aspidopholas, *Fischer*, Moll. 84
Asthenodon, *Marsh*, Mamm. 56
Astiphrommus, *Thomson*, Ins. 214 (xxiii)
Astrocapsa, *Hæckel*, Prot. 14
Astrosphæra, *Hæckel*, Prot. 14
Athrodon, *Osborn*, Mamm. 56
Atmetochilus, *Simon*, Arachn. 17
Atomophis, *Cope*, Rept. 18
Atreus, *Grote*, Ins. 232
Atrypotherium, *Ameghino*, Mamm. 40
Aulacochthebius, *Kuwert*, Ins. 96
Aulactinium, *Hæckel*, Prot. 15
Aularia, *Hæckel*, Prot. 15
Aulascus, *F. E. Schulze*, Spong. 16
Aulastrum, *Hæckel*, Prot. 15
Aulatractus, *Hæckel*, Prot. 15
Aulocalyx, *F. E. Schulze*, Spong. 14
Auloceros, *Hæckel*, Prot. 15
Aulochone, *F. E. Schulze*, Spong. 16
Aulodendron, *Hæckel*, Prot. 15
Aulonia, *Hæckel*, Prot. 15
Aulophacus, *Hæckel*, Prot. 15
Auloscenia, *Hæckel*, Prot. 15
Aulospathis, *Hæckel*, Prot. 15
Autarcontes, *Waterhouse*, Ins. 132
Autocarabus, *Seidlitz*, Ins. 88
Autodax, *Boulenger*, Rept. 33
Axellipsis, *Hæckel*, Prot. 14
Axinota, *Wulp*, Ins. 312 (xxiii)
Axodiscus, *Hæckel*, Prot. 14
Axoprunum, *Hæckel*, Prot. 14

Bactrellaria, *Marsson*, Pol. 13
Balanites, *F. E. Schulze*, Spong. 16
Balanomis, *Meyrick*, Ins. 268
Balantiostoma, *Marsson*, Pol. 16
Barathrobius, *Danielssen*, Cœl. 12
Barsenis, *Pascoe*, Ins. 148
Bassettia, *Ashmead*, Ins. 204
Bathydorus, *F. E. Schulze*, Spong. 16
Bathystoma, *Marsson*, Pol. 15
Batoctenus, *Sharp*, Ins. 106
Batrachylodes, *Boulenger*, Rept. 30
Batrisobryaxis, *Schaufuss*, Ins. 106
Bazaria, *Ragonet*, Ins. 268
Belonostaurus, *Hæckel*, Prot. 14
Belonozoum, *Hæckel*, Prot. 14
Berlepschia, *Ridgway*, Aves, 42
Bettaia, *Bedriaga*, Rept. 13 (xxiii)
Bicorbula, *Fischer*, Moll. 84
Biotus, *Casey*, Ins. 104
Bipora, *Whitelegge*, Pol. 17
Bivetia, *Jousseaume*, Moll. 68
Bivetopsia, *Jousseaume*, Moll. 68
Blumenus, *Belon*, Ins. 115
Bolbomorphus, *Gorham*, Ins. 177
Bolivarella, *Saussure*, Ins. 321
Bolteria, *Uhler*, Ins. 303
Bonellitia, *Jousseaume*, Moll. 68
Borbacha, *Moore*, Ins. 257
Borhyæna, *Ameghino*, Mamm. 24
Bothriostoma, *Stokes*, Prot. 17
Botryopera, *Hæckel*, Prot. 15
Bournonia, *Fischer*, Moll. 83
Bracebridgia *MacGillivray*, Pol. 16
Brachyprionus, *Jakowleff*, Ins. 160
Bradyopisthius, *Karsch*, Ins. 319
Brocchinia, *Jousseaume*, Moll. 68
Brontops, *Marsh*, Mamm. 42
Brissopneustes, *Cotteau*, Ech. 11
Buccinosphæra, *Hæckel*, Prot. 14
Burrica, *Ridgway*, Aves, 45

Bythinogaster, *Schaufuss*, Ins. 107
Bythinomorpha, *Schaufuss*, Ins. 107

Caccoplectus, *Sharp*, Ins. 107
Cacosternum, *Boulenger*, Rept. 31
Cadomella, *Oehlert*, Brach. 4
Calaxis, *Letourneux & Bourguignat*, Moll. 64
Calcarata, *Jousseaume*, Moll. 68
Callidora, *Thomson*, Ins. 193
Callipyndax, *Waterhouse*, Ins. 131
Calliscapterus, *Macleay*, Ins. 90
Calluga, *Moore*, Ins. 260
Calocarabus, *Semenow*, Ins. 88
Calochthebius, *Kuwert*, Ins. 96
Calotheca, *Heyden*, Ins. 169
Calycanthocrinus, *Follmann*, Ech. 14
Calyptomyrmex, *Emery*, Ins. 190
Caminosphæra, *Hæckel*, Prot. 14
Camptocarpus, *Gorham*, Ins. 175
Camptochthebius, *Kuwert*, Ins. 96
Camptotarsus, *Thorell*, Arachn. 17
Canericepon, *Giard*, Crust. 24
Canerion, *Giard*, Crust. 24
Cannartidium, *Hæckel*, Prot. 14
Cannartiscus, *Hæckel*, Prot. 14
Cannobelos, *Hæckel*, Prot. 14
Cannocapsa, *Hæckel*, Prot. 14
Cannopilus, *Hæckel*, Prot. 15
Cantharospyris, *Hæckel*, Prot. 15
Capitomastus, *Eisig*, Verm. 31
Capnoda, *Jakowleff*, Ins. 300
Carchares, *Pascoe*, Ins. 139
Carenoscaphus, *Macleay*, Ins. 90
Carpocanistrum, *Hæckel*, Prot. 15
Carpocystites, *Oehlert*, Ech. 14
Caspia, *Dybowski*, Moll. 74
Castorura, *Meyrick*, Ins. 277
Catætyx, *Günther*, Pisces, 23
Catamerus, *Fairmaire*, Ins. 144
Cataphractus, *Behrens*, Ins. 151
Catastictis, *Gumppenberg*, Ins. 260
Catinulus, *Hæckel*, Prot. 15
Catoptyx, *Matthews*, Ins. 179
Catoria, *Moore*, Ins. 255
Caulocalyx, *F. E. Schulze*, Spong. 15
Caulophacus, *F. E. Schulze*, Spong. 16
Cavarinella, *Marsson*, Pol. 9
Cavilucina, *Fischer*, Moll. 85
Cediocera, *Pascoe*, Ins. 159
Celœnopsis, *Kramer*, Arachn. 21
Cenellipsis, *Hæckel*, Prot. 14
Cenocapsa, *Hæckel*, Prot. 14
Cenodiscus, *Hæckel*, Prot. 14
Cenolarcus, *Hæckel*, Prot. 14
Centrocubus, *Hæckel*, Prot. 14
Centrometopia, *Ragonot*, Ins. 268
Centrophoroides, *Davis*, Pisces, 9
Ceraochalina, *Lendenfeld*, Spong. 13
Cerathosia, *Smith*, Ins. 236
Ceratobatrachus, *Boulenger*, Rept. 15 (xxi)
Ceratophysetis, *Meyrick*, Ins. 275
Ceratoptilus, *Bouvier*, Moll. 70
Cetoconcha, *Dall*, Moll. 102 (xxiii)
Chabria, *Jacoby*, Ins. 170
Chætaspis, *Bollman*, Myr. 10
Chætorhopalus, *Raffray*, Ins. 108
Chainodictyon, *Foerste*, Pol. 11
Chalinella, *Lendenfeld*, Spong. 13
Chalinissa, *Lendenfeld*, Spong. 13
Chalinopora, *Lendenfeld*, Spong. 13
Chalinodendron, *Lendenfeld*, Spong. 13
Chalinorhaphis, *Lendenfeld*, Spong. 13
Chamæthlypis, *Ridgway*, Aves, 49
Chalcidoptera, *Butler*, Ins. 263
Chalcidoseps, *Boulenger*, Rept. 14
Charazella, *Pictet & Saussure*, Ins. 320
Charhyphus, *Sharp*, Ins. 102
Charltona, *Swinhoe*, Ins. 288 (xxiii)
Cheilochthebius, *Kuwert*, Ins. 96
Chelyopsis, *Smets*, Rept. 25
Cheritrella, *Nicéville*, Ins. 223
Cheylabis, *Trouessart*, Arachn. 29
Cheyletiella, *Canestrini*, Arachn. 19
Chiastolus, *Hæckel*, Prot. 14
Chimæropsis, *Zittel*, Pisces, 10
Chirobelemnon, *Pfeffer*, Cœl. 13
Chirochthebius, *Kuwert*, Ins. 96
Chlamydochæra, *Sharpe*, Aves, 43
Chlinocephalus, *Rintori*, Crust. 20
Chœnicosphæra, *Hæckel*, Prot. 14
Chogada, *Moore*, Ins. 255
Chondressus, *Bates*, Ins. 106 (xxiii)
Chondria, *Gorham*, Ins. 178
Chondrostus, *Cope*, Rept. 33
Chonelasma, *F. E. Schulze*, Spong. 14
Chorimerium, *Behrens*, Ins. 147
Chortoglyphus, *Berlese*, Arachn. 20
Christophia, *Ragonet*, Ins. 268
Chrysaspis, *Saussure*, Ins. 191
Chthonius, *Bolivar*, Ins. 321
Circocytonus, *Budde-Lund*, Crust. 36 (xxiii)
Circogonia, *Hæckel*, Prot. 15
Circorrhegma, *Hæckel*, Prot. 15

Circotympanum, *Hæckel*, Prot. 15
Citrinophila, *Kirby*, Ins. 223
Clada, *Pascoe*, Ins. 138
Cladosictis, *Ameghino*, Mamm. 24
Claviporella, *MacGillivray*, Pol. 12
Cleonica, *Jacoby*, Ins. 169
Clessinia, *Dybowski*, Moll. 75
Clinopora, *Marsson*, Pol. 9
Cnemaspis, *Strauch*, Rept. 9
Cnethodonta, *Staudinger*, Ins. 241
Coanaco, *Distant*, Ins. 306
Cobboldia, *Brauer*, Ins. 292
Coccolarcus, *Hæckel*, Prot. 14
Cœlagalma, *Hæckel*, Prot. 15
Cœlocephala, *Karsch*, Ins. 296
Cœlodasea, *Hæckel*, Prot. 15
Cœlodecas, *Hæckel*, Prot. 15
Cœlodoras, *Hæckel*, Prot. 15
Cœlographis, *Hæckel*, Prot. 15
Cœloplegma, *Hæckel*, Prot. 15
Cœlospathis, *Hæckel*, Prot. 15
Cœlostylus, *Hæckel*, Prot. 15
Cœlotholus, *Hæckel*, Prot. 15
Cœnogenes, *Walsingham*, Ins. 274
Cœnoprosopis, *Holmberg*, Ins. 180
Colobosaura, *Boulenger*, Rept. 11
Colonia, *Olliff*, Ins. 99
Colpochthebius, *Kuwert*, Ins. 96
Colubrellina, *Fischer*, Moll. 43 (xxi)
Columnotheca, *Marsson*, Pol. 15
Comophorus, *Alphéraky*, Ins. 249
Conchasma, *Hæckel*, Prot. 15
Conchellium, *Hæckel*, Prot. 15
Conchonia, *Hæckel*, Prot. 15
Conchotopoda, *Karsch*, Ins. 318
Constantia, *Ragonot*, Ins. 263
Copismerinthus, *Grote*, Ins. 232
Cophophryne, *Boulenger*, Rept. 31
Cophura, *Osten-Sacken*, Ins. 284
Coptereucoila, *Ashmead*, Ins. 205
Coptotettix, *Bolivar*, Ins. 322
Coquerelidia, *Reuter*, Ins. 300
Coraster, *Cotteau*, Ech. 11
Corina, *Westerlund*, Moll. 63
Corocalyptra, *Hæckel*, Prot. 15
Coronosphæra, *Hæckel*, Prot. 14
Cortina, *Hæckel*, Prot. 15
Cortinetta, *Hæckel*, Prot. 15
Cortiniscus, *Hæckel*, Prot. 15
Coscinaspis, *Hæckel*, Prot. 14
Coscinomma, *Hæckel*, Prot. 14
Coscinopleura, *Marsson*, Pol. 16
Cossulus, *Staudinger*, Ins. 247
Cossura, *Webster*, Verm. 32
Cota, *Bolivar*, Ins. 321
Cotys, *Bolivar*, Ins. 322
Craspedozoum, *MacGillivray*, Pol. 12
Creagrophorus, *Matthews*, Ins. 112
Cremacrinus, *Ulrich*, Ech. 14
Crimisus, *Bolivar*, Ins. 322
Criotettix, *Bolivar*, Ins. 321
Crisidmonea, *Marsson*, Pol. 10
Cromyatractus, *Hæckel*, Prot. 14
Cromyocarpus, *Hæckel*, Prot. 14
Cromyodruppa, *Hæckel*, Prot. 14
Crucidiscus, *Hæckel*, Prot. 14
Cryphorinula, *Schaufuss*, Ins. 106
Cryptoglena, *Marsson*, Pol. 9
Cryptostoma, *Marsson*, Pol. 16
Cubaxonium, *Hæckel*, Prot. 14
Cubosphæra, *Hæckel*, Prot. 14
Cubotholonium, *Hæckel*, Prot. 14
Cubotholus, *Hæckel*, Prot. 14
Cuphotes, *Champion*, Ins. 146
Cusiala, *Moore*, Ins. 255
Cyclestheria, *Sars*, Crust. 25
Cyclograptus, *Spencer*, Cœl. 18
Cylindrembolus, *Reitter*, Ins. 107
Cylindrarctus, *Schaufuss*, Ins. 109
Cyllias, *Borallius*, Crust. 22
Cymostyla, *Martens*, Moll. 79
Cyparsis, *Hæckel*, Prot. 14
Cyphantha, *Hæckel*, Prot. 14.
Cyphidinium, *Hæckel*, Prot. 14
Cyphocolpus, *Hæckel*, Prot. 14
Cyphonium, *Hæckel*, Prot. 14
Cyphothorax, *Waterhouse*, Ins. 132
Cyriopagopus, *Simon*, Arachn. 17
Cyrtaulon, *F. E. Schulze*, Spong. 17
Cystophormis, *Hæckel*, Prot. 15
Cyrtochthebius, *Kuwert*, Ins. 96
Cyriophthalmus, *Faust*, Ins. 154
Cyttoides, *Wettstein*, Pisces 18

Dactylocalyx, *F. E. Schulze*, Spong. 14
Dairella, *Borallius*, Crust. 23
Dalmina, *Raffray*, Ins. 107
Danacæna, *Reitter*, Ins. 137
Danalia, *Giard*, Crust. 24
Danielssenia, *Greig*, Cœl. 13
Dapsiloderus, *Fairmaire*, Ins. 148
Dasydactylus, *Gorham*, Ins. 175
Dasytherion, *Mabille*, Moll. 76
Dasyurodon, *Andrea*, Mamm. 24
Dattinia, *Ragonot*, Ins. 263
Daulaxius, *Pascoe*, Ins. 153
Dectocera, *Ragonot*, Ins. 269
Deilonche, *Grote*, Ins. 231
Delothraupis, *Sclater*, Aves 56
Deltacrinus, *Ulrich*, Ech. 14
Demarchus, *Jacoby*, Ins. 170
Dengitha, *Reitter*, Ins. 139
Dentilucina, *Fischer*, Moll. 85
Dentinodia, *Ragonot*, Ins. 269

Desmartus, *Hæckel*, Prot. 14
Desmocampe, *Hæckel*, Prot. 14
Diadophorus, *Ameghino*, Mamm. 43
Diaglenia, *Cope*, Rept. 32
Diapterna, *Horn*, Ins. 121
Dicaulocephalus, *Gestro*, Ins. 126
Dicolpomys, *Winge*, Mamm. 36
Dictyaspis, *Hæckel*, Prot. 14
Dictyocalyx, *F. E. Schulze*, Spong. 17
Didalsus, *Fairmaire*, Ins. 166
Diduga, *Moore*, Ins. 237
Dimicrostrophis, *Ashmead*, Ins. 205
Dimicrosthopis, *Ashmead*, Ins. 204
Dinichus, *Pascoe*, Ins. 155
Dinychus, *Kramer*, Arachn. 22
Dicœcoderus, *Fairmaire*, Ins. 152
Dioptropora, *Marsson*, Pol. 16
Diommatus, *Uhler*, Ins. 303
Diplacanthopoma, *Günther*, Pisces 24
Diplocolpus, *Hæckel*, Prot. 14
Diplocyrtus, *Quedenfeldt*, Ins. 144
Diplocystis, *Kunstler*, Prot. 18
Diplonyx, *Saussure*, Ins. 184
Diplophorus, *Fairmaire*, Ins. 137
Diporaspis, *Hæckel*, Prot. 14
Dirodes, *Pascoe*, Ins. 155
Dirrhox, *Cope*, Rept. 18
Discodamalis, *Karsch*, Ins. 285
Discogonium, *Hæckel*, Prot. 14
Discopus, *Imhof*, Verm. 29
Discopyle, *Hæckel*, Prot. 14
Dispinthera, *Gosse*, Verm. 29
Displotera, *Reitter*, Ins. 115
Distriactis, *Hæckel*, Prot. 14
Dittocephalus, *Parona*, Verm. 26
Dizonium, *Hæckel*, Prot. 14
Dodecaspis, *Hæckel*, Prot. 14
Dolbina, *Staudinger*, Ins. 231
Doloporus, *Candèze*, Ins. 12[illegible]
Doranaga, *Moore*, Ins. 253
Dordanca, *Reitter*, Ins. 139
Doryagus, *Pascoe*, Ins. 142
Doryochthebius, *Kuwert*, Ins. 96
Doryscus, *Jacoby*, Ins. 174
Douvillina, *Œhlert*, Brach. 4
Draconata, *Pictet & Saussure*, Ins. 320
Drepanorhynchus, *Fischer & Reichenow*, Aves 43 (xxi)
Drifa, *Danielssen*, Cœl. 12
Druppatractus, *Hæckel*, Prot. 14
Druppocarpus, *Hæckel*, Prot. 14
Druppula, *Hæckel*, Prot. 14
Dyerocera, *Pascoe*, Ins. 153
Dysideissa, *Lendenfeld*, Spong. 12
Dystympanum, *Hæckel*, Prot. 15
Ealopsis, *Canestrini*, Arachn. 19.
Ecbletus, *Sharp*, Ins. 102
Eccoptochthebius, *Kuwert*, Ins. 96
Ecitochara, *Wasmann*, Ins. 97
Ecitopora, *Wasmann*, Ins. 98
Echinacturia, *Hæckel*, Prot. 14
Echinochama, *Fischer*, Moll. 82
Ecphora, *Thomson*, Ins. 193
Ectomychus, *Gorham*, Ins. 177
Elatomma, *Hæckel*, Prot. 14
Elegia, *Ragonot*, Ins. 269
Eleleus, *Bolivar*, Ins. 321
Ellipsidium, *Hæckel*, Prot. 14
Ellipsostylus, *Hæckel*, Prot. 14
Elvirea, *Parona*, Prot. 17
Embolimus, *Rominger*, Arachn. 31
Emporia, *Ragonot*, Ins. 269
Endytocera, *Sharp*, Ins. 109
Ennecodon, *Marsh*, Mamm. 56
Enyaliopsis, *Karsch*, Ins. 319
Eoauchenia, *Ameghino*, Mamm. 46
Eocardia, *Ameghino*, Mamm. 37
Epaemus, *Osten-Sacken*, Ins. 286
Epharpastis, *Meyrick*, Ins. 264
Epichronistis, *Meyrick*, Ins. 285 (xxiii)
Epidictyon, *Marsson*, Pol. 10
Epitelphusa, *Drago*, Verm. 31
Epizorus, *Pascoe*, Ins. 151
Ereynetes, *Berlese*, Arachn. 22
Eriochiton, *Maskell*, Ins. 310
Ernophthora, *Meyrick*, Ins. 269
Erquelinnesia, *Dollo*, Rept. 25
Erythrosphodrus, *Reuter*, Ins. 305
Estria, *Poirier*, Moll. 56
Etheridgina, *Œhlert*, Brach. 4
Ethocles, *Webster*, Verm. 32
Euarctia, *Staudinger*, Ins. 235
Euchalina, *Lendenfeld*, Spong. 13
Euchalinopsis, *Lendenfeld*, Spong. 13
Eucholæops, *Ameghino*, Mamm. 51
Eucoilidia, *Ashmead*, Ins. 205
Euceribanchus, *Costa*, Ins. 194
Eudæmonius, *Lewis*, Ins. 177
Eumalus, *Sharp*, Ins. 103
Eumayria, *Ashmead*, Ins. 204
Euphlœus, *Pascoe*, Ins. 145
Euphysetta, *Hæckel*, Prot. 15
Euplacella, *Lendenfeld*, Spong. 13
Euplœamina, *Holland*, Ins. 219
Euplœopsis, *Nicéville*, Ins. 209
Euprymna, *Steenstrup*, Moll. 54
Eurete, *F. E. Schulze*, Spong. 16
Eurhanius, *Reitter*, Ins. 115
Eurhexius, *Sharp*, Ins. 108
Euryodon, *Leidy*, Mamm. 56 (xxiii)
Eurygnathus, *Davis*, Pisces 30

Circotympanum, *Hæckel*, Prot. 15
Citrinophila, *Kirby*, Ins. 223
Clada, *Pascoe*, Ins. 138
Cladosictis, *Ameghino*, Mamm. 24
Claviporella, *MacGillivray*, Pol. 12
Cleonica, *Jacoby*, Ins. 169
Clessinia, *Dybowski*, Moll. 75
Clinopora, *Marsson*, Pol. 9
Cnemaspis, *Strauch*, Rept. 9
Cnethodonta, *Staudinger*, Ins. 241
Coanaco, *Distant*, Ins. 306
Cobboldia, *Brauer*, Ins. 292
Coccolarcus, *Hæckel*, Prot. 14
Cœlagalma, *Hæckel*, Prot. 15
Cœlocephala, *Karsch*, Ins. 296
Cœlodasea, *Hæckel*, Prot. 15
Cœlodecas, *Hæckel*, Prot. 15
Cœlodoras, *Hæckel*, Prot. 15
Cœlographis, *Hæckel*, Prot. 15
Cœloplegma, *Hæckel*, Prot. 15
Cœlospathis, *Hæckel*, Prot. 15
Cœlostylus, *Hæckel*, Prot. 15
Cœlotholus, *Hæckel*, Prot. 15
Cœnogenes, *Walsingham*, Ins. 274
Cœnoprosopis, *Holmberg*, Ins. 180
Colobosaura, *Boulenger*, Rept. 11
Colonia, *Olliff*, Ins. 99
Colpochthebius, *Kuwert*, Ins. 96
Colubrellina, *Fischer*, Moll. 43 (xxi)
Columnotheca, *Marsson*, Pol. 15
Comophorus, *Alphéraky*, Ins. 249
Conchasma, *Hæckel*, Prot. 15
Conchellium, *Hæckel*, Prot. 15
Conchonia, *Hæckel*, Prot. 15
Conchotopoda, *Karsch*, Ins. 318
Constantia, *Ragonot*, Ins. 263
Copismerinthus, *Grote*, Ins. 232
Cophophryne, *Boulenger*, Rept. 31
Cophura, *Osten-Sacken*, Ins. 284
Coptereucoila, *Ashmead*, Ins. 205
Coptotettix, *Bolivar*, Ins. 322
Coquerelidia, *Reuter*, Ins. 309
Coraster, *Cotteau*, Ech. 11
Corina, *Westerlund*, Moll. 63
Corocalyptra, *Hæckel*, Prot. 15
Coronosphæra, *Hæckel*, Prot. 14
Cortina, *Hæckel*, Prot. 15
Cortinetta, *Hæckel*, Prot. 15
Cortiniscus, *Hæckel*, Prot. 15
Coscinaspis, *Hæckel*, Prot. 14
Coscinomma, *Hæckel*, Prot. 14
Coscinopleura, *Marsson*, Pol. 16
Cossulus, *Staudinger*, Ins. 247
Cossura, *Webster*, Verm. 32
Cota, *Bolivar*, Ins. 321
Cotys, *Bolivar*, Ins. 322
Craspedozoum, *MacGillivray*, Pol. 12
Creagrophorus, *Matthews*, Ins. 112
Cremacrinus, *Ulrich*, Ech. 14
Crimisus, *Bolivar*, Ins. 322
Criotettix, *Bolivar*, Ins. 321
Crisidmonea, *Marsson*, Pol. 10
Cromyatractus, *Hæckel*, Prot. 14
Cromyocarpus, *Hæckel*, Prot. 14
Cromyodruppa, *Hæckel*, Prot. 14
Crucidiscus, *Hæckel*, Prot. 14
Cryphorinula, *Schaufuss*, Ins. 106
Cryptoglena, *Marsson*, Pol. 9
Cryptostoma, *Marsson*, Pol. 16
Cubaxonium, *Hæckel*, Prot. 14
Cubosphæra, *Hæckel*, Prot. 14
Cubotholonium, *Hæckel*, Prot. 14
Cubotholus, *Hæckel*, Prot. 14
Cuphotes, *Champion*, Ins. 146
Cusiala, *Moore*, Ins. 255
Cyclestheria, *Sars*, Crust. 25
Cyclograptus, *Spencer*, Cœl. 18
Cylindrembolus, *Reitter*, Ins. 107
Cylindrarctus, *Schaufuss*, Ins. 109
Cyllias, *Bovallius*, Crust. 22
Cymostyla, *Martens*, Moll. 79
Cyparsis, *Hæckel*, Prot. 14
Cyphantha, *Hæckel*, Prot. 14.
Cyphidinium, *Hæckel*, Prot. 14
Cyphocolpus, *Hæckel*, Prot. 14
Cyphonium, *Hæckel*, Prot. 14
Cyphothorax, *Waterhouse*, Ins. 132
Cyriopagopus, *Simon*, Arachn. 17
Cyrtaulon, *F. E. Schulze*, Spong. 17
Cystophormis, *Hæckel*, Prot. 15
Cyrtochthebius, *Kuwert*, Ins. 96
Cyriophthalmus, *Faust*, Ins. 154
Cyttoides, *Wettstein*, Pisces 18

Dactylocalyx, *F. E. Schulze*, Spong. 14
Dairella, *Bovallius*, Crust. 23
Dalmina, *Raffray*, Ins. 107
Danacæna, *Reitter*, Ins. 137
Danalia, *Giard*, Crust. 24
Danielssenia, *Greig*, Cœl. 13
Dapsiloderus, *Fairmaire*, Ins. 148
Dasydactylus, *Gorham*, Ins. 175
Dasytherion, *Mabille*, Moll. 76
Dasyurodon, *Andrea*, Mamm. 24
Dattinia, *Ragonot*, Ins. 263
Daulaxius, *Pascoe*, Ins. 153
Dectocera, *Ragonot*, Ins. 269
Deilonche, *Grote*, Ins. 231
Delothraupis, *Sclater*, Aves 56
Deltacrinus, *Ulrich*, Ech. 14
Demarchus, *Jacoby*, Ins. 170
Dengitha, *Reitter*, Ins. 139
Dentilucina, *Fischer*, Moll. 85
Dentinodia, *Ragonot*, Ins. 269

Desmartus, *Hæckel*, Prot. 14
Desmocampe, *Hæckel*, Prot. 14
Diadophorus, *Ameghino*, Mamm. 43
Diaglenia, *Cope*, Rept. 32
Diapterna, *Horn*, Ins. 121
Dicaulocephalus, *Gestro*, Ins. 126
Dicolpomys, *Winge*, Mamm. 36
Dictyaspis, *Hæckel*, Prot. 14
Dictyocalyx, *F. E. Schulze*, Spong. 17
Didalsus, *Fairmaire*, Ins. 166
Diduga, *Moore*, Ins. 237
Dimicrostrophis, *Ashmead*, Ins. 205
Dimicrosthopis, *Ashmead*, Ins. 204
Dinichus, *Pascoe*, Ins. 155
Dinychus, *Kramer*, Arachn. 22
Dicœcoderus, *Fairmaire*, Ins. 152
Dioptropora, *Marsson*, Pol. 16
Diommatus, *Uhler*, Ins. 303
Diplacanthopoma, *Günther*, Pisces 24
Diplocolpus, *Hæckel*, Prot. 14
Diplocyrtus, *Quedenfeldt*, Ins. 144
Diplocystis, *Kunstler*, Prot. 18
Diplonyx, *Saussure*, Ins. 184
Diplophorus, *Fairmaire*, Ins. 137
Diporaspis, *Hæckel*, Prot. 14
Dirodes, *Pascoe*, Ins. 155
Dirrhox, *Cope*, Rept. 18
Discodamalis, *Karsch*, Ins. 285
Discogonium, *Hæckel*, Prot. 14
Discopus, *Imhof*, Verm. 29
Discopyle, *Hæckel*, Prot. 14
Dispinthera, *Gosse*, Verm. 29
Displotera, *Reitter*, Ins. 115
Distriactis, *Hæckel*, Prot. 14
Dittocephalus, *Parona*, Verm. 26
Dizonium, *Hæckel*, Prot. 14
Dodecaspis, *Hæckel*, Prot. 14
Dolbina, *Staudinger*, Ins. 231
Doloporus, *Candèze*, Ins. 12*
Doransga, *Moore*, Ins. 253
Dordanca, *Reitter*, Ins. 139
Doryagus, *Pascoe*, Ins. 142
Doryochthebius, *Kuwert*, Ins. 96
Doryscus, *Jacoby*, Ins. 174
Douvillina, *Œhlert*, Brach. 4
Draconata, *Pictet & Saussure*, Ins. 320
Drepanorhynchus, *Fischer & Reichenow*, Aves 43 (xxi)
Drifa, *Danielssen*, Cœl. 12
Druppatractus, *Hæckel*, Prot. 14
Druppocarpus, *Hæckel*, Prot. 14
Druppula, *Hæckel*, Prot. 14
Dyerocera, *Pascoe*, Ins. 153
Dysideissa, *Lendenfeld*, Spong. 12
Dystympanum, *Hæckel*, Prot. 15
Ealopsis, *Canestrini*, Arachn. 19.
Echletus, *Sharp*, Ins. 102
Ecceptochthebius, *Kuwert*, Ins. 96
Ecitochara, *Wasmann*, Ins. 97
Ecitopora, *Wasmann*, Ins. 98
Echinacturia, *Hæckel*, Prot. 14
Echinochama, *Fischer*, Moll. 82
Ephora, *Thomson*, Ins. 193
Ectomychus, *Gorham*, Ins. 177
Elatomma, *Hæckel*, Prot. 14
Elegia, *Ragonot*, Ins. 269
Eleleus, *Bolivar*, Ins. 321
Ellipsidium, *Hæckel*, Prot. 14
Ellipsostylus, *Hæckel*, Prot. 14
Elvirea, *Parona*, Prot. 17
Embolimus, *Rominger*, Arachn. 31
Emporia, *Ragonot*, Ins. 269
Endytocera, *Sharp*, Ins. 109
Enneodon, *Marsh*, Mamm. 56
Enyaliopsis, *Karsch*, Ins. 319
Eoauchenia, *Ameghino*, Mamm. 46
Eocardia, *Ameghino*, Mamm. 37
Epacmus, *Osten-Sacken*, Ins. 286
Epharpastis, *Meyrick*, Ins. 264
Epichronistis, *Meyrick*, Ins. 285 (xxiii)
Epidictyon, *Marsson*, Pol. 10
Epitelphusa, *Drago*, Verm. 31
Epizorus, *Pascoe*, Ins. 151
Ereynetes, *Berlese*, Arachn. 22
Eriochiton, *Maskell*, Ins. 310
Ernophthora, *Meyrick*, Ins. 269
Erquelinnesia, *Dollo*, Rept. 25
Erythrosphodrus, *Reuter*, Ins. 305
Estria, *Poirier*, Moll. 56
Etheridgina, *Œhlert*, Brach. 4
Ethocles, *Webster*, Verm. 32
Euarctia, *Staudinger*, Ins. 235
Euchalina, *Lendenfeld*, Spong. 13
Euchalinopsis, *Lendenfeld*, Spong. 13
Eucholæops, *Ameghino*, Mamm. 51
Eucoilidia, *Ashmead*, Ins. 205
Euceribanchus, *Costa*, Ins. 194
Eudæmonius, *Lewis*, Ins. 177
Eumalus, *Sharp*, Ins. 103
Eumayria, *Ashmead*, Ins. 204
Euphlœus, *Pascoe*, Ins. 145
Euphysetta, *Hæckel*, Prot. 15
Euplacella, *Lendenfeld*, Spong. 13
Euplœamina, *Holland*, Ins. 219
Euplœopsis, *Nicéville*, Ins. 209
Euprymna, *Steenstrup*, Moll. 54
Eurete, *F. E. Schulze*, Spong. 16
Eurhanius, *Reitter*, Ins. 115
Eurhexius, *Sharp*, Ins. 108
Euryodon, *Leidy*, Mamm. 56 (xxiii)
Eurygnathus, *Dacis*, Pisces 30

Euryplegma, *F. E. Schulze*, Spong. 17
Eurytellina, *Fischer*, Moll. 85
Euryxena, *Pascoe*, Ins. 153
Euscenium, *Hæckel*, Prot. 15
Eusilis, *Reitter*, Ins. 136
Eutelops, *Ameghino*, Mamm. 52
Eutelliua, *Fischer*, Moll. 85
Euxinomysis, *Czerniavsky*, Crust. 21
Exarchus, *Pascoe*, Ins. 155
Exocœtoides, *Davis*, Pisces 28
Exœtoderes, *Pascoe*, Ins. 154
Exoptata, *Coquillet*, Ins. 286
Exuviaella, *Tzenkovsky*, Prot 18

Faronidius, *Casey*, Ins. 109
Felderia, *Walsingham*, Ins. 274
Flosculipora, *MacGillivray*, Pol. 10
Frey-Suila, *Aleman*, Ins. 308
Fulla, *Danielssen*, Cœl. 12

Gadarscama, *Reuter*, Ins. 300
Gersemiopsis, *Danielssen*, Cœl. 12
Gigantichthys, *Dames*, Pisces 34
Globa, *Raffray*, Ins. 107
Glossocephalus, *Bocallius*, Crust. 23
Glossola, *Fowler*, Ins. 97
Glutophrissa, Butler, Ins. 210
Glyphastræa, *Duncan*, Cœl. 14
Gnaptorina, *Reitter*, Ins. 140
Gnorimidia, *Lansberge*, Ins. 128
Gobiella, *Tzenkovsky*, Prot. 15
Gonotypa, *Thomson*, Ins. 193
Gorgonetta, *Hæckel*, Prot. 15
Grapsicepon, *Giard*, Crust. 24
Grapsion, *Giard*, Crust. 24
Graptodytes, *Seidlitz*, Ins. 94
Graus, *Philippi*, Pisces, 21
Gronotherium, *Ameghino*, Mamm. 40
Gubaria, *Moore*, Ins. 259
Gulia, *Jousseaume*, Moll. 68
Gymnoproctus, *Karsch*, Ins. 319
Gymnostinops, *Sclater*, Aves 47
Gyrostropha, *Ancey*, Moll. 76

Haastia, *Leudenfeld*, Spong. 12
Hamotoides, *Schaufuss*, Ins. 105
Hamotulus, *Schaufuss*, Ins. 105
Halysiocrinus, *Ulrich*, Ech. 14
Hapalops, *Ameghino*, Mamm. 51
Haplodiscus, *Weldon*, Verm. 34
Haplobia, *Jacoby*, Ins. 174
Harpalidium, *Kolbe*, Ins. 91
Harpicephalus, *Canestrini*, Arachn. 19
Hathliacynus, *Ameghino*, Mamm. 24
Hecotus, *Sharp*, Ins. 110
Hedemannia, *Meyrick*, Ins. 270
Hedotettix, *Bolivar*, Ins. 322
Hedymys, *Ameghino*, Mamm. 37
Hegetotherium, *Ameghino*, Mamm. 40
Hemibulimus, *Martens*, Moll. 62
Hemichelys, *Lydekker*, Rept. 23
Hemicladodus, *Davis*, Pisces 11 (xxi)
Hemicropteryx, *Staudinger*, Ins. 243
Hemiculterella, *Warpachowski*, Pisces 27
Hemimerita, *Martens*, Moll. 79
Hepatulina, *Ristori*, Crust. 21
Herpetoseps, *Boulenger*, Rept. 14
Heteromysis, *Czerniavsky*, Crust. 22
Heteromastus, *Eisig*, Verm. 31
Heteronychus, *Seidlitz*, Ins. 94
Heteronyx, *Saussure*, Ins. 184
Heteroponera, *Mayr*, Ins. 187
Heteroscada, *Schatz*, Ins. 212
Heterosiriella, *Czerniavsky*, Crust. 22
Heterosuchus, *Seeley*, *Rept.* 22
Hexacontarium, *Hæckel*, Prot. 14
Hexaconus, *Hæckel*, Prot. 14
Hexagleua, *McNeill*, Myr. 11
Hexalaspis, *Hæckel*, Prot. 14
Hexalatractus, *Hæckel*, Prot. 15
Hexaspyris, *Hæckel*, Prot. 15
Hexastylarium, *Hæckel*, Prot. 14
Hexocalpus, *Hæckel*, Prot. 14
Hexonaspis, *Hæckel*, Prot. 14
Hibrildes, *Druce*, Ins. 246
Hircinissa, *Leudenfeld*, Spong. 12
Hircinopsis, *Leudenfeld*, Spong. 12
Hirrius, *Bolivar*, Ins. 323
Histurgops, *Reichenow*, Aves. 52
Holascus, *F. E. Schulze*, Spong. 15
Holcoponera, *Mayr*, Ins. 187
Holocremna, *Thomson*, Ins. 194
Holopholas, *Fischer*, Moll. 84
Homalostega, *Marsson*, Pol. 16
Homalochthebius, *Kuwert*, Ins. 96
Homoconnus, *Sharp*, Ins. 110
Homœodesma, *Fischer*, Moll. 84
Homœorhipis, *Fairmaire*, Ins. 134
Hoplochalina, *Leudenfeld*, Spong. 13
Hoplocrabron, *Stefani*, Ins. 183
Horatia, *Bourguignat*, Moll. 75
Hormogaster, *Rosa*, Verm. 31
Humblotia, *Milne-Edwards & Oustalet*, Aves. 50
Hyalæthea, *Butler*, Ins. 234

Hyalostylus, *F. E. Schulze*, Spong. 17
Hydrichthys, *Fowkes*, Cœl. 11
Hylaspis, *Hæckel*, Prot. 14
Hylastinus, *Bedel*, Ins. 158
Hypargyrus, *Gilbert*, Pisces, 32 (xxi)
Hyperiella, *Bovallius*, Crust. 22
Hyperoche, *Bovallius*, Crust. 22
Hypochrotænia, *Holmberg*, Ins. 201 (xxiii)
Hypoclopus, *Walsingham*, Ins. 274
Hystrichaspis, *Hæckel*, Prot. 14
Hypsæus, *Bolivar*, Ins. 321

Ichneutica, *Meyrick*, Ins. 248
Idiocetus, *P. van Beneden*, Mamm. 50
Ilynerita, *Martens*, Moll. 79
Inope, *Staudinger*, Ins. 234
Iramba, *Moore*, Ins. 260
Isaminas, *Champion*, Ins. 145
Isauria, *Ragonot*, Ins. 270
Ischnaspis, *Douglas*, Ins. 309
Ischyroptera, *Pokorny*, Ins. 291
Isectolophus, *Scott & Osborn*, Mamm. 41
Isocentris, *Meyrick*, Ins. 265
Isocetus, *P. van Beneden*, Mamm. 50
Isodromus, *Howard*, Ins. 200
Isonota, *Fairmaire*, Ins. 139
Itagonia, *Reitter*, Ins. 140
Ithaca, *Olliff*, Ins. 150
Iulopsis, *Bovallius*, Crust. 22
Ivalia, *Jacoby*, Ins. 170

Kelestoma, *Marsson*, Pol. 16
Kentrochrysalis, *Staudinger*, Ins. 231
Keraunogramma, *Röber*, Ins 224
Kesslerella, *Czerniavsky*, Crust. 22
Krystallofanes, *Danielssen*, Cœl. 13
Kurtodon, *Osborn*, Mamm. 56

Laccopterum, *Maclean*, Ins. 90
Lachnocnemenca, *Trimen*, Ins. 224
Lævilitorina, *Martens & Pfeffer*, Moll. 72
Lagenolobus, *Faust*, Ins. 153
Lagodiopsis, *Marsson*, Pol. 16
Lampoxanthium, *Hæckel*, Prot. 14
Lamprobothrix, *Fairmaire*, Ins. 147
Lanchnophorus, *Reuter*, Ins. 302
Laodon, *Marsh*, Mamm. 56
Laparomyrmex, *Emery*, Ins. 189
Laphidioderus, *Raffray*, Ins. 104
Larcarium, *Hæckel*, Prot. 14
Larcidium, *Hæckel*, Prot. 14
Larcospira, *Hæckel*, Prot. 14
Larnacantha, *Hæckel*, Prot. 14
Larnacalpis, *Hæckel*, Prot. 14
Larnacidium, *Hæckel*, Prot 14
Larnacilla, *Hæckel*, Prot. 14
Larnacoma, *Hæckel*, Prot. 14
Larnacospongus, *Hæckel*, Prot. 14
Larnacostupa, *Hæckel*, Prot. 14
Lasiopodomys, *Lataste*, Mamm. 35
Lasioctena, *Meyrick*, Ins. 274
Lasiosticha, *Meyrick*, Ins. 270
Lathroplex, *Thomson*, Ins. 193
Lathrostiza, *Thomson*, Ins. 194
Lecteria, *Osten-Sacken*, Ins. 281
Ledon, *Webster*, Verm. 32
Lekythoglena, *Marsson*, Pol. 15
Leluthia, *Cameron*, Ins. 197
Lepadodes, *Matthews*, Ins. 179
Leponiscus, *Giard*, Crust. 24
Lepromyia, *Williston*, Ins. 289
Leptagoniates, *Boulenger*, Pisces, 28
Leptocharis, *Reitter*, Ins. 110
Leptosphæra, *Hæckel*, Prot. 14
Leptotragulus, *Ameghino*, Mamm. 46
Leroya, *Grandidier*, Moll. 72
Leucaster, *Gauthier*, Ech. 11
Leucophenga, *Mik*, Ins. 312 (xxiii)
Levoisia, *Davis*, Pisces, 30
Liasotus, *Pascoe*, Ins. 153
Libya, *Ragonot*, Ins. 265
Licaphrium, *Ameghino*, Mamm. 43
Limnomysis, *Czerniavsky*, Crust. 21
Linguælapsus, *Cope*, Rept. 33
Liodonax, *Fischer*, Moll. 84
Liotellina, *Fischer*, Moll. 85
Liothyrina, *Oehlert*, Brach. 4
Liripora, *MacGillivray*, Pol. 9
Lithapium, *Hæckel*, Prot. 14
Lithatractus, *Hæckel*, Prot. 14
Lithops, *Ameghino*, Mamm. 40
Litophasia, *Girschner*, Ins. 292
Lophoconus, *Hæckel*, Prot. 15
Lophocosma, *Staudinger*, Ins 241
Lophocyrtis, *Hæckel*, Prot. 15
Lophopompilus, *Radoszkowski*, Ins. 184
Luffarella, *Lendenfeld*, Spong. 12
Lukhmina, *Œhlert*, Brach. 4
Luperomorpha, *Weise*, Ins. 169
Lyconus, *Günther*, Pisces, 24
Lyrolepis, *Romanovsky*, Pisces, 32
Lyropedius, *Seidlitz*, Ins. 92

Machæropteris, *Walsingham*, Ins. 274
Macrerius, *Meyrick*, Ins. 276

Macrenphractus, *Ameghino*, Mamm. 52
Macrocercucoila, *Ashmead*, Ins. 205
Magostolis, *Meyrick*, Ins. 276
Malacorhinus, *Jacoby*, Ins. 172
Malacosaccus, *F. E. Schulze*, Spong. 14
Malacosarcus, *Günther*, Pisces, 16
Mamboicas, *Bates*, Ins. 106 (xxiii)
Marmottania, *Puton*, Ins. 302
Maschalix, *Waterhouse*, Ins. 131
Mastobranchus, *Eisig*, Verm. 31
Maxates, *Moore*, Ins. 257
Mazarredia, *Bolivar*, Ins. 322
Mechanetes, *Waterhouse*, Ins. 143
Mechanicus, *Schaufuss*, Ins. 108
Medasina, Moore, Ins. 255
Medusetta, *Hæckel*, Prot. 15
Medythia, *Jacoby*, Ins. 174
Megalatractus, *Fischer*, Moll. 39 (xxi)
Megaloblatta, *Dohrn*, Ins. 317
Melanodytes, *Seidlitz*, Ins. 95
Melanoseps, *Boulenger*, Rept. 14
Melinna, *Uhler*, Ins. 304
Menamopsis, *Nicéville*, Ins. 209
Menophra, *Moore*, Ins. 255
Menops, *Marsh*, Mamm. 42
Meristobelus, *Gorham*, Ins. 175
Meronera, *Sharp*, Ins. 98
Mesomysis, *Czerniavsky*, Crust. 22
Mesoprionus, *Jakowleff*, Ins. 160
Metabolus, *Fairmaire*, Ins. 125
Metamynodon, *Scott & Osborn*, Mamm. 42
Metanomus, *Buysson*, Ins. 134
Metopacanthus, *Zittel*, Pisces 10
Metrodora, *Bolivar*, Ins. 322
Microbiotherium, *Ameghino*, Mamm. 54
Microbrotica, *Jacoby*, Ins. 172
Microcossus, *Walsingham*, Ins. 274
Microschænis, *Meyrick*, Ins. 265
Microscolex, *Rosa*, Verm. 31
Microsternus, *Lewis*, Ins. 176
Microtricha, *Mik*, Ins. 293
Miladion, *Reitter*, Ins. 142
Mira, *Staudinger*, Ins. 245
Mitraria, *Bolivar*, Ins. 322
Mixochlorus, *Waterhouse*, Ins. 130
Mixonus, *Günther*, Pisces 24
Mixophyla, *Meyrick*, Ins. 265
Mnionomidius, *Reitter*, Ins. 114
Mœrella, *Fischer*, Moll. 85
Moinodaphnia, *Herrick*, Crust. 24
Mombasica, *Fairmaire*, Ins. 170
Monellia, *Oestlund*, Ins. 308
Monogonium, *Hæckel*, Prot. 14
Monorhiza, *Haake*, Cœl 12
Morylus, *Jacoby*, Ins. 170
Multicilia, *Tzenkovsky*, Prot. 18
Mutilloides, *Fairmaire*, Ins. 137
Mycterops, *Cope*, Pisces 24 (xxiii)
Myrlaca, *Ragonot*, Ins. 271
Myrmidonistis, *Meyrick*, Ins. 265
Myxocephalus, *Steindachner & Döderlein*, Pisces 23

Nagoda, *Moore*, Ins. 244
Nalepa, *Reitter*, Ins. 140
Nannobrachium, *Günther*, Pisces 26
Nannocerus, *Fairmaire*, Ins. 144
Nannocnus, *Stejneger*, Aves 65
Nannodendron, *Danielssen*, Cœl. 12
Nannoglanis, *Boulenger*, Pisces 26
Nannolene, *Bollman*, Myr. 11
Narapa, *Moore*, Ins. 255
Narosodes, *Moore*, Ins. 237
Nassella, *Hæckel*, Prot. 15
Neacretus, *Reuter*, Ins. 302
Nealges, *Trouessart*, Arachn. 27
Necromanter, *Weithofer*, Mamm. 31
Nectarophora, *Oestlund*, Ins. 308
Nectopilema, *Fewkes*, Cœl. 12
Nematherium, *Ameghino*, Mamm. 51
Nematonus, *Günther*, Pisces 24
Neoascia, *Williston*, Ins. 290
Neobrotica, *Jacoby*, Ins. 170
Neochrolia, *Jacoby*, Ins. 174
Neodeuterus, *Schaufuss*, Ins. 107
Neodipelicus, *Riteema*, Ins. 127
Neofalco, *Ridgway*, Aves 64
Neolophus, *Walsingham*, Ins. 274
Neomysis, *Czerniavsky*, Crust. 21
Neopetræus, *Martens*, Moll. 61
Neoplinthus, *Bedel*, Ins. 93 (xxi)
Neoremys, *Ameghino*, Mamm. 36
Neotriplax, *Lewis*, Ins. 177
Neoxides, *Pascoe*, Ins. 158
Neozetes, *Berlese*, Arachn. 24
Nephele, *Bolivar*, Ins. 322
Nephropora, *Marsson*, Pol. 15
Nepiera, *Thomson*, Ins. 193
Nepiesta, *Thomson*, Ins. 193
Nesonycteris, *Thomas*, Mamm. 30
Nevia, *Jousseaume*, Moll. 68
Nodosina, *Lendenfeld*, Spong. 12
Nomotus, *Gorham*, Ins. 175
Nörneria, *Canestrini*, Arachn. 19
Notholestes, *Maclachlan*, Ins. 315
Nothrocerus, *Fairmaire*, Ins. 139
Notocaulus, *Quedenfeldt*, Ins. 63 (xxi)
Notophallus, *Canestrini*, A[illegible]
Nuttalornis, *Baird*, Ins. 234

ɔctanassa, *Stejneger*, Aves 65

Obia, *Distant*, Ins. 307
Ochrinulus, *Reitter*, Ins. 156
Octodendron, *Hæckel*, Prot. 14
Octonema, *Herzenstein*, Pisces 27
Octopelta, *Hæckel*, Prot. 14
Octotympanum, *Hæckel*, Prot. 15
Odontosphæra, *Hæckel*, Prot. 14
Odontobracon, *Cameron*, Ins. 197
Odontochthebius, *Kuwert*, Ins. 96
Œstroderma, *Portschinsky*, Ins. 292
Olesicampa, *Thomson*, Ins. 193
Oligarthrum, *Matthews*, Ins. 179
Olixon, *Cameron*, Ins. 198
Omochyseus, *Waterhouse*, Ins. 132
Omorga, *Thomson*, Ins. 193
Omosudis, *Günther*, Pisces 26
Omphaloconus, *Westerlund*, Moll. 63
Oncopterus, *Fairmaire*, Ins. 141
Onychodromopsis, *Stokes*, Prot. 17
Onychomysis, *Czerniavsky*, Crust. 21
Ophiocampsis, *Duncan*, Ech. 12
Ophiolophus, *Marktanner-Turneretscher*, Ech. 12
Ophiopsiseps, *Boulenger*, Rept. 14
Ophryacus, *Cope*, Rept. 20
Ophryodotus, *Pascoe*, Ins. 153
Oplistochilus, *Jakowleff*, Ins. 300
Optostomias, *Günther*, Pisces 29
Oreodytes, *Seidlitz*, Ins. 94
Oreomyza, *Pokorny*, Ins. 282
Oreonyza, *Stejneger*, Aves 44
Orestera, *Pictet & Saussure*, Ins. 320
Organidus, *Danielssen*, Cœl. 13
Ornithaster, *Cotteau*, Ech. 11
Ornithocephalus, *Semenow*, Ins. 89
Ornithodesmus, *Seeley*, Aves 76
Orona, *Hæckel*, Prot. 15
Oroplegma, *Hæckel*, Prot. 15
Oroscena, *Hæckel*, Prot. 15
Orosphæra, *Hæckel*, Prot. 15
Orodemnias, *Wallengren*, Ins. 253 (xxiii)
Ortholophus, *Duncan*, Ech. 11
Otocryptops, *Haase*, Myr. 8
Ortholophus, *Walsingham*, Ins. 274
Otosphæra, *Hæckel*, Prot. 14
Onrocnemis, *Baker*, Ins. 222
Ovilia, *Jousseaume*, Moll. 68

Pachydera, *Marsson*, Pol. 16
Pachyscelodes, *Sénac*, Ins. 141
Pseudo-[illegible]stomias, *Günther*, Pisces 29
Mamm. 3[illegible] *Fischer*, Moll. 82
Paidina, *Staudinger*, Ins. 237
Palæotheutes, *Ameghino*, Mamm. 54
Pamillia, *Uhler*, Ins. 303
Pamplota, *Andrusov*, Prot. 16.
Panartus, *Hæckel*, Prot. 14
Pangeranopsis, *Nicéville*, Ins. 209
Panicium, *Hæckel*, Prot. 14
Panosmia, *Nicéville*, Ins. 209
Panosmiopsis, *Nicéville*, Ins. 209
Pantelia, *Bolivar*, Ins. 321
Panticopsis, *Nicéville*, Ins. 209
Pantolasius, *Lansberge*, Ins. 122
Pantopelta, *Hæckel*, Prot. 14
Pantopholis, *Davis*, Pisces 30
Paraceramius, *Radoszkowski*, Ins. 182
Paradistichocera, *Poll*, Ins. 161
Paradomorphus, *Waterhouse*, Ins. 132
Paraleria, *Reuter*, Ins. 300
Paralophora, *Girschner*, Ins. 292
Paramphibolus, *Reuter*, Ins. 305
Paramysis, *Czerniavsky*, Crust. 22
Parapasiphae, *Smith*, Crust. 19 (xxi)
Paraphanes, *Macleay*, Ins. 144
Parapedius, *Seidlitz*, Ins. 92
Parascison, *Plate*, Verm. 29
Paratettix, *Bolivar*, Ins. 322
Pardopsis, *Trimen*, Ins. 212
Paristhmius, *Reuter*, Ins. 302
Paromphreus, *Ganglbauer*, Ins. 93
Parosus, *Sharp*, Ins. 102
Parthia, *Ragonot*, Ins. 271
Parmularia, *MacGillivray*, Pol. 17
Parupeneus, *Klunzinger*, Pisces 19 (xxi)
Patricosaurus, *Seeley*, Rept. 15
Paurodon, *Marsh*, Mamm. 56
Paxilla, *Bolivar*, Ins. 323
Pelmatosilpha, *Dohrn*, Ins. 317
Pellilitorina, *Martens & Pfeffer*, Moll. 72
Peltephilus, *Ameghino*, Mamm. 52
Pentarthrum, *Schaufuss*, Ins. 158
Pentophiastrum, *Hæckel*, Prot. 14
Percalates, *Ramsay & Douglas-Ogilvy*, Pisces 14
Peregrinella, *Œhlert*, Brach. 4
Pericometes, *Schneider*, Prot. 16
Perimeda, *Reuter*, Ins. 302
Perimys, *Ameghino*, Mamm. 36
Perimylops, *Müller*, Ins. 85 (xxi)
Peripanarium, *Hæckel*, Prot. 14
Peripanartus, *Hæckel*, Prot. 14
Peripanicium, *Hæckel*, Prot. 14
Periplectus, *Raffray*, Ins. 108
Perissogaster, *Fletcher*, Verm. 31
Peronæmis, *Waterhouse*, Ins. 130

Peroniaster, *Gauthier*, Ech. 11
Pexodorus, *Jacoby*, Ins. 170
Pezerpes, *Pascoe*, Ins. 153
Phælota, *Jacoby*, Ins. 170
Phæocoris, *Jakowleff*, Ins. 300
Phæomychus, *Gorham*, Ins. 178
Phæstus, *Jacoby*, Ins. 172
Phæstus, *Bolivar*, Ins. 323
Phalangopora, *Kirkpatrick*, Cœl. 11
Phanomys, *Ameghino*, Mamm. 37
Pharaonia, *Bourguignet*, Moll. 96 (xxiii)
Pharyngosphæra, *Hæckel*, Prot. 14
Pharyngella, *Hæckel*, Prot. 15
Phasganocaris, *Novák*, Crust. 25
Pheronema, *F. E. Schulze*, Spong. 17
Philippiella, *Martens & Pfeffer*, Moll. 83
Philoctetes, *Buysson*, Ins. 191
Philogeus, *Jacoby*, Ins. 170
Philomachus, *Karsch*, Ins. 285
Philoscaphus, *Macleay*, Ins. 90
Phlebocis, *Christoph*, Ins. 249
Phlœonotas, *Bolivar*, Ins. 323
Phloromys, *Ameghino*, Mamm. 36
Phobeotherium, *Ameghino*, Mamm. 40
Phobocampa, *Thomson*, Ins. 193
Phœnocalpis, *Hæckel*, Prot. 15
Phœnoscenium, *Hæckel*, Prot. 15
Phœostolus, *Fairmaire*, Ins. 146
Phœochridius, *Lansberge*, Ins. 122
Phormocampe, *Hæckel*, Prot. 15
Phormocyrtis, *Hæckel*, Prot. 15
Phormonotus, *Marsson*, Pol. 10
Phormopora, *Marsson*, Pol. 10
Phorusrhachos, *Ameghino*, Mamm. 52
Photodrilus, *Giard*, Verm. 31
Phoyx, *Stejneger*, Aves 66
Phregatherium, *Ameghino*, Mamm. 37
Phrenocodon, *Hæckel*, Prot. 15
Phrynella, *Boulenger*, Rept. 31
Phthartomicrus, *Schaufuss*, Ins. 108
Phya, *Druce*, Ins. 242
Phylactocephalus, *Davis*, Pisces 31
Phylacus, *Westerlund*, Moll. 64
Phyllocharis, *Schatz*, Ins. 211
Phyllofrancia, *Marsson*, Pol 11
Phylosiphonia, *Lendenfeld*, Spong. 13
Physetica, *Meyrick*, Ins. 250
Piezotettix, *Bolivar*, Ins. 321
Piliocolobus, *Rochebrune*, Mamm. 22
Pimplema, *Pascoe*, Ins. 144
Pingasa, *Moore*, Ins. 256
Pipetella, *Hæckel*, Prot. 14
Pipetta, *Hæckel*, Prot. 14
Pipettaria, *Hæckel*, Prot. 14
Piptomerus, *Cope*, Rept. 26
Pithanotomys, *Ameghino*, Mamm. 36
Pithauriopsis, *Nicéville*, Ins. 230
Pithodella, *Marsson*, Pol. 13
Pityogenes, *Bedel*, Ins. 159
Pixodarus, *Fairmaire*, Ins. 160
Placochalina, *Lendenfeld*, Spong. 13
Placostola, *Meyrick*, Ins. 277
Plagoniscus, *Hæckel*, Prot. 15
Planodus, *Ameghino*, Mamm. 43
Planops, *Ameghino*, Mamm. 52
Platyceps, *Stephens*, Rept. 34
Platydesmus, *Macleay*, Ins. 124
Platyglena, *Marsson*, Pol. 15
Platylates, *Storms*, Pisces 14
Platypeplus, *Walsingham*, Ins. 273
Platytelphusa, *Milne-Edwards*, Crust. 20
Platythorax, *Macleay*, Ins. 90
Plectaniscus, *Hæckel*, Prot. 15
Plesiastarte, *Fischer*, Moll. 82
Plesiocyprina, *Fischer*, Moll. 83
Plethus, *Hagen*, Ins. 311
Pliolagostomus, *Ameghino*, Mamm. 36
Podarcella, *Giard*, Prot. 20
Pœcilogramma, *Karsch*, Ins. 318
Pœcilopora, *MacGillivray*, Pol. 17
Pœcilosphodrus, *Reuter*, Ins. 304
Polyipnus, *Günther*, Pisces, 29
Polyparium, *Korotneff*, Cœl. 12
Polypetta, *Hæckel*, Prot. 15
Polyplagia, *Hæckel*, Prot. 15
Polyrhabdus, *F. E. Schulze*, Spong. 16
Polyzonium, *Hæckel*, Prot. 14
Pompilioides, *Radoszkowski*, Ins. 184
Pontomysis, *Czerniavsky*, Crust. 21
Pornotrips, *Karsch*, Ins. 319
Porocapsa, *Hæckel*, Prot. 14
Poromera, *Boulenger*, Rept. 11
Portunicepon, *Giard*, Crust. 24
Portunion, *Giard*, Crust. 24
Potamomysis, *Czerniavsky*, Crust. 21
Potua, *Bolivar*, Ins. 321
Pragmopholas, *Fischer*, Moll. 84
Priacodon, *Marsh*, Mamm. 55
Priapina, *Jacoby*, Ins. 174
Priochirus, *Sharp*, Ins. 103
Prionochthebius, *Kuwert*, Ins. 96
Prionoblemma, *Jakowleff*, Ins. 160
Prionocnemis, *Karsch*, Ins. 254

Pristacantha, *Hæckel*, Prot. 14
Pristophora, *Ragonot*, Ins. 271
Proboscidocoris, *Reuter*, Ins. 306 (xxi)
Proboscidella, *Œhlert*, Brach. 4
Procryptocerus, *Emery*, Ins. 189
Proctostoma, *Mabille*, Moll. 62
Procolobus, *Rochebrune*, Mamm. 22
Proganochelys, *Baur*, Rept. 24
Prohalicore, *Flot*, Mamm. 48
Proho[plo]phorus, *Ameghino*, Mamm. 52
Prolagostomus, *Ameghino*, Mamm. 36
Pronaidites, *Kästa*, Verm. 30
Pronematus, *Canestrini*, Arachn. 19
Pronoella, *Fischer*, Moll. 83
Propalæhoplophorus, *Ameghino*, Mamm. 52
Prophtasia, *Ragonot*, Ins. 271
Prorophora, *Ragonot*, Ins. 271
Prosoporella, *Marsson*, Pol. 17
Protalges, *Trouessart*, Arachn. 28
Prothyracodon, *Scott & Osborn*, Mamm. 41
Protoreodon, *Scott & Osborn*, Mamm. 46
Prototettix, *Bolivar*, Ins. 322
Protoxodon, *Ameghino*, Mamm. 39
Protulides, *Webster*, Verm. 21
Prunocarpus, *Hæckel*, Prot. 14
Prunulum, *Hæckel*, Prot. 14
Psammella, *Lendenfeld*, Spong. 12
Psammopessa, *Lendenfeld*, Spong. 12
Psammotellina, *Fischer*, Moll. 84
Pselaphocerus, *Raffray*, Ins. 104
Pseudanaphora, *Walsingham*, Ins. 274
Pseudangerona, *Moore*, Ins. 255
Pseudartemon, *Mabille*, Moll. 56
Pseudasthena, *Moore*, Ins. 258
Pseudedmondia, *Fischer*, Moll. 84
Pseudocanthon, *Bates*, Ins. 118
Pseudocubus, *Hæckel*, Prot. 15
Pseudodacnis, *Sclater*, Aves, 43
Pseudoderus, *Seidlitz*, Ins. 92
Pseudodesmus, *Pocock*, Myr. 11
Pseudodichthadia, *André*, Ins. 208 (xxiii)
Pseudolasius, *Emery*, Ins. 186
Pseudomicronia, *Moore*, Ins. 258
Pseudopedius, *Seidlitz*, Ins. 92
Pseudopterodon, *Schlosser*, Mamm. 23
Pseudorchesia, *Fairmaire*, Ins. 86 (xxi)
Pseudorhinolophus, *Schlosser*, Mamm. 30
Ptenodactylus, *Strauch*, Rept. 9
Pterocephalus, *Schneider*, Prot. 16
Pteroidonus, *Günther*, Pisces, 23
Pteropilium, *Hæckel*, Prot. 15
Pterotettix, *Bolivar*, Ins. 322
Pterycolobus, *Rochebrune*, Mamm. 22
Pteryngium, *Reitter*, Ins. 114
Ptilochares, *Meyrick*, Ins. 277
Ptymatophora, *Gumppenberg*, Ins. 260
Puiggaria, *Bolivar*, Ins. 323
Pulcheria, *Alpheraky*, Ins. 251
Pygocardia, *Fischer*, Moll. 83
Pygopteryx, *Staudinger*, Ins. 241
Pylodiscus, *Hæckel*, Prot. 14
Pylolena, *Hæckel*, Prot. 14
Pylospira, *Hæckel*, Prot. 14
Pyrazisinus, *Heilprin*, Moll. 70
Pytna, *Casey*, Ins. 105

Quadrilonche, *Hæckel*, Prot. 14

Racotis *Moore*, Ins. 256
Rambaia, *Moore*, Ins 258
Remiza, *Stejneger*, Aves, 50 (xxiii)
Renania, *Lewis*, Ins. 176
Rhabdocalyptus, *F. E. Schulze*, Spong. 17
Rhabdotocarabus, *Seidlitz*, Ins. 88
Rhadinatherium, *Ameghino*, Mamm. 40
Rhamnosa, *Fixsen*, Ins. 243
Rhapactor, *Puton*, Ins. 305
Rhexidius, *Casey*, Ins. 108
Rhinognathus, *Davis*, Pisces 9
Rhipidomys, *Œhlert*, Brach. 4
Rhipidopora, *Marsson*, Pol. 9
Rhopalodictya, *Hæckel*, Prot. 14
Rhynchoporina, *Œhlert*, Brach. 4
Rhynchorina, *Œhlert*, Brach. 5
Rostrocaris, *Kinnear*, Crust. 25

Sagena, *Hæckel*, Prot. 15
Sagmarium, *Hæckel*, Prot. 15
Sagmidium, *Hæckel*, Prot. 15
Sagoplegma, *Hæckel*, Prot. 15
Sagoscena, *Hæckel*, Prot. 15
Sagosphæra, *Hæckel*, Prot. 15
Salilota, *Günther*, Pisces 23
Saluria, *Ragonot*, Ins. 272
Sandahlia, *Westerlund*, Moll. 63
Sarakka, *Danielssen*, Coel. 13
Sarcophagula, *Walp*, Ins. 293
Satelia, *Lewis*, Ins. 177
Saturninus, *Hæckel*, Prot. 14
Saussurella, *Bolivar*, Ins. 323
Scalptia, *Jousseaume*, Moll. 68

Scaria, *Bolivar*, Ins. 323
Scapheutes, *Handlirsch*, Ins. 182
Scelodolichus, *Pascoe*, Ins. 174 (xxiii)
Schismotherium, *Ameghino*, Mamm. 51
Schistomys, *Ameghino*, Mamm. 37
Schistonyx, *Saussure*, Ins. 184
Sciamys, *Ameghino*, Mamm. 36
Sciotrogus, *Sharp*, Ins. 102
Scleromys, *Ameghino*, Mamm. 36
Scopeloides, *Wettstein*, Pisces 26
Scopotherium, *Ameghino*, Mamm. 40
Scotæops, *Ameghino*, Mamm. 52
Scoteumys, *Ameghino*, Mamm. 37
Scotogramma, *Smith*, Ins. 249
Scylax, *Distant*, Ins. 299
Scytodytes, *Seidlitz*, Ins. 94
Seeboldia, *Ragonot*, Ins. 272
Seiodes, *Berlese*, Arachn. 21
Seleucia, *Ragonot*, Ins. 272
Semantidium, *Hæckel*, Prot. 15
Semantis, *Hæckel*, Prot. 15
Semantiscus, *Hæckel*, Prot. 15
Semantrum, *Hæckel*, Prot. 15
Semioptila, *Butler*, Ins. 233
Semiotopsis, *Candèze*, Ins. 133
Semirossia, *Steenstrup*, Moll. 54
Semisulcospira, *Böttger*, Moll. 83 (xxiii)
Serraca, *Moore*, Ins. 256
Sesha, *Distant*, Ins. 299
Sethamphora, *Hæckel*, Prot. 15
Sethocyrtis, *Hæckel*, Prot. 15
Sieberella, *Œhlert*, Brach. 4
Sigmoilina, *Schlumberger*, Prot. 15
Sipalocyon, *Ameghino*, Mamm. 24
Siphocypræa, *Heilprin*, Moll. 70
Siphonella, *Leudenfeld*, Spong. 13
Skenella, *Martens & Pfeffer*, Moll. 73
Sluiteria, *E. van Beneden*, Tun. 5
Solatia, *Josseaume*, Moll. 68
Solenaspis, *Ashmead*, Ins. 205
Solenogaster, *Reuter*, Ins. 300
Solenosphæra, *Hæckel*, Prot. 14
Solenophragma, *Marsson*, Pol. 13
Solenozopheria, *Ashmead*, Ins. 204
Somotrichus, *Seidlitz*, Ins. 89
Sophrops, *Fairmaire*, Ins. 125
Sorolarcus, *Hæckel*, Prot. 14
Spalacomimus, *Karsch*, Ins. 319
Spaniomys, *Ameghino*, Mamm. 36
Spathiurus, *A. S. Woodward*, Pisces 12
Spathiferomyia, *Bigot*, Ins. 265 (xxi)
Sphæramys, *Ameghino*, Mamm. 37
Sphærochthebius, *Kuwert*, Ins. 96
Sphæropleura, *Jacoby*, Ins. 170
Sphærospyris, *Hæckel*, Prot. 15
Sphenomorpha, *Behrens*, Ins. 151
Sphiggomys, *Ameghino*, Mamm. 37
Sphingulus, *Standinger*, Ins. 231
Sphodromys, *Ameghino*, Mamm. 37
Sphodropsis, *Seidlitz*, Ins. 93
Sphragidium, *Butler*, Ins. 236
Spilobotys, *Butler*, Ins. 267
Spionides, *Webster*, Verm. 32
Spironium, *Hæckel*, Prot. 14
Spirophora, *Leudenfeld*, Spong. 13
Spongatractus, *Hæckel*, Prot. 14
Spongellipsis, *Hæckel*, Prot. 14
Spongiomma, *Hæckel*, Prot. 14
Spongocore, *Hæckel*, Prot. 14
Spongodruppa, *Hæckel*, Prot. 14
Spongolarcus, *Hæckel*, Prot. 14
Spongolena, *Hæckel*, Prot. 14
Spongoliva, *Hæckel*, Prot. 14
Spongomelissa, *Hæckel*, Prot. 15
Spongoprunum, *Hæckel*, Prot. 14
Spongopyramis, *Hæckel*, Prot. 15
Spongothamnus, *Hæckel*, Prot. 14
Spongoxiphus, *Hæckel*, Prot. 14
Spudastica, *Thomson*, Ins. 193
Staudingeria, *Ragonot*, Ins. 272
Stauralastrum, *Hæckel*, Prot. 14
Staurolonchidium, *Hæckel*, Prot. 14
Staurotholonium, *Hæckel*, Prot. 14
Staurotholus, *Hæckel*, Prot. 14
Stauroxiphos, *Hæckel*, Prot. 14
Steganomma, *Mackay*, Ins. 91
Stegotherium, *Ameghino*, Mamm. 52
Steiromys, *Ameghino*, Mamm. 36
Steleocheta, *Becker*, Ins. 288
Stephaniscus, *Hæckel*, Prot. 15
Stephanium, *Hæckel*, Prot. 15
Stephanolepas, *Fischer*, Crust. 26
Stichocados, *Marsson*, Pol. 17
Stichocotyle, *Cunningham*, Verm. 27
Stichomys, *Ameghino*, Mamm. 36
Stichopilidium, *Hæckel*, Prot. 15
Stichoptilum, *Grieg*, Cœl. 13
Stictoponera, *Mayr*, Ins. 187
Stictopisthus, *Thomson*, Ins. 214 (xxiii)
Stigmatæchos, *Marsson*, Pol. 10
Stigmosphæra, *Hæckel*, Prot. 14
Stilotherium, *Ameghino*, Mamm. 54
Stizolarra, *Saussure*, Ins. 182
Stomatodiscus, *Hæckel*, Prot. 14
Stomylomyia, *Bigot*, Ins. 287
Strabena, *Mabille*, Ins. 221
Streblacanthus, *Hæckel*, Prot. 14
Streblonia, *Hæckel*, Prot. 14
Streblopyle, *Hæckel*, Prot. 14

Stremmatopsis, *Mabille*, Moll. 56
Streptocionella, *Martens & Pfeffer*, Moll. 74
Stylatractus, *Hæckel*, Prot. 14
Stylodiscus, *Hæckel*, Prot. 14
Stylocalyx, *F. E. Schulze*, Spong. 16
Stylolophus, *Lendenfeld*, Spong. 12
Stymnonotus, *Reuter*, Ins. 302
Stypolarcus, *Hæckel*, Prot. 14
Subunicuspidens, *Lemoine*, Mamm. 23
Sveltia, *Jousseaume*, Moll. 68
Sympiezomias, *Faust*, Ins. 151
Synagrops, *Günther*, Pisces 15
Synatractus, *Macleay*, Ins. 147
Synctæris, *Thomson*, Ins. 193
Synmysis, *Czerniavsky*, Crust. 22
Syria, *Ragonot*, Ins. 272
Systaltopezus, *Faust*, Ins. 157
Systenostoma, *Marsson*, Pol. 15
Systole, *Mabille*, Ins. 229
Systolederus, *Bolivar*, Ins. 322

Tachinæstrus, *Portchinsky*, Ins. 292
Tachysoma, *Stokes*, Prot. 17
Tægeria, *F. E. Schulze*, Spong. 16
Tænioglyptes, *Bedel*, Ins. 159
Tænioporina, *Marsson*, Pol. 15
Talarocera, *Williston*, Ins. 293
Tamraca, *Moore*, Ins. 267
Taphus, *Webster*, Verm. 32
Tatutor, *Jousseaume*, Moll. 62
Tegyrius, *Jacoby*, Ins. 170
Teriomima, *Kirby*, Ins. 226
Termophila, *Grassi*, Ins. 313
Tessarastrum, *Hæckel*, Prot. 14
Tethiopsamma, *Lendenfeld*, Spong. 10
Tetraschalis, *Meyrick*, Ins. 278
Thalamoporella, *Hincks*, Pol. 14
Thalassogeton, *Behrens*, Ins. 147
Thamnodrilus, *Beddard*, Verm. 31
Thamnæus, *Bovallius*, Crust. 23
Tharyx, *Webster*, Verm. 32
Thaumatomyrmex, *Mayr*, Ins. 186
Thecidella, *Œhlert*, Brach. 5
Theclopsis, *Godman & Salvin*, Ins. 228
Thecidiopsis, *Œhlert*, Brach. 5
Themistella, *Bovallius*, Crust. 22
Theocampe, *Hæckel*, Prot. 15
Theoconus, *Hæckel*, Prot. 15
Theocyrtis, *Hæckel*, Prot. 15
Theodiscus, *Hæckel*, Prot. 14
Theosodon, *Ameghino*, Mamm. 43
Theoxenia, *Walsingham*, Ins. 275
Theriodesmus, *Seeley*, Mamm. 56
Thoatherium, *Ameghino*, Mamm. 43
Tholactus, *Hæckel*, Prot. 14
Tholocubus, *Hæckel*, Prot. 14
Tholodes, *Hæckel*, Prot. 14
Tholoma, *Hæckel*, Prot. 14
Tholonium, *Hæckel*, Prot. 14
Tholospira, *Hæckel*, Prot. 14
Tholostaurus, *Hæckel*, Prot. 14
Threciscus, *Bolivar*, Ins. 322
Thrylæa, *Jacoby*, Ins. 170
Thyreocera, *Ashmead*, Ins. 205
Thyridectis, *Meyrick*, Ins. 275
Thyrsus, *Bolivar*, Ins. 322
Thysanoscelis, *Walsingham*, Ins. 274
Ticherra, *Nicéville*, Ins. 228
Titanichthys, *Dames*, Pisces, 34
Titanops, *Marsh*, Mamm. 42
Tonkinia, *Mabille*, Moll. 64
Toxarium, *Hæckel*, Prot. 15
Toxotinus, *Bates*, Ins. 104 (xxi)
Trachycaulus, *F. E. Schulze*, Spong. 17
Trachycentra, *Meyrick*, Ins. 291 (xxiii)
Trachylepidia, *Ragonot*, Ins. 272
Trachyphilus, *Faust*, Ins. 152
Tranosema, *Thomson*, Ins. 193
Trapezidistes, *Gorham*, Ins. 175
Trematherium, *Ameghino*, Mamm. 51
Triarius, *Jacoby*, Ins. 170
Tribia, *Jousseaume*, Moll. 68
Tribodon, *Ameghino*, Mamm. 36
Tribolocephalus, *Ristori*, Crust. 20
Trichasius, *Provancher*, Ins. 201
Trichochlænius, *Seidlitz*, Ins. 91
Trichorhynchus, *Balbiani*, Prot. 16
Tricœlina, *Barrois*, Ech. 14
Tricuspidens, *Lemoine*, Mamm. 23
Trigonastrum, *Hæckel*, Prot. 14
Triodiscus, *Hæckel*, Prot. 14
Triolena, *Hæckel*, Prot. 14
Tripocystis, *Hæckel*, Prot. 15
Trisacantha, *Ashmead*, Ins. 202
Trisolenia, *Ashmead*, Ins. 204
Tritia, *Berlese*, Arachn. 23
Trizonium, *Hæckel*, Prot. 14
Trochodiscus, *Hæckel*, Prot. 14
Trochospongia, *Römer*, Spong. 19
Trogactus, *Sharp*, Ins. 102
Trombella, *Berlese*, Arachn. 22
Tropicolobus, *Rochebrune*, Mamm. 22
Tropidauchen, *Saussure*, Ins. 321
Trymochthebius, *Kuwert*, Ins. 96
Trypanosphæra, *Hæckel*, Prot. 14

Trypantius, *Waterhouse*, Ins. 132
Tuberaster, *Gauthier*, Ech. 12
Tuberculipora, *Pergens & Meunier*, Pol. 10
Tullbergella, *Bovallius*, Crust. 23
Tuscaridium, *Hæckel*, Prot. 15
Tuscarusa, *Hæckel*, Prot. 15
Tympaniscus, *Hæckel*, Prot. 15

Ulolonche, *Smith*, Ins. 249
Uranodoxa, *Butler*, Ins. 257
Urceolopsis, *Stokes*, Prot. 17
Uriela, *Reitter*, Ins. 141
Urodonta, *Staudinger*, Ins. 241
Uxia, *Jousseaume*, Moll. 68

Vanessula, *Dewitz*, Ins. 214
Vega, *Westerlund*, Moll. 62
Ventrilia, *Jousseaume*, Moll. 68
Vespertiliavus, *Schlosser*, Mamm. 31
Vestigifera, *Gumppenberg*, Ins. 260
Vietomorpha, *Fairmaire*, Ins. 142
Vipsania, *Druce*, Ins. 243
Vœringia, *Danielssen*, Cœl. 12

Wagneria, *Heilprin*, Moll. 70
Wagneria, *Tzenkovsky*, Prot. 15
Walterinnesia, *Lataste*, Rept. 19
Weissia, *Branco*, Rept. 34
Wesmælinius, *Costa*, Ins. 184

Xanthodytes, *Seidlitz*, Ins. 94
Xenocephalus, *Wasmann*, Ins. 98
Xenopholis, *Davis*, Pisces, 26
Xiphatractus, *Hæckel*, Prot. 14
Xiphomyrmex, *Forel*, Ins. 190
Xistra, *Bolivar*, Ins. 322
Xolalges, *Trouessart*, Arachn. 28
Xotodon, *Ameghino*, Mamm. 40
Xyophorus, *Ameghino*, Mamm. 52

Yelicones, *Cameron*, Ins. 197

Zamarada, *Moore*, Ins. 256
Zeheba, *Moore*, Ins. 259
Zeuxamathusia, *Staudinger*, Ins. 217
Zonarium, *Hæckel*, Prot. 14
Zonaspis, *Hæckel*, Prot. 14
Zonidium, *Hæckel*, Prot. 14
Zoniscus, *Hæckel*, Prot. 14
Zonosaurus, *Boulenger*, Rept. 13
Zootecus, *Westerlund*, Moll. 64
Zophodiodes, *Rogonot*, Ins. 272
Zorus, *Webster*, Verm. 32
Zygocampe, *Hæckel*, Prot. 14
Zygostaurus, *Hæckel*, Prot. 14

END OF THE TWENTY-FOURTH VOLUME.

SIMMONS & BOTTEN, Printers, Shoe Lane, Fleet Street, E.C.

CORRIGENDA.

PISCES.

Page 12, line 1, for "ZOGRAFII," read "ZOGRAFF."

INSECTA.

Add to page 10—118A. CANDÈZE, E. Quatre espèces nouvelles d'Élatérides de l'ile de Sumatra. Notes Leyd. Mus. ix, pp. 189–191.
Page 52, line 9, for "Lew," read "Liv."
Page 75, line 4, add at commencement of line, "*Rhynchota.*"
Page 223, line 21, for "Ticherra," read "*Ticherra.*"
Page 309, line 25, for "BROWN," read "BROWNE."

VERMES.

Page 30, line 27, for "*Naidomorphæ,*" read "*Naidomorpha.*"

Trypantius, *Waterhouse*, Ins. 132
Tuberaster, *Gauthier*, Ech. 12
Tuberculipora, *Pergens & Meunier*, Pol. 10
Tullbergella, *Bovallius*, Crust. 23
Tuscaridium, *Hæckel*, Prot. 15
Tuscarusa, *Hæckel*, Prot. 15
Tynipaniscus, *Hæckel*, Prot. 15

Ulolonche, *Smith*, Ins. 249
Uranodoxa, *Butler*, Ins. 257
Urceolopsis, *Stokes*, Prot. 17
Uriela, *Reitter*, Ins. 141
Urodonta, *Staudinger*, Ins. 241
Uxia, *Jousseaume*, Moll. 68

Vanessula, *Dewitz*, Ins. 214
Vega, *Westerlund*, Moll. 62
Ventrilia, *Jousseaume*, Moll. 68
Vespertiliavus, *Schlosser*, Mamm. 31
Vestigifera, *Gumppenberg*, Ins. 260
Victomorpha, *Fairmaire*, Ins. 142
Vipsania, *Druce*, Ins. 243
Vœringia, *Danielssen*, Cœl. 12

Wagneria, *Heilprin*, Moll. 70
Wagneria, *Tzenkovsky*, Prot. 15
Walterinnesia, *Lataste*, Rept. 19
Weissia, *Branco*, Rept. 34
Wesmælinius, *Costa*, Ins. 184

Xanthodytes, *Seidlitz*, Ins. 94
Xenocephalus, *Wasmann*, Ins. 98
Xenopholis, *Davis*, Pisces, 26
Xiphatractus, *Hæckel*, Prot. 14
Xiphomyrmex, *Forel*, Ins. 190
Xistra, *Bolivar*, Ins. 322
Xolalges, *Trouessart*, Arachn. 28
Xotodon, *Ameghino*, Mamm. 40
Xyophorus, *Ameghino*, Mamm. 52

Yelicones, *Cameron*, Ins. 157

Zamarada, *Moore*, Ins. 256
Zeheba, *Moore*, Ins. 259
Zeuxamathusia, *Staudinger*, Ins. 217
Zonarium, *Hæckel*, Prot. 14
Zonaspis, *Hæckel*, Prot. 14
Zonidium, *Hæckel*, Prot. 14
Zoniscus, *Hæckel*, Prot. 14
Zonosaurus, *Boulenger*, Rept. 13
Zootecus, *Westerlund*, Moll. 64
Zophodiodes, *Rugonot*, Ins. 272
Zorus, *Webster*, Verm. 32
Zygocampe, *Hæckel*, Prot. 14
Zygostaurus, *Hæckel*, Prot. 14

END OF THE TWENTY-FOURTH VOLUME.

SIMMONS & BOTTEN, Printers, Shoe Lane, Fleet Street, E.C.

CORRIGENDA.

PISCES.

Page 12, line 1, for "ZOGRAFH," read "ZOGRAFF."

INSECTA.

Add to page 10—118A. CANDÈZE, E. Quatre espèces nouvelles d'Élatérides de l'île de Sumatra. Notes Leyd. Mus. ix, pp. 189–191.
Page 52, line 9, for "Lew," read "Liv."
Page 75, line 4, add at commencement of line, "*Rhynchota.*"
Page 223, line 21, for "Ticherra," read "*Ticherra.*"
Page 309, line 25, for "BROWN," read "BROWNE."

VERMES.

Page 30, line 27, for "*Naidomorphæ*," read "*Naidomorpha.*"

THE ZOOLOGICAL RECORD.

THE object of the Zoological Record is to give, in an annual Volume, reports on, abstracts of, and an index to, the various Zoological publications which have appeared during the preceding year; to acquaint Zoologists with the progress of every branch of their science in all parts of the globe; and to form a repertory which will retain its value for the Student in future years.

The 'Zoological Record' is published for the Society by Messrs. Gurney and Jackson at the price of 30s. per volume. But all Members of the Zoological Society of London have the privilege of receiving it, including the cost of delivery (within the United Kingdom), at a subscription price of 20s. per annum. This Subscription is due on the 1st of July in every year, but the privilege of Subscription is forfeited unless the amount be paid before the 1st of December following.

The Zoological Society, having purchased the entire stock of the 'Zoological Record,' are able to supply complete sets of the first twenty-two volumes at the price of £5 10s. Volumes of any single year (exclusive of the last two volumes and Vol. 6) can likewise be supplied at 10s. per volume.

Members of the Society wishing to subscribe to the 'Record' are requested to apply at this office for a Form, to be returned when filled up and signed by the subscriber. In order to facilitate the payment of the subscription, a Banker's Order Form is also furnished to those who prefer that mode of payment. This order, when filled up and signed, should be sent to the Society's office for registration; it will then be sent to the Agents named therein.

Learned Societies and Institutions and members of the former Zoological Record Association are permitted to subscribe to the 'Record' on the same conditions as are accorded to Members of the Zoological Society.

P. L. SCLATER,
Secretary.

Dec. 1*st*, 1888.

Zoological Society of London,
3 Hanover Square, W.

THE ZOOLOGICAL RECORD.

THE object of the Zoological Record is to give, in an annual Volume, reports on, abstracts of, and an index to, the various Zoological publications which have appeared during the preceding year; to acquaint Zoologists with the progress of every branch of their science in all parts of the globe; and to form a repertory which will retain its value for the Student in future years.

The 'Zoological Record' is published for the Society by Messrs. Gurney and Jackson at the price of 30s. per volume. But all Members of the Zoological Society of London have the privilege of receiving it, including the cost of delivery (within the United Kingdom), at a subscription price of 20s. per annum. This Subscription is due on the 1st of July in every year, but the privilege of Subscription is forfeited unless the amount be paid before the 1st of December following.

The Zoological Society, having purchased the entire stock of the 'Zoological Record,' are able to supply complete sets of the first twenty-two volumes at the price of £5 10s. Volumes of any single year (exclusive of the last two volumes and Vol. 6) can likewise be supplied at 10s. per volume.

Members of the Society wishing to subscribe to the 'Record' are requested to apply at this office for a Form, to be returned when filled up and signed by the subscriber. In order to facilitate the payment of the subscription, a Banker's Order Form is also furnished to those who prefer that mode of payment. This order, when filled up and signed, should be sent to the Society's office for registration; it will then be sent to the Agents named therein.

Learned Societies and Institutions and members of the former Zoological Record Association are permitted to subscribe to the 'Record' on the same conditions as are accorded to Members of the Zoological Society.

P. L. SCLATER,
Secretary.

Dec. 1st, 1888.

Zoological Society of London,
3 Hanover Square, W.

LIST OF VOLUMES

OF THE

'ZOOLOGICAL RECORD.'

The Record of Zoological Literature, 1864. Volume First. Edited by Albert C. L. G. Günther, M.A., M.D., Ph.D., F.Z.S., &c. London, 1865. Price 10*s*.

The Record of Zoological Literature, 1865. Volume Second. Edited by Albert C. L. G. Günther, M.A., M.D., Ph.D., F.Z.S., &c. London, 1866. Price 10*s*.

The Record of Zoological Literature, 1866. Volume Third. Edited by Albert C. L. G. Günther, M.A., M.D., Ph.D., F.R.S., F.Z.S., &c. London, 1867. Price 10*s*.

The Record of Zoological Literature, 1867. Volume Fourth. Edited by Albert C. L. G. Günther, M.A., M.D., Ph.D., F.R.S., F.Z.S., &c. London, 1868. Price 10*s*.

The Record of Zoological Literature, 1868. Volume Fifth. Edited by Albert C. L. G. Günther, M.A., M.D., Ph.D., F.R.S., F.Z.S., &c. London, 1869. Price 10*s*.

The Record of Zoological Literature, 1869. Volume Sixth. Edited by Albert C. L. G. Günther, M.A., M.D., Ph.D., F.R.S., F.Z.S., &c. London, 1870. Price 30*s*.

The Zoological Record for 1870; being Volume Seventh of the Record of Zoological Literature. Edited by Alfred Newton, M.A., F.R.S., Professor of Zoology and Comparative Anatomy in the University of Cambridge, F.L.S., V.P.Z.S, &c. London, 1871. Price 10*s*.

The Zoological Record for 1871; being Volume Eighth of the Record of Zoological Literature. Edited by Alfred Newton, M.A., F.R.S., Professor of Zoology and Comparative Anatomy in the University of Cambridge, F.L.S., V.P.Z.S., &c. London, 1873. Price 10*s*.

The Zoological Record for 1881; being Volume Eighteenth o the Record of Zoological Literature. Edited by Edward Caldwell Rye, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Ro Geographical Society. London, 1882. Price 10s.

The Zoological Record for 1882; being Volume Nine the Record of Zoological Literature. Edited by Edward Rye, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to Geographical Society. London, 1883. Price 10s.

The Zoological Record for 1883; being Volume Twentieth of the Record of Zoological Literature. Edited by Edward Caldwell Rye, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1884. Price 10s.

The Zoological Record for 1884; being Volume the Twenty-first of the Record of Zoological Literature. Edited by F. Jeffrey Bell, M.A., Sec. R.M.S., Professor of Comparative Anatomy and Zoology in King's College, London. London, 1885. Price 10s. ard

---

The Zoological Record for 1885; being Volume the Twenty-second of the Record of Zoological Literature. Edited by F. Jeffrey Bell, M.A., Sec. R.M.S., Professor of Comparative Anatomy an Zoology in King's College, London. London, 1886. Price 10s.

The Zoological Record for 1886; being Volume the Twenty third of the Record of Zoological Literature. Edited by Fran E. Beddard, M.A., F.Z.S., Prosector and Davis Lecturer to th Zoological Society of London. London, 1887. Price 30s.

The Zoological Record for 1887; being Volume the Twen y fourth of the Record of Zoological Literature. Edited by Fra E. Beddard, M.A., F.Z.S., Prosector and Davis Lecturer to th Zoological Society of London. London, 1888. Price 30s.

These publications may be obtained at the Society's Offi *(3 Hanover Square, W.), of Messrs.* Gurney and Jackson *(Pate no Row, E.C.), or through any bookseller.*

ne
A.,
Uni-
10s.

The Zoological Record for 1881; being Volume Eighteenth o the Record of Zoological Literature. Edited by Edward Caldwell Rye, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Ro Geographical Society. London, 1882. Price 10s.

The Zoological Record for 1882; being Volume Nine the Record of Zoological Literature. Edited by Edward Rye, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to Geographical Society. London, 1883. Price 10s.

The Zoological Record for 1883; being Volume Twentieth of the Record of Zoological Literature. Edited by Edward Caldwell Rye, F.Z.S., M.E.S., Editor Ent. M. Mag., Librarian to the Royal Geographical Society. London, 1884. Price 10s.

The Zoological Record for 1884; being Volume the Twenty-first of the Record of Zoological Literature. Edited by F. Jeffrey Bell, M.A., Sec. R.M.S., Professor of Comparative Anatomy and Zoology in King's College, London. London, 1885. Price 10s. ard

---

The Zoological Record for 1885; being Volume the Twenty-second of the Record of Zoological Literature. Edited by F. Jeffrey Bell, M.A., Sec. R.M.S., Professor of Comparative Anatomy an Zoology in King's College, London. London, 1886. Price 10s.

The Zoological Record for 1886; being Volume the Twenty third of the Record of Zoological Literature. Edited by Fran E. Beddard, M.A., F.Z.S., Prosector and Davis Lecturer to th Zoological Society of London. London, 1887. Price 30s.

The Zoological Record for 1887; being Volume the Twenty fourth of the Record of Zoological Literature. Edited by Fran E. Beddard, M.A., F.Z.S., Prosector and Davis Lecturer to th Zoological Society of London. London, 1888. Price 30s.

These publications may be obtained at the Society's Offi *(3 Hanover Square, W.), of Messrs.* Gurney and Jackson (*Pater no Row, E.C.), or through any bookseller.*

ne
A.,
Uni-
10s.