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EDITED BY

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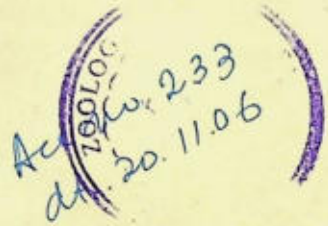

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PREFACE.

I HAVE again the pleasure of acknowledging a grant of £100 from the British Association for the Advancement of Science, a second contribution of £100 from the Government Grant Fund of the Royal Society, and a third contribution of £50 from the Council of the Zoological Society of London, in aid of this undertaking; and I have also to thank my fellow Recorders for their continued co-operation.

EDWARD CALDWELL RYE.

Royal Geographical Society,
1, Savile Row, Burlington Gardens, London,
May, 1877.

Communications, papers, and memoirs intended for this work should be addressed *solely* to "THE EDITOR of the Zoological Record, care of Mr. Van Voorst, 1, Paternoster Row, London." It is earnestly requested that in the case of separately-printed copies of papers so forwarded the *original pagination* be indicated.

LIST OF THE

PRINCIPAL ABBREVIATED TITLES OF JOURNALS

QUOTED IN THIS VOLUME.

Abh. Ak. Berl.—Abhandlungen der k. Akademie der Wissenschaften zu Berlin.

Abh. bayer. Ak.—Abhandlungen der mathematisch-physikalischen Classe der k. bayerischen Akademie der Wissenschaften (München).

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

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

Abh. Ges. Halle.—Abhandlungen der naturforschenden Gesellschaft zu Halle.

Abh. Ges. Nürnb.—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg.

Abh. senck. Ges.—Abhandlungen herausgegeben von der senckenbergischen naturforschenden Gesellschaft (Frankfurt-am-Main).

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

Act. Fenn.—Acta Societatis Scientiarum Fennicæ (Helsingfors).

Am. J. Sci. (3).—American Journal of Science and Art. Third series (New Haven).

Am. Nat.—American Naturalist (Boston, U. S. A.).

Ann. Agric. Tor.—Annali della R. Accademia d'Agricoltura de Torino.

Ann. Ent. Belg.—Annales de la Société entomologique de Belgique (Bruxelles).

Ann. Lyc. N. York—Annals of the Lyceum of Natural History of New York.

Ann. Mal. Belg.—Annales de la Société malacologique de Belgique (Bruxelles).

Ann. Mus. Genov.—Annali del Museo civico di Storia naturale di Genova.

Ann. N. H. (4)—Annals and Magazine of Natural History. Fourth series (London).

Ann. Sci. Géol.—Annales des Sciences Géologiques (Paris).

Ann. Sci. Nat. (5)—Annales des Sciences Naturelles. 5me série (Paris)

Ann. Soc. Agric. Lyon (4) – Annales de la Société d'Agriculture, Histoire naturelle, &c., de Lyon. 4me série.

Ann. Soc. Ent. Fr. (5)—Annales de la Société entomologique de France. 5me série (Paris).

Ann. Soc. Géol. Nord.—Annales de la Société Géologique du Nord (Lille).

Ann. Soc. Hérault (2)—Annales de la Société d'Horticulture et d'Histoire naturelle de l'Hérault (Montpellier). 2me série.

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

Ann. Soc. Sci. Crac.—Rocznik C. K. Towarzystwa Naukowego Krakowskiego (Krakow).

An. Soc. Mod.—Anuario della Società dei Naturalisti di Modena.

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

Arb. Inst. Würzb. (2)—Arbeiten aus dem zoologisch-zootomischen Institut in Würzburg. Neue Folge.

Arch. Anat. Phys.—Archiv für pathologische Anatomie und Physiologie (Berlin).

Arch. Anthr. Br.—Archiv für Anthropologie (Braunschweig).

Arch. f. Nat. (2)—Archiv für Naturgeschichte. Neue Folge (Berlin).

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

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

Arch. Nat. Livl.—Archiv für Naturkunde Liv-, Ehst-, und Kur- lands (Dorpat).

Arch. Néerl.—Archives Néerlandaises des Sciences exactes et naturelles (La Haye).

Arch. Phys.—Archives de Physiologie normale et pathologique (Paris).

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

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

Atti Acc. Nap.—Atti dell' Accademia di Scienze fisiche e mathematiche di Napoli.

Atti Acc. Palerm.—Atti della R. Accademia Palermitana delle scienze e lettere (Palermo).

Atti Acc. Rom.—Atti della R. Accademia dei Lincei (Roma).

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

Atti Soc. Ital.—Atti della Società Italiana di Scienze naturali (Modena).

Atti Soc. Pad.—Atti della Società Veneto-Trentina di Scienze naturali (Padova).

Atti Soc. Tosc.—Atti della Società Toscana di Scienze naturali residente in Pisa.

Ber. offenb. Ver.—Bericht über die Thatigkeit des offenbacher Vereins für Naturkunde (Offenbach-am-Main).

Ber. senck. Ges.—Bericht der senckenbergischen naturforschenden Gesellschaft (Frankfurt-am-Main).

Ber. St. Gal. Ges.—Bericht über die Thätigkeit der St. Gallischen naturwissenschaftlichen Gesell schaft (St. Gallen).

Ber. Ver. Innsbr. — Berichte des naturwissenschaftlich-medicinischen Vereins, Innsbruck.

B. E. Z.—Berliner entomologische Zeitschrift.

Bibl. Nat. Sicil.—Bibliotheca del Naturalista Siciliano (Castelbuono).

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

Bol. Ac. Cordova—Boletin de la Academia nacional de Ciencias exactas existente en la Universidad de Cordova.

Boll. Com. Geol. Ital.—Bolletino del R. Comitato Geologico d'Italia (Roma).

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

Bull. Ac. Belg. (2)—Bulletin de l'Académie Royal des Sciences de Belgique. 2me série (Bruxelles).

Bull. Buff. Soc.—Bulletin of the Society of Natural Sciences, Buffalo.

Bull. Corn. Univ.—Bulletin of the Cornell University (Ithaca, U. S. A.).

Bull. Ent. Ital. — Bullettino della Società Entomologica Italiana (Firenze).

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

Bull. mal. (2)—Bulletino malacologico Italiano. Serie seconda (Firenze).

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

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

Bull. Pétersb.—Bulletin de la classe physico-mathématique de l'Académie impériale des Sciences de St. Petersbourg.

Bull. Soc. Acclim. (3)—Bulletin de la Société d'Acclimatation. 3me série (Paris).

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

Bull. Soc. Géol. (3)—Bulletin de la Société géologique de France. 3me série (Paris).

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

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

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

Bull. Soc. Pyrén.—Bulletin de la Société agricole scientifique et littéraire des Pyrénées orientales (Perpignan).

Bull. Soc. Rouen—Bulletin de la Société des Amis des Sciences naturelles de Rouen.

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

Canad. Ent.—Canadian Entomologist (Bethune : Montreal).
Canad. Nat. (*n. s.*)—Canadian Naturalist and Quarterly Journal of Science. New Series (Montreal).
Cat. Mus. C. Z.—Illustrated Catalogue of the Museum of Comparative Zoology (Cambridge, U. S. A.).
CB. med. Wiss. Würzb.—Centralblatt für die medicinischen Wissenschaften in Würzburg.
CB. Ver. Regensb.—Correspondenz-Blatt des zoologisch-mineralogischen Vereins in Regensburg.
C. H.—Coleopterologische Hefte (München).
Cist. Ent.—Cistula Entomologica (Janson : London).
Congr. Sc.—Congrès scientifique de France.
C. R.—Comptes rendus des séances hebdomadaires de l'Académie des Sciences (Paris).
CR. Ent. Belg.—Comptes-rendus des séances de la Société entomologique de Belgique (Bruxelles).

Dan. Selsk. Skr. (5)—K. Danske Videnskabernes Selskabs Skrifter; Naturvidenskabelig og mathematisk afdeling. 5te Række (Kjöbenhavn).
Denk. Ak. Wien—Denkschriften der k. Akademie der Wissenschaften zu Wien.
Deutsche E. Z.—Deutsche entomologische Zeitschrift (Kraatz : Berlin).

Ent.—The Entomologist (Newman : London).
Ent. Ann.—The Entomologist's Annual (Stainton : London).
Ent. M. M.—Entomologist's Monthly Magazine (Douglas, McLachlan, Rye, & Stainton : London).
Ent. Monatsbl.—Entomologische Monatsblätter (Kraatz : Berlin).
Ent. Nachr.—Entomologische Nachrichten (Katter : Putbus).

Feuil. Nat.—Feuilles des jeunes Naturalistes (Mülhausen).
Forh. Selsk. Chr.—Forhandlinger i Videnskabs-Selskabet i Christiania.
Förh. Sk. Naturf.—Fördhandlingar vid det af Skandinaviska Natursforskare och Läkare möte (Sweden).

Geol. Mag.—Geological Magazine (Woodward : London).

Hor. Ent. Ross.—Horæ Societatis Entomologicæ Rossicæ (St. Petersburg).

Ibis—The Ibis (Salvin : London).
Isis, Maandschr. v. Nat.—Isis, Maandschrift voor Natuurwetenschap.

J. Agric. Soc. (2)—Journal of the Royal Agricultural Society. 2nd series (London).
J. Anat. Phys.—Journal of Anatomy and Physiology (Humphry : London).

J. A. S. B. (*n. s.*)—Journal of the Asiatic Society of Bengal. New Series (Calcutta).

JB. Ak. Erf. (*n. f.*)—Jahresbericht der Akademie der Wissenschaften in Erfurt. Neue Folge.

JB. Anat. Physiol.—Jahresberichte über die Fortschritte der Anatomie und Physiologie (Hofmann & Schwalbe: Leipzig).

JB. f. Mineral.—Neues Jahrbuch für Mineralogie, Geologie, und Palæontologie (Leonhard & Geinitz: Stuttgart).

JB. Geol. Reichsanst.—Jahrbuch der k.-k. geologischen Reichsanstalt (Wien).

JB. Ges. Hannov.—Jahresbericht der naturforschenden Gesellschaft in Hannover.

JB. Leist. Forts. medicin—Jahresbericht über die Leistungen und Fortschritte in der gesammten Medicin (Virchow & Hirsch).

JB. mal. Ges.—Jahrbuch der deutschen malakozoologischen Gesellschaft (Frankfurt-am-Main).

JB. schles. Ges.—Jahresbericht der schlesischen Gesellschaft für vaterländische Cultur (Breslau).

JB. ungar. Geol. Anst.—Jahrbuch der konigl.- ungarischen geologischen Anstalt (Pest).

JB. Ver. Zwickau — Jahresbericht des Vereins für Naturkunde zu Zwickau.

J. de Conch.—Journal de Conchyliologie (Paris).

J. de l'Anat. Phys.—Journal de l'anatomie et de la physiologie (Robin: Paris).

Jen. Z. Nat.—Jenaische Zeitschrift für Medicin und Naturwissenschaft (Leipzig).

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

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

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

J. Mus. Godeffr.—Journal des Museum Godeffroy: Geographische ethnographische und naturwissenschaftliche Mittheilungen (Hamburg).

J. Quek. Club—Journal of the Quekett Microscopical Club (London).

J. R. G. Soc. Irel.—Journal of the Royal Geological Society of Ireland (Dublin).

J. Sc. Lisb.—Jornal de Sciencias da Academia de Lisboa.

J. Zool.—Journal de Zoologie (Gervais: Paris).

L'Ab.—L'Abeille (De Marseul: Paris).

Mal. Bl.—Malakozoologische Blätter (Cassel).

MB. Ak. Berl.—Monatsberichte der k. Akademie der Wissenschaften zu Berlin.

Mél. Biol.—Mélanges biologiques tirés du Bulletin de la classe physico-mathématique de l'Academie Impériale des Sciences de St. Pétersbourg.

Mém. Ac. Belg.—Mémoires de l'Académie Royale des Sciences de Belgique (Bruxelles).

Mem. Acc. Bologn.—Memorie dell' Accademia di Scienze dell' Istituto di Bologna.
Mém. Ac. Sci.—Mémoires de l'Académie des Sciences (Paris).
Mem. Am. Ass.—Memoirs of the American Association for the Advancement of Science (Salem).
Mem. Bost. Soc.—Memoirs of the Boston Society of Natural History.
Mem. Peab. Ac.—Memoirs of the Peabody Academy of Arts and Sciences (Salem).
Mém. Pétersb. (7)—Mémoires de l'Académie impériale des Sciences de St. Pétersbourg. 7me série.
Mém. Soc. Biol.—Comptes-rendus des séances et Mémoires de la Société de Biologie (Paris).
Mém. Soc. Cherb. (2)—Mémoires de la Société des sciences naturelles de Cherbourg. 2me série.
Mem. Soc. Phys. Genèv.—Mémoires de la Société de Physique et d'Histoire naturelle de Genève.
M. Micr. J.—Monthly Microscopical Journal (London).
Morph. JB.—Morphologisches Jahrbuch: eine Zeitschrift für Anatomie und Entwickelungsgeschichte (Gegenbauer: Leipzig).
MT. Ges. Bern—Mittheilungen der naturforschenden Gesellschaft in Bern.
MT. Mus. Dresd.—Mittheilungen aus dem k. zoologischen Museum zu Dresden.
MT. schw. ent. Ges.—Mittheilungen der schweizerischen entomologischen Gesellschaft.
MT. Ver. Steierm.—Mittheilungen des naturwissenschaftlichen Vereins für Steiermark (Grätz).
MT. Vorpomm.—Mittheilungen aus dem naturwissenschaftlichen Vereine von Neu-Pommern und Rügen (Greisswalde).

Nachr. Ges. Götting.—Nachrichten von der k. Gesellschaft der Wissenschaften zu Göttingen.
Nachr. Ges. Mosc.—Nachrichten der k. Gesellschaft der Liebhaber der Naturkunde zu Moscau.
Nachr. mal. Ges.—Nachrichtsblatt der deutschen malako-zoologischen Gesellschaft (Frankfurt-am-Main).
N. Arch. Mus.—Nouvelles Archives du Muséum d'Histoire Naturelle (Paris).
Nat. Canad.—Le Naturaliste Canadien (Provancher: Montreal).
Nat. Mex.—La Naturaleza (Mexico).
Nat. Tids.—Naturhistorisk Tidsskrift (Schiödte: Kjöbenhavn).
Nature.—Nature (London).
Niederl. Arch. Zool.—Niederländisches Archiv für Zoologie (Hoffmann: Haarlem).
N. Mag. Naturv.—Nyt Magazin for Naturvidenskaberne (Sars & Kjerulf: Christiania).
Not. Fenn.—Notiser ur Sällskapets pro Fauna et Flora Fennica Förhandlingar (Helsingfors).
Nouv. et Faits—Nouvelles et Faits divers (De Marseul: Paris).

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

Œfv. Fin Soc.—Œfversigt af Finska Vetenskaps-Societetens Förhandlingar (Helsingfors).

Op. Ent.—Opuscules Entomologiques (Mulsant: Paris).

Opusc. ent.—Opuscula entomologica (Thomson: Lund).

Orn. Misc.—Ornithological Miscellany (Rowley: London and Brighton).

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

Pal. Soc.—[Publications of the] Palæontographical Society (London).

P. Am. Ac. (2)—Proceedings of the American Academy of Arts and Sciences. 2nd Series (Boston).

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

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

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

P. Belf. Soc.—Proceedings of the Belfast Natural-History Society.

P. Berw. Club.—Proceedings of the Berwickshire Naturalists' Field Club (Berwick).

P. Bost. Soc.—Proceedings of the Boston Society of Natural History.

P. Cal. Ac.—Proceedings of the California Academy of Sciences (San Francisco).

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

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

Pet. Nouv.—Petites Nouvelles Entomologiques (Deyrolle: Paris).

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

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

P. Liverp. G. Soc.—Proceedings of the Liverpool Geological Society.

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

P. Lyc. N. York—Proceedings of the Lyceum of Natural History, New York.

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

Pop. Sci. Rev.—Popular Science Review (London).

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

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

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

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

P. Soc. Manch.—Proceedings of the Literary and Philosophical Society of Manchester.

P. Soc. Portl.—Proceedings of the Society of Natural History, Portland (Maine, U.S.A.).
Psyche—Psyche: Organ of the Cambridge [U. S. A.] Entomological Club.
Publ. Inst. Luxemb.—Publications de l'Institut Royal Grand-ducal de Luxembourg.
P. Z. S.—Proceedings of the Zoological Society (London).
P. Z. S. Viet.—Proceedings of the Zoological and Acclimatization Society of Victoria.

Q. J. Micr. Sci.—Quarterly Journal of Microscopical Science (London).

Rec. Mét. Vét. (6)—Recueil de Médicine Véterinaire. 6me série (Paris).
Rend. Acc. Bologn.—Rendiconto dell' Accademia di scienze dell' Istituto di Bologna.
Rend. Ist. Lomb.—Rendiconti del R. Istituto Lombardo di scienze, &c. (Milan).
Rep. Belf. Club.—Annual Report of the Belfast Naturalists' Field Club.
Rep. Br. Ass.—Report of the British Association for the Advancement of Science.
Rep. E. Soc. Ont.—Report of the Entomological Society of the Province of Ontario (Toronto).
Rep. Ins. Mo.—Annual Report on the noxious, beneficial, and other Insects of the State of Missouri, made to the State Board of Agriculture (St. Louis).
Rep. Ins. N. York—Report on the noxious, beneficial, and other Insects of the State of New York.
Rep. N. York. Mus.—Annual Report of the New York State Museum of Natural History.
Rev. Montp.—Revue des Sciences Naturelles (Montpellier).
Rev. Sci. Nat.—Revue des Sciences Naturelles (Montpellier).
R. Z. (3)—Revue et Magasin de Zoologie pure et appliquée. 3me série (Guérin-Meneville: Paris).

SB. Ak. Wien—Sitzungsberichte der mathematisch- naturwissenschaftlichen Classe der k. Akademie der Wissenschaften (Wien).
SB. bayer Ak.—Sitzungsberichte der mathematisch-physikalischen Classe der k. bayerischen Akademie der Wissenschaften (München).
SB. böhm. Ges.—Sitzungsberichte der k. böhmischen Gesellschaft der Wissenschaften (Prag).
SB. Ges. Dorp.—Sitzungsberichte der Dorpater Naturforscher Gesellschaft (Dorpat).
SB. Ges. Isis—Sitzungsberichte der naturwissenschaftlichen Gesellschaft "Isis" (Dresden).
SB. Nat. Fr.—Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin.
SB. niederrhein. Ges.—Sitzungsberichte des niederrheinischen Gesellschaft für Natur und Heilkunde (Bonn).
Schr. Ges. Danz. (*n. f.*)—Neueste Schriften des naturforschenden Gesellschaft zu Danzig. Neue Folge.

Schr. Ges. Königsb.—Schriften der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg).
Schr. Ver. Schlesw. Holst. –Schriften des naturwissenschaftlichen Vereins für Schleswig-Holstein (Kiel).
Sci. Gos.—Science Gossip (London).
Scot. Nat.—The Scottish Naturalist (Buchanan-White: Perth).
S. E. Z.—Stettiner entomologische Zeitung (Dohrn: Stettin).
Str. Feath.—Stray Feathers (Calcutta).
Sv. Ak. Handl.—K. Svenska Vetenskaps Akademiens Handlingar (Stockholm).

Term. Közl.—Természettudományi Közlemének (Pest).
Tids. Naturvid.—Tidsskrift for populäre Fremstillinger af Naturvidenskabene (Kjöbenhavn).
Tijdschr. Ent.—Tijdschrift voor Entomologie ('s Gravenhage).
Tijdschr. Nederl. Ind. (7)—Natuurkundig Tijdschrift voor Nederlandsch Indië, uitgegeven door de Natuurkundige Vereeniging. 7de Reeks (Batavia).
Tr. Ac. St. Louis—Transactions of the Academy of Sciences of St. Louis.
Tr. Am. Ent. Soc.—Transactions of the American Entomological Society (Philadelphia).
Tr. Devon. Ass.—Report and Transactions of the Devonshire Association for the Advancement of Science, &c. (Plymouth).
Tr. E. Soc.—Transactions of the Entomological Society of London.
Tr. G. Soc. Edinb.—Transactions of the Geological Society of Edinburgh.
Tr. G. Soc. Glasg.—Transactions of the Geological Society of Glasgow.
Tr. L. S.—Transactions of the Linnean Society (London).
Tr. North. Dur.—Natural-History Transactions of Northumberland and Durham (Newcastle-upon-Tyne).
Tr. Norw. Soc.—Transactions of the Norfolk and Norwich Naturalists' Society (Norwich).
Tr. N. Z. Inst.—Transactions and Proceedings of the New Zealand Institute (Wellington).
Tr. R. Irish Ac.—Transactions of the Royal Irish Academy (Dublin).
Tr. R. Soc. Edinb.—Transactions of the Royal Society of Edinburgh.
Tr. Watford Soc.—Transactions of the Watford Natural History Society and Hertfordshire Field Club.
Tr. Z. S.—Transactions of the Zoological Society (London).

Verh. Ak. Amst.—Verhandelingen der koninklijke Akademie van Wetenschappen (Amsterdam).
Verh. geol. Reichsanst.—Verhandlungen der k. k. geologischen Reichsanstalt (Wien).
Verh. Ges. Bas.—Verhandlungen der naturforschenden Gesellschaft in Basel.
Verh. Ges. Würzb. (2)—Verhandlungen der physikalisch-medicinischen Gesellschaft in Würzburg. Neue Folge.

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

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

Verh. Ver. Rheinl.—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westphalens (Budge: Bonn).

Verh. z.-b. Wien—Verhandlungen der zoologisch-botanischen Gesellschaft in Wien.

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

Vid. Medd.—Videnskabelige Meddelelser fra den Naturhistoriske Forening (Kjöbenhavn).

Württ. nat. JH.—Württembergische naturwissenschaftliche Jahreshefte (Stuttgart).

Z. Anat. Entwickel.—Zeitschrift für Anatomie und Entwickelungsgeschichte (Leipzig).

Z. E. Ver. schles.—Zeitschrift für Entomologie des Vereins für schlesische Insektenkunde (Breslau).

Z. Ferd.—Zeitschrift des Ferdinandeums (Innsbruck).

Z. geol. Ges. — Zeitschrift der deutschen geologischen Gesellschaft (Berlin).

Z. ges. Naturw. (2)—Zeitschrift für die gesammten Naturwissenschaften. Neue Folge (Giebel: Berlin).

Zool. Gart. — Der Zoologische Garten (Weinland, Bruch, & Noll: Frankfurt-am-Main).

Zool. Rec.—Zoological Record (Rye: London).

Zool. (*s.s.*)—The Zoologist. Second Series (Newman: London).

Z. wiss. Zool. — Zeitschrift für wissenschaftliche Zoologie (Siebold & Kölliker: Leipzig).

ERRATUM.

Page 102, *Trimeresurus jerdoni*, Günth., should be placed under the CROTALIDÆ, not the ELAPIDÆ.—A. W. E. O'S.

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ZOOLOGICAL RECORD

FOR 1875.

MAMMALIA.

BY

EDWARD RICHARD ALSTON, F.L.S., F.Z.S., &c.

THE most important new separate works of the year are the first part of Milne-Edwards and Grandidier's magnificent memoir on the Mammals of Madagascar [*infrà*, p. 3] and the first volume of the Geological Record [*ibid.*], from which last the Recorder has to acknowledge much assistance. Van Beneden and Gervais have continued their work on the Cetacea [pp. 12 & 13], and Turner his important researches on placentation [p. 4]. Attention may also be directed to Dobson's classification of Bats [p. 7], to Flower's views on the arrangement of the Artiodactyles [p. 17], and to the labours of Owen and Garrod among the Marsupials, extinct and recent [p. 23]. The American palæontologists have been as untiring as ever, and have been amply rewarded; principally by the discovery of remarkable forms seemingly allied to the Lemurs [pp. 6 & 7], and by fuller knowledge of the structure of the ancient Ungulates [pp. 15 & 16], and of the paradoxical creatures, for the reception of which the new orders *Tillodontia* of Marsh [p. 9], and *Amblypoda* of Cope [p. 16], have been proposed.

THE GENERAL SUBJECT.

ANDERSON, J. Description of some new Asiatic Mammals and *Chelonia*. Ann. N. H. (4) xvi. pp. 282 & 283. [Cf. *Insectivora*, *Carnivora*, and *Glires*.]

——. [See BLYTH, E.]

Bartlett, E. List of Mammals and Birds collected by Mr. Waters in Madagascar. P. Z. S. 1875, pp. 62–64, pl. xii.

Twenty species of Mammals are enumerated, and *Potamochœrus edwardsi* is figured.

Blanford, W. T. List of *Mammalia* collected by the late Dr. Stoliczka in Kashmir, Ladak, Eastern Turkestan, and Wakhan; with descriptions of new species. J. A. S. B. (n.s.) xliv. pt. 2, pp. 105–112.

Describes 42 species, some of them only doubtfully determined, obtained by Sir D. Forsyth's expedition. The new species include 1 Insectivore and 6 Rodents.

——. Description of new *Mammalia* from Persia and Balúchistán. Ann. N. H. (4) xvi. pp. 309–313.

Descriptions of new species published in advance of the author's delayed work on Persian Zoology [cf. *Chiroptera*, *Insectivora*, *Carnivora*, and *Glires*].

Blyth, E. Catalogue of the Mammals and Birds of Burma. Mammals. J. A. S. B. (n.s.) xliii. pt. 2, pp. 1–53.

This valuable posthumous memoir has been edited by A. Grote, and the *Mammalia* revised by J. Anderson and G. E. Dobson. 129 species are enumerated, with full notes on distribution and habits.

Bronn, H. G. [See Giebel, C. G.]

Cope, E. D. On the supposed *Carnivora* of the Eocene of the Rocky Mountains. P. Ac. Philad. 1875, pp. 444–448.

The Eocene animals hitherto regarded as belonging to the *Carnivora* and to Marsh's order *Tillodontia* are referred to the *Insectivora* [*infrà*, p. 8].

——. Report on the Geology of that part of North-western New Mexico examined during the field season of 1874. In G. M. Wheeler's Ann. Rep. Geog. Expl. & Surv. 1875, pp. 68–73, 93–95, pls. ii. v. vi.; abstract, Am. Nat. ix. pp. 49–52.

——. Systematic Catalogue of *Vertebrata* of the Eocene of New Mexico, collected in 1874. Washington: 1875, 8vo, pp. 39. [Not seen by the Recorder.]

Dobson, G. E. [See Blyth, E.]

Ferrier, D. Experiments on the Brain of Monkeys. No. 1. P. R. Soc. xxiii. pp. 409–430. [*Cf.* Zool. Rec. xi. p. 2.]

Forsyth Major, C. I. Considerazioni sulla Fauna dei Mammiferi Pliocenici e Post-pliocenici della Toscana. Part I. Atti Soc. Tosc. i. pp. 7–40.

Foulis, J. On the Development of the Ova and Structure of the Ovary in Man and other *Mammalia*. Tr. R. Soc. Edinb. xxvii. pp. 345–382, pls. xxvii.–xxxi.; abstract, P. R. Soc. Edinb. viii. pp. 437–440.

Gaudry, A. Sur quelques pièces de Mammifères fossiles qui ont été trouvées dans les phosphorites de Quercy. J. Zool. iv. pp. 518–527, pl. xviii.

Gives further details as to several fossil forms, and describes new species of *Ancyclotherium* and *Chalicotherium*.

GAUDRY, A. Sur de nouvelles pièces fossiles découvertes dans les phosphorites de Quercy. C. R. lxxxi. pp. 1113–1115.

Notes on *Adapis*, *Tapirulus*, *Lophiomeryx*, *Chalicotherium*, and *Lophiodon*.

GERVAIS, P. De l'Hyperostose chez l'Homme et chez les Animaux. J. Zool. iv. pp. 272–284, 445–465, pls. v.–x.

GIEBEL, C. G. Dr. H. G. Bronn's Klassen und Ordnungen des Thier-Reichs, Abth. 5, *Mammalia*; Nos. 6–10. Leipzig & Heidelberg: 1875. 8vo, pp. 81–160, pls. xxv.–xlii.

The present numbers of the text are devoted to the dentition, and of the plates to the osteology, of the various orders [*cf.* Zool. Rec. xi. p. 3].

GRANDIDIER, A. [See MILNE-EDWARDS, A.]

GULLIVER, G. Observations on the sizes and shapes of the red corpuscles of the blood of Vertebrates. P. Z. S. 1875, pp. 474–495, pl. lv.

Sums up the result of the author's previous papers [*cf.* Zool. Rec. vii. p. 5], illustrated by figures drawn to scale, and extensive tables of measurements.

KÖNIG-WARTHAUSEN, R. Verzeichniss der Wirbelthiere Oberschwabens: Abth. i., Säugethiere. Württ. nat. JH. 1875, pp. 193–335.

A list, with full notes, of 59 species of Mammals either now existing in Upper Suabia, or which have become extinct during the human period.

MACGILLAVRY, T. H. Les dents incisives du *Mus decumanus*; Essai d'une histoire évolutive de l'émail dentaire. Arch. Néerl. x. pp. 337–360, pl. v.

MAGITOT, É. Contribution à l'histoire des anomalies du système dentaire chez les Mammifères. Des anomalies de Structure. J. de l'Anat. Phys. 1875, pp. 260–287.

MIALL, L. C. (Sub-Editor). The Geological Record for 1874. London: 8vo, 1875. Palæontology, I. *Vertebrata*, pp. 261–282.

The literature of fossil *Mammalia* is in this work more fully recorded than is possible within the limits of the Zoological Record.

MILNE-EDWARDS, A., & GRANDIDIER, A. Histoire Physique, Naturelle, et Politique de Madagascar. VI. Histoire Naturelle des Mammifères, I. part. i. 4to, texte, pp. 192, atlas, pls. i.–cxxii. Paris: 1875.

The first portion of this important and magnificently illustrated work is devoted to the general anatomy of the family *Indrisidæ*, and the comparison of their structure with that of Monkeys [*cf. infrà*, p. 6].

MOHNIKE, O. Banka und Palembang, nebst Mittheilungen über Sumatra in Algemeinen. Münster: 1874, 8vo.

The Mammals of Banka are specifically identical with those of Sumatra; about 80 species are found in the district of Palembang.

Naumann, E. Die Fauna der Pfahlbauten in Starnberger See. Arch. Anthr. Br. viii. pp. 1–48, pls. i.–iv.

Struckmann, C. Ueber einige der wichtigsten fossilen Säugethiere der Quartärzeit oder Diluvial-Periode in Deutschland. JB. Ges. Hannov. 1874, pp. 129–156.

Sundström, C. R. Zoologiska Anteckningar från östra Södermaland och dithörande skärgård. Bihang till Sv. Ak. Handl. i. No. 4, pp. 11–15 (1872).

27 species of Mammals are enumerated.

Toussaint, H. Application de la méthode graphique à la détermination du mécanisme de la réjection dans la Rumination. Arch. Phys. 1875, pp. 141–175.

The return of the food from the rumen into the œsophagus is considered to be caused by rarefaction of the air in the thoracic cavity.

Troschel, F. H. Bericht über die Leistungen in der Naturgeschichte der Säugethiere während des Jahres 1874. Arch. f. Nat. 1875, ii. pp. 53–77.

Turner, W. On the Placentation of the Seals. Tr. R. Soc. Edinb. xxvii. pp. 275–304, pls. xviii.–xxi.

——. The Placenta in Ruminants—a Deciduate Placenta. P. R. Soc. Edinb. viii. pp. 537–544.

——. Note on the Placentation of *Hyrax*. P. R. Soc. xxiv. pp. 151–155.

——. On the Structure of the Diffused, the Polycotyledonary, and the Zonary Forms of Placenta. J. Anat. Phys. x. pp. 127–177.

The last named paper gives the principal general results arrived at. Various degrees of deciduation are distinguished, and the polycotyledonary placenta of the Ruminants is regarded as obliterating the line of demarcation between the diffuse non-deciduate and the zonary deciduate types of placenta.

Vasseur, G. Sur quelques Vertébrés du Gypse des environs de Paris. Bull. Soc. Géol. (3) iii. pp. 134–137, pl. ii.

Wilder, B. G. The outer cerebral fissures of *Mammalia*, especially the *Carnivora*, and the limits of their homologies. Bull. Corn. Univ. i. (1874) pp. 214–233.

——. The pectoral muscles of *Mammalia* (abstract). *Tom. cit.* pp. 305–307.

E. R. Alston & J. A. Harvie Brown give a list of 24 species of Mammals found in Sutherlandshire, with notes on their habits. The Wolf appears to have existed till the end of the sixteenth century. P. N. H. Soc. Glasg. ii. pp. 138–147.

W. Boyd-Dawkins describes remains of Pleistocene Mammals found in bone caves in Derbyshire, ascribed to species of *Ursus*, *Canis*, *Bison*, *Cervus*, *Arvicola*, and *Lepus*. J. G. Soc. xxxi. pp. 246–255.

G. Busk gives a list of *Mammalia* from a rock-fissure cavern in Derbyshire, referred to *Ursus*, *Hyæna*, *Canis*, *Gulo*, *Bos*, *Cervus*, *Ovis*, *Equus*, *Rhinoceros*, *Elephas*, *Arvicola*, and *Lepus*. Tom. cit. pp. 683–691.

L. M. D'Albertis finds Mammals very scarce in southern New Guinea; hitherto he has only obtained a *Cuscus*, a *Belideus*, a few insectivorous Bats, a *Pteropus*, *Sus papuensis*, and *Dorcopsis luctuosa* [*infrà* p. 23]. P. Z. S. 1875, pp. 531 & 532.

J. J. Monteiro gives occasional notes on the Mammalian fauna in his work "Angola and the River Congo." London: 1875, 2 vols. 8vo.

J. J. Rein remarks on the distribution of 13 species of Japanese Mammals. Zool. Gart. 1875, pp. 55–58.

W. Stricker has notes on the fauna of Pomerania and the extinction of the wolf and lynx. *Tom. cit.* pp. 175–177.

J. C. Melliss, "St. Helena," London, 1875, cr. 8vo, pp. 79–87, gives a list with observations of the indigenous and imported Mammals of that island.

R. Cunningham has published a popular lecture "On the Geographical distribution of Mammals;" P. Belf. Soc. 1875, pp. 63–85.

Pansch writes on the brain of Mammals; Schr. Ver. Schlesw. Holst. i. p. 191 [*cf.* Arch. f. Nat. 1875, ii. p. 54]: and W. Gruber on sesamoid bones in the hyaline cartilages of the head of the gastrocnemius muscle in Man and Mammals; Mém. Pétersb. (7) xxii. No. 4, pls. i.–iv.

MONODELPHIA.

PRIMATES.

J. A. Fischer discusses the treatment of diseased tails in Monkeys in confinement. Zool. Gart. 1875, pp. 325–335.

St. G. Mivart in the article "Ape" in the Encyclopædia Britannica (9th Ed. ii. pp. 148–169, figs. 1–19, London: 1875) reviews the classification, anatomy, distribution in time and space, and affinities of the Monkeys. The families and sub-families adopted are: — I. *Simiidæ* with *Simiinæ*, *Semnopithecinæ* and *Cynopithecinæ*; and II. *Cebidæ* with *Cebinæ*, *Mycetinæ*, *Pithecinæ*, *Nyctipithecinæ*, and *Hapalinæ*.

Simiidæ.

Troglodytes niger. R. Hartmann continues his notes on the osteology and dentition of the "Bam-Chimpanzee" [*cf.* Zool. Rec. ix. p. 7]. Arch. Anat. Phys. 1875, pp. 265–303, pls. vii. & viii.

Troglodytes gorilla. On a supposed living Gorilla in the Dresden Zoological Gardens; F. C. Noll, Zool. Gart. 1875, pp. 361–363; A. Brehm, *tom. cit.* p. 392. The specimen determined to be a Chimpanzee; A. B. Meyer, Nature, xiii. p. 106.

Cercopithecidæ.

Macacus rheso-similis, Scl., = *problematicus*, Gr., = *assamensis* ?; P. L. Sclater, P. Z. S. 1875, p. 418.

Macacus speciosus figured; *id. tom. cit.* pl. xlvii.

Cynocephalus porcarius. Note on the adhesion of the great omentum to the colon in this species and in *Macacus nemestrinus*; H. P. Chapman, P. Ac. Philad. 1875, p. 123.

Cebidæ.

Ateles melanochir. Four varieties figured; *A. ornatus* being regarded as a local form "not yet differentiated." P. L. Sclater, P. Z. S. 1875, p. 419, pls. xlviii. & xlix.

Hapalidæ.

Hapale melanura figured; P. L. Sclater, *tom. cit.* pl. l.

Lemuridæ.

A. Milne-Edwards & A. Grandidier begin a very detailed monograph of the *Indrisinæ*, which are regarded as a distinct family. In the letterpress, the osteology, dentition, and myology are described and contrasted with that of Monkeys. The plates also illustrate in advance the external characters, visceral anatomy and placentation. Mamm. de Madag. i. pt. i. [*cf. suprà*, p. 3].

Avahi laniger figured, *tom. cit.* pls. ix. & x.

Propithecus diadema = *P. edwardsi* = *P. sericeus* = *P. holomelas* (Günth.); *tom. cit.* p. 4; figured, *ib.* pls. i.–iii.

Propithecus verreauxi = *P. deckeni* = *P. coquereli*; tom. cit. p. 4, figured, *ib.* pls. iv.–vi.

Propithecus coronatus figured, *tom cit.* pl. vii.

Indris brevicaudatus figured, *tom. cit.* pls. xi. & xii. A. Milne-Edwards also describes its vocal apparatus; the larynx has a large membranous pouch, opening below the cricoid cartilage; Ann. Sci. Nat. (6) i. art. i. pl. xii.

Propithecus holomelas, sp. n.; A. Günther, Ann. N. H. (4) xvi. p. 125; Madagascar.

Chirogaleus trichotis, sp. n.; *id.*, P. Z. S. 1875, p. 78, pl. xv. & p. 79, figs. 1 & 2; Madagascar.

Perodicticus potto. Note on its habits, &c.; A. Milne-Edwards, N. Arch. Mus. x. pp. 111–114, pls. iii. & iv.

Genera incertæ sedis.

H. Filhol proposes a new family, *Pachylemuridæ*, for the reception of *Palæolemur*, *Adapis*, *Aphelotherium*, and the new American fossil genera. Ann. Sc. Geol. v. (1874) art. 4, pls. vii. & viii.

Adapis duvernoyi. Part of a humerus attributed to this species figured by A. Gaudry, J. Zool. iv. p. 522, pl. xviii.

Laopithecus, g. n. (foss.), O. C. Marsh, Am. J. Sci. (3) ix. p. 240; allied to *Limnotherium*, but with the first molar the largest; type, *L. robustus*, sp. n., Miocene of Nebraska. This genus = *Menotherium*, Cope; E. D. Cope, P. Ac. Philad. 1875, p. 256.

Lemuravus, g. n. (foss.), O. C. Marsh, Am. J. Sci. (3) ix. p. 239, allied to *Lemur*, but with more numerous teeth ; type, *L. distans*, sp. n., Eocene of Wyoming.

Hyopsodus, Leidy, belongs, not to the *Ungulata*, but to this order, and is related to *Lemuravus* ; id. *tom. cit.* p. 239.

Sarcolemur, g. n. (foss.), E. D. Cope, P. Ac. Philad. 1875, p. 256, allied to *Pantolestes*, *Tomitherium*, and *Anaptomorphus*, but differing in dentition, and regarded as showing relationships to the lower *Carnivora* ; type, *Antiacodon furcatus*, Cope, Eocene of N. America.

The following fossil forms from the Eocene of New Mexico are referred to (from "Report on Vertebrata of New Mexico, An. Rept. Chief of Engrs. 1874," and "Vertebrata of the Eocene, Geogl. Ex. and Surv. W. of 100th M. 1875") by E. D. Cope, in G. M. Wheeler's Ann. Rep. Geog. Expl. & Surv. 1875, pp. 93 & 94: they are apparently new, and their position is still uncertain ; they are probably, however, referable to the *Primates* :—

Pelycodus jarrovii, *frugivorus*, and *angulatus*, g. & spp. nn.

Pantolestes chacensis, sp. n.

Opisthotomus astutus and *flagrans*, g. & spp. nn.

Oligotomus, g. n. (*Orotherium*, Marsh, *nec* Aymard), type, *O. vintanus*, Msh., p. 94.

Apheliscus insidiosus, g. & sp. n.

Phenacodus primævus, *omnivorus*, and *sulcatus*, spp. nn.

CHIROPTERA.

G. E. Dobson gives a "Conspectus of the Sub-Orders, Families, and Genera of *Chiroptera* arranged according to their natural affinities," Ann. N. H. (4) xvi. pp. 345–357. The first sub-order is named Megachiroptera (= *Chiroptera Frugivora*, auctt.), with one family (*Pteropidæ*) ; the second Microchiroptera (= *Chir. Insectivora*) with seven families, arranged as follows :—

A. Tail contained within the interfemoral membrane. "Vespertilionine Alliance."

a. Middle finger with two phalanges.

a'. First phalanx of the middle finger extended (in repose) in a line with the metacarpal bone.

a''. Nostrils opening in a depression on the upper surface of the muzzle, surrounded by foliaceous cutaneous appendages.

a'''. Tragus none ; premaxillaries represented by osseous laminæ in middle of muzzle.

Fam. I. *Rhinolophidæ* (sub-ff. *Rhinolophinæ* and *Phyllorhininæ*).

b''. Tragus distinct ; premaxillaries cartilaginous or smaller, separated in front.

Fam. II. *Nycteridæ* (sub-ff. *Megadermina* and *Nycterinæ*).

b'. Nostrils opening at extremity of muzzle, without distinct appendages ; premaxillaries small, widely separated ; tragus distinct.

Fam. III. *Vespertilionidæ*.

B. Tail perforating the interfemoral membrane and appearing on its

upper surface or produced considerably beyond the truncated membrane. "Emballonurine Alliance."

b'. First phalanx of middle finger folded (in repose) on dorsal surface of metacarpal.

c'. Nostrils with simple circular or valvular apertures, without cutaneous appendages; tragus distinct.

Fam. IV. *Emballonuridæ* (sub-ff. *Emballonurinæ* and *Molossinæ*).

b. Middle finger with three phalanges; nostrils opening in front of cutaneous appendages or at extemity of muzzle, chin with warts or ridges, premaxillaries well developed, united.

Fam. V. *Phyllostomidæ* (Sub-ff. *Phyllostominæ* and *Lobostominæ*).

The sub-famiiies and "groups of allied genera" are all characterized, and a table given of their probable descent from a hypothetical ancestral stirps, named *Palæochiroptera*.

Vespertilionidæ.

Histiotus. W. Peters reviews the Chilian Bats allied to *H. velatus*, and redescribes *H. macrotus*, *Vesperus montanus* and *V. magellanicus*. MB. Ak. Berl. 1875, pp. 785–792, 1 pl.

Vesperugo stenopterus (Borneo, p. 470), *pulcher* (Zanzibar, p. 471), *tylopus* (Borneo, p. 473), spp. nn., G. E. Dodson, P. Z. S. 1875. *V. nanus*, Pet., redescribed, *id. tom. cit.* p. 472.

Vesperugo platyrhinus, sp. n., G. E. Dobson, Ann. N. H. (4) xvi. p. 262, hab. incert.

Scotozous, g. n., allied to *Vesperugo*, but with only two upper incisors; type, *S. dormeri*, sp. n., S. India: *id.* P. Z. S. 1875, p. 372.

Scotophilus. G. E. Dobson follows Peters in using this name for the Old World *Nycticeji*, characterizes it, and describes *S. greyi*, Gr.; *tom. cit.* pp. 368–372.

Scotophilus gigas, sp. n., G. E. Dobson, Ann. N. H. (4) xvi. p. 122; W. Africa.

Scotophilus leisleri. On its distribution in Ireland [*cf.* Zool. Rec. x. p. 7], R. M. Barrington, Zool. (s. s.) 1875, p. 4532.

Vespertilio africanus and *megalopus*, spp. nn., G. E. Dobson, Ann. N. H. (4) xvi. pp. 260 & 261; W. Africa.

Vespertilio desertorum, sp. n., *id. tom. cit.* p. 309; Balúchistán.

Emballonuridæ.

Taphozous. G. E. Dobson monographs this genus, dividing it into two sub-genera, *Taphozous*, s. str., with a radio-metacarpal pouch, and *Taphonycteris*, sub-g.n., with none. Ten species are recognized. P. Z. S. 1875, pp. 546–556.

Taphozous affinis, sp. n., *id.* Ann. N. H. (4) xvi. p. 232; Labuan.

INSECTIVORA.

E. D. Cope refers the American Eocene Mammals hitherto placed among the *Carnivora* or in Marsh's order *Tillodontia* [infrà, p. 9] to this

order, which he divides into three sub-orders;—I. INSECTIVORA VERA; II. CREODONTA (sub-ord. nov.), with the American genera *Amblyctonus*, *Stypolophus*, *Oxyæna*, *Didymictis*, and perhaps *Diacodon* [infrà, p. 12], and the French *Pterodon* and *Palæonictis*; III. TILLODONTA. Their analogies with the Marsupials are pointed out. *Mesonyx* is regarded as a true Carnivore, and made the type of a new Family, *Mesonychidæ*. P. Ac. Philad. 1875, pp. 444–448.

ERINACEIDÆ.

Erinaceus macracanthus, sp. n., W. T. Blanford, Ann N. H. (4) xvi. p. 310; Persia.

CENTETIDÆ.

Hemicentetes nigriceps, sp. n., A. Günther, *tom. cit.* p. 125; Madagascar.

CHRYSOCHLORIDÆ.

Chrysochloris trevelyani, sp. n., A. Günther, P. Z. S. 1875, p. 311, pl. xliii.; S. Africa.

TALPIDÆ.

Talpa europæa. On the hypapophyses of the caudal vertebræ; Lessona, Atti Ac. Tor. x. pp. 483–489, pl.

Talpa mogura. Its eyes covered with skin; F. Hilgendorf, Zool. Gart. 1874, p. 155.

SORICIDÆ.

Sorex araneus. Z. Gerbe states that when in danger the young form a chain after the mother, each holding on to the other's tail; R. Z. (3) iii. pp. 156–162.

Sorex myoides, sp. n., W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 106; Ladak, Central Asia.

Anurosorex assamensis, sp. n., J. Anderson, Ann. N. H. (4) xvi. p. 282; Assam.

"TILLODONTIA."

Under this name, O. C. MARSH characterizes a new order, combining the characteristics of Carnivores, Ungulates, and Rodents. Dentition, i. $\frac{1}{1}$, c. $\frac{1}{1}$, p. $\frac{3}{2}$, m. $\frac{3}{3}$. The incisors resembled those of Rodents, the articulation of the mandibles that of Ungulates, while the rest of the skeleton was most like the Carnivores, the feet being plantigrade with compressed and pointed ungual phalanges, but the scaphoid and lunar were distinct, and the femur had a third trochanter. The type is *Tillotherium* [cf. Zool. Rec. x. p. 15], from the Eocene of Wyoming, and other genera will probably form two families, *Tillotheridæ*, with rooted molars, and *Stylinodontidæ*, with rootless molars;

the first of these may prove identical with *Anchippodontidæ*. Am. J. Sci. (3) ix. p. 221.

Tillotherium fodiens, sp. n. (foss.), O. C. Marsh, *tom. cit.* p. 241; Eocene of Wyoming.

The following fossil forms from the Eocene of New Mexico are referred to [*suprà*, p. 7] by E. D. Cope, in Wheeler's Ann. Rep. Geog. Expl. & Surv. 1875, p. 95. They are apparently new, and are dubiously arranged under *Toxodontia* :—

Esthonyx bisulcatus and *burmeisteri*, g. & spp. nn.

Ectoganus gliriformis, g. & sp. nn.

Calamodon simplex, *arcamænus*, and *novomehicanus*, g. & spp. nn.

CARNIVORA.

E. Alix remarks on the myology of this order. C. R. lxxxi. pp. 1259 & 1260.

E. D. Cope discusses the homologies of the sectorial tooth; it was little differentiated in the Eocene *Carnivora*, in which also the tibio-astragalar articulation was less specialized. P. Ac. Philad. 1875, pp. 20–23.

Felidæ.

Felis viverrina. On its habits in captivity; J. v. Fischer, Zool. Gart. 1875, pp. 217–225.

Machærodus latidens. Note on a tooth in the Albert Memorial Museum, Exeter; W. Pengelly, Tr. Devon. Ass. vii. pp. 247–260.

Machærodus perarmatus, sp. n. (foss.), P. Gervais, J. Zool. iv. p. 429; Eocene of France.

Viverridæ.

Viverra indica. On its habits in captivity; J. v. Fischer, Zool. Gart. 1875, pp. 170–175.

Herpestes rafflesi, sp. n., J. Anderson, Ann. N. H. (4) xvi. p. 282; Sumatra.

Herpestes galera, *H. ichneumon*, and *H. ornatus*. On their habits in captivity; J. v. Fischer, Zool. Gart. 1875, pp. 10–17, 81–87.

Herpestes ferrugineus. Note on figures of type [*cf.* Zool. Rec. xi. p. 8], W. T. Blanford, P. Z. S. 1875, p. 540.

Hyænidæ.

Hyæna. Hartmann has notes on the recent species; SB. nat. Fr. 1875, pp. 66–70.

Canidæ.

Canis. Note on the composition of the carpus in Dogs; B. G. Wilder, Bull. Corn. Univ. i. pp. 301 & 302 (1874).

Canis familiaris. On the breeds of Dogs represented on ancient Egyptian monuments; S. Birch, Transactions of the Society for Biblical Archæology, iv. pp. 172–195.

Canis ursinus, sp. n. (foss.), E. D. Cope, P. Ac. Philad. 1875, p. 256; Wheeler's Ann. Rep. Geog. Expl. & Surv. 1875, p. 68; Pliocene of N. America.

Canis chama figured; P. L. Sclater, P. Z. S. 1875, pl. xvii.

Canis famelicus. A fox from the Persian Gulf is doubtfully referred to this species; *id. tom. cit.* p. 420.

Vulpes persicus, sp. n., W. T. Blanford, Ann. N. H. (4) xvi. p. 310; Persia.

Procyonidæ.

Procyon cancrivorus. A red-footed northern and a black-footed southern race are described; the latter will probably prove specifically distinct. P. L. Sclater, P. Z. S. 1875, p. 421.

Æluridæ.

Ælurus fulgens. Note on its habits (almost certainly not carnivorous); L. Schwendler, P. A. S. B. 1875, p. 98.

Ursidæ.

Ursus melanoleucus. P. Gervais describes and figures the teeth and skeleton; J. Zool. iv. pp. 79–87, pls. ii. & iii.

Ursus arctos. Note on fossil remains in France; E. Chelloneix, Ann. Soc. Géol. Nord, 1870–1874, pp. 33–35.

Mustelidæ.

Martes abietum and *M. foina.* On their habits; O. v. Krieger, Zool. Gart. 1875, pp. 297–306.

Mustela boccamela. The weasel found in Malta is doubtfully referred to this species; C. A. Wright, P. Z. S. 1875, pp. 312 & 313.

Mephitis frontata, sp. n. (foss.), E. Coues, Bull. U. S. Geol. Surv. (2) No. 1, p. 6, fig. 1; bone-caves of Pennsylvania. The skulls and teeth of *M. mephitica*, *Spilogale putorius* [= *M. zorilla*, *bicolor*, or *interrupta*, auctt. recentt.] and *Conepatus mapurito* are also described; *id. l. c.* pp. 7–15.

Rhabdogale zorilla. On its habits in captivity; E. Marno, Zool. Gart. 1874, pp. 382 & 383.

Meles canescens, sp. n., W. T. Blanford, Ann. N. H. (4) xvi. p. 310; Persia.

Lutra. J. C. G. Lucae continues his elaborate comparison of the muscles and bones of the Otters and Seals [*cf.* Zool. Rec. x. p. 10]; Abh. senck. Ges. ix. pp. 369–496, pls. i.–xviii.

Lutra vulgaris. Note on its habits; V. Bothmer, Zool. Gart. 1875, pp. 112 & 113.

Enhydris marina. Remarks on its osteology; P. Gervais, J. Zool. iv. pp. 200–204; *cf.* also A. L. Pinart's Voyages à la Côte Nord-ouest de l'Amérique, i. pp. 43–48, pls. B, figs. 1–10, C, figs. 1–21.

Otariidæ.

Otaria. J. W. Clark discusses the history, distribution, structure, and synonymy of the Eared Seals of Australia, New Zealand, and the adjacent islands. Four species, *O. fosteri*, *O. cinerea*, *O. albicolis*, and *O. hookeri*, are characterized, and the dentition, snout, manus, pes, and other details of the first named are figured. P. Z. S. 1875, pp. 650–677, pls. lxx.–lxxii.

Arctocephalus nigrescens. The milk dentition described; A. W. Malm, Œfv. Ak. Förh. xxix. (1873) 7, pp. 63–68.

Arctophoca gazella, sp. n., W. Peters, MB. Ak. Berl. 1875, p. 396; Kerguelen-Land.

Trichecidæ.

Trichecus rosmarus. On the age of fossil remains found in France; G. A. Defrance, Bull. Soc. Géol. (3) ii. pp. 164–170.

Phocidæ.

Phoca. J. C. G. Lucae's comparison of the osteology and myology of the Seals with that of Otters and other Mammals [*cf.* Zool. Rec. x. p. 10] is continued. Abh. senck. Ges. ix. pp. 369–496, pls. i.–xviii.

W. Turner compares the placentation of the Seals with that of the land Carnivores [*cf. suprà*, p. 4].

Genera incertæ sedis.

The following apparently new fossil forms from the Eocene of New Mexico are referred to [*suprà*, p. 7] by E. D. Cope, in Wheeler's Ann. Rep. Geog. Expl. & Surv. 1875, p. 94, and are referable either to this order or to the Insectivora [*cf. suprà*, p. 8]:—

Ambloctonus sinosus, g. & sp. nn.

Oxyæna moristans, *lupina*, and *forcipata*, g. & spp. nn.

Prototomus vicerrinus, *secundarius*, *multicuspis*, and *strenuus*, g. & spp. nn.

Pachyæna ossifraga, g. & sp. nn.

Didymictis protenus, g. & sp. nn.

Diacodon alticuspis and *celatus*, g. & spp. nn.

CETACEA.

Gervais, P. Remarques sur les Balénides des Mers du Japon. C. R. lxxxi. pp. 932–938.

Hector, J. Notes on New Zealand Whales. Tr. N. Z. Inst. vii. pp. 251–265 [*cf. infrà*].

Münter remarks on the Cetaceans of the Baltic, which he regards as only visitors, and as much rarer than was formerly the case, as shown by the bones preserved in churches and castles. MT. Vorpomm. v. p. 31 [not seen by the Recorder; *cf.* Arch. f. Nat. 1875, ii. p. 74].

Van Beneden, P. J., & Gervais, P. Ostéographie des Cétacés Vivantes et Fossiles. Paris: 1875, text (4to) livr. 13, atlas (fol.) livr. 13.

The present portion of the text of this great work [*cf.* Zool. Rec. xi. p. 11] includes the fossil Ziphoid Whales, and the general characters of the genera *Squalodon*, *Phocodon*, and *Platanista*. The additional part of the atlas illustrates the genera *Dolichodon*, *Ziphius*, *Placoziphius*, *Belemnoziphius*, *Ziphiopsis*, *Ziphirostrum*, and *Aporatus*.

Zeuglodontidæ.

Squalodon wilkinsoni, sp. n. (foss.), F. McCoy, Prod. Palæont. Vict. dec. ii. p. 7, pl. xi.; Miocene (?) of Victoria.

Delphinidæ.

Globiocephalus macrorhynchus described; J. Hector, Tr. N. Z,. Inst. vii. p. 261, pl. xvi.

Orca pacifica described; *id. l. c.* p. 260, pl. xvi.

Tursio metis. F. W. Hutton describes and figures the "Cow Fish" of New Zealand; Ann. N. H. (4) xvi. pp. 357–359.

Delphinus tursio. Note on its occurrence in Belgium; C. Van Bambeke, Bull. Ac. Belg. (2) xxxix. p. 14.

Delphinus tetragorhinus, sp. n. (foss.), Delfortrie, Act. Soc. L. Bord. xxx.; J. Zool. iv. pp. 361 & 362; Miocene of France.

Sotalia braziliensis, sp. n., E. Van Beneden, Mém. Ac. Belg. xli. art. i. pp. 1–44, pls. i. & ii. Rio de Janeiro; its osteology described in detail.

Besophys, g. n. (foss.), E. D. Cope, P. Am. Phil. Soc. xiv. pp. 363 & 364. Allied to *Priscodelphinus*, but with spiniform lumbar diapophyses; type, *P. spinosus*, Cope. *Tretosphys*, Cope, = *Priscodelphinus*.

Physeteridæ.

Hyperoodon rostratum. Note on its occurrence in Belgium; E. Van Beneden, Bull. Ac. Belg. (2) xxxvii. (1874), p. 35.

Berardius hectori. Notes on; J. Hector, Tr. N. Z. Inst. vii. pp. 262–265.

Balænopteridæ.

Stenobalæna xanthogaster [cf. Zool. Rec. xi. p. 13] = *Physalus australis*; J. Hector, *tom. cit.* pp. 257–260, pl. xviii.

Balænoptera musculus on the Norfolk coast, T. Southwell, Tr. Norw. Soc. ii. p. 61. One taken near Danzig figured and described in detail; G. Zaddach, Arch f. Nat. 1875, pp. 338–386, pl. x.

Balænoptera sibbaldi. P. J. Van Beneden makes observations on this species, with notes from the journal of O. Finsch. Bull. Ac. Belg. (2) xxxix. pp. 853–870 pl. i.

Balænoptera rostrata. P. J. Van Beneden states that the portion of a skull in the Bremen Museum mentioned in Ostéogr. des Cétacés, p. 251, belongs to this species. J. Zool. iv. pp. 184–187.

Megaptera novæ-zealandiæ described; J. Hector, Tr. N. Z. Inst. vii. pp. 255–257.

Plesiocetus cortesii = *Cetotherium cuvieri*, Brdt., = *C. capellinii*, Brdt., and the skeleton in the Museum of Milan is re-described; P. J. Van Beneden, Bull. Ac. Belg. (2) xl. pp. 736–758, pl. i.

Aulocetus. The remains of *A. lentianus* in the Museum at Lintz are re-described by P. J. Van Beneden; *tom. cit.* pp. 536–549.

Pachyacanthus [infrà, *Sirenia*].

Balænidæ.

Caperea = *Macleayius* = *Balæna*; P. J. Van Beneden, Bull. Ac. Belg. (2) xxxvii. (1874) pp. 832–837.

Neobalæna marginata described; J. Hector, Tr. N. Z. Inst. vii. pp. 251–255, pls. xvi. & xvii.

SIRENIA.

B. G. Wilder compares a fœtal Manatee with a fœtal Cetacean, and regards the Sirenians as probably descended by a "retrograde evolution," from prior ungulate forms. Am. J. Sci. (3) x. pp. 105–114, pl. viii.

Manatus americanus. A young female reached the Zoological Gardens alive in 1875, but only survived about a month: P. L. Sclater, P. Z. S. 1875, p. 529; A. H. Garrod, *tom. cit.* p. 567. Notes supplementary to J. Murie's description of its anatomy; H. C. Chapman, P. Ac. Philad. 1875, pp. 452–462.

Eotherium, g. n. (foss.), R. Owen, J. G. Soc. xxxi. p. 100, pl. iii. Allied to *Halitherium*, but only known from a natural cast of the brain-cavity. Type, *E. ægyptiacum*, sp. n.; Eocene of Egypt.

Prorastomus. R. Owen gives further characters from a renewed examination of the type specimen of *P. sirenoides*. *Tom. cit.* pp. 559–567, pls. xxviii. & xxix.

Pachyacanthus. P. J. Van Beneden has examined the remains at Vienna referred to this genus. He states that the *Pachyacanthus* of Brandt is based on the vertebræ and ribs of a Sirenian, and the sternum and limbs of a Cetodont. *P. trachyspondylus* is founded on morbid, and *Cetotherium ambiguum* on normal, vertebræ. The name *Pachyacanthus* is retained for the Sirenian. Bull. Ac. Belg. (2) xl. pp. 323–340.

PROBOSCIDEA.

E. D. Cope removes *Bathmodon* and its allies from this order [*cf. infrà*, p. 16].

Elephantidæ.

Leith Adams, A. On the Dentition and Osteology of the Maltese Fossil Elephants; Tr. Z. S. ix. pp. 1–124, pl. i.–xxii.

The results of the author's investigations are now given in full [*cf.* Zool. Rec. xi. p. 13], and the remains of *Elephas melitensis*, *E. mnaidriensis*, and *E. falconeri* are figured, with a map showing the localities where they were found.

Elephas indicus. On the hyoid bone; A. H. Garrod, P. Z. S. 1875, pp. 365–367. Report on the death of a female from pulmonary tuberculosis; *id. tom. cit.* pp. 542 & 543.

Elephas primigenius: remains in bone-caves in Italy, H. Botti, Boll. Com. Geol. Ital. 1874, pp. 242–244; in diluvium in France, E. Chelloneix, Ann. Soc. Géol. Nord. 1870–1874, pp. 38–40; a molar tooth from Alaska, A. Gaudry, in A. L. Pinart's Voyages à la Côte Nord-ouest de l'Amérique, i. pp. 29–31, pl. A, figs. 1 & 1*a*.

Mastodon. The present evidence of the "cotemporaneity of Man and the Mastodon in Missouri" is considered doubtful. J. D. Dana, Am. J. Sci. (3) ix. pp. 335–346, 398; E. Andrews, *op. cit.* x. pp. 32–34.

UNGULATA PERISSODACTYLA.

Titanotheriidæ.

Anisacodon, g. n. (foss.), O. C. Marsh, Am. J. Sci. (3) ix. pp. 245 & 246, allied to *Brontotherium*, but with no upper and only two lower incisors. Type, *A. montanus*, sp. n. (p. 246); Miocene of Nebraska. Three other genera of "Brontotheridæ" are regarded as well established, viz.:—*Titanotherium*, *Megacerops*, and *Brontotherium*.

Diplacodon, g. n. (foss.), O. C. Marsh, *tom. cit.* p. 246. Between the *Brontotheriidæ* and *Limnohyidæ*. Type, *D. elatus*, sp. n., Eocene of Utah.

Rhinocerotidæ.

Diceratherium, g. n. (foss.), O. C. Marsh, *tom. cit.* p. 242. Allied to *Aceratherium*, but with two nasal horns placed transversely. Types, *D. armatum* (p. 242) and *D. nanum* (p. 243), from Miocene of Oregon, and *D. advenum* [*-na*] (p. 244), from Eocene of Utah, spp. nn.

Aphelops jemezanus, sp. n. (foss.), E. D. Cope, P. Ac. Philad. 1875, p. 260; Ann. Rep. Geog. Expl. 1875, p. 72; Miocene of New Mexico.

Rhinoceros. Note on the existence of a two-horned species, probably *R. lasiotis*, in Assam; P. L. Sclater, P. Z. S. 1875, p. 566.

Rhinoceros. Observations on remains of three species found in Russia; J. F. Brandt, Bull. Pétersb. xxi. pp. 81–84.

Rhinoceros deccanensis, sp. n. (foss.), R. B. Foote, Palæont. Ind. ser. x. art. i. pls. i.–iii.; Pleistocene of India.

Rhinoceros unicornis. On the minute anatomy of its intestinal canal, P. & H. Gervais, C. R. lxxxi. pp. 488–491; J. Zool. iv. pp. 465–474, pls. xi. & xii.

Rhinoceros sondaicus. The nasal septum is sometimes partially ossified. O. L. Fraser, J. A. S. B. (n. s.) xliv. pt. 2, pp. 10–12, pl. v.

Tapiridæ.

Tapirulus hyracinus. The mandible and dentition are figured; its affinities appear doubtful. A. Gaudry, J. Zool. iv. p. 522, pl. xviii.

Hyrachyus singularis, sp. n. (foss.), E. D. Cope, Vert. Eoc. New Mex., Geol. Ex. & Surv. W. of 100th M., 1875, p. 19; Eocene of New Mexico.

Palæotheriidæ.

Palæotherium eocænum, sp. n. (foss.), P. Gervais, J. Zool. iv. p. 422 ; Eocene of France.

Equidæ.

Burmeister, H. Los caballos fósiles de la Pampa Argentina. Buenos Aires: 1875, fol. pp. i.–viii., 1–88, pls. i.–viii.

A comparative description of the fossil horses of the Pampas quarternary formation:—*Hippoideum neogæum*, Lund. (skeleton figured), and *H. principale*, and *Equus argentinus*, sp. n. (p. 56), and *E. curvidens*. In the Appendix, pp. 72–88, a list of 54 species of fossil mammals from the same formation is given, with general observations.

Orohippus tapirinus, *O. angustidens*, and *O. cuspidatus*, E. D. Cope, *l. c.* pp. 20–22, Eocene of New Mexico; *O. uintensis*, O. C. Marsh, Am. J. Sci. (3) ix. p. 247, Eocene of Utah: spp. nn. (foss.).

Mesohippus, g. n. (foss.), Marsh, *tom. cit.* p. 248; intermediate between *Orohippus* and *Anchitherium*. Types, *A. bairdi*, Leidy, and *A. celer*, Marsh.

Hippotherium calamarium, sp. n. (foss.), E. D. Cope, in Wheeler's Ann. Rep. Geog. Expl. & Surv. 1875, p. 70; P. Ac. Philad. 1875, p. 259 ; Pliocene of New Mexico.

Equus caballus. On a hydrocephalous cranium; P. Gervais, J. Zool. iv. pp. 191–195, pl. iv.

Genera incertæ sedis.

Coryphodon oweni. Note on its osteology ; G. Vasseur, Bull. Soc. Géol. (3) iii. pp. 181–186, pl. iii.

Bathmodon. E. D. Cope gives further details of the osteology of this genus, and describes six species, *B. elephantopus*, *lomas*, *simus*, *molestus*, *radians*, *latidens*, and *cuspidatus*, all from the Eocene of New Mexico. He removes the group from the *Proboscidea* [*cf.* Zool. Rec. xi. p. 13], making it the type of a new order, Amblypoda, of which two suborders are recognized:—I. Pantodonta, with *Bathmodon*, *Metalaphodon*, and perhaps *Coryphodon*; and II. Dinocerata, with *Uintatherium* and *Loxolophodon*. Report on Vertebrata of New Mexico, Ann. Rep. Chief of Engrs., 1874, pp. 596 & 597 ; Vertebrata of Eocene, Geog. Expl. & Surv. 1875, pp. 29 & 30; P. Ac. Philad. 1875, p. 73. Cranium of *B. elephantopus* figured ; *id.* in Wheeler's Ann. Rep. Geog. Expl. & Surv. 1875, pls. v. & vi.

Meniscotherium chamense, g. & sp. nn. (foss.), E. D. Cope, Ann. Rep Chief of Engrs., 1874, p. 596, Eocene of New Mexico.

UNGULATA ARTIODACTYLA.

E. D. Cope regards the line of descent of the *Camelidæ* to be represented by *Poebrotherium*, that of the *Tragulidæ* by *Hyæmoschus*, and

that of the more typical Artiodactyles by *Gelocus*. All three descend from the same source as the *Anoplotheriidæ*, perhaps from the *Dichodontidæ*. (Abstract) P. Am. Phil. Soc. xiv. p. 110.

W. H. Flower in his paper on *Moschus* (*infrà*, p. 18) gives his views on the general arrangement of the Artiodactyles, with a table indicating the probable descent of the *Suina*, *Tylopoda*, *Tragulina*, and *Pecora* from a common stock; P. Z. S. 1875, pp. 178–190.

W. Turner regards the placenta of Ruminants as deciduate (*cf. suprà*, p. 4),

Suidæ.

Sus scrofa. Var. n. *nigripes*, from the Thian Shan; W. T. Blanford, J. A. S. B. (n. s.) xliv. pt. 2, p. 112.

Potamochœrus. On the skulls of three species; J. E. Gray, Ann. N. H. (4) xv. pp. 45–48, that of *P. edwardsi* figured, pl. iv. *a*. The same species figured; E. Bartlett, P. Z. S. 1875, pl. xii.

Thinohyus, g. n. (foss.), O. C. Marsh, Am. J. Sci. (3) ix. p. 248; allied to *Dicotyles*, but with more numerous teeth. Types, *T. lentus*, p. 248, and *T. socialis*, p. 249, spp. nn.; Miocene of Oregon.

Anoplotheriidæ.

Chalicotherium modicum, sp. n. (foss.), A. Gaudry, C. R. lxxxi. p. 1115; J. Zool. iv. p. 523, pl. xviii.; Miocene of France.

Oreodontidæ.

Eporeodon, g. n. (foss.), O. C. Marsh, Am. J. Sci. (3) ix. p. 249. The species of *Oreodon* which have a large auditory bulla are separated under this name.

Agriochœrus pumilus, sp. n. (foss.), O. C. Marsh, *tom. cit.* p. 250; Eocene of Utah.

Cervidæ.

Altum, —. Die Geweihbildung bei Rothhirsch, Rehbock und Damhirsch; ein Beitrag zur Jagdzoologie. Berlin: 1874.

[Not seen by the Recorder; *cf.* Arch. f. Nat. 1875, ii. p. 72.]

Fitzinger, L. J. Kritische Untersuchungen über die Arten der natürlichen Familie der Hirsche (Cervi). II. Abth. SB. Ak. Wien, lxx. pt. i. pp. 239–333.

Discusses *Capreolus*, *Hyelaphus*, *Axis*, *Rusa*, *Rucervus*, and *Elaphurus*.

Rangifer tarandus. On its distribution in the pre-historic epoch; P. Gervais, J. Zool. iv. pp. 390–398. On [illegible] is found in the south of Scotland; J. Young, P. N. H. Soc. Glasg. [illegible]. 5.

Cervus eustephanus, sp. n., W. T. Blanford, P. Z. S. 1875, p. 640; Thian Shan.

Cervus dama. On its ancient range in Europe [*cf.* Zool. Rec. xi. p. 16]; V. Brooke, Nature, xi. pp. 210–211; W. Boyd Dawkins, *tom. cit.* p. 226.

Cervus mesopotamicus, sp. n., V. Brooke, P. Z. S. 1875, p. 265, pl. xxxviii., Persia.

Cervus chilensis. H. Burmeister identifies *Equus bisulcus*, Molina, with this species, treats of its distribution, and regards *C. antisiensis* as only doubtfully distinct; Arch. f. Nat. 1875, pp. 19–30. On the synonymy of this species, *C. antisiensis*, *C. whitelii*, and *C. peruvianus*; P. L. Sclater, P. Z. S. 1875, pp. 44–47.

Cervulus micrurus, sp. n., P. L. Sclater, P. Z. S. 1875, p. 421, pl. li. fig. 1, China; *C. reevesi*, figured, *id. tom. cit.* pl. li. fig. 2.

Moschus. W. H. Flower describes in detail the anatomy of *M. moschiferus*, and discusses its affinities. He comes to the conclusion that it is an undeveloped and little-specialized Deer, representing a period at which the *Cervidæ* were not yet fully established as a distinct type. It may still however be retained in the family. *Tom. cit.* pp. 178–190; J. Zool. iv. pp. 404–419.

Dicrocerus (Lartet). The American species are *Merycodus necatus*, Leidy, *M. gemmifer*, Cope, *Cosoryx furcatus*, Leidy, and *D. ramosus* and *teres*, Cope; E. D. Cope, P. Ac. Philad. 1875, p. 257.

Camelopardalidæ.

Camelopardalis giraffa. Note on the great blood-vessels; H. C. Chapman, P. Ac. Philad. 1875, pp. 401 & 402.

Bovidæ.

Mazama americana. Observation on its affinities; P. Gervais, J. Zool. iv. pp. 263–266. On its osteology; *id.* in A. L. Pinart's Voyages à la Côte Nord-ouest de l'Amérique, i. pp. 49–51, pl. D, figs. 1–8. Note on a horn with a double prong; W. J. Hoffman, P. Z. S. 1875, pp. 532 & 533.

Antelope cervicapra, Pall., is considered by W. T. Blanford to be the correct name of the Indian Antelope; J. A. S. B. (n. s.) xliv. pt. 2, pp. 18–20; P. A. S. B. 1875, p. 120.

Gazella subgutturosa. Var. n. *yarkandensis*, from East Turkestan, described; W. T. Blanford, J. A. S. B. (n. s.) xliv. pt. 2, p. 112.

Gazella granti figured; P. L. Sclater, P. Z. S. 1875, pl. lix.

Capra. W. T. Blanford reviews the synonymy of the Persian Wild Goat and the Markhor, and shows that *Capra ægagrus*, Gmel., is the correct name for the former and *C. falconeri*, Hügel, for the latter. The Wild Goats of Sind, Persia, Armenia, the Caucasus, and Crete are considered identical, as are the Markhors of Suliman and Kashmir. J. A. S. B. (n. s.) xliv. pt. 2, pp. 12–18; P. A. S. B. 1875, p. 120.

Capra ægagrus. Notes on the horns, growth, habits, and distribution of the Wild Goat of Asia Minor; C. G. Danford, P. Z. S. 1875, pp. 458–468. On the introduction of the Angora breed into Tasmania; E. Pears and G. Gatheral, P. R. Soc. Tasm. 1874, pp. 5–8; J. Swan, *tom. cit.* pp. 19–22.

Ovis. Sir V. Brooke & B. Brooke review the Argali sheep of Central Asia. They give abridged translations of Severtzoff's observations [*cf.* Zool. Rec. x. p. 17] in addition to their own, and recognize the following species:—*O. karelini*, *O. poli*, *O. heinsi*, *O. nigrimontana*, *O. ammon*, *O. hodgsoni*, *O. brookii*, and *O. nivicola*. The Himalayas are regarded as

the probable centre from which they all spread. P. Z. S. 1875, pp. 509–526.

Ovis poli. Note on Stoliczka's figure [*cf.* Zool. Rec. xi. p. 17]; W. T. Blanford, *tom. cit.* p. 540.

Ovibos moschatus. Its remains in diluvium of Silesia; F. Römer, Z. geol. Ges. xxv. pp. 600–604.

Bos taurus. Note on the Chillingham cattle; C. G. Barrett, Tr. Norw. Soc. ii. pp. 51–55.

Bos primigenius and *B. priscus.* Their remains in the Baltic Provinces; C. Grewingk, SB. Ges. Dorp. iii. (1874) pp. 475–477.

Bubalus. On the remains found in the Quarternary deposits of Europe; L. Rütimeyer, Verh. Ges. Bas. 1875, pp. 320–332, 356.

Bubalus antiquus. Remains from Algeria described and figured; — Thomas, J. Zool. iv. pp. 72–78, pl. i.

Bubalus pumilus, B. æquinoctialis, and *B. caffer.* Sir V. Brooke has further notes on these species and figures the first named; P. Z. S. 1875, pp. 454–457, pl. liv.

Camelidæ.

E. D. Cope remarks on the phylogeny of this family, which is traced through *Poebrotherium, Procamelus,* and a new genus, *Pliauchenia,* to *Auchenia* and *Camelus.* The last genus was probably derived from American ancestors. P. Ac. Philad. 1875, pp. 261 & 262.

Procamelus occidentalis. Skull figured; *id. tom. cit.* pl. ii.

Pliauchenia, g. n. (foss.), *id. tom. cit.* pp. 258 & 259, intermediate between *Procamelus* and *Auchenia.* Types, *P. humphresiana* and *P. vulcanorum,* spp. nn.; Pliocene of New Mexico.

HYRACES.

M. George, in a "Monographie anatomique des Mammifères du genre Daman," minutely describes and illustrates their anatomy. He regards them as forming a perfectly distinct order, and recognizes two genera, *Hyrax* and *Dendrohyrax.* Ann. Sci. Nat. (6) i. art. 9, pls. xiii.–xix.

W. Turner describes the placentation [*cf. suprà,* p. 4].

GLIRES.

Holländer, —. De dentium ex ordine Rodentium structura penitiori. Halle: 1873 [not seen by the Recorder; *cf.* Arch. f. Nat. 1875, ii. p. 66].

Nehring, A. Länge und Lage der Schneidezahnalveolen bei den wichtigsten Nagethieren. Z. ges. Naturw. xlv. pp. 217–239.

Discusses the relative position of the incisors and molars in the principal families of Rodents.

Anomaluridæ.

Anomalurus. E. R. Alston discusses the structure and position of this form, which he regards as an aberrant sciurine Rodent. He describes and figures the remarkable viscera, gives a synopsis of the species, and figures *A. fulgens*, Gray. P. Z. S. 1875, pp. 88–97, pl. xxi.

Sciuridæ.

Pteromys yunanensis, sp. n., J. Anderson, Ann. N. H. (4) xvi. p. 282; Yunan.

Pteromys leucogenys. Note on its habits in captivity; A. v. Roretz, Zool. Gart. 1875, pp. 447–449.

Sciurus hudsonius feeds on the ovaries of cherry blossom; F. H. Storer, Nature, xiii. p. 26.

Sciurus fulvus, sp. n., W. T. Blanford, Ann. N. H. (4) xvi. p. 311; Persia.

Sciurus palmarum. Note on its specific name; H. J. Rainey, P. A. S. B. 1875, p. 159.

Spermophilus citillus, a fossil skull from Bad Weilbach is referred to "var. *superciliosus*, Kaup," and the other fossil species are reviewed; O. Böttger, Ber. Offenb. Ver. xiv. [1874] pp. 28–48, pl. i.

Spermophilus richardsoni. Notes on its habits; E. Coues, Am. Nat. ix. pp. 147–156.

Arctomys. W. T. Blanford reviews the Marmots of the Himalaya, Tibet, and adjoining regions, recognizing four species, *A. himalayanus*, *A. hemachalanus*, *A. caudatus*, and *A. aureus* (infrà); J. A. S. B. (n.s.) xliv. pt. 2, pp. 114–127.

Arctomys dichrous, sp. n., J. Anderson, Ann. N. H. (4) xvi. p. 283; Affghanistan.

Arctomys aureus, sp. n., W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 106; Central Asia.

Arctomys monax. On its habits in captivity; J. v. Fischer, Zool. Gart. 1875, pp. 255–263.

Arctomys marmotta. On its habits in captivity; K. v. Dellatore, Ber. Ver. Innsbr. iv. (1874) p. li.–liii.

Castoridæ.

Castor. According to H. C. Chapman, the lower symmetrical glands opening into the ano-preputial passage are two in number in the American Beaver, and three in the European. P. Ac. Philad. 1875, p. 440.

Castor fiber. On the Weberian appendages of the Beaver; J. Chatin, Ann. Sci. Nat. (6) i. art. 10.

Myoxidæ.

Myoxus pictus, sp. n., W. T. Blanford, Ann. N. H. (4) xvi. p. 311; N. Persia.

Myoxus glis. Z. Gerbe makes the same observation (*cf. anteà*, p. 9) on this species as on *Sorex araneus*; R. Z. (3) iii. pp. 156–162.

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Graphiurus murinus, a rufous variety described. *G. elegans*, Ogilby, = *G. capensis*, juv. E. R. Alston, P. Z. S. 1875, p. 317.

MURIDÆ.

Hydromys beccarii, sp. n., W. Peters, Ann. Mus. Genov. vi. [1874 on title, but ? published until 1875, and not received in this country until 1876] p. 303; Kei Island.

Gerbillus persicus (Persia) and *nanus* (Balúchistán), spp. nn., W. T. Blanford, Ann. N. H. (4) xvi. p. 312.

Gerbillus cryptorhinus, sp. n., W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 108; Central Asia.

Brachytarsomys, g. n., A. Günther, P. Z. S. 1875, p. 79, pl. xvi., allied to *Nesomys*, but with very short legs, and approaching *Otomys* in its skull. Type, *B. albicauda*, sp. n., p. 80; Madagascar.

Dasymys, g. n., W. Peters, MB. Ak. Berl. 1875, pp. 12–14, pls. i. & ii., intermediate between *Mus* and *Otomys*, with complicated molars, and the inferior maxillary zygomatic process developed into a hook-like form. Type, *D. gueinzii*, sp. n.; Port Natal.

Mus rattus. On its recent occurrence in Germany; F. H. Troschel, Verh. Ver. Rheinl. 1875, pp. 76 & 77.

Mus decumanus. T. H. MacGillavry has studied the development of the incisors [*suprà*, p. 3]. Note on supposed evidence of its appearance in Italy in 1573; — Nickel, Zool. Gart. 1874, p. 155.

Mus erythronotus, W. T. Blanford, Ann. N. H. (4) xvi. p. 311, N. Persia; *M. pachycercus*, id. J. A. S. B. (n.s.) xliv. pt. 2, p. 108, Central Asia: spp. nn.

Cricetus fulvus, sp. n., *id. tom. cit.* p. 108, Central Asia.

Neotoma ?. A. W. Chase describes the wonderful nest of the "Californian Wood-Rat," Am. J. Sci. (3) viii. (1874) pp. 73 & 74.

Arvicolinæ. A. Nehring describes fossil remains of Lemmings and Voles from the diluvium of North Germany. Z. ges. Naturw. xlv. pp. 1–28, pl. i.

Myodes schisticolor. Notes by C. A. F. Sädborn, Œfv. Ak. Förh. xxix. (1873) pp. 431 & 432, 841 & 842.

Arvicola stoliczkanus, sp. n., W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 107; Central Asia.

Arvicola glareolus in Norfolk; T. Southwell, Tr. Norw. Soc. ii. p. 60.

GEOMYIDÆ.

Geomyinæ. E. Coues gives a "Synopsis of the *Geomyidæ*," recognizing five species of *Geomus* and one only of *Thomomys*. P. Ac. Philad. 1875, pp. 130–138.

Heteromyinæ. E. Coues, in a "Critical Review" of this group, raises it to the rank of a family, *Saccomyidæ*, independent of the *Geomyidæ*, although closely allied. He divides it into three sub-families, *Dipodomyinæ*, *Perognathidinæ*, and *Saccomyinæ*. The osteological and other characters are described in detail, and *Cricetodipus*, Baird (? Peale), is regarded as a distinct genus. All the North American species are reviewed and described. *Tom. cit.* pp. 272–327.

Dipodidæ.

Dipus loftusi, sp. n., W. T. Blanford, Ann. N. H. (4) xvi. p. 312; Mesopotamia.

Octodontidæ.

Isothrix and *Lasiuromys* are regarded as subgenera of *Loncheres*, and perhaps = *Nelomys*; W. Peters, MB. Ak. Berl. 1875, pp. 119 & 120.

Caviidæ.

Dolichotis salinicola, sp. n., H. Burmeister, P. Z. S. 1875, p. 635, pl. lxix.; Argentine Republic.

Lagomyidæ.

Lagomys ladacensis and *macrotis*, A. Günther, Ann. N. H. (4) xvi. p. 231, Central Asia; *cf.* W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 110; *L. auritus* and *griseus*, W. T. Blanford, *tom. cit.* p. 111, Central Asia: spp. nn.

Leporidæ.

Lepus cuniculus. Zoo-geographical and palæontological observations; J. F. Brandt, Bull. Pétersb. xxi. pp. 1–21.

Lepus pamirensis and *yarkandensis*, A. Günther, Ann. N. H. (4) xvi. p. 229, Central Asia; *cf.* W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, pp. 109 & 110; *L. stoliczkanus*, W. T. Blanford, *tom. cit.* p. 110, Central Asia; *L. hypsibius*, id. P. A. S. B. 1875, p. 233, Ladak; *L. craspedotus*, *id.* Ann. N. H. (4) xvi. p. 313, Balúchistán: spp. nn.

EDENTATA.

A. Macalister, in his "Report on the Anatomy of Insectivorous Edentates," describes the myology of the upper extremity in *Manis*, *Pholidotus*, *Myrmecophaga*, *Tamandua*, and *Cyclothurus*; Tr. R. Irish Ac. xxv. pp. 491–508, pls. xxvi. & xxvii.

Bradypodidæ.

Bradypus gularis. On the skull of the young; A. Macalister, P. R. Irish Ac. (2) ii. p. 139.

Megatheriidæ.

Lestodon armatus. Observations on its structure and affinities; J. Reinhardt, Dan. Selsk. Skr. (5) xi. pp. 1–38, pls. i.–iii.

Glyptodontidæ.

H. Burmeister has concluded his "Monographia de los Glyptodontes en el Museo Publico de Buenos Aires" [*cf.* Zool. Rec. x. p. 20]; the following genera and species being finally recognized:—*Dædicurus*

[g. n., p. 393] *giganteus*, *Panochthus tuberculatus*, *P. bullifer*, *Hoplophorus euphractus*, *H. ornatus*, *H. elegans*, *H. pumilio*, *Glyptodon clavipes*, *G. reticulatus*, *G. asper*, *G. elongatus*, and *G. lævis*; An. Mus. B. Aires, ii. pt. 6, pls. xxxv -xlii. (1874).

Macrotheriidæ.

Ancyclotherium priscum, sp. n. (foss.), A. Gaudry, C. R. lxxxi. p. 1037; J. Zool. iv. p. 519, pl. xviii.; Miocene of France.

DIDELPHIA.

MARSUPIALIA.

R. Owen, in part x. of his memoirs "On the Fossil Mammals of Australia" [*cf.* Zool. Rec. xi. p. 20], describes *Macropus affinis*, sp. n. and gives further characters of the species of *Palorchestes*, *Macropus*, *Sthenurus*, *Phascolagus*, and *Procoptodon*, the latter genus being regarded as a connecting link between the saltigrade and gravigrade groups of phytophagous Marsupials. Abstract, P. R. Soc. xxiii. p. 451.

Krefft publishes remarks on Owen's arrangement of fossil Kangaroos; he believes that all Marsupials are derived from a form combining the dentition of the carnivorous and herbivorous sections, and of which *Thylacoles* was the last survivor; Ann. N. H. (4) xv. 204–209.

Dasyuridæ.

Chætocercus bruijni, sp. n., W. Peters, Ann. Mus. Genov. vii. p. 420; New Guinea.

Phalangistidæ.

Phalangista (*Pseudochirus*) *albertisi* and *Ph. pennata*, W. Peters, *op. cit.* vi. p. 303 (the latter is the type of *Distæchurus*, sub-g. n., distinguished from sub-g. *Pseudochirus* by its pennate tail), New Guinea; *Ph.* (*Cuscus*) *gymnotis*, id. & G. Doria, *op. cit.* vii. p. 543, Aru: spp. nn.

Dactylopsila albertisi, sp. n., *iid.*, *tom. cit.* p. 542; N. W. New Guinea.

Peramelidæ.

Perameles rufescens, p. 541, Kei, *aruensis*, p. 542, note, Aru, W. Peters & G. Doria, *tom. cit.*: spp. nn.

Macropodidæ.

A. H. Garrod divides the family *Macropodidæ* into two sub-families *Macropodinæ* and *Hypsiprymninæ*, the former with two sections, *Ma-*

cropus and *Dorcopsis* ; to the latter of these are referred Owen's fossil genera *Protemnodon* and *Sthenurus* ; P. Z. S. 1875, p. 58.

Æpyprymnus, g. n., A. H. Garrod, *tom. cit.* p. 59 ; = *Hypsiprymnus*, section i., Waterhouse, in which the auditory bullæ are not inflated, the palatine foramina absent, the head short, and the tarsus long.

Dorcopsis luctuosus. A. H. Garrod describes in detail the type of *Halmaturus luctuosus* [*cf.* Zool. Rec. xi. p. 20], and shows that it belongs to this genus ; *tom. cit.* pp. 48–59, pls. vii.–ix. L. M. D'Albertis arrives independently at the same conclusion ; *tom. cit.* p. 531.

Macropus papuanus, sp. n., W. Peters & G. Doria, Ann. Mus. Genov. vii. p. 544 ; New Guinea, near Yule Island.

Phascolomyidæ.

Phascolomys pliocenus, sp. n. (foss.), F. McCoy, Prodr. Palæont. Vict. dec. i. p. 21, pls iii.–v., Pliocene of Victoria.

ORNITHODELPHIA.

MONOTREMATA.

C. Martins compares the bones of the fore-limb of *Ornithorhynchus* and *Echidnus* with those of other Vertebrates ; he finds that the torsion of the humerus amounts to about 90°, thus agreeing with that of Birds and Reptiles rather than with that of other Mammals ; Ann. Sci. Nat. (5) xix. art. 6 (1874). M. Durand de Gros objects to some of his criticisms, *op. cit.* (6) i. art. 4 ; and he replies, *op. cit.* (6) ii. art. 1, *bis*.

AVES.

BY

OSBERT SALVIN, M.A., F.R.S., &c.

TITLES OF SEPARATE WORKS AND OF PAPERS PUBLISHED IN PROCEEDINGS OF SOCIETIES, ETC.

AITKEN, JAMES. The Swallows and Swifts of Berar. Str. Feath. 1875, pp. 212–215.

ALESI, VICENZO. Sulla Borsa di Fabricio negli Uccelli. Atti Soc. Ital. xviii. pp. 132–171, pls. iv. & v.

A bibliographical account of the *bursa fabricii* in birds is given in this memoir, followed by a full description of the organ, together with an examination into its anatomical structure. These observations are chiefly drawn from an examination of the fowl, but other birds have been dissected, one of them, *Rhea americana*, furnishing the subject of some of the figures of the second plate which accompanies the paper.

ALLEN, J. A. Remarks on the sharp-tailed Finch (*Ammodromus caudacutus*). P. Bost. Soc. xvii. pp. 292–294.

ANDERSON, ANDREW. Corrections of, and Additions to "Raptorial Birds of North-western India." P.Z.S. 1875, pp. 16–27, pl. iii.

Supplements and corrects a previous paper on the same subject in P.Z.S. 1872, p. 619. [*Falconidæ*.]

——. On the Nidification of certain Indian Birds. Part IV. Ibis, 1875, pp. 199 & 200.

A continuation of former papers on the same subject.

——. On little or unknown Himalayan Oology, with Notes on the Birds. Str. Feath. 1875, pp. 350–358.

These notes were made during a two months' tour in Northern Kumaon, and apply to a few species of birds selected out of 250 observed. [*Sylviidæ*, *Motacillidæ*, *Scolopacidæ*.]

——. Notes on a Visit to the Lucknow Museum. *Tom. cit.* pp. 384–388. [*Falconidæ*, *Strigidæ*.]

BALL, V. Notes on some Birds observed in the Suliman Hills, west of Dera Ghazi Khan. *Tom. cit.* pp. 204–209.

Contains notes on some 20 species of birds obtained during a geological

tour in the northern portion of Beluchistan and the south-eastern corner of Afghanistan.

Ball, V. Avifauna of Chota Nagpur, Addenda et Corrigenda. Str. Feath. 1875, p. 288.

Supplement to the author's former paper, *op. cit.* 1874, p. 355.

Barboza du Bocage, J. V. Mélanges Ornithologiques. I. Observations sur le *Dryoscopus major*, Hartl., et Espèces voisines d'Angola. J. Sc. Lisb. 1875, pp. 101–107. [*Picidæ*.]

——. Observaçoes ácerca do *Corvo* do Archipelago de Cabo Verde. *Tom. cit.* pp. 113–120.

Bartlett, Edward. List of the Mammals and Birds collected by Mr. Waters in Madagascar. P. Z. S. 1875, pp. 62–69.

The birds in this list are from Tamatavi and "the interior of Madagascar," most of them being common Madagascan species.

Beccari, O. Lettera Ornitologica intorno agli Uccelli osservati durante un suo recente Viaggio alla Nuova Guinea. Ann. Mus. Genov. vii. pp. 704–720.

A letter addressed to Count Salvadori, in which Dr. Beccari gives a very interesting account of his doings in New Guinea, with special reference to the ornithology of the districts visited by him, the Arfak Mountains and some of the islands of the great Bay of Geelvink. Dr. Beccari paid great attention to the *Paradiseidæ*. In this letter, a new species of *Casuarius* is described, as well as another by Count Salvadori in a footnote. [*Struthiones*.]

Bendire, Charles. Notes on seventy-nine Species of Birds observed in the Neighbourhood of Camp Harney, Oregon, compiled from the Correspondence of Captain Charles Bendire, 1st Cavalry, U.S.A. P. Bost. Soc. viii. pp. 153–168.

These notes are extracted from letters written to Dr. T. M. Brewer, of Boston, and are of great interest, being from the pen of one of the most successful and diligent of the many excellent field ornithologists of the United States.

Beneden, P. J. van. Un Oiseau Fossile Nouveau des Caverne de la Nouvelle Zélande. J. Zool. iv. pp. 267–272.

A number of bones of a species of *Anas* found in the Earnsclough Cave, Otago, are considered by the author to belong to an extinct species which he calls *Anas finschi*. They are compared with the corresponding bones in *A. chlorotis*, *A. gibbosifrons*, and *Dendrocygna eytoni*, and other species.

Berlepsch, Hans Graf v. Ornithologische Notizen aus Kurhessen. J. f. O. 1875, p. 105.

Blanford, W. T. *Hypocolius ampelinus* in Sind. Ibis, 1875, p. 387, and Str. Feath. 1875, pp. 358–361.

Blyth, Edward. Catalogue of the Birds of Burmah. Edited, with

Notes and Additions, by Arthur, Viscount Walden, F.R.S. and Pres. Z.S. . J. A. S. B., (n.s.) xliii. pt. 2 (extra number : Hertford, 1875), pp. 54–167.

The ornithological portion of this posthumous work of the late Edward Blyth has been revised for press by Lord Walden, who has also added a number of notes and such additional species as more recent investigations have brought to light. The whole paper is thus a complete list, as far as known at the time of its publication, of the Birds of Burmah ; the large number of about 650 species being shown to inhabit the limited area described. Five species are described as new. [*Sylviidæ*, *Timeliidæ*.]

Booth, B. S. Description of the Moa Swamp at Hamilton. Tr. N. Z. Inst. vii. pp. 123–138.

For a report on the discussion raised on this paper, see Pr. N. Z. Inst. vii. p. 544 *et seq.*

Bouvier, A. Catalogue Géographique des Oiseaux recueillis par MM. A. Marche et De Compiègne dans leur Voyage. 8vo, pp. 42. Paris: 1875.

A catalogue of the birds obtained during this expedition to Western Africa. The species, of which the number is large, have been determined with the aid of Mr. R. B. Sharpe, whose assistance is fully acknowledged. The localities where each species was obtained is recorded with care, and thus this catalogue is a very useful addition to our knowledge of the distribution of West African birds.

Bree, Charles Robert. A History of the Birds of Europe not observed in the British Islands. 2nd edition, enlarged. Large 8vo, London : Vols. I.–IV.(1875), Vol. V. (1876).

Brockholes, J. F. On Birds observed in Wirral, Cheshire. P. Chester Soc. No. 1 (1874), pp. 1–16.

Brooks, W. E. On an apparently unnamed Species of *Phœnicopterus*. P. A. S. B. 1875, pp. 17 & 48. [*Phœnicopterigidæ*.]

——. Notes upon a Collection of Birds made between Mussoori and Cangaotri in May 1874. Str. Feath. 1875, pp. 224–257.

Contains a description of the country traversed (which is illustrated by a map) and notes on the species of birds observed. To some of these Mr. Hume has added his opinion as to the correctness of Mr. Brooks's determination of the species.

——. Notes on a new *Dumeticola*, and on *Tribura luteoventris*, Hodgson, and *Dumeticola affinis*, Hodgson. Str. Feath. 1875, p. 284. [*Sylviidæ*.]

——. On *Drymoipus inornatus*, Sykes, and *D. longicaudatus*, Tickell. Str. Feath. 1875, p. 295.

The latter is the winter plumage of the former.

——. Notes on the "Spotted Eagle," *Aquila nævia*. Str. Feath. 1875, pp. 304–313.

An attempt to identify the name *A. nævia* of the "old authors" and to associate it with the larger of the two species of Spotted Eagle.

Brown, J. A. Harvie. On the Birds found breeding in Sutherlandshire. Glasgow: 1875. 8vo, p. 149.

A revised reprint of the paper published in the Proceedings of the Natural History Society of Glasgow, Jan. 3, 1871, and now published in a separate form, together with an account of the Mammals and Reptiles of Sutherlandshire, by E. R. Alston & J. A. Harvie Brown.

Brüggemann, F. *Cygnus immutabilis*, eine Varietät des Höckerschwans, *C. olor*. Zool. Gart. 1875, p. 321.

Bruhin, Th. A. Die Vögel von New Coeln im Staate Wisconsin. Zool. Gart. 1875, p. 414.

A bare list of about a hundred species, with a few notes giving the time of year in which some of them were observed.

Buller, Walter L. On the Ornithology of New Zealand. Tr. N. Z. Inst. vii. pp. 197–211.

Contains some general remarks on the ornithology of New Zealand. The author also gives notes and observations based chiefly upon an examination of recent additions to the collection of birds in the Canterbury Museum. [*Scolopacidæ*.]

——. Notes on certain disputed Species of New Zealand Birds. *Tom. cit.* pp. 211 & 212.

Gives Dr. Finsch's report upon certain birds submitted to him for examination. [*Campephagidæ*, *Muscicapidæ*, *Cuculidæ*, *Meliphagidæ*.]

——. On the existence of two Species of *Hieracidea* in New Zealand. *Tom. cit.* pp. 213–214.

The author adheres to his view that there are two species of *Hieracidea* in New Zealand, *H. ferox* and *H. novæ-zealandiæ*.

——. Notes on an alleged new Species of Tern, *Sterna alba*, Potts. *Tom. cit.* pp. 214 & 215.

Admits that this supposed species was wrongly identified with *S. nereis*; but, as no specimen has yet been obtained, it is not possible to say what the species may prove to be. The specific name *alba* is not admissible, there being already a *Sterna alba* of Gmelin.

——. Description of a new Species of Petrel (*Procellaria affinis*). *Tom. cit.* pp. 215 & 216.

This supposed species is compared with *Procellaria* (*Œstrelata*) *cooki*, and therefore probably belongs to the genus *Œstrelata* and not to *Procellaria*.

——. On the Occurrence of *Plotus novæ-hollandiæ* in New Zealand. *Tom. cit.* pp. 217 & 218.

——. Notice of a new Species of Parrakeet in New Zealand. *Tom. cit.* pp. 219 & 220. [*Psittacidæ*.]

——. On the Genus *Himantopus* in New Zealand. *Tom. cit.* pp. 220–224.

The author considers that three species of *Himantopus* inhabit New Zealand, one of which he describes as new. [*Scolopacidæ*.]

BULLER, W. L. On some Additions to the Collection of Birds in the Colonial Museum. Tr. N. Z. Inst. vii. pp. 224 & 225.

Six species, with notes thereon, are mentioned in this paper.

——. Note on *Rallus modestus*. Tom. cit. p. 511.

Contrary to his former view, the author now admits this species to be distinct from *R. dieffenbachi*.

BUTLER, E. A. Notes on the Avifauna of Mount Aboo and Northern Guzerat. Str. Feath. 1875, pp. 437–500.

A full list [not completed in this vol.], to which A. O. Hume has added a number of species ascertained to inhabit the district investigated by the author. The paper is thus a very important contribution to the knowledge of the local distribution of Indian Birds.

CALDWELL, J. Notes on the Zoology of Rodriguez. P. Z. S. 1875, pp. 644–647.

Gives an account of the discovery in Rodriguez of a nearly perfect female skeleton of *Pezophaps solitarius*, and of one of a male in a less complete state. The author thinks that the destruction of the Solitaire is to be attributed to a violent hurricane or other disturbing cause, rather than to any other hitherto suggested.

COOPER, J. G. Notes on Californian Thrushes. Am. Nat. ix. pp. 114–116.

These notes apply to *Turdus nanus* and *T. ustulatus*, and, while correcting some statements made in the 'Ornithology of California' respecting them, the author considers that by priority the names *nanus* and *ust us* should not rank as varieties, but that if any should occupy that position they should be *swainsoni* and *pallasi*.

COPE, E. D. On an Extinct Vulturine Bird. P. Ac. Philad. 1875, p. 271.

The matrix containing the fossil described by the author as *Cathartes umbrosus* having been removed from the nostril, the presence of a short osseous septum was disclosed, showing that the species should be referred not to the new world *Cathartidæ*, but to the old world *Vulturidæ*. He, therefore, now proposes to call this fossil species *Vultur umbrosus*.

CORDEAUX, JOHN. Notes on the Birds of Heligoland in Mr. Gätke's collection. Ibis, 1875, pp. 172–188.

The author made good use of a five days' visit to this wonderful asylum of straggling birds in drawing up the list and notes above referred to. We hear with a satisfaction in which all ornithologists will join, that Mr. Gätke purposes publishing shortly a work on the birds of Heligoland, a twenty years' acquaintance with which qualifies him to speak with authority. The present paper supplements the late Dr. Blasius's celebrated article in Naumannia for 1858, and gives an idea of the numbers of rare stragglers which have appeared since that date.

COUES, ELLIOTT. Fasti Ornithologiæ redivivi. No. 1. "Bartram's Travels." P. Ac. Philad. 1875, pp. 338–358.

According to the author, 20 of the names employed by Bartram in the list of birds published in his "Travels" ought to be used. Of these, 10 are already employed, and it is argued that the remaining 10 should in future be used for others now current. The absence of anything that can be called a sufficient description accompanying these names, in our opinion, justifies their rejection. Take, for instance, Bartram's mention of a bird supposed by Coues to be *Botaurus lentiginosus*; all that is said is "Ardea mugitans, the marsh bittern, or Indian hen," which we should say was giving a bird three compound names, and not describing it at all, yet the author considers that the American Bittern should in future be called *Botaurus mugitans* (Bartram)!

——. Contributions to the Natural History of Kerguelen Island, made in Connection with the American Transit of Venus Expedition, 1874–75. By J. H. Kidder, M.D., Passed Assistant Surgeon U.S. Navy. I. Ornithology, by Dr. Elliott Coues, U.S.A. Washington: 1875. 8vo, pp. 47.

The personal observations on the birds of this island are by the first mentioned author, the naturalist to the American Transit of Venus Expedition, and the notes on the habits, &c., of each species are very full and interesting. Dr. Coues has worked out the technical part of the subject and supplied the names and synonymy.

——. On the Breeding of certain Birds. Am. Nat. ix. pp. 75–78.

This paper is dated from Fort Benton, Montana; in it, the author describes the breeding of some species of birds as observed by him in the neighbourhood.

COUGHTREY, MILLEN. [See HUTTON, F. W., & OWEN, R.]

CROMMELIN, J. P. VAN WICKEVOORT. Nouvelles Ornithologiques sur la Faune des Pays-Bas. Arch. Néerl. x. pp. 166–180.

Contains supplementary notes to the author's paper published in Arch. Néerl. iv. Some of the names adopted for certain Hawks in Sharpe's Catalogue of Birds, vol. i., are examined with regard to that author's views respecting them. A number of notes are given on birds occurring in the Netherlands, and the capture in that country of a specimen of *Erismatura leucocephala*, furnishes the author with an opportunity of giving a very complete account of that bird.

D'ALBERTIS, L. M. Letter from, giving some Account of several Excursions into Southern New Guinea. P. Z. S. 1875, pp. 530–532.

Gives a short account of an expedition from Yule Island into the adjoining mainland of New Guinea, and of the Birds and Mammals observed.

DANFORD, CHARLES G., & BROWN, JOHN A. HARVIE. The Birds of Transylvania. Ibis, 1875. pp. 188–199, 291–313, 412–434.

A very full list of nearly 300 species of Transylvanian birds is made

out in this paper, being chiefly derived from the personal observations of the authors. The remainder is compiled from the contents of Museums and from several local works on the fauna of the country. Of the latter, a careful list is drawn up at the end of the introductory remarks making the first part of the paper.

David, A. Journal d'un Voyage dans le centre de la Chine, &c. (part 3). N. Arch. Mus. x. (Bulletin), pp. 3–82 (1874).

Contains the concluding portion of the author's account of his travels in China, throughout which he has given notes of the birds met with. A short epitome of the earlier part of this journal was published by P. L. Sclater, Ibis, 1874, p. 167 *et seq.*

Dresser, H. E. A History of the Birds of Europe, including all the Species inhabiting the Western Palæarctic Region. Parts xxxv.–xlvi.

Twelve parts of this work bear dates of the past year (1875). [*Falconidæ*, *Picidæ*, *Muscicapidæ*, *Scolopacidæ*, *Cypselidæ*, *Caprimulgidæ*, *Corvidæ*, *Fringillidæ*, *Anatidæ*, *Sylviidæ*, *Laridæ*, *Alcedinidæ*, *Charadriidæ*, *Perdicidæ*, *Alaudidæ*, *Tetraonidæ*, *Hirundinidæ*, *Ardeidæ*, *Motacillidæ*, *Pycnonotidæ*, *Oriolidæ*, *Turdidæ*].

——. Notes on Severtzoff's "Fauna of Turkestan" (Turkestanskie Jevotnie). Ibis, 1875, pp. 96–112, 236–250, 332–342.

These notes are drawn out from an English translation by Carl Craemers, of Severtzoff's Russian work, "Turkestanskie Jevotnie," published in the Transactions of the Imperial Society of Naturalists at Moscow, vol. viii. They contain many identifications of the species described by Severtzoff, the distribution of the species being given in an abbreviated form.

——. Notes on the Nest and Egg of *Hypolais caligata*, and on the Egg of *Charadrius asiaticus*, Pall., together with Remarks on the latter species and *Charadrius veredus*, Gould. P. Z. S. 1875, pp. 97 & 98. [*Sylviidæ*, *Charadriidæ*.]

——. Notes on *Falco labradorus*, Aud., *Falco sacer*, Forster, and *Falco spadiceus*, Forster. P. Z. S. 1875, pp. 114–117. [*Falconidæ*.]

Dubois, A. Note sur une *Coccyzus* tué en Belgique. Bull. Ac. Belg. (2) xxxix. pp. 40–42.

——. Description de quelques oiseaux nouveaux. *Op. cit.* xl. p. 684, et 797–801. [*Corvidæ*, *Icteridæ*.]

Elliot, D. G. Notes on the *Trochilidæ*. The genera *Chlorostilbon* and *Panychlora*. Ibis, 1875, pp. 149–172.

By carefully comparing a large series of specimens of *Chlorostilbon*, noting the various tints of their plumage, and tabulating their measurements, the author has succeeded in reducing the number of species of *Chlorostilbon* to eight, *Panychlora* to three. The synonymy (too full to epitomize) is given at great length, as well as the distribution of the various species.

Ercolani, G. B. Note anatomiche sull' Orecchio esterno e sul Timpano negli Uccelli. Ann. Soc. Mod. (2) ix. pp. 141–150 (plate).

The author points out in a memoir, originally communicated to the Academy of Sciences of the Institute of Bologna in 1843, that the anti-vestibulum of Galvani—a portion of the osseous labyrinth which has been generally stated to be peculiar to the class of birds, and believed to be always met with in that class, is absent in *Strix*, in which a rudiment of an external ear is present. This is illustrated by two plates, in which are figured the osseous labyrinths of *Gallus* and *Strix*.

Finsch, O. On two apparently new species of Penguin from New Zealand. Ibis, 1875, pp. 112–114. [*Spheniscidæ*.]

——. Notes on *Chalcopelia brehmeri*. Tom. cit. p. 467. [*Columbidæ*.]

——. Notes on the Fruit Pigeons of the genus *Chrysœna*. P. Z. S. 1875. p. 557.

Corrects a transient impression of Layard's that *Chrysœna victor* and *C. luteovirens* were simply stages of plumage of one species; they in fact being quite distinct.

——. On a new species of Crown Pigeon. P. Z. S. 1875, pp. 631–633. [*Columbidæ*.]

——. Notes on *Phœnicomanes iora*, Sharpe, and *Abrornis atricapilla*, Blyth. P. Z. S. 1875, p. 640. [*Timeliidæ*, *Sylviidæ*.]

——. On *Pristorhamphus versteri*, a new Genus and Species of Birds from the Arfak Mountains. P. Z. S. 1875, p. 641. [*Dicæidæ*.]

——. Characters of Six new Polynesian Birds in the Museum Godeffroy, at Hamburg. P. Z. S. 1875, pp. 642–644. [*Muscicapidæ*, *Melliphagidæ*, *Sturnidæ*.]

——. Preliminary Remarks of some New Zealand Birds. Tr. N. Z. Inst. vii. pp. 226–236.

Contains a number of critical remarks on New Zealand birds, arising out of an examination of specimens sent from that country. [*Falconidæ*, *Muscicapidæ*, *Sylviidæ*, *Scolopacidæ*, *Rallidæ*.]

——. Zur Ornithologie der Südsee-Inseln. I. Die Vögel der Palau-Gruppe. J. Mus. Godeffr. viii. pp. 51, pls. i.–v.

Contains a complete account, as far as at present known, of the Ornithology of the Pelew Islands, based upon collections made chiefly by Kubary, for the well-known Museum of J. Cesar Godeffroy, of Hamburg. The 56 birds shown to inhabit these islands are dealt with in detail, and their internal and external range traced. The references given are chiefly to papers on the Ornithology of these islands by Hartlaub and the author, published in the P. Z. S. for 1872, and elsewhere. The plates are chromo-lithographs from drawings by Keulemans.

Gammie, J. On the breeding of *Aceros nipalensis*. Str. Feath. 1875, pp. 209–211.

GARROD, A. H. On a point in the Mechanism of the Bird's Wing. P. Z. S. 1875, pp. 82–84.

Explains how the relative position of the ulna and radius in the outstretched wing of a bird produces a rigid exterior margin to the wing. A simple wooden model is also described, to illustrate the movement of these wing bones.

——. On the Form of the Lower Larynx in certain Species of Ducks. *Tom. cit.* pp. 151–156.

——. On the Form of the Trachea in certain Species of Storks and Spoonbills. *Tom. cit.* pp. 297–301.

Describes the complex intrathoracic convolutions of the trachea in *Tantalus ibis*, and the muscles attached thereto; a woodcut shows the peculiarity of this organ. The trachea of *Platalea ajaja* is also described and figured, to show the position of the bifurcation of the cervical bronchii. The relationship of *Tantalus* to the Storks, and not to *Ibis* and *Platalea*, is insisted upon.

——. On the Description of the deep Plantar Tendons in different Birds. *Tom. cit.* pp. 339–348.

The peculiarities in the arrangement of the plantar tendons in a number of birds are discussed in this pap[illegible]nd woodcuts are introduced to show the disposition of these tendo[illegible] the following species:—*Gallus bankiva*, *Apteryx mantelli*, *Tinnunc[illegible] alaudarius*, *Buceros rhinoceros*, *Momotus lessoni*, *Trogon puella*, *Crotophaga sulcirostris*, *Megalæma asiatica*, and in the typical Passerine foot.

——. Notes on two Pigeons, *Ianthœnas leucolæma* and *Erythrœnas pulcherrima*. Tom. cit. p. 367.

GERBE, Z. Sur la manière dont s'accomplit la mue des rémiges chez le Macreux Moine et le Plongeon Lumme. R. Z. (3) iii. pp. 271–277, pl. vi.

The wing feathers in the species referred to in this paper, *Fratercula arctica* and *Colymbus arcticus*, appear to be moulted at once and not by degrees. The plate shows two stages of growth of these feathers in *Fratercula arctica*.

GIEBEL, C. G. Thesaurus Ornithologiæ. ii. Vierter Halbband.

The first half (1874) and the second (1875) of the second volume of this book bring the work to the end of the letter O [Zool. Rec. ix. p. 19].

GODWIN-AUSTEN, H. H. Description of a supposed new *Actinura* from the Dafla Hills. Ann. N. H. (4) xvi. p. 339. [*Timeliidæ*.]

—— & WALDEN [ARTHUR HAY], VISCOUNT. Descriptions of some supposed new Species of Birds. Ibis, 1875, pp. 250–253.

Contains descriptions of a new genus and five new species of Birds from Munipur and the North Cachar Hills. [*Paridæ*, *Timeliidæ*, *Troglodytidæ*, *Sturnidæ*.]

GOULD, JOHN. The Birds of Asia. Part xxvii. London: March, 1875.

Gould, John. The Birds of New Guinea and the adjacent Papuan Islands, including any new Species that may be discovered in Australia. Part i. fol. London: December 1st, 1875.

This new undertaking of the author, as its title tells us, is intended to illustrate the birds of New Guinea, of which our knowledge has been lately increased by the exertions of several very energetic and competent travellers. The plates are in the usual style and size of the author's other works, and upon them are represented life-size figures of the birds depicted. To the figures of New Guinea species, will be added some plates of such of the more recent discoveries in Australia as have been found in that country since the completion of the 'Supplement to the Birds of Australia.'

——. A Monograph of the *Trogonidæ* or Family of Trogons. 2nd ed. Parts 3 & 4, fol. London: June and September, 1875.

With these two parts, the author completes the second edition of his Monograph of the Trogons, the first part of which was issued in 1858, the second in 1869. As in the first edition, a synopsis of the species of the family accompanies the preface, in which all the additions are incorporated. 47 plates illustrate the 46 species recognized. [*Trogonidæ.*]

——. Descriptions of three new Species of Australian Birds. P. Z. S. 1875, pp. 314 & 315. [*Psittacidæ, Meliphagidæ.*]

——. Further Contributions to the Ornithology of Australia. Ann. N. H. (4) xvi. pp. 285–287. [*Sylviidæ, Meliphagidæ.*]

——. On a new Species of the Genus *Eupetomena*. *Tom. cit.* p. 370. [*Trochilidæ.*]

——. On the Bower-birds of Australia, with the description of a new Species. Tom. cit. p. 429. [*Paradiseidæ.*]

Gulliver, George. Observations on the Sizes and Shapes of the Red Corpuscles of the Blood of Vertebrates, with Drawings of them to a uniform Scale, and extended and revised Tables of Measurements. P. Z. S. 1875, pp. 474–495 (plate).

Gundlach, Jean. Neue Beiträge zur Ornithologie Cubas. Nach eigenen 30 jährigen Beobachtungen zusammengestellt. J. f. O. 1875, pp. 293–339, 353–407.

The conclusion of the paper commenced in 1870 [Zool. Rec. x. p. 38].

Gurney, J. H. Notes on the Catalogue of Accipitres in the British Museum, by R. Bowdler Sharpe. Ibis, 1875, pp. 87–96, 221–236, 353–370, 468–484.

These 'Notes,' intended to supplement and correct Sharpe's 'Catalogue of the Accipitres,' are in fact the result of a life-long study of the Birds of Prey, and are replete with information respecting this intricate family of birds. References to this paper are freely made in the part of this Record devoted to *Accipitres*, but space does not admit of all the useful details being given. [*Falconidæ, Vulturidæ.*]

GURNEY, ANNA. Extracts from the Note-book of the late. Tr. Norw. Soc. ii. pp. 19–24.

Contains notes on zoological occurrences in the neighbourhood of Cromer, between the years 1820–1856. Remarks by J. H. Gurney and H. Stevenson on some of the birds mentioned, are appended to the paper.

HAAST, JULIUS. Researches and Excavations carried on in and near the Moa-bone Point Cave, Sumner Road, in the year 1872. Tr. N. Z. Inst. vii. pp. 54–85.

Describes excavations made in this cave and the results arising therefrom, comprising (with other objects of interest) numerous bones of Moa as well as bones of existing birds. The position of the cave is described at length, and at the conclusion of the paper inferences are made respecting the history of Moas and Moa hunters. [See MCKAY, A.]

——. Notes on the Moa-hunter Encampment at Shag Point, Otago. *Tom. cit.* pp. 91–98.

Gives an account of an examination of certain kitchen-middens of Moa-hunters, and the remains of *Dinornithidæ* found in them.

HAMILTON, J. W. Notes on Maori Traditions of the Moa. *Tom. cit.* pp. 121 & 122.

Relates statements made since 1844 by Maoris, respecting the recent existence of Moas.

HARTING, J. E. The Natural History and Antiquities of Selborne, in the county of Southampton. By the Rev. Gilbert White, M.A. Standard edition by E. T. Bennett. Thoroughly revised, with additional notes, by J. E. Harting. London : 1875, 8vo, pp. 532.

——. Our Summer Migrants. An Account of the Migratory Birds which pass the Summer in the British Islands. London: 1875, 8vo, pp. 336.

This volume consists in a great measure of reprinted articles from 'The Field,' where they were originally published by the author. The subject is explained by the title of the volume. Woodcuts accompany each species, taken, it is said, from designs by Thomas Bewick, which, apparently, means that they are copied from the works of that artist.

——. On the Pleasures and Advantages to be derived from the study of Natural History, and more particularly from the Observation of Birds. Tr. Watford Soc. i. pp. 52–62.

HARTLAUB, G., & KRÜPER, T. Seiten des Gehens und Kommens und des Brütens der Vögel in Greichenland und Ionien. Catalog von Dr. Krüper, mit Citaten und Zusätzen von Dr. Hartlaub. Kalender, vom Herausg. (A. Mommsen). Literatur, von Dr. Hartlaub. Griechische Jahreszeiten, Heft iii. (1875).

This part contains a complete summary of the birds of the North-Eastern Mediterranean. Full references are given to all authorities on the birds of the region, and a list of works is appended to the Catalogue of species. The account of each species is drawn up from

notes by Dr. Krüper, who has, as is well known, long resided in this district, and himself written some valuable papers on its birds. An interesting calendar is given at the end of the work, showing the movements of the various birds of passage as they traverse the country, &c.

Hartlaub, G. Letter from, relating to a Finch (*Lobiospiza notabilis*), described in the Zoological Society's Proceedings. P. Z. S. 1875, p. 269. [*Fringillidæ*.]

——. [See Neumayer, G.]

Heuglin, T. von. Ornithologie Nordost Afrika's. Liefn. 50, 51, 52, 53, 54, 55, 56, 57 (completion).

With these parts, the author brings this work, on which he has been engaged for some years, to a conclusion. As completed, it makes two 8vo volumes, each divided into two parts. The work has already been described in Zool. Rec.: it promises long to remain a standard authority on the birds of the country of which it treats.

——. Viaggio dei Signori O. Antinori, O. Beccari ed A. Issel nel Mar Rosso, nel territorio dei Bogos, e regioni circonstanti, durante gli anni 1870–71. Catalogo degli Uccelli, compilato per cura di O. Antinori et T. Salvadori. Genova: 1873. J. f. O. 1875, pp. 52–58.

A short notice of this work, with notes on several of the species mentioned therein.

Hoffman, W. J. List of Birds observed at Grand River Agency Dakotah. P. Bost. Soc. xviii. pp. 169–175.

Brief mention is made in this list of 79 species of N. American birds.

Homeyer, A. von. Biologische Beobachtungen über einige schlesische Vögel. J. f. O. 1875, pp. 111–113.

——. Ueber die Gruppe der Schreiadler. *Tom. cit.* pp. 153–166. [*Accipitres*.]

Hudson, W. H. On the Herons of the Argentine Republic, with a Notice of a curious Instinct of *Ardetta involucris*. P. Z. S. 1875, pp. 623–631.

A very interesting account of some peculiar instincts of *Ardetta involucris*, and full notes on the habits of several other species of Heron found near Buenos Ayres.

Hügel, A. von. Letter describing a trip to New Zealand, and to the haunts of *Stringops habroptilus*, &c. Ibis, 1875, pp. 389–394. [*Psittacidæ*, *Anatidæ*, *Rallidæ*.]

Hume, Allan O. Nests and Eggs of Indian Birds. Rough Draft. Part iii. 1875.

With this part, the author concludes his "Nests and Eggs of Indian Birds," the volume, as completed, containing 662 pages. [Zool. Rec. x. p. 44, & xi. p. 39.]

——. A first List of the Birds of Upper Pegu. Str. Feath. 1875, pp. 1–194.

This list is based upon collections made by Captain Feilden and Mr.

Oates, who have supplied a number of observations respecting the birds they met with. Mr. Oates adds an introductory note, describing briefly the country traversed. 317 species are noticed, and Mr. Hume gives a summary, showing the relationship of the Birds of Burmah to those of the adjoining countries.

HUME, ALLAN O. What is a Species? Str. Feath. 1875, pp. 257–262.

A short argument, giving the author's views on this question.

——. Recently described Species. Republications. *Tom. cit.* pp. 279–284.

The author proposes to reproduce the descriptions of species added to the Indian fauna since the publication of Jerdon's work; and the present paper, in which nine species are described, is an instalment towards the end in view.

——. Novelties? *Tom. cit.* pp. 296–303. [*Pittidæ*, *Nectariniidæ*, *Ibididæ*, *Pycnonotidæ*, *Caprimulgidæ*.]

——. *Baza sumatrensis*, Lafr. ?. *Tom. cit.* pp. 313–316.

Two specimens, one from Sikkim the other from the Tenasserim provinces, described, and believed to belong to *Baza sumatrensis*, Lafr.

——. A Second List of the Birds of Tenasserim. *Tom. cit.* pp. 317–326.

This list is based upon collections made in Tenasserim by Mr. Davison, and in it 79 species are added to former lists, raising the total number recorded from this district to 510 species.

HUTTON, F. W. Notice of the Earnscleugh Cave; with Remarks on some of the more remarkable Moa Remains found in it, by Professor Millen Coughtrey, M.D. Tr. N. Z. Inst. vii. pp. 138–144.

Describes this cave, wherein remains of *Dinornis* and *Cnemiornis* were found together with bones of other birds, including those of an extinct species of Duck since described as *Anas finschi* [cf. VAN BENEDEN]. Dr. Coughtrey's notes give descriptive details of the remains of certain muscles found adhering to a Moa's neck, right femur, left fibula, and left tibio-tarsus.

——. On the Dimensions of *Dinornis* Bones. *Tom. cit.* pp. 274–278.

The result of measurements of the femur, tibia, and metatarsus of more than 200 birds are here tabulated. The author believes that all or nearly all the species separated by Owen were really distinct.

——. Description of some Moa Remains from the Knobby Ranges; with Anatomical Notes, by Millen Coughtrey, M.D. *Tom. cit.* pp. 266–273, pl. xix.

A right metatarsus with portions of the toes, a fragment of a left metatarsus, a right tibia, a left femur and a fragment of a sternum supposed to belong to *Dinornis ingens* are here described. Dr. Coughtrey's

notes chiefly relate to the remains of muscles and tendons attached to them, all of which are carefully described.

Irby, L. H. L. The Ornithology of the Straits of Gibraltar. London : 1875. 8vo, pp. 236, 2 maps.

This work is mainly based upon the author's personal observations made during a residence of several years at Gibraltar. His information respecting the African side of the Straits is derived partly from his own observations, partly extracted from the MS. notes left by the late F. Favier, who resided at Tangiers for upwards of thirty years. 335 species are included in the work, and the notes appended to each are full of useful information respecting the habits and times of passage of the many migratory species which here cross the Mediterranean.

Jäckel, A. J. Beitrag zur Kenntniss der geographischen Verbreitung der Zwergtrappe, *Otis tetrax*. Zool. Gart. 1875, p. 453.

Kidder, J. H. [See Coues, Elliott.]

Krüper, T. Beitrag zur Ornithologie Klein-Asiens. J. f. O. 1875, pp. 258–285.

A continuation of the paper on the Birds of Asia Minor commenced in J. f. O. 1869 [*cf.* Zool. Rec. vi. p. 35]. Though eleven years have elapsed since the present portion appears to have been written, it cannot be said to be out of date, for we believe that no author has since treated of the birds of this neglected country. The author's notes are full of information especially those relating to the *Sylviidæ*, *Emberizidæ*, *Sitta krueperi*, and *Coccystes glandarius*.

——. [See Hartlaub, G.]

Lacroix, A. Catalogue des Oiseaux dans la Haute-Garonne, l'Aude, l'Ariége. Bull. Soc. Toulouse, ix. pp. 17–99.

This catalogue, the first portions of which appeared in the vii. & viii. volumes of the same work, is now concluded. Mention is made of 349 species or varieties of birds. The leading synonyms of the species, their regular or casual migrations, and the facts as to their breeding or not in the district discussed, are given.

——. Observations sur le Héron-cendré Pourpré. *Tom. cit.* p. 192.

Describes a supposed hybrid between *Ardea cinerea* and *A. purpurea*.

Layard, E. L. The Birds of South Africa ; New Edition, thoroughly Revised and Augmented by R. Bowdler Sharpe. London: 1875. Parts i. (May), ii. (October).

In this edition, all the additions and corrections made since the issue of the first one are incorporated. The distribution of each species in S. Africa is given at length, and most of the species are described, but references are almost entirely suppressed, as also all discussion of synonymy. The species of the following families are mentioned :—*Vulturidæ*, *Falconidæ*, *Bubonidæ*, *Strigidæ*, *Caprimulgidæ*, *Cypselidæ*, *Meropidæ*, *Coraciidæ*, *Trogonidæ*, *Alcedinidæ*, *Bucerotidæ*, *Upupidæ*, *Musophagidæ*, *Cuculidæ* (part).

LAYARD, E. L. Ornithological Notes from Fiji, with Descriptions of supposed new Species of Birds. P. Z. S. 1875, pp. 27–30. [*Meliphagidæ, Muscicapidæ, Dicæidæ.*]

— —. Descriptions of some supposed new Species of Birds from the Fiji Islands. *Tom. cit.* pp. 149–151. [*Campephagidæ, Meliphagidæ, Laniidæ. Columbidæ.*]

——. Notes on Fijian Birds. *Tom. cit.* pp. 423–442.

This paper contains notes on many Fijian species of birds, being the result of a year's residence in the group. The author speaks of the comparative poverty of the avifauna of these islands, and states his belief that the number of species does not exceed 70. The notes relate to the habits and distribution of the various species mentioned. Some descriptions of recently described species are reproduced. [*Laniidæ.*]

——. Description of a new Flycatcher belonging to the Genus *Myiagra*, and Notes on some other Fijian Birds. Ibis, 1875, pp. 434–436. [*Muscicapidæ.*]

——. Description of a new Species of *Trichoglossus* from Fiji. Ann. N. H. (4) xvi. p. 344. [*Psittacidæ.*]

LAWRENCE, GEORGE N. Descriptions of five new Species of American Birds. Ibis, 1875, pp. 383–387. [*Tanagridæ, Tyrannidæ.*]

——. Descriptions of two new Species of Birds of the Families *Tanagridæ* and *Tyrannidæ*. Ann. Lyc. N. York, xi. pp. 70–72.

——. Descriptions of four new Species of Birds from Costa Rica. *Tom. cit.* pp. 88–91. [*Corvidæ, Caprimulgidæ, Columbidæ, Rallidæ.*]

LEGGE, W. VINCENT. On the Birds of the South-eastern Subdivisions of Southern Ceylon. Ibis, 1875, pp. 273–290, 395–412.

An important addition to the knowledge of the Avifauna of Ceylon, especially with reference to the distribution of birds within the island. Field notes are added concerning many of the species mentioned. Appended to this paper is a short reply to some criticisms by Mr. Holdsworth on a former article by the author in the same publication.

——. On the Breeding of certain *Grallatores* and *Natatores* in the South-east of Ceylon, with Notes on the nestling Plumages of the same. P. Z. S. 1875, pp. 374–379. [*Charadriidæ, Scolo.cidæ*, and *Laridæ.*]

——. Additions to the Avifauna of Ceylon, and Notes on various Species found there. Str. Feath. 1875, pp. 194–204.

Contains notes on 14 species of birds, some of which are for the first time recorded as inhabitants of Ceylon.

——. On *Dromas ardeola*. Tom. cit. pp. 220–224.

An account of this bird, as observed near Trincomalee, Ceylon.

LEGGE, W. VINCENT. Notes on Ceylonese Ornithology and Oology, with additions to the Avifauna of the Island. Str. Feath. 1875, pp. 361–378.

Contains notes on several Ceylonese birds, a new name being suggested for the marsh warbler, formerly called *Calamodyta brunnescens* by writers on Ceylonese birds. [*Sylviidæ*.]

——. Notes on *Myiagra plumbea*, Vig. & Horsf. P. R. Soc. Tasm. 1874, p. 10. [*Muscicapidæ*.]

——. Notes on some species of Tasmanian Birds. *Tom. cit.* p. 31.

LEIDY, JOSEPH. On Psorosperms in a Mallard Duck. P. Ac. Philad. 1875, p. 125.

Fusiform corpuscles, $\frac{1}{1500}$ of an inch in length, resembling minute *Naviculæ*, and similar to bodies first discovered by J. Müller in many fishes and described by him as parasites, under the name of Psorosperms, were found by the author in some portions of the flesh of a Mallard sent to him by Coues.

LE MESSURIER, A. Additional Notes on the Avifauna of Sindh. Str. Feath. 1875, pp. 378–382.

Adds two birds to the recorded Avifauna of Sindh, which now reaches 292 species.

LESCUYER, F. Étude sur les Oiseaux. Architecture des Nids. Paris: 1875. Sm. 8vo, pp. 182.

An essay giving descriptions of the nests of several familiar species of birds, their position, structure, &c.

LIEBE, K. T. Ornithologische Notizen. J. f. O. 1875, pp. 200–213.

LILFORD, LORD. Cruise of the "Zara," R.Y.S., in the Mediterranean. Ibis, 1875, pp. 1–35.

An interesting account of the birds seen during a winter and spring cruise in the western half of the Mediterranean, containing notes on a large number of species met with at sea, on the western coasts of Italy, and on certain islands visited. Some interesting species were observed. [*Falconidæ*, *Gallinæ*, *Laridæ*.].

M'COY, FREDERICK. Note on an apparently new Parrot from Cardwell, N.E. Australia. Ann. N. H. (4) xvi. p. 54. [*Psittacidæ*.]

MCKAY, ALEXANDER. On the identity of the Moa Hunters with the present Maori Race. Tr. N. Z. Inst. vii. pp. 98–105.

In a discussion of this vexed question, the author expresses his opinion that either the Moa was exterminated long before the advent of the Maoris by another race, or that the Maoris arrived in New Zealand not 350 years ago, as frequently supposed, but at a much earlier date, and that one of their first acts was the extermination of the Moa. The author worked under Dr. Haast in exploring the Sumner Cave, and seems to have offended that gentleman by publishing this paper. See *tom. cit.* p. 528 *et seq.*, and also p. 534 *et seq.* on the same subject.

MARCHAND, A. Poussins d'Europe. R. Z. (3) iii. pp. 139–144, pls. ii.–iv.

A continuation of the author's former papers on this subject. [*Phalacrocoracidæ*, *Pelecanidæ*, *Laridæ*.]

MARSH, O. C. On the Odontornithes, or Birds with Teeth. Am. J. Sci. (3) x. pp. 403–408, pls. ix. & x. Reprinted, Am. Nat. ix. pp. 625–631; translated, J. Zool. iv. pp. 494–502, pl.

Some of the characteristic features presented by the skeletons of two forms of the sub-class ODONTORNITHES, *Ichthyornis dispar* and *Hesperornis regalis*, are described in this paper, and as a result of the examination of nearly complete skeletons of both forms the following division is made of the ODONTORNITHES or AVES DENTATÆ:—

A. Teeth in sockets, vertebræ biconcave, sternum with keel, wings well developed. Order, ICHTHYORNITHES.

B. Teeth in grooves, vertebræ as in recent birds, sternum without keel, wings rudimentary. Order, ODONTOLCÆ.

The author has in preparation full descriptions with plates of all the known species of ODONTORNITHES, a work which cannot fail to be of the highest interest. In the meantime, figures are given of the left lower jaw and one of a cervical vertebra of *Ichthyornis dispar*, and the left lower jaw, a tooth, and a dorsal vertebra of *Hesperornis regalis*.

MARSHALL, WILLIAM. Pterologische Mittheilungen. Zool. Gart. 1875, p. 121.

The third of a series of papers on this subject [Zool. Gart. 1874, p. 124], containing observations on the young plumage of the Ostrich and a comparison of the feathering of the *Ratitæ* and *Carinatæ*.

MARTENS, E. v. Friedr. Leybold's Excursion a las Pampas Argentinas. J. f. O. 1875, pp. 439–448.

A translation of the portion relating to ornithology of Herr Leybold's account of his journey from Santiago to the Pampas of the Argentine Republic [Zool. Rec. x. p. 37]. Descriptions of three species described in the original work are here reproduced. [*Psittacidæ*, *Picidæ*, *Columbidæ*.]

——. Verschiedenheit der Weibchen bei den Hokko-Hühnern. Zool. Gart. 1875, p. 374.

This paper appears to be based entirely upon that recently published by Mr. Sclater in the Zoological Society's Transactions. The chief characteristics of the Curassows are concisely given, with special reference to the diversity subsisting in a greater or less degree between the sexes of the different species.

MELLISS, JOHN CHARLES. St. Helena: a Physical, Historical, and Topographical Description of the Island, including its Geology, Fauna, Flora, and Meteorology. London: 1875. Large 8vo. *Aves*, pp. 87–99.

By far the greater part of the species mentioned have been introduced from different parts of the world. The only land-bird, *Ægialitis*

sanctæ-helenæ, is figured, the plate being that published in The Ibis for 1873, pl. ix., and the account of the bird drawn from Harting's notes on that species in the same journal. Eight species of sea birds are mentioned, one being undetermined.

MEVES, W. Ueber die rostrothe Farbe des Geieradlers, *Gypaetus barbatus*, Storr. J. f. O. 1875, pp. 434–439.

——. Brüteplätze seltener europäischer Vögel. *Tom. cit.* pp. 428–434.

The exact breeding places of several rare and interesting European birds are given in this paper, many of them having been ascertained by the author during a journey to the Southern Ural in 1869. There are also several important notes on the synonymy of certain *Sylviidæ*.

MEYER, A. B. *Diphyllodes* (*Paradisea*) *gulielmi-tertii*, Von Mussch., ein neuer Paradiesvogel. Zool. Gart. 1875, p. 29. [*Paradiseidæ*.]

——. Letter from, containing Remarks upon a new Bird of Paradise. P. Z. S. 1875, p. 30. [*Paradiseidæ*.]

——. Ueber neue von ihm entdeckte Vögel von Neu-Guinea und der Insel Jobi im Norden Neu-Guinea's. SB. Ges. Isis, 1875, pp. 74–76. [*Muscicapidæ*, *Motacillidæ*, *Paridæ*, *Columbæ*.]

——. Ueber die von ihm im Jahre 1873 auf Neu-Guinea und den nahe liegenden Inseln gesammelten Papageien. *Tom. cit.* pp. 76–79.

A short account of 35 species of Parrots obtained by the author in New Guinea and the neighbouring islands in 1873. [*Psittacidæ*.]

——. Alphabetischer Index zu den in diesem Jahrgange (Band lxix. Seite 74, 202, 386, 493, und Band lxx. Seite 110 u. 200 und fig.) abgedruckten sechs Mittheilungen. "Über neue und ungenügend bekannte Vögel von Neu-Guinea und den Inseln der Geelvinksbai." SB. Ak. Wien, lxx. pt. i. pp. 479–495.

A full and useful index to the species mentioned in the author's many papers in the above-mentioned publication.

——. Ornithologische Mittheilungen. I. MT. Mus. Dresd. i. pp. 1–22.

In this paper, the author describes several new species of birds from the N.W. portion of New Guinea and the adjacent islands, and gives notes of interest upon other species from the same region. [*Paradiseidæ*, *Paridæ*, *Muscicapidæ*, *Motacillidæ*, *Columbæ*, *Psittacidæ*.]

MILNE-EDWARDS, A. Observations sur l'époque de la disparition de la faune ancienne de l'île Rodrigues. C. R. lxxx. pp. 1212–1216; translated, Ann. N. H. (4) xv. pp. 436–439.

——. Nouveaux Documents sur l'Époque de la Disparition de la Faune Ancienne de l'Ile Rodrigue. Ann. Sci. Nat. (6) ii. art. 4, pp. 20.

Gives the particulars of certain MS. documents preserved in the French Admiralty Records under the title of 'Relation de l'île Rodrique,' recently discovered by M. Rouillard. The island is described, with its

chief inhabitants, including the 'Solitaire' and other now extinct birds, of which we know nothing except from the writings of Leguat and other early writers, and from their semi-fossilized remains. The date when this 'Relation' was written, is believed by the author to have been about 1730. [See NEWTON, ALFRED.]

MORGAN, RHODES W. On the Nidification of certain South Indian Birds. Ibis, 1875, pp. 313–323.

The nests and eggs of 41 species of birds inhabiting Southern India are described in this paper.

MORESBY, J. Letter from, giving the exact locality of the young *Casuarius uniappendiculatus*, presented by him to the Zoological Society. P. Z. S. 1875, p. 533.

The Cassowary here referred to was obtained at Threshold Bay, 20 miles to the north of the island of Salwatti.

MULSANT, É. Catalogue des Oiseaux-Mouches ou Colibris. Lyons, Paris, and London: 1875. Large 8vo, pp. 32.

A number of new generic names appear to be introduced into this list for the first time, some of which, but not all, have since been characterized in the same author's Hist. Nat. des Ois.-Mouches, now in course of publication. [*Trochilidæ*.]

—— & VERREAUX, ÉDOUARD. Histoire Naturelle des Oiseaux-Mouches ou Colibris. ii. Livr. 1 & 2.

See Zool. Rec. xi. p. 48.

NELSON, E. W. Notes on the Ornithology of Utah, Nevada, and California. P. Bost. Soc. xvii. pp. 338–365.

These notes apply to a number of birds observed in the neighbourhood of Fort Bridger, near Salt Lake City, and in the vicinity of Uko, Nevada.

NEUMAYER, G. Anleitung zu wissenschaftlichen Beobachtungen auf Reisen. Berlin: 1875. 8vo. Vögel. Von Dr. G. Hartlaub, pp. 461–480, woodcuts.

Dr. Hartlaub's contribution to this work contains practical instructions on bird collecting in all its branches, his information being taken from the best current authorities, such as Professor Newton's "Instructions for Collecting Birds' Eggs," &c. An outline, giving a sketch of the observations to which a collector should give his attention, together with a list of some of the most useful works applicable to different parts of the globe, conclude the article.

NEWTON, ALFRED. Encyclopædia Britannica (9th edn.), iii. pp. 728–778, Article "Birds." [See PARKER, W. K.]

Prof. Newton's share of this article treats of the following subjects:—

1. FOSSIL BIRDS. Comprising allusions to the supposed Triassic birds known only from footprints, which may be those of Dinosaurian Reptiles; Oolitic Birds (*Archæopteryx*); Cretaceous Birds; Eocene Birds, including Professor Owen's *Odontopteryx*, Miocene, Pliocene, and Post-pliocene Birds, and lastly Cave Birds.

2. Subfossil Birds. In these, are included remains found in kitchen middens, lake dwellings, and fens, and with them the extinct gigantic birds of New Zealand.

3. Birds Recently Extirpated. The Dodo and Solitaire come under this heading, and other extinct species formerly found in the Mascarene Islands. The Great Auk (*Alca impennis*), *Fregilupus varius*, *Somateria labradora*, and *Nestor productus* receive their due share of attention.

4. Birds Partially Exterminated. Here the diminishing number of several species of birds is dwelt upon.

5. Geographical Distribution of Birds. Mr. Sclater's original zoo-geographical divisions are adopted, and their boundaries defined, with the more recent emendations of later writers. This portion of the subject is treated with great precision, but want of space prevents even a summary of its contents being here given.

6. Migration. The facts and theories respecting the migration of birds are here discussed.

The concluding sections, all of which are full of information in a necessarily concise form, are, 7, Song; 8, Nidification; 9, Eggs; and 10, Moult.

Newton, Alfred. Notes on Birds which have been found in Greenland. Manual of the Natural History, Geology, and Physics of Greenland, &c., prepared for the use of the Arctic Expedition of 1875, under the direction of the Arctic Committee of the Royal Society. London: 1875, 8vo, pp. 94–115.

A very complete account of the birds of Greenland, gleaned from the earliest writers, but chiefly from Reinhardt's paper on this subject, Ibis 1861, p. 1 *et seq.* The names of the stragglers to Greenland, the birds that may be looked for in Smith's Sound and northwards, and also those that may not be expected to occur beyond the Danish settlements, are typographically distinguished. 62 stragglers are mentioned as having occurred in Greenland, whilst the number that may be called denizens reaches 63. An analysis of the species and genera of birds at present found in Greenland shows the relationship of the avifauna to those of Europe and America. Not more than 36 species are expected to be found in Smith's Sound and to the northward.

——. Letter adding *Corcus corax* and *Hirundo rustica* to the Birds of Spitsbergen. Ibis, 1875, p. 272.

——. Note on *Palæornis exsul*. Ibis, 1875, pp. 342 & 343, pl. vii. [*Psittaci.*]

——. Additional Evidence as to the original Fauna of Rodriguez. P. Z. S. 1875, pp. 39–43.

Discusses the MS. referred to *suprà*, p. 42, wherein a precise description of the island is given, and reference made to the following extinct birds:—*Pezophaps solitarius*, *Erythromachus leguati*, *Ardea megacephala*, and *Necropsittacus rodericanus*, as well as to other species, including

a bird perhaps allied to *Fregilupus*, and also to *Palæornis exsul* and others.

Newton, Alfred. Exhibition of tracings of some unpublished sketches of the Dodo and other extinct birds of Mauritius. *Tom. cit.* pp. 349–350.

These tracings are from the original drawings mentioned in 'The Ibis' for 1868, p. 503. They include sketches of the Dodo, *Aphanapteryx*, and *Psittacus mauritianus*. For the last-mentioned bird, Prof. Newton proposes the new generic title *Lophopsittacus*, from the curious development of feathers on the head shown in these sketches, and perhaps also in one of the plates in Van Neck's Voyage, reproduced in Strickland's work.

——. On certain Neglected Subjects of Ornithological Investigation. Zool. (s.s.) 1875, pp. 4637–4643.

Complains of the little progress made in observations, the laws of plumage, period of incubation, and other matters.

Oates, Eugene W. Notes on some Burmese Birds. Str. Feath. 1875, pp. 336–350.

Supplements Mr. Hume's paper entitled "A First List of the Birds of Upper Pegu." [See Hume, A. O.] [*Alaudidæ*.]

Ogden, J. A. Description of a new species of Bird of Paradise, of the genus *Ptiloris*, in the Collection of the Academy. P. Ac. Philad. 1875, p. 451. [*Paradiseidæ*.]

Olphe-Galliard, Léon. On *Mormon grabæ* and an *Ægithalus* from S. Russia. Ibis, 1875, pp. 267–269.

——. Excursions Ornithologiques en Suisse. R. Z. (3) iii. pp. 1–36.

Contains lists of birds observed in the Cantons Fribourg, Unterwald, and Valais. The latter part of the paper is devoted to the question of the utility of birds, and comments upon their unnecessary destruction, with a list of articles by different authors on this subject.

Oustalet, E. Description d'une nouvelle Espèce de Brève (*Pitta*) N. Arch. Mus. x. (Bull.) pp. 101–105, pl. ii. (1874). [*Pittidæ*.]

Owen, R. On Dinornis (part xx.), containing a Restoration of the Skeleton of *Cnemiornis calcitrans*, Ow., with Remarks on its Affinities in the Lamellirostral group. Tr. Z. S. ix. pp. 253–272, 5 pls.

The bones of *Cnemiornis* examined by the author are compared in this paper with the corresponding bones in *Cereopsis* and *Tachyeres* (*Micropterus*, Less., *nec* Lacép.), and the affinity of the extinct Anserine New Zealand bird shown to be closer to the former than the latter. The plates illustrate a nearly perfect skull, several vertebræ, a complete sternum, a tarso-metatarsus, humerus, and several other wing bones, and also a restoration of the complete skeleton of the bird, with one of *Cereopsis* beside it to show the great size of *Cnemiornis*. [*Anatidæ*.]

——. Note on a new Locality of *Dinornithidæ*. P. Z. S. 1875, p. 88.

Dr. Coughtrey has reported to the author the discovery in the Hamilton

Swamp, Province Otago, New Zealand, of the remains of 10 species of *Dinornis* and 2 varieties, and also complete skeletons of *Cnemiornis calcitrans*.

PANCERI, PAOLO. Intorno ad alcune Crittogame osservate nell'uovo dello Struzzo. Atti Acc. Nap. vi. pl. [sep. copy].

Describes certain Cryptograms found on the inner lining of an Ostrich's egg. On the plate, their position is shown, and their form is also drawn, magnified 700 diameters.

PARKER, W. K. Encyclopædia Britannica (9th edn.), iii. pp. 699–728. Article "Birds." [See NEWTON, ALFRED.]

In Professor Parker's contribution to this article, he treats of the anatomy of Birds, the development and structure of the skull being a prominent feature in his work. The common fowl is taken as the subject of this part of his investigations, and the author's paper in Phil. Tr. 1869, as the basis of his remarks. Numerous woodcuts illustrate the different stages of development, and explain the text. Passing from the skull of the fowl, skulls of other birds typical of the main groups are described, and then more briefly the different portions of the skeleton. Then, in short paragraphs, follow descriptions of the muscles, the brain, organs of sense, alimentary canal, heart, respiratory, vocal, renal, and reproductive organs, and lastly, the integument and feathers. This article is prefaced with a classification of birds, based upon Prof. Huxley's now well-known system, but into which some minor modifications are introduced. Upon the form of the vomer, a high value is set in the *Carinatæ*, whereby the author is induced to place *Thinocorus* and *Turnix*, together with the Swifts and ordinary Passerine birds, in the group *Ægithognathæ*. The Goat-suckers (*Caprimulgidæ*), part of Huxley's *Coccygomorphæ*, are placed in the *Schizognathæ*, and next them the *Trochilomorphæ*, or Humming-birds. There are other points in the author's "Classification" to which the Recorder would allude, did space permit; suffice it to say, that the paper is full of materials which will serve to aid in framing a future Classification of Birds.

PARKER, W. K. On Ægithognathous Birds. (Part i.) Tr. Z. S. ix. pp. 289–352, pls. liv.–lxii.

In this paper, the author investigates the structure of the skull of many genera of Ægithognathous birds (*i.e.*, Passerine, as now usually understood). The form and relationship of the anterior portion of the vomer, with respect to the nasal cartilages, is specially dwelt upon. The importance of studying the structure of the skull as giving a character to the rest of the skeleton, is, according to the author, essential to a right classification. The genus *Turnix*, usually placed in the *Gallinæ*, is shown to have an incomplete Ægithognathous palate, as also has *Thinocorus*, a genus of *Limicolæ*. The greater portion of the paper is devoted to descriptions of the palates of a number of genera of *Passeres*, from various parts of the world; and these, being drawn on an enlarged scale, are very clear in their details.

PARKER, W. K. On the Morphology of the Skull in the Woodpeckers (*Picidæ*) and Wrynecks (*Yungidæ*) Tr. L. S. (2) i. pp. 1–22, pls. i.–iv.

The Woodpeckers (with which *Yunx* is associated) are in this paper placed in a group equivalent to the *Ægithognathæ* of Huxley, which the author calls *Saurognathæ*, from the Lacertian characters displayed by the structure of the skull in these birds. His investigations extend chiefly to the palate, and the cartilages forming the nasal passages. He finds numerous small ossicles of bone in the anterior portion of the skull, which he looks upon as remnants of bone structure more fully developed in ancestral forms, and surviving to some extent in the Lizards. The plates are drawn on a magnified scale, and are very clear in their execution.

PATTERSON, R. LLOYD. Further notes on some of the Swimming Birds frequenting Belfast Lough, with special reference to the Great Northern Diver. P. Belf. Soc. 1874–75, pp. 126–129.

PAVESI, P. Intorno ad una nuova forma di trachea di *Manucodia*. Ann. Mus. Genov. vi. pp. 315–324, pl. x.

The singular convolutions of the trachea observable in *Manucodia keraudreni*, are discussed in this paper, and a list of birds is given in which the trachea is found to take peculiar folds before separating into the bronchial tubes. A plate shows two forms in which the trachea of *M. keraudreni* is found.

PELZELN, AUGUST VON. On some Birds from Spanish Guiana collected by Herr Müntzberg. Ibis, 1875, pp. 329–332.

A short list of birds supposed to have been collected between the Upper Rio Negro, the Orinoco, and the adjacent parts of New Granada. [*Cypselidæ*, *Troglodytidæ*, *Scolopacidæ*.]

——. Notiz über *Myiagra caledonica*, Bonap. J. f. O. 1875, pp. 50–52. [*Muscicapidæ*.]

——. Africa-Indien. Darstellung der Beziehungen zwischen der africanischen und indo-malayischen Vogel-Fauna, nebst allgemeineren Betrachtungen über die geographische Verbreitung der Säugethiere. Verh. z.-b. Wien, xxv. p. 33.

After quotations from authors who have spoken of the probability of the former continent between India and Africa (Sclater's "Lemuria"), the author gives lists of the groups and species of birds which indicate a relationship between the Avifaunas of Africa and Madagascar on the one hand, and those of India, the Malayan Archipelago, and Australia on the other, so as to show more exactly what the present amount of this relationship is in the class of Birds. Turning now to Mammals, which have the advantage of the extinct forms being better known, he discusses many general points in their distribution, particularly those bearing upon the same question, *i.e.*, the relationship of Africa, Madagascar, and India. He comes to the conclusion finally, that the ordinary six geographical regions proposed by Sclater should be modified as follows:—

1. Arctic, = Palæarctic and Nearctic of Sclater.
2. Tropical-American, = Neotropical of Sclater.
3. Australian.
4. Æthiopian.
5. Hindoo, *i.e.*, Indian Peninsula and Ceylon.
6. Malayan, in which he would include Madagascar and the Mascarenes.

Perrin, J. Beswick. On the Myology of *Opisthocomus cristatus*. Tr. Z. S. ix. 353–370, pls. lxiii.–lxvi.

This paper is chiefly descriptive of the muscles of *Opisthocomus*, those of the limbs and tail being exhibited on the plates, which contain also a drawing showing the peculiarity of the crop in this bird, and two outlines illustrating the pterylography.

Pouget, —. Note sur le Kagou. Bull. Soc. Acclim. (3) ii. pp. 162–171.

Describes the habits of *Rhinochetus jubatus*.

Pralle, —. Ornithologische Notizen. J. f. O. 1875, pp. 415–416.

Notes on some 6 or 8 birds, of no special interest.

Quépat, Nérée. Monographie du Cini (*Fringilla serinus*, Linné). Paris: 1875, 8vo, pp. 59, 2 pls.

Ramsay, E. P. Notes on the original Specimen of *Ptilonorhynchus rawnsleyi*. P. Z. S. 1875, p. 69.

The author considers this supposed species to be a hybrid between *Sericulus chrysocephalus* and *Ptilonorhynchus holosericeus*, his observations being based upon an examination of the original specimen.

——. Descriptions of some rare Eggs of Australian Birds. *Tom. cit.* pp. 112–114. [*Paradiseidæ*, *Caprimulgidæ*.]

——. List of Birds met with in North-Eastern Queensland, chiefly at Rockingham Bay. *Tom. cit.* pp. 578–603.

This list includes notes on 173 species, two of which are described as new. [*Muscicapidæ*, *Paradiseidæ*.]

——. Description of the Eggs and Young of *Rallina tricolor*, from Rockingham Bay, Queensland. *Tom. cit.* pp. 603 & 604.

——. Description of a new species of *Ptilotis*, from Endeavour River, with some Remarks on the Natural History of the East Coast Range, near Rockingham Bay. P. Linn. Soc. N. S. W. i. pp. 9–12. [*Meliphagidæ*.]

Ramsay, Robert Wardlaw. Ornithological Notes from the District of Karen-nee, Burmah. Ibis, 1875, pp. 348–353.

An interesting account of the birds seen during a short expedition into this almost unexplored district of Burmah. The collection has been examined by Lord Walden, who has added foot-notes respecting several species mentioned in this article.

Reichenow, Anton. Zur Vogelfauna Westafrika's. Ergebnisse einer Reise nach Guinea. J. f. O. 1875, pp. 1–50.

Contains the concluding portion of the paper commenced in 1874.

[*Cf.* Zool. Rec. 1874, p. 27.] Notes are appended under the heads of nearly all the species mentioned. The paper is thus an important contribution to the ornithology of West Africa.

Reinhardt, J. Om Ellekragens Forekomst her i Landet. Vid. Medd. 1874–75, pp. 113–120.

Contains an account of the occurrence of *Coracias garrula* in Denmark. [*Coraciidæ*.]

——. Notiser til Grönlands Ornithologie. *Tom. cit.* pp. 179–189.

Records, with observations on the species, several additions to the Avifauna of Greenland.

Rey, E. Beschreibung einiger Indischer Vogeleier. J. f. O. 1875, pp. 285–292.

The eggs of 44 species of Indian birds are described, none of them of any special interest.

Ridgway, Robert. Note on *Sterna longipennis*, Nordmann. Am. Nat. ix. pp. 54 & 55.

Describes a specimen of this species, sent for comparison with the author's *S. portlandica* by O. Finsch. The result shows that *S. longipennis* is closely allied to *S. hirundo* and *S. macrura*, but distinct from both *S. portlandica* and *S. pikii*.

——. Description of a New Wren from Eastern Florida. *Tom. cit.* pp. 469 & 470. [*Troglodytidæ*.]

——. A Monograph of the Genus *Leucosticte*, Swainson, or Gray-Crowned Purple Finches. Bull. U. S. Geol. Surv. (2) i. pp. 51–82.

Very complete, so far as America is concerned. The Bibliography, Distribution, &c., of the genus and its members are given at length, the materials at the author's disposal for compiling it being very extensive. [*Fringillidæ*.]

——. Outlines of a Natural Arrangement of the *Falconidæ*. Tom. cit. pp. 225–231, 8 pls.

Professor Huxley's arrangement of the Birds of Prey is adopted, after due consideration. The basis of the classification here sketched out is shown in a tabular form, and the points relied upon are placed in the order of their importance. The *Falconidæ* are divided into two groups, *Falconinæ* and *Buteoninæ*, the relative positions of the scapular process of the coracoid and the clavicle with other characters defining these groups. The *Falconinæ* (the only section discussed in this paper) contain *Falcones*, *Polybori*, *Micrastures*, and *Herpetotheres*, and their respective characters are drawn out. Lastly, the genera of *Polybori* are defined. 8 plates give drawings in outline of the chief characters relied on in this paper.

——. List of Birds observed at various Localities contiguous to the Central Pacific Railroad, from Sacramento City, California, to Salt Lake Valley, Utah. Bull. Ess. Inst. vi. 1874, pp. 169–174; vii. 1875, pp. 10–40.

The notes in this list are based upon the observations made during

1867, 1868, and 1869, by the officers of the U. S. Geological Exploration of the 40th Parallel in charge of Mr. Clarence King. The paper is an abstract of that part of the Zoological Report of the Survey relating to the character and distribution of the local faunas observed along the route of exploration, the Report itself being in the press. After giving an outline of the routes traversed by the expedition, and a classified list of the localities where the collections were made, the paper is divided into a number of sections, in which the birds occurring or breeding at each station are enumerated. It also contains much information of local interest. It must be remarked, that in many instances the author uses a trinomial system, without the qualifying 'var.' usual with American ornithologists.

Ridgway, Robert. On *Nisus cooperi* (Bonaparte), and *N. gundlachi* (Lawrence). P. Ac. Philad. 1875, pp. 78–88.

——. On the Buteonine Sub-genus *Craxirex*, Gould. *Tom. cit.* pp. 89–119.

The author divides the genus *Buteo* into two sub-genera, *Buteo* proper, and *Craxirex*, Gould. His observations apply solely to the American members of the latter group, which is distinguished from the former by having only the three outer primaries narrowed at their extremities, instead of four, as is the case in the former. Six American species of *Craxirex* are recognized, and their characters, synonymy, and distribution given. Some of the descriptions are taken from Sharpe's Catalogue of *Accipitres*.

——. Studies of the American *Falconidæ*. Monograph of the Genus *Micrastur*. Tom. cit. pp. 470–502.

A very complete monograph of this genus, the difficulties of which, several ornithologists have during the past few years endeavoured to clear up. The author reviews the labours of his predecessors, and explains his reasons for dissenting from some of their conclusions. 7 species are recognized, one of which is described as new. [*Falconidæ*.]

Rivière, É. Faune quaternaire des cavernes des Baousse-Roussé, en Italie, dites grottes de Menton. C. R. lxxxi. pp. 346–348.

A number of birds' bones belonging to the Orders *Accipitres*, *Passeres*, *Columbæ*, *Gallinæ*, and *Anseres* are mentioned as having been found in these caves.

Rosenberg, C. B. H. von. Reistochten naar de Geelvinkbaai op Nieuw Guinea in de Jaren 1869 en 1870. s'Gravenhage : 1875, 4to, pp. 153.

In this posthumous work, the author has given an account of his travels in the islands of Geelvink Bay, and in the north-western part of New Guinea. The birds collected by him were sometime ago described by Dr. Schlegel (to whom he transmitted his specimens), in his "Observations Zoologiques." These descriptions are here reproduced, and reduced figures of several of the species are given.

Rowley, George Dawson. Ornithological Miscellany. 4to. London and Brighton: 1875, parts i. January, ii. August, plates.

A new periodical, illustrated with admirable plates, which all will welcome. The parts are not to appear at any stated intervals. In those issued last year, all the papers are from Mr. Rowley's pen. In others that have since been published, memoirs by various ornithologists have been inserted, and Mr. Rowley acts the part of Editor, at the same time contributing largely to the pages of his own journal. [*Apterygidæ*, *Psittacidæ*, *Strigidæ*, *Rallidæ*.]

Sachse, C. Ornithologische Notizen vom Westerwalde. J. f. O. 1875, pp. 417–428.

Salvadori, Tommaso. Intorno al Genere *Machærirhynchus*, Gould. Atti Acc. Tor. x. pp. 369–379.

A monograph of the four species comprising this genus, their distribution, synonymy, &c., being given, as well as a description of all the species.

——. Intorno allo *Orthonyx spinicaudus*, Temm. *Tom. cit.* pp. 632–634.

Shows that *Orthonyx temminckii*, Vig. & Horsf., is a prior title for this bird.

——. Nuove specie di uccelli delle Isole Aru e Kei raccolte da Odoardo Beccari. Ann. Mus. Genov. vi. (1874) pp. 73–80. [*Psittacidæ*, *Campephagidæ*, *Nectariniidæ*, *Meliphagidæ*, *Sylviidæ*.]

——. Altre nuove specie di uccelli della Nuova Guinea e di Goram raccolte dal Signor L. M. D'Albertis. *Tom. cit.* pp. 81–88. [*Cuculidæ*, *Muscicapidæ*, *Laniidæ*, *Nectariniidæ*, *Ploceidæ*, *Columbæ*.]

——. Altre nuove specie di uccelli raccolte nella Nuova Guinea dal Signor L. M. D'Albertis e nelle Isole Aru e Kei dal Dott. O. Beccari. *Tom. cit.* pp. 308–314. [*Strigidæ*, *Muscicapidæ*.]

——. Intorno a due collezioni di uccelli di Celebes inviate al Museo Civico di Genova dal Dr. O. Beccari e dal Sig. A. A. Bruijn. *Op. cit.* vii. pp. 641–681, pl. xviii.

Lord Walden's paper on the Birds of Celebes (Tr. Z. S. viii. p. 23, *et seq.*) is chiefly referred to in this list. Some alterations are made in the determination of the species, some new species are described, and notes given on most of those mentioned, 85 in number. [*Cuculidæ*, *Alcedinidæ*, *Artamidæ*, *Nectariniidæ*, *Sylviidæ*, *Corvidæ*, *Columbæ*, *Turnicidæ*.]

——. Descrizione dell' *Harpyopsis novæ-guineæ*, nuovo genere e nuova specie di rapace della sottofamiglia degli Accipitrini, raccolta dal Sig. L. M. D'Albertis nella Nuova Guinea. *Tom. cit.* pp. 682 & 683. [*Accipitres*.]

——. Catalogo di una collezione di uccelli del gruppo di Halmahera e di varie località della Papuasia, inviati in dono al Museo Civico di Genova dal Sig. A. A. Bruijn. *Tom. cit.* pp. 749–796 (plates).

In this catalogue of 158 species of birds, several species are described

as new, and some genera. Notes accompany the names of most of the birds mentioned. [*Accipitres*, *Psittacidæ*, *Muscicapidæ*, *Laniidæ*, *Meliphagidæ*, *Columbæ*, *Rallidæ*.]

SALVADORI, TOMMASO. Descrizione di cinquantotto nuove specie di uccelli, ed osservazioni intorno ad altre poco note, della Nuova Guinea e di altre Isole Papuane, raccolte dal Dr. Odoardo Beccari e dai cacciatori del Sig. A. A. Bruijn. Ann. Mus. Genov. vii. pp. 896–976.

Besides the new species described in this paper, 5 [4 *Meliphagidæ*, 1 *Timeliidæ*] new genera are characterized, and 1 [*Rallidæ*] suggested. Many other species, besides the new ones, are mentioned and notes given respecting them. [*Accipitres*, *Strigidæ*, *Psittacidæ*, *Cuculidæ*, *Podargidæ*, *Caprimulgidæ*, *Muscicapidæ*, *Campephagidæ*, *Laniidæ*, *Nectariniidæ*, *Meliphagidæ*, *Sylviidæ*, *Timeliidæ*, *Eupetidæ*, *Paradiseidæ*, *Columbæ*, *Rallidæ*.]

——. Descrizione di sei nuove specie di Uccelli delle Molucche, delle Kei e delle Aru, e del maschio della *Pachycephala lineolata*, Wall. *Tom. cit.* pp. 983–990. [*Accipitres*, *Psittacidæ*, *Cuculidæ*, *Muscicapidæ*, *Nectariniidæ*, *Sylviidæ*, *Laniidæ*.]

——. Descrizione di due nuove specie di Uccelli del Capo York. *Tom. cit.* pp. 991 & 992.

A new species of *Monarcha* is described [*Muscicapidæ*].

——. & D'ALBERTIS, L. M. Catalogo di una collezione di uccelli dell' Isola Yule e della vicina costa meridionale della penisola orientale della Nuova Guinea, raccolti da L. M. D'Albertis. *Tom. cit.* pp. 797–839.

A new genus of Hawk is described in this paper, and nine new species of birds. The whole collection sent by D'Albertis contained 85 species, notes of all of which are given in this paper. [*Accipitres*, *Strigidæ*, *Psittacidæ*, *Caprimulgidæ*, *Laniidæ*, *Sylviidæ*, *Paradiseidæ*, *Columbæ*.]

SALVIN, OSBERT. Additional notes on the Birds of the Island of Mas-afuera and Juan Fernandez. Ibis, 1875, pp. 370–377.

A collection of skins from Mas-afuera, containing two new species, furnishes further information respecting the birds of the Juan Fernandez group, and raises to 17 the total number of birds now known to inhabit these islands. A list of their names is given. [*Falconidæ*, *Procellariidæ*.]

——. Abstract of a Memoir on the Avifauna of the Galapagos Archipelago. P. Z. S. 1875, pp. 269–272.

SAUNDERS, HOWARD. On the Immature Plumage of *Rhodostethia rosea*. Ibis, 1875, pp. 484–487.

——. Exhibition of a Gull obtained by Mr. Gervaise Mathew, R.N., at Magdalena Bay, Lower California. P. Z. S. 1875, p. 158.

Records the occurrence on the coast of California of a Gull allied to, if not identical with, *Larus fuscus*.

Schalow, Herman. Monographische Beiträge zur Kenntniss des Genus *Otomela*, Bp. J. f. O. 1875, pp. 129–151.

Of this sub-genus of *Lanius*, 9 species are recognized, and the author's views respecting their intricate synonymy given at length.

Sclater, P. L. Synopsis of the Species of the sub-family *Diglossinæ*. Ibis, 1875, pp. 204–221.

A complete monograph of this sub-family of the *Cœrebidæ*, which comprises 15 species classed in two sections.

——. On *Turdus javanicus* of Horsfield, and its allied form *Turdus schlegeli*. Tom. cit. pp. 344–347.

——. Remarks on the species of the Tanagrine Genus *Chlorochrysa*. Tom. cit. pp. 464–467.

A monographic review of the three known species of this genus.

——. On the Curassows now or lately living in the Society's Gardens. Tr. Z. S. ix. pp. 273–288, pls. xl.–liii.

Seven certain, and three doubtful, species of *Crax*, one of *Nothocrax*, two of *Mitua*, and one of *Pauxis*, are recognized in this paper, and most of them figured. The synonymy and account of the distribution are mainly derived from Sclater & Salvin's Paper on *Cracidæ* (P. Z. S. 1870, p. 504), such additions and corrections as have since come to light being incorporated into the present memoir. One species of doubtful origin is described as new.

——. On some rare Parrots living in the Society's Gardens. P. Z. S. 1875, pp. 59–62. [*Psittacidæ*.]

——. Further Remarks on the Cassowaries living in the Society's Gardens, and on other Species of the Genus *Casuarius*. Tom. cit. pp. 84–87.

Nine species of Cassowaries are recognized in this paper, whereof two are described as new. [*Casuariidæ*.]

——. Report on the Additions to the Society's Menagerie in February, 1875. *Tom. cit.* p. 156, pl. xxvi.

Contains a note on, and figure of, *Chrysotis xantholora*, Gray.

——. Remarks on the Objects seen during a Visit recently made to the Zoological Gardens, in Rotterdam, the Hague, Amsterdam, Antwerp, and Ghent. *Tom. cit.* p. 379.

A young example of *Casuarius westermanni* was seen at Rotterdam, and at Amsterdam, living specimens of *Euplocamus vieilloti*, *E. nobilis*, and *E. pyronotus*. Also a specimen of a *Goura* believed to be distinct from both *G. coronata* and *G. victoriæ* (afterwards described by Dr. Finsch as *G. scheepmakeri*; P. Z. S. 1875, p. 631, pl. lxxiii.).

——. Exhibition of, and Remarks on, the typical Specimen of *Centropsar mirus*. Tom. cit. p. 380. [*Icteridæ*.]

Sclater, P. L. Remarks on the Female Plumage of *Pauxis galeata*. P. Z. S. 1875, p. 566.

Quotes Funk's opinion that the normal female of *Pauxis galeata* is represented in Tr. Z. S. ix. pl. liii. The specimens of this sex coloured like the male, are considered abnormal.

—— & Salvin, Osbert. Descriptions of some new species of South American Birds. *Tom. cit.* pp. 37–39. [*Troglodytidæ*, *Dendrocolaptidæ*, *Ardeidæ*.]

——. On Venezuelan Birds collected by Mr. A. Goering. Part v *Tom. cit.* pp. 234–238.

Mr. Goering having returned to Europe, this paper concludes the series on his collections of birds. A complete list of the birds obtained in the district of Merida, is given, and also one of another collection obtained at San Cristoval, on the frontiers of Columbia.

——. Description of two new species of Birds from the State of Antioquia, U.S.C. *Tom. cit.* pp. 541 & 542. [*Turdidæ*, *Dendrocolaptidæ*.]

Scully, J. *Phasianus shawi* and *P. insignis*, Elliot. Str. Feath. 1875, pp. 433–436.

Having examined a number of these birds, both alive and as skins, the author comes to the conclusion that there is only one species of pheasant in Yarkand, for which he selects the name *P. shawi*, Elliot.

Seebohm, H. Exhibition of some rare and interesting Birds and Eggs from the Petchora River, North-Eastern Russia. P. Z. S. 1875, p. 566.

The most noticeable amongst the rare eggs exhibited were those of *Tringa minuta*, *Squatarola helvetica*, and *Cygnus bewicki*.

Severtzoff, N. Notes on some new Central Asiatic Birds. Ibis, 1875, pp. 487–494. [*Picidæ*, *Caprimulgidæ*, *Phasianidæ*.]

——. Notes on Central Asiatic Birds. Str. Feath. 1875, pp. 420–431.

Contains notes on and corrections of the author's published work on Turkestan birds. They are 79 in number, but are too minute in their details to be noticed at length in this Record.

——. Allgemeine Uebersicht der aralo-tianschanischen Ornis in ihrer horizontalen und verticalen Verbreitung; mit Originalzusätzen und Berichtigungen des Verfassers. J. f. O. 1875, pp. 58–114, 168–190. [Zool. Rec. xi. p. 26.]

——. Zusätze und Berichtigungen zur allgemeinen Uebersicht der aralo-tianschanischen Ornis. J. f. O. 1875, pp. 190–200.

Contains some additional notes to certain birds mentioned in the previous paper. [*Corvidæ*, *Oriolidæ*, *Alaudidæ*, *Columbidæ*, *Podicipidæ*.]

Sharpe, R. Bowdler. Catalogue of the Birds in the British Museum. II. Catalogue of the *Striges* or Nocturnal Birds of Prey in the

Collection of the British Museum. London: 1875, 8vo, pp. 325, 14 pls.

In this volume, the author gives a catalogue of the species of Owls at present known, drawn out in the same form as his previous volume on the *Accipitres*; each species is described, and its range and synonyms given, as well as a list of the specimens contained in the British Museum. At the commencement, a scheme of classification is drawn out, and the characters of the families, subfamilies, and genera given in the form of tabular "keys." A good index makes the work easy for reference, and the 14 plates, on which 21 species are figured, add much to its completeness.

SHARPE, R. BOWDLER. The Zoology of the Voyage of H.M.S. Erebus and Terror, &c. i. Birds. Appendix. London: 1875, 4to, pp. 21–39, pls. i. vii. xx.* xxvii. xxix.–xxxii.

The first portion of the Birds of this Voyage, by G. R. Gray, was published in 1846. The above supplement contains a revision of the Birds of New Zealand, with references to the most recent authors.

——. Contributions to a History of the *Accipitres*. The genus *Glaucidium*. Ibis, 1875, pp. 35–59.

Discusses the nomenclature of this genus, with special reference to Mr. Ridgway's article in P. Bost. Soc. 1873. Nine American species are recognized, two being described as new. [*Strigidæ*.]

——. Contribution to a History of the *Accipitres*. Notes on Birds of Prey in the Museum at the Jardin des Plantes and in the Collection of Mons. A. Bouvier. *Tom. cit.* pp. 253–261. [*Falconidæ*, *Strigidæ*.]

——. Contributions to a History of the *Accipitres*. The Genus *Strix* of Linnæus and its type. *Tom. cit.* pp. 324–328.

The author holds that no type-species had been assigned to the Linnæan genus *Strix*, until Savigny, in 1809, recast the genera of Owls and fixed upon *Strix flammea* as the type—*Strix aluco* of Linnæus being the type of Savigny's genus *Syrnium*. [But see Prof. Newton on this subject, Ibis, 1876, p. 94 *et seq.*]

——. Description of an apparently new species of Teal from Kerguelen's Island. *Tom. cit.* 1875, p. 328. [*Anatidæ*.]

——. Contributions to the Ornithology of Madagascar. Part IV. P. Z. S. 1875, pp. 70–78.

Several remarkable birds are described in this paper. [*Accipitres*, *Coraciidæ*, *Nectariniidæ*.]

——. On a Collection of Birds from Labuan. *Tom. cit.* pp. 99–111.

——. Contributions to a History of the *Accipitres*, or Birds of Prey. Notes on the rarer *Accipitres* of Australia. *Tom. cit.* pp. 337–339. [*Falconidæ*.]

——. Note on *Cossypha pyrrhopygia*, Hartlaub. Ann. N. H. (4) xvi. p. 236. [*Sylviidæ*.]

SHARPE, R. BOWDLER. Notes on *Cerchneis vespertina* and *C. amurensis*. Str. Feath. 1875, p. 303.

Gives the differential characters of these species in all stages of plumage.

——. Note on the genus *Dendrophila*. Tom. cit. p. 436.

Three species are recognized and their distribution given.

——. [See LAYARD, E. L.]

SHELLEY, G. E. Three months on the Coast of South Africa. Ibis, 1875, pp. 59–87.

Gives an account of a short expedition to the neighbourhood of Cape Town and Natal, and notes on 150 birds collected or observed during the time.

——. A few Stray Notes on African Birds. *Tom. cit.* pp. 379–383. [*Caprimulgidæ*, *Nectariniidæ*, *Sylviidæ*, *Charadriidæ*.]

SORBY, H. C. On the Colouring-matters of the Shells of Birds' Eggs. P. Z. S. 1875, pp. 351–365.

Spectrum analysis was employed in investigating the colouring matter of birds' eggs, and the presence of several different substances traced, and names given to them. The author considers that all the varied tints of birds' eggs are due to mixtures of a limited number of colouring matters having well-defined specific characters. Apparently (except in one particular case), there is no intimate connection between the organization of the birds and the colouring-matter secreted, and there is a probability that these substances are naturally formed only during the development of the eggs of birds, giving rise to important questions in relation to comparative physiology.

STEJNEGER, LEONH. Ornithologisches aus Norwegen. J. f. O. 1875, p. 167.

Records the occurrence of *Motacilla flava*, *Upupa epops*, *Pagophila eburnea*, and *Puffinus major* in Norway.

STÖLKER, CARL. Ueber Schnabelmissbildungen. Ber. St. Gal. Ges. 1873–74, pp. 453–480, 2 plates.

Treats of the malformation and abnormal growth of the bill in many species of birds.

STOLICZKA, FERDINAND. The Avifauna of Kashgar in Winter. Str. Feath. 1875, pp. 215–220.

An unfinished letter, and the last written by the author, giving a brief summary of the birds he observed during the winter in Kashgar. The names of the species are in many cases supplied by A. O. Hume.

SWINHOE, R. Ornithological Notes made at Chefoo (Province of Shantung, North China). Ibis, 1875, pp. 114–140.

The conclusion of the paper on this subject, commenced in the Ibis for 1874. The whole number of species treated of is 104. [*Rallidæ*.]

SWINHOE, R. On the Contents of a Second Box of Birds from Hakodadi, in Northern Japan. *Tom. cit.* pp. 447–458. [*Motacillidæ*, *Scolopacidæ*.]

TACZANOWSKI, L. Description d'une nouvelle espèce de Coq de bruyère. P. Z. S. 1875, pp. 266–269, figs. 1–4.

A remarkable new species of Black Grouse from the Caucasus is described in this paper under the name of *Tetrao mlokosiewiczi*.

——. Briefliches über zwei fragliche sibirische Vögel. J. f. O. 1875, pp. 151 & 152.

Treats of a bird from Dauria, referred with doubt to *Aquila pennata*, and to a species of *Anthus*, also from Dauria, compared with *A. campestris*, but not named.

——. Verzeichniss der Vögel, welche durch die Herren Dybowski und Godlewski an der Ussurimündung gesammelt wurden. *Tom. cit.* pp. 241–257.

Upwards of 100 species are mentioned in this list and references are given to Dybowski's paper in J. f. O. for 1872 [*cf.* Zool. Rec. x. p. 28], and to Swinhoe's articles on Chinese birds in P. Z. S. 1870 & 1871, as well as to the standard works on this region, by Von Schrenk & Radde.

THIENEMANN, W. Weitere Beobachtungen über den neuen Brutvogel Thüringens, die Zwergtrappe (*Otis tetrax*). Zool. Gart. 1875, p. 363.

TOBIAS, ROBERT. Ornithologische Berichtigungen und Notizen. J. f. O. 1875, pp. 105–110.

Contains a few notes on European birds.

TSCHUSI-SCHMIDHOFEN, VICTOR VON. Ornithologische Mittheilungen aus Oesterreich. (1874.) *Tom. cit.* pp. 408–413.

——. Eine Waldschnepfe (*Scolopax rusticola*), die ihre Jungen davonträgt. *Tom. cit.* p. 413.

——. Ein zweites, wahrscheinlich gleichfalls hermaphroditisches Exemplar von *Pyrrhula vulgaris*. Ibid.

Short notes on 19 species of birds observed in different parts of Austria. Also a note on an "hermaphrodite" *Pyrrhula vulgaris*, and one on a Woodcock carrying its young.

——. Die Vögel Salzburgs. Zool. Gart. 1875, pp. 228–236, 309–312, 345–349, 385–390, 421–430, 457–461.

A useful list, comprising the names of 223 species of birds found in the neighbourhood of Salzburg, references being given to all the local literature on the subject.

…GEL, GEORG. Der Zaunammer (*Emberiza cirlus*, L.) bei Zürich beobachtet. Ber. St. Gal. Ges. 1873–74, pp. 434–452.

WALDEN [ARTHUR HAY], VISCOUNT. Notes on Birds from Burmah. Ibis, 1875, pp. 458–463.

WALDEN [ARTHUR HAY], VISCOUNT. A List of the Birds known to inhabit the Philippine Archipelago. Tr. Z. S. ix. pp. 125–252, pls. xxiii.–xxxiv.

In this memoir, a complete account is given of the state of our knowledge of the birds inhabiting the Philippine Archipelago acquired since the days of Brisson and Sonnerat. The total number of species only reaches 219, a small number when compared with the riches of some of the adjoining districts. This poverty of species is accounted for by the fact of these islands being as it were a border land, linking the Indian and Papuan regions, but in which the diminution of Indian types is not compensated for by the number of Papuan forms found there. These views are carefully worked out by tables showing the distribution of the genera found in the Philippines, and with respect to the adjoining lands. As the birds of this archipelago have received attention from ornithologists from early times, the nomenclature of the species is of an intricate nature. One of the chief features of this very important memoir is the full and careful way in which the synonymy of the species is unravelled, and the literature respecting them analyzed.

——. Description of a new Species of Pigeon from the Karen Hills. Ann. N. H. (4) xvi. p. 228. [*Columbidæ*.]

——. Description of some undescribed Species of Birds discovered by Lieut. Wardlaw Ramsey in Burmah. Ann. N. H. (4) xv. pp. 400–403. [*Capitonidæ*, *Nectariniidæ*, *Pycnonotidæ*, *Timeliidæ*.]

——. [See BLYTH, E.]

WHITMEE, S. J. List of Samoan Birds, with Notes on their Habits, &c. Ibis, 1865, pp. 436–447.

An instructive account of Samoan birds, with notes on their habits, their native names, and other points of interest. This list of land birds includes 29 species. The names of ten others, as yet unobserved by the author, are given on the authority of other writers.

——. On a change in the Habits of the *Didunculus strigirostris*. P. Z. S. 1875, p. 495.

WICKHAM, H. A. Letter from, respecting the Range of the large Hyacinth-macaw. *Tom. cit.* p. 633.

WOOD-MASON, JAMES. On the occurrence of a superorbital chain of Bones in the *Arboricolæ* (Wood Partridges). Ann. N. H. (4) xvi. p. 145.

Extracted from J. A. S. B. (n.s.) xliii. pt. 2 [1874].

YARROW, H. C., & HENSHAW, H. W. Report upon Ornithological Specimens collected in 1871–73; Lieut. Geo. M. Wheeler, Corps of Engineers, in charge. Washington: 1874, 8vo, pp. 148.

In this report, a list of the species collected during Lieut. Wheeler's expedition is given, together with notes on their habits and the

localities where they were found. The report contains the following papers:—

1. Report upon and List of Birds collected by the Expedition for Exploration west of the one hundredth meridian in 1872, Lieut. G. M. Wheeler, Corps of Engineers, in charge, pp. 5–33. Relates to Birds of Utah and Nevada.

2. List of Birds collected by Lieut. G. M. Wheeler's Expedition, 1871, pp. 34–38. Nearly all the specimens catalogued in this list were obtained by Mr. Bischoff in Nevada and Arizona.

3. An Annotated List of the Birds of Utah, by W. H. Henshaw, reprinted with a few alterations from Ann. Lyc. N. York, xi. (1874). 214 species are mentioned.

4. Report upon and List of Birds collected by the Expedition for Geographical and Geological Explorations and Surveys west of the one hundredth meridian in 1873, Lieut. G. M. Wheeler, Corps of Engineers, in charge, by W. H. Henshaw, pp. 55–148. This list, which is divided into three parts, contains mention of many scarce N. American species, and is a very important contribution to the knowledge of N. American Ornithology; one Mexican Humming-bird (*Eugenes fulgens*) is added to the fauna.

ACCIPITRES.*

Vulturidæ.

Gyps hispaniolensis, Sharpe, (Zool. Rec. xi. p. 41) = *G. occidentalis*, Brehm; J. H. Gurney, Ibis, 1875, p. 87.

Neophron percnopterus occurs at Aden; A. Anderson, P. Z. S. 1875, p. 17.

Cathartidæ.

Rhinogryphus pernigra, Sharpe (Zool. Rec. xi. p. 41), doubtfully distinct from *R. urubitinga*; J. H. Gurney, Ibis, 1875, p. 93.

Sarcorhamphus gryphus. The propriety of separating the Condor into three races, *S. gryphus*, *S. magellanicus*, and *S. æquatorialis*, as proposed by Sharpe, is questioned; *id. tom. cit.* pp. 91–93.

Falconidæ.

Outlines of a classification of *Falconidæ*; R. Ridgway, Bull. U. S. Geol. & Geogr. Surv. (2) i. p. 225.

Accipiter. Notes on most of the species; J. H. Gurney, Ibis, 1875, p. 468 *et seq.*

Accipiter nisus figured; G. D. Rowley, Orn. Misc. pt. ii. pl. x. *A. ovampensis*, sp. n., J. H. Gurney, Ibis, 1875, p. 367, pl. vi. Damaraland.

* The arrangement of the Families is that of former Records, but the genera are placed in alphabetical order under their respective families.—O. S.

A. virgatus and *Micronisus badius*; their differences defined, A. Anderson, P. Z. S. 1875, p. 19.

Antenor, Ridgw. (= *Urotriorchis*, Sharpe). Note on the position of the genus; J. H. Gurney, Ibis, 1875, p. 234.

Aquila albipectus, Severtz., = *A. pennata*, H. E. Dresser, Ibis, 1875, p. 101; *A. bœcki*, E. v. Homeyer; *A. clanga*, Pall.; *A. fulviventris*, Brehm; *A. hastata*, Less.; *A. nævia*, Gm.; *A. orientalis*, Cab.; and *A. vindhiana*, Frankl.: notes on all these species. E. v. Homeyer, J. f. O. 1875, pp. 156–165. *A. culleni*, sp. n., C. R. Bree, B. Eur. 2nd ed. i. p. 89, Turkey. *A. hastata*, breeding in the Saharunpore district, India, A. Anderson, Ibis, 1875, p. 199; described and figured, A. Anderson, P. Z. S. 1875, p. 21, pl. iii. *A. minuta*, Severtz., = *A. pennata*, H. E. Dresser, Ibis, 1875, p. 102. *A. mogilnik*, *A. bifasciata*, *A. nævia*, *A. vindhiana*, *A. fulvescens*, and *A. pennata*, their characters described, A. Anderson, P. Z. S. 1875, pp. 20–24. *A. pennata* figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Archibuteo lagopus figured; H. E. Dresser, B. Eur. pt. xlvi.

Astur. Notes on the species and races of this genus; J. H. Gurney, Ibis, 1875, p. 353.

Astur, sp. ?. An undetermined species allied to, and perhaps the young of *A. griseogularis*, Gray, described; T. Salvadori, Ann. Mus. Genov. vii. p. 751, Dorey, New Guinea.

Astur badius captured in 1868 in Aude, also figured; A. Lacroix, Bull. Soc. Toulouse, ix. p. 78, pl. *A. macroscelides*, Hartl., from Gaboon, = *Accipiter castanilius*, Bp. (*Micrastur castanilius*, Sharpe), a species hitherto erroneously supposed to be from Columbia in South America; J. H. Gurney, Ibis, 1875, p. 363. *A. palumbarius* figured; H. E. Dresser, B. Eur. pts. xli. & xlii. *A. tibialis*, Verr., = *Sclospizias unduliventer* (Rüpp.); J. H. Gurney, Ibis, 1875, p. 362.

Baza incognita, a name suggested for two specimens of *Baza* from Sikhim and Tenasserim should they belong to a species distinct from *B. sumatrensis*, Lafr., to which they are at present referred; A. O. Hume, Str. Feath. 1875, p. 313.

Buteo (*Craxirex*) *albicaudatus*, *B. erythronotus*, *B. galapagensis*, *B. pennsylvanicus*, *B. poliosomus*, and *B. swainsoni* described, with synonyms and references; R. Ridgway, P. Ac. Philad. 1875, p. 98. *B. burmanicus* is a name suggested for a small *Buteo* from Thayetmyo, in case it should prove to be distinct from *B. japonicus*, Schl.; A. O. Hume, Str. Feath. 1875, p. 30. *B. desertorum* figured; H. E. Dresser, B. Eur. pt. xxxvii. *B. exsul*, sp. n., O. Salvin, Ibis, 1875, p. 371, Masafuera Island, Coast of Chili. *B. ferox* figured; H. E. Dresser, B. Eur. pt. xxxviii. *B. nigricans*, *B. rufinus*, and *B. leucurus* of Severtzoff's work = *B. ferox* (Gm.); *id.*, Ibis, 1875, p. 103. *B. vulgaris* figured; *id.*, B. Eur. pt. xxxix.

Cerchneis naumanni. Note on "Sylvan," the work where the fir[illegible] description of the Lesser Kestrel appeared under this name, to the effec[illegible] that, this work and Naumann's Naturg.-deutschl. having appeared about the same time, the best name to use for this hawk is that employed by Naumann, *Falco* sive *Tinnunculus cenchris*; H. E. Dresser, Ibis, 1875, p. 515. *C. vespertina* and *C. amurensis*, their differences in all stages of

plumage; R. B. Sharpe, Str. Feath. 1875, p. 303. *C. zoniventris* sent, from Madagascar; *id.*, P. Z. S. 1875, p. 74.

Circaetus gallicus figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi. *B. orientalis*, Brehm, = *C. gallicus*; id., Ibis, 1875, p. 102.

Circus assimilis, Gould, New Zealand, should be called *C. approximans* Peale; O. Finsch, Tr. N. Z. Inst. vii. p. 226. *C. macroscelis* described, but believed to be the same as *C. maillardi*, Sharpe, P. Z. S. 1875, p. 71; = *C. maillardi*, id., Ibis, 1875, p. 254. The two species compared; J. H. Gurney, Ibis, 1875, p. 228. *C. melanoleucus*, its immature stages described; *id. tom. cit.* p. 225. *C. spilothorax*, sp. n., T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 807, Yule Island, New Guinea. *C. wolfi* is distinct from *C. gouldi*; J. H. Gurney, Ibis, 1875, p. 225.

Elanus cæruleus figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Epervier ——; an undetermined species of Sparrowhawk figured; A. Lacroix, Bull. Soc. Toulouse, vii. (1873) p. 156, pl.

Erythrotriorchis radiatus (Lath.). A skin of a young female described, and the generic name *Erythrotriorchis*, proposed by Gurney, adopted instead of *Urospizias*; R. B. Sharpe, P. Z. S. 1875, p. 337.

Eutriorchis, g. n., allied to *Spilornis* and *Dryotriorchis*. Type, *E. astur*, sp. n.; R. B. Sharpe, P. Z. S. 1875, p. 73, pl. xiii., Madagascar.

Falco æsalon figured; H. E. Dresser, B. Eur. pt. xxxviii. *F. barbarus* at the Cape-Verde Islands; R. B. Sharpe, Ibis, 1875, p. 255. *F. biarmicus*, figured; Layard's B. S. Afr., Sharpe's Ed., pl. ii. (pt. i.). *F. eleonoræ*, observed on the islands of Vacca and Toro; Lord Lilford, Ibis, 1875, p. 28. *F. gyrfalco* figured; H. E. Dresser, B. Eur. pts. xliii. & xliv. *F. labradorus*, three specimens from Labrador described; *id.* P. Z. S. 1875, p. 114. *F. peregrinoides* figured; A. Lacroix, Bull. Soc. Toulouse, vii. [1873] p. 151, pl. *F. sacer*, Forst., and of American authors, = *F. gyrfalco*, L.; H. E. Dresser, P. Z. S. 1875, p. 116. *F. spadiceus*, Forst., = *Circus hudsonicus* (L.), not *Archibuteo sancti-johannis*, as supposed by Ridgway & Sharpe; *id. tom. cit.* p. 117. *F. tscherniaievi*, Severtz., = *F. babylonicus*; id. Ibis, 1875, p. 106.

Geranospizias. Note on the different races of this genus; J. H. Gurney, Ibis, 1875, p. 233.

Gypoictinia melanosterna (Gould). Its position among the *Milvi* confirmed; R. B. Sharpe, P. Z. S. 1875, p. 339.

Haliaetus albicilla. Adult and young figured; H. E. Dresser, B. Eur. pt. xxxvii. Observations on the biliary apparatus; L. Maggi, Rend. Ist. Lomb. (2) viii. pp. 15–20, pl. i.

Harpyopsis, g. n. Type, *H. novæ-guineæ*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 682, Arfak, New Guinea.

Hieracidea. Two species still asserted to inhabit New Zealand; W. Buller, Tr. N. Z. Inst. vii. p. 213, pl. ix.

Limnaetus philippensis, figured; Lord Walden, Tr. Z. S. ix. pl. p. xxiv.

Lophoictinia isura (Gould). A very young bird described; R. B. Sharpe, P. Z. S. 1875, p. 338.

Machærhamphus anderssoni recorded from Madagascar; R. B. Sharpe, P. Z. S. 1875, p. 74.

Megatriorchis, g. n. Type, *M. doriæ*, sp. n.; T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 805, New Guinea.

Melierax. On the colouring of the iris in members of this genus; J. H. Gurney, Ibis, 1875, p. 235.

Micrastur. Notes on some species of this genus; J. H. Gurney, Ibis, 1875, p. 232. *M. melanoleucus*, V., is the name that should be used for the species usually called *M. semitorquatus*, the description accompanying the latter being either erroneous or not applicable to the species; R. Ridgway, P. Ac. Philad. 1875, p. 482. *M. pelzelni*, sp. n., *id. tom. cit.* p. 494, Upper Ucayali, East Peru.

Microhierax sinensis, sp. n., R. B. Sharpe, Ibis, 1875, p. 254, China.

Milvus ictinus figured; H. E. Dresser, B. Eur. pt. xl. *M. palustris*, A. Anderson (J. A. S. B. 1873, p. 142), = *M. govinda*, Sykes; A. Anderson, P. Z. S. 1875, p. 25.

Nisaetus fasciatus figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi. *N. morphnoides* (Gould), a description of the adult bird given; R. B. Sharpe, P. Z. S. 1875, p. 338.

Nisus cooperi and *N. gundlachi*. Their differences pointed out, with full descriptions of all stages of plumage, references, synonomy, and distribution; R. Ridgway, P. Ac. Philad. 1875, p. 78.

Pandion fluviatilis, Severtz., = *P. haliaetus*, H. E. Dresser, Ibis, 1875, p. 102.

Pernis apivorus. Adult and young figured; *id.* B. Eur. pts. xl., xli. & xlii.

Polihierax insignis, Wald., is shown to be an older title than *P. feildeni*, Hume; P. L. Sclater, Str. Feath. 1875, p. 417.

Scelospizias polyzonoides and *S. brevipes*; placed by Sharpe as a "subspecies" of *Astur badius*, considered to be specifically distinct; J. H. Gurney, Ibis, 1875, p. 360. *S. pusillus*, sp. n., *id. tom. cit.* p. 358, Joanna Island.

Urospizias, Kaup, having been applied to *Falco radiatus*, Temm., = *Astur approximans*, Gould, cannot, as proposed by Sharpe, be used as the generic name for *Falco radiatus*, Lath., a totally distinct bird; J. H. Gurney, Ibis, 1875, p. 364. *U. albiventris*, p. 983, Kei Islands, *U. etorques*, p. 901, Salwatti and N. Peninsula of New Guinea, *U. melanochlamys*, p. 905, Mount Arfak, New Guinea, *U. misorensis*, p. 904, Misor, New Guinea, and *U. spilothorax*, p. 900, Mount Arfak and Jobi Island, New Guinea, T. Salvadori, Ann. Mus. Genov. vii.: spp. nn.

Strigidæ.

See Sharpe, R. B., *suprà*, p. 55.

Aluco flammeus, figured; G. D. Rowley, Orn. Misc. pt. ii. pl. xi.

Athene dismorpha, sp. n., T. Salvadori, Ann. Mus. Genov. vi. (1874) p. 308, Sorong, New Guinea.

Bubo maximus, var. *turcomanus*, Severtz., = *Bubo ignavus*, Forst.; H. E. Dresser, Ibis, 1875, p. 111. *B. shelleyi* figured; R. B. Sharpe,

Cat. B. Brit. Mus. ii. pl. ii. *B. sinensis*, Heude, = *B. coromandus*; id. Ibis, 1875, p. 255.

Carine. A list of the species, six in number; *id. tom. cit.* p. 258.

Ephialtes pennatus, Hodgs., and *E. sunia*, Hodgs., described and considered distinct, and *E. griseus*, Jerdon, measured and described; A. Anderson, P. Z. S. 1875, pp. 25 & 26.

Glaucidium. Review of the American species; R. B. Sharpe, Ibis, 1875, pp. 35–59. A list of 24 species of this genus; *id. tom. cit.* p. 259. *G. cobanense*, sp. n., *id. tom. cit.* p. 260, Guatemala; figured, *id.* Cat. B. Brit. Mus. ii. pl. xiii. fig. 1. *G. gnoma* and *G. pumilum* figured; *id.* Ibis, 1875, p. 38, pl. i. *G. griseiceps*, p. 41, pl. ii. fig. 2, and *G. ridgwayi*, p. 55, spp. nn., *id. tom. cit.*, Central America. *G. tephronotum*, sp. n., *id. tom. cit.* p. 260, S. America ? ?; figured, *id.* Cat. B. Brit. Mus. ii. pl. xiii. fig. 2.

Gymnoglaux krugi, sp. n., J. Gundlach, J. f. O. 1875, p. 223, Porto Rico. [= *G. nudipes* (Daud.).]

Lempijius megalotis figured; Lord Walden, Tr. Z. S. ix. pl. xxv. fig. 3.

Ninox. A list of 28 species of this genus; R. B. Sharpe, Ibis, 1875, p. 258. *N. assimilis*, sp. n., T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 809, Mount Epa, New Guinea. *N. fusca* (Vieill.) is not from the Antilles, but Timor; *Ninox guteruhi*, Müll., and *Strix maugæi*, Temm., are synonyms of the same bird, R. B. Sharpe, Ibis, 1875, p. 256. Figured; *id.* Cat. B. Brit. Mus. ii. pl. xii. fig. 1. *N. hantii* and *N. ochracea* figured; *id. tom. cit.* pl. xi. fig. 1. *N. philippensis* figured; Lord Walden, Tr. Z. S. ix. pl. xxv. fig. 1. *N. squamipila* figured; R. B. Sharpe, Cat. B. Brit. Mus. ii. pl. xii. fig. 2.

Noctua podargina figured; O. Finsch, J. Mus. Godeffr. viii. pl. i. figs. 1 & 2.

Nyctea nivea breeding in confinement; J. H. Gurney, Ibis, 1875, p. 517.

Pseudoptynx philippinensis figured; Lord Walden, Tr. Z. S. ix. pl. xxv. fig. 2.

Sceloglaux albifacies figured; G. D. Rowley, Orn. Misc. pt. ii. pl. viii., and also R. B. Sharpe, Zool. Voy. Ereb. and Terr. Birds, pl. i.

Scops albiventris is a new name for a 'sub-species' of *S. magicus* from Flores Island; also figured; R. B. Sharpe, Cat. B. Brit. Mus. ii. p. 78, pl. viii. fig. 1. *S. beccarii*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 906, Misor I., New Guinea. *S. bouruensis* is a new name proposed for a 'sub-species' of *S. magicus*, from Bouru; also figured; R. B. Sharpe, Cat. B. Brit. Mus. ii. p. 73, pl. vii. fig. 2. *S. capensis* figured; *id. tom. cit.* pl. iii. fig. 1. *S. guatemalæ* is a new name for a 'sub-species' of *S. brasilianus*, from Central America; also figured; *id. tom. cit.* p. 112, pl. ix. *S. gymnopodus* figured; *id. tom. cit.* pl. iv. fig. 2. *S. hypogramma* figured; *id. tom. cit.* pl. x. *S. leucospilus* figured; *id. tom. cit.* pl. vi. *S. magicus* figured; *id. tom. cit.* pl. v. *S. malayanus* figured; *id. tom. cit.* pl. iv. fig. 1. *S. menadensis* figured; *id. tom. cit.* pl. viii. fig. 2. *S. morotensis* is a new name proposed for a 'sub-species' of *S. magicus*, from Morty Island; also figured; *id. tom.*

cit. p. 75, pl. viii. fig. 1; *S. obsoleta*, sp. n., J. Cabanis, J. f. O. 1875, p. 126, Bokhara and Syria. *S. rufipennis* is a new name proposed for a 'sub-species' of *S. giu*, from Madras; R. B. Sharpe, Cat. B. Brit. Mus. ii. p. 60. *S. stictonotus* is a new name proposed for a 'sub-species' of *S. giu*, from China, Siam, and the Eastern Himalayas; also figured; *id. tom. cit.* p. 54, pl. iii. fig. 2.

Scotopelia bouvieri, sp. n., R. B. Sharpe, Ibis, 1875, p. 260, Ogowé River, Gaboon. Figured; *id.* Cat. B. Brit. Mus. ii. pl. i.

Strix. The type of this genus should be considered to be *S. flammea*, rather than *S. aluco*; O. Salvin, Ibis, 1875, p. 66, note. *S. candida*; on its occurrence in Australia; E. P. Ramsay, Ibis, 1875, p. 512. *S. deroepstorffi*, sp. n., A. O. Hume, Str. Feath. 1875, p. 390, South Andamans. *S. flammea* figured; R. B. Sharpe, Cat. B. Brit. Mus. ii. pl. xiv.

Syrnium davidi, sp. n., R. B. Sharpe, Ibis, 1875, p. 256, Moupin, China. *S. spilonotum*, G. R. Gray, H. list B. i. p. 49 (descr. nulla), described; R. B. Sharpe, Cat. B. Brit. Mus. ii. p. 277.

PSITTACI.

See MEYER, A. B., *suprà*, p. 42.

Aprosmictus insignissimus, sp. n., J. Gould, P. Z. S. 1875, p. 314, Rockingham Bay, Queensland, Australia. Figured; *id.*, B. of N. Guinea, &c., Queensland.

Ara hyacinthina found between Santarem, on the Amazon, and the River Curuá; H. Wickham, P. Z. S. 1875, p. 634.

Cacatua goffini figured from a Queensland specimen; P. L. Sclater, P. Z. S. 1875, p. 60, pl. x.

Caica pyrilia (Bp.). Its occurrence at San Cristoval, Venezuela; P. L. Sclater & O. Salvin, P. Z. S. 1875, p. 238.

Chrysotis bouqueti from Santa Lucia figured; P. L. Sclater, P. Z. S. 1875, p. 61, pl. xi. *C. xantholora* figured; *id. tom. cit.* p. 157, pl. xxvi.

Conurus aymara and *C. rufirostris*. Leybold's notes on these species translated; *C. glaucifrons*, Leybold, redescribed; E. v. Martens, J. f. O. 1875, p. 445.

Cyclopsitta aruensis, sp. n., T. Salvadori, Ann. Mus. Genov. vi. (1874) p. 73, Aru Islands. *C. leadbeateri*, sp. n., F. M'Coy, Ann. N. H. (4) xvi. p. 54, South Australia. *C. macoyi*, sp. n., J. Gould, P. Z. S. 1875, p. 314, Rockingham Bay, Queensland; figured, *id.* B. of N. Guinea, &c., pt. i. [*C. leadbeateri*, M'Coy, = this species]. *C. macleayana*, Ramsay, originally described in the Sydney Morning Herald, Nov. 15, 1874, from Cardwell, Rockingham Bay, Australia, redescribed; E. P. Ramsay, P. Z. S. 1875, p. 602 [appears to be the same as *C. macoyi*, Gould].

Cyclopsittacus cervicalis, sp. n., T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 811, New Guinea. *C. occidentalis*, Salwatti, and *C. cervicalis*, New Guinea, near Yule Island, spp. nn., T. Salvadori, Ann. Mus. Genov. vii. p. 910.

Eclectus. On the coloration of the sexes of certain species of this genus; A. B. Meyer, MT. Mus. Dresd., i. p. 11. *E. polychlorus*: a diagnostic table of this and five allied species; T. Salvadori, Ann. Mus. Genov. vii. p. 757.

Geoffroyus dorsalis, sp. n., T. Salvadori, *tom. cit.* p. 758, Andai, New Guinea.

Lophopsittacus, g. n., type, *Psittacus mauritianus*, Owen; A. Newton, P. Z. S. 1875, p. 350.

Nasiterna bruijni, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 753, Arfak Mountains, New Guinea; ♀ described and ♂ figured, *id. tom. cit.* p. 907, pl. xxi. *N. keiensis*, p. 984, Kei Islands, *N. maforensis*, p. 908, Mafor, New Guinea, *N. misoriensis*, p. 909, Misor, New Guinea, *id. tom. cit.* spp. nn.

Necropsittacus rodericanus. [See NEWTON, ALFRED.]

Neopsittacus, g. n. Type, *Nanodes musschenbroeki*, Von Rosenb.; T. Salvadori, *tom. cit.* p. 761.

Nestor meridionalis, var. figured; G. D. Rowley, Orn. Misc. pt. i. pl. vii.

Palæornis exsul. The female figured; A. Newton, Ibis, 1875, p. 342, pl. vii. *P. melanorhynchus* in luteous plumage from Munipur; Lord Walden, Ibis, 1875, p. 270.

Pezoporus formosus in Tasmania; W. V. Legge, P. R. Soc. Tasm. 1874, p. 31.

Platycercus rowleyi, sp. n., W. L. Buller, Tr. N. Z. Inst. vii. p. 219, New Zealand.

Stringops habroptilus near Lake Anare, New Zealand; A. von Hügel, Ibis, 1875, p. 391. A plate drawn from a specimen of this species, but coloured to represent *S. greyi*, which is perhaps distinct; R. B. Sharpe, Voy. Ereb. & Terr., Birds, pl. vii.

Trichoglossus aureicinctus, sp. n., E. L. Layard, Ann. N. H. (4) xvi. p. 344, Taviuni, Fiji Islands. *T. rosenbergi* figured; C. B. H. von Rosenberg, Reist. naar Geelvinkbaai op Nieuw Guinea, pl. xv. fig. 2.

PICARIÆ.

PICIDÆ.

Chloronerpes xanthochlorus, sp. n., P. L. Sclater & O. Salvin, P. Z. S. 1875, p. 238, San Cristoval, Venezuela.

Colaptes leucofrenatus, Leybold, redescribed; E. v. Martens, J. f. O. 1875, p. 445.

Dryoscopus major, Hartl., and its allies in Angola; J. V. Barboza du Bocage, J. Sc. Lisb. 1875, p. 101.

Gecinus erythropygius, Wald., = *G. nigrigenis*, Hume, = *G. erythropygius*, Elliot (N. Arch. Mus. 1865, p. 76, pl. iii.); Lord Walden, Ibis, 1875, p. 148. Note on the variation of the facial yellow streak in this Woodpecker; R. W. Ramsay, P. Z. S. 1875, p. 317.

Picus leptorhynchus, sp. n., N. Severtzoff, Ibis, 1875, p. 487, Turkestan. *P. leucopterus*, var. n., *id. tom. cit.* p. 488, Lower Syr.

Sphyrapicus williamsoni is the ♀ of *S. thyroides*; W. H. Henshaw, Rep. upon Orn. Spec. p. 90.

Yunx torquilla figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Trogonidæ.

See Gould, J., *suprà*, p. 34.

Hapaloderma constancia and *H. narina* figured; J. Gould, Mon. Trogonidæ, ed. 2, pt. 3.

Harpactes diardi, *H. erythrocephalus*, and *H. fasciatus*, figured; *id. op. cit.* pts. 3 & 4.

Pharomacrus auriceps (immature) and *P. moccinno* figured; *id. op. cit.* pts. 3 & 4.

Trogon atricollis, *T. bairdi*, *T. chionurus*, *T. citreolus*, *T. clathratus*, *T. collaris*, *T. macrurus*, *T. melanurus*, *T. meridionalis*, *T. mexicanus*, *T. personatus*, *T. tenellus*, *T. variegatus*, figured; *id. op. cit.* pts. 3 & 4. *T. behni*, sp. n., described and figured; *id. op. cit.* pt. 4.

Meropidæ.

Melittophagus cyanostictus, sp. n., J. Cabanis, J. f. O. 1875, p. 340 (= *M. erythropterus*, var., *id.* in Von der Decken's Reis. iii. p. 34), N. E. Africa and Senegal.

Merops bicolor and *M. sumatranus* figured; Lord Walden, Tr. Z. S. ix. pl. xxxvi. figs. 1 & 2.

Alcedinidæ.

Alcedo ispida figured; H. E. Dresser, B. Eur. pt. xlv. *A. moluccensis*, Blyth, = *A. ispidoides*, Less.; T. Salvadori, Ann. Mus. Genov. vii. p. 652.

Ceryle rudis figured; H. E. Dresser, B. Eur. pts. xli. & xlii.

Halcyon smyrnensis figured; *id. op. cit.* pts. xli. & xlii.

Tanysiptera carolinæ and *T. rideli* figured; C. B. H. von Rosenberg, Reist. naar Geelvinkbaai op Nieuw Guinea, pl. xiv.

Bucerotidæ.

Aceros nipalensis. Observed breeding; J. Gammie, Str. Feath. 1875, p. 209.

Cranorrhinus leucocephalus figured; Lord Walden, Tr. Z. S. ix. pl. xxvii.

Penelopides panini figured; *id. tom. cit.* pl. xxviii.

Ramphastidæ.

Aulacorhamphus calorhynchus, Gould, from Merida, Venezuela; its specific distinctions discussed: *A. phæolæmus*, Gould, = *A. albivitta*: P. L. Sclater & O. Salvin, P. Z. S. 1875, p. 236.

Capitonidæ.

Megalæma ramsayi, sp. n., Lord Walden, Ann. N. H. (4) xv. p. 400, Karen-nee, Burma.

Cuculidæ.

Centrococcyx affinis (Horsf.) is the ♀ of *C. javanensis* (Dumont) ; T. Salvadori, Ann. Mus. Genov. vii. p. 651.

Chrysoccocyx plagosus, Gould, = *C. lucidus* (Gm.), *fide* Finsch ; W. L. Buller, Tr. N. Z. Inst. vii. p. 212.

Coccyzus americanus shot in Hainault ; A. Dubois, Bull. Ac. Belg. (2) xxxix. p. 40.

Eudynamis honorata. The young observed to be fed by Crows ; A. Anderson, Ibis, 1875, p. 142. *E. parva*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 986, ? Tidore.

Chrysococcyx meyeri, sp. n., *id. tom. cit.* p. 82, Atam, New Guinea.

Lamprococcyx misorensis, sp. n., *id. tom. cit.* p. 914, Misor, New Guinea. *L. ruficollis*, sp. n., *id. tom. cit.* p. 913, Mount Arfak, New Guinea.

Nesocentor chalybeus, sp. n., *id. tom. cit.* p. 915, Misor, New Guinea.

Coraciidæ.

Atelornis crossleyi, sp. n., described and figured ; R. B. Sharpe, P. Z. S. 1875, p. 74, pl. xiv. Madagascar.

Coracias garrula in Denmark ; J. Reinhardt, Vid. Medd. 1874–75, p. 113.

Caprimulgidæ.

Caprimulgus accræ, sp. n., G. E. Shelley, Ibis, 1875, p. 379, Accra, W. Africa. *C. arenicolor*, sp. n., N. Severtzoff, Ibis, 1875, p. 491 ; from the Lower Oxus, Syr, and south-east shore of the Caspian. *C. concretus* figured ; R. B. Sharpe, P. Z. S. 1875, pl. xxii. fig. 2. *C. europæus* figured ; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi. *C. innominata* [*-tus*], a name suggested for a species of *Caprimulgus* from Tenasserim, doubtfully referred to *C. indicus* ; A. O. Hume, Str. Feath. 1875, p. 318. *C. macrurus* ; its egg described ; E. P. Ramsay, P. Z. S. 1875, p. 113. *C. melanopogon*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 918, Western New Guinea. *C. phalæna* figured ; O. Finsch, J. Mus. Godeffr. viii. pl. ii. figs. 1 & 2. *C. salvadorii*, sp. n., R. B. Sharpe, P. Z. S. 1875, p. 99, pl. xxii. fig. 1, Borneo.

Eurystopodus albigularis and *E. guttatus*, eggs described ; E. P. Ramsay, P. Z. S. 1875, p. 113.

Lyncornis bourdilloni, sp. n., A. O. Hume, Str. Feath. 1875, p. 302, S. Travancore.

Stenopsis albicauda, sp. n., G. N. Lawrence, Ann. Lyc. N. Y. xi. p. 89, Talamanca, Costa Rica.

PODARGIDÆ.

Ægotheles insignis, p. 916, *Æ. affinis*, p. 917, T. Salvadori, Ann. Mus. Genov. vii. Mount Arfak, New Guinea; *Æ. bennetti*, id. & L. M. D'Albertis, *tom. cit.* p. 816, New Guinea: spp. nn.

CYPSELIDÆ.

See AITKEN, *suprà*, p. 25.

Collocalia terræ-reginæ, Ramsay, figured; J. Gould, Birds of New Guinea, &c., pt. i., Queensland.

Cypselus pallidus and *C. unicolor* figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Hemiprocne albicincta, Cab., is probably distinct from *H. zonaris*; A. v. Pelzeln, Ibis, 1875, p. 330.

TROCHILIDÆ.

See ELLIOT & MULSANT, *suprà*, pp. 31 & 43.

Alsosia, sub-g. n.; type, *Panoplites mathewsi* (Bourc.), É. Mulsant, Cat. des Ois.-mouches, p. 17 [characterized in 1876; *id.* Hist. Nat. des Ois.-mouches, ii. p. 225].

Amalsia, g. n. Contains *Doricha henicura* (Vieill.) and *D. eliza*, Less.; *id.* Cat. des Ois.-mouches, p. 29.

Aurinia, g. n. Type, *Polymistria verreauxi*, Bourc.; *id. tom. cit.* p. 27.

Calligenia, g. n. Contains *Helianthea latetiæ*, *H. violifera*, and its allies, *Helianthea* being restricted to *H. typica* and *H. bonapartii*; id. *tom. cit.* p. 20 [characterized in 1876; *id.* Hist. Nat. des Ois.-mouches, ii. p. 305].

Chlorestes gertrudis, sp. n., J. Gundlach, J. f. O. 1875, p. 223, Porto Rico.

Chlorostilbon. A revision with synonyms and distribution of this genus (which is made to include *Chlorolampis*); D. G. Elliot, Ibis, 1875, pp. 149–170.

Chrysobronchus viridissimus figured; É. Mulsant, Hist. Nat. des Ois.-mouches, ii.

Chrysomirus, g. n. Includes *Trochilus angustipennis* and *Ornismya atala*, Less.; *id. tom. cit.* ii. p. 102.

Dialia, g. n., type, *Lophornis adorabilis*, Salv.; *id.*, Cat. des Ois.-mouches, p. 27 [figured; *id.* Hist. Nat. des Ois.-mouches, ii. fig. 1].

Diphlogæna hesperus figured; *id.* Hist. Nat. des Ois.-mouches, ii.

Eremita, sub.-g. n. of *Pygmornis*; id. *op. cit.* i. [1873] p. 89.

Eudosia, g. n. Contains *Bourcieria traviesi*, *Lampropygia prunelli*, a *L. wilsoni*; id. Cat. des. Ois.-mouches, ii. p. 20. The same name use again for a new genus [!], with *Myrtis yarrelli* (Bourc.) as the type; *id. tom. cit.* p. 32.

Eugenes fulgens, a ♀ taken at Camp Grant, Arizona; W. H. Henshaw, Rep. Orn. Spec. p. 132.

Engycte, sub-g. n. of *Eriocnemis* ; type, *E. alinæ* ; É. Mulsant, Cat. des Ois.-mouches, p. 21.

Eupherusa eximia figured ; *id.* Hist. Nat. des Ois.-mouches, ii.

Eupetomena hirundo, sp. n., J. Gould, Ann. N. H. (4) xvi. p. 370, Huiro, Peru.

Eupogonus, g. n. Contains *Heteropogon herrani* and *H. ruficeps* ; É. Mulsant, Cat. des Ois.-mouches, p. 26.

Helymus, g. n., type, *Heliangelus micraster*, Gould ; *id. tom. cit.* p. 23.

Himalia, g. n., contains *Steganura peruana*, Gould, and *S. addæ*, Bourc. ; *id. tom. cit.* p. 28.

Himelia, sub-g. n. of *Cœligena* ; *id. tom. cit.* p. 7 [= *Delattria*, Bp. et auctt.].

Hypolia, g. n. Contains *H. otero* (Tsch.), *H. splendens* (Gould), and *H. leadbeateri*, Bourc. & Muls. ; *id. tom. cit.* p. 17 [= *Leadbeatera*, Bp.]. Characterized in 1876 ; *id.* Hist. Nat. des Ois.-mouches, ii. p. 207.

Idas, g. n. ; type, *Lophornis magnificus* (Vieill.) ; *id.* Cat. des Ois.-mouches, p. 27.

Klais guimeti figured ; *id.* Hist. Nat. des Ois.-mouches, ii.

Lamprolæma rhami figured ; *id. ibid.*

Lavania, g. n., type, *Metallura hedvigæ*, Tacz. ; *id.*, Cat. des Ois.-mouches, p. 24.

Leucaria, g. n., type, *Calypte costæ* (Bourc.) ; *id. tom. cit.* p. 29.

Leucodora, g. n., divided into two sub-genera, *Hemistilbon* and *Leucodora*. In the former, is placed *Trochilus norrisi*, Bourc. [but erroneously, as the type of *Hemistilbon* is *H. ocai*, Gould]. The latter contains *Trochilus edwardi*, Delattre & Bourc., and *T. niveiventris*, Gould. *Id.* Hist. Nat. des Ois.-mouches, i. p. 309 [1874].

Lisoria, sub.-g. n., *id.*, Cat. des Ois.-mouches, p. 11 [= *Saucerottia*, Bp.].

Manilia pulchra figured ; *id.*, Hist. Nat. des Ois.-mouches, ii.

Marsyas, sub-g. n., type, *Trochilus maugæi*, Vieill. ; *id. tom. cit.* p. 75. [Used in *Mollusca* by Oken in 1815, and in *Coleoptera* by Putzeys in 1845.]

Methon, sub-g. n. of *Chalybura* ; *id.*, Cat. des Ois.-mouches, p. 7.

Myrmia, g. n., type, *Acestrura micrura*, Gould ; *id. tom. cit.* p. 32.

Mytinia, g. n., type, *Gouldia lætitiæ* (Bourc.) ; *id. tom. cit.* p. 28.

Nania, sub-g. n. of *Eriocnemis*. Contains *E. cupreiventris* and its allies ; *id. tom. cit.* p. 21.

Niche, sub-g. n. of *Eriocnemis*, type, *E. dorbignii* ; id. *ibid.*

Nodalia, g. n., type, *Heliotrypha barrali*, Muls. & Verr. ; *id. tom. cit.* pp. 23.

Panychlora. A revision of this genus ; D. G. Elliot, Ibis, 1875, spp. 170–172.

Paphosia helenæ figured ; É. Mulsant, Hist. Nat. des Ois.-mouches, ii. fig. 2.

Peratus, g. n., containing *Heliangelus amethysticollis* and *H. mavors* ; id., Cat. des Ois.-mouches, p. 23.

Pholoe, sub-g. n. of *Eriocnemis*, type, *E. dyselius*, Elliot; É. Mulsant, Cat. des Ois.-mouches, p. 22.

Polyplancta, sub-g. n., type, *Clytolæma aurescens*, Gould; *id. tom. cit.* p. 17 [characterized in 1876; *id.*, Hist. Nat. des Ois.-mouches, ii. p. 220].

Saturia, g. n., type, *S. isaacsoni*, Parz.; *id.* Cat. des Ois.-mouches, p. 21 [characterized in 1876; *id.* Hist. Nat. des Ois.-mouches, ii. p. 299].

Selasphorus ardens figured; *id. tom. cit.*

Sericotes, sub-g. n., type, *Eulampis holosericeus* (L.); *id.* Cat. des Ois.-mouches, p. 15.

Talaphorus, sub-g. n. of *Leucippus*; id. Hist. Nat. des Ois.-mouches, i. [1874] p. 257.

Timolia, sub-g. of *Thalurania*, type, *T. lerchi*, Muls. & Verr.; *id.* Cat. des Ois.-mouches, p. 23.

Tricholopha, g. n., type, *Gouldia popelairii* (Du Bus); *id. tom. cit.* p. 27.

Ulysses, g. n., type, *Trochilus grayi*, Delattre & Bourc.; *id.* Hist. Nat. des Ois.-mouches, ii. p. 41.

PASSERES.

Remarks on Wallace's arrangement of this order; J. Cabanis, J. f. O. 1875, p. 228.

Pittidæ.

Anthocincla phayrii, Blyth, figured and described; A. O. Hume, Str. Feath. 1875, p. 109, pl. ii.

Brachyurus davisoni, a name suggested for a species of this genus from Tenasserim, doubtfully referred to *B. cæruleus*, Raffl.; *id. tom. cit.* p. 321.

Pitta ellioti, É. Oustalet, N. Arch. Mus. (Bull.) x. [1874] p. 101, pl. ii., Cochin China; *P. gurneyi*, A. O. Hume, Str. Feath. 1875, p. 296, pl. ii. Tenasserim Provinces: spp. nn.

Menuridæ.

Climacteris placens, Scl., figured; J. Gould, Birds of New Guinea, &c., pt. i. New Guinea.

Orthonyx spinicauda, Temm., = *O. temminckii*, Vig. & Horsf.; T. Salvadori, Atti Ac. Tor. x. p. 632.

Dendrocolaptidæ.

Automolus striaticeps, p. 37, Columbia and Peru, and *A. holostictus*, p. 542, Antioquia, Columbia, P. L. Sclater & O. Salvin, P. Z. S. 1875: spp. nn.

Meliphagidæ.

Anthochera bulleri = *A. carunculata*; W. L. Buller, Tr. N. Z. Inst. vii. p. 212.

Euthyrhynchus, sp. ?, described but not named; T. Salvadori, Ann. Mus. Genov. vii. p. 953, New Guinea.

Melilestes, g. n., *id. tom. cit.* p. 950; type, *Ptilotis megarhyncha*, G. R. Gray, also *Arachnothera novæ-guineæ*, Less., and *M. iliolophus*, p. 951, Miosnom and Jobi, and *M. affinis*, p. 952, Mount Arfak and Waigiou I., spp. nn.

Melithreptes latior, sp. n., J. Gould, Ann. N. H. (4) xvi. p. 287, Lake Eyre, Australia.

Melitograis gilolensis (Bp.) redescribed; T. Salvadori, Ann. Mus. Genov. vii. p. 775.

Myzomela adelphinæ, sp. n., *id. tom. cit.* p. 946, Mount Arfak, New Guinea. *M. rosenbergi* figured; C. B. H. von Rosenberg, Reist. naar Geelvinkbaai op Nieuw Guinea, pl. xvi. fig. 2.

Œdistoma, g. n., type, *Œ. pygmæum*, sp. n.; T. Salvadori, Ann. Mus. Genov. vii. p. 952, Mount Arfak, New Guinea.

Oreocharis, g. n., type, *O. stictoptera*, sp. n.; *id. tom. cit.* p. 939, Mount Arfak, New Guinea.

Ptilotis erythropleura, id. *tom. cit.* p. 949 (and an allied species described but not named, p. 950), Mount Arfak, New Guinea; *P. flavo-striata*, J. Gould, P. Z. S. 1875, p. 315, Rockingham Bay, Queensland; *P. macleayana*, E. P. Ramsay, P. Linn. Soc. N. S. Wales, p. 10, N.E. coast of Australia; *P. provocator*, E. L. Layard, P. Z. S. 1875, p. 28, Fiji Islands: spp. nn.

Tatare ? viridis, sp. n., E. L. Layard, P. Z. S. 1875, p. 150, Taviuni, Fiji.

Xanthotis meyeri, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 947, = *Ptilotis pyrrhotis*, Meyer, nec Less.

Dicæidæ.

Dicæum keiense, T. Salvadori, *op. cit.* vi. [1874] p. 313, Kei Islands; *D. maforense*, p. 944, Mafor, *misoriense*, Misor, and *jobiense*, Jobi, p. 945, *id. op. cit.* vii.; and *D. olivaceum*, Lord Walden, Ann. N. H. (4) xv. p. 401, Tonghoo and Karen Hills, Burma: sp. nn. *D. retrocinctum* figured; J. Gould, Birds of Asia, pt. xxvii.

Melanocharis longicauda, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 942, Mount Arfak, New Guinea.

Prionochilus modestus, sp. n., A. O. Hume, Str. Feath. 1875, p. 298, S. Tenasserim.

Pristorhamphus, g. n., allied to *Melanocharis* and *Dicæum*; type, *P. versteri*, sp. n.; O. Finsch, P. Z. S. 1875, p. 641, Arfak Mountains, New Guinea. Redescribed; T. Salvadori, Ann. Mus. Genov. vii. p. 940.

Rhamphocharis, g. n.; type, *R. crassirostris*, sp. n., T. Salvadori, *tom. cit.* p. 943, Mount Arfak, New Guinea.

Zosterops chrysolæma, sp. n., *id. tom. cit.* p. 954, Mount Arfak, New Guinea. *Z. explorator*, sp. n., E. L. Layard, P. Z. S. 1875, p. 29, Fiji Islands. *Z. fuscicapilla*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 955, Mount Arfak, New Guinea. *Z. ponapensis*, sp. n.,

Ponape, Seniavin group; O. Finsch, P. Z. S. 1875, p. 643. *Z. rufifrons*, sp. n., T. Salvadori, Ann. Mus. Genov. vi. [1874] p. 79, Seram Laut. *Z. semperi* figured; O. Finsch, J. Mus. Godeffr. viii. pl. iv. fig. 1. *Z. uropygialis*, sp. n., T. Salvadori, Ann. Mus. Genov. vi. [1874] p. 78, Kei Islands. *Z.* sp. ?, *id. op. cit.* vii. p. 954, Mount Arfak.

Nectariniidæ.

Æthopyga beccarii, sp. n., described and figured; T. Salvadori, Ann. Mus. Genov. vii. p. 659, pl. xviii. figs. 1 & 2, Celebes. *Æ. sanguinipectus*, sp. n., Lord Walden, Ann. N. H. (4) xv. p. 400, Tonghoo Hills, Burma.

Anthreptes xanthochlora, a name suggested for an undetermined female of a species of this genus from Tenasserim; A. O. Hume, Str. Feath. 1875, p. 320.

Chalcostethia chlorocephala, sp. n., T. Salvadori, Ann. Mus. Genov. vi. [1874] p. 78, Aru Islands. *C. chlorolæma*, sp. n., *id. tom. cit.* p. 77, Kei Islands. *C. goramensis*, sp. n., *id. tom. cit.* p. 85, Goram. *C. inspirata*, a name suggested for a species of this genus from Tenasserim, doubtfully referred to *C. insignis*, Jard.; A. O. Hume, Str. Feath. 1875, p. 319.

Melanocharis chloroptera, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 987, Aru Islands.

Neodrepanis, g. n.; type, *N. coruscans*, sp. n., described, and head and wing figured in a cut; R. B. Sharpe, P. Z. S. 1875, p. 75, Madagascar. The adult male described; G. E. Shelley, Ibis, 1875, p. 380.

Cœrebidæ.

Diglossa albilateralis figured, p. 216, pl. v.; *D. pectoralis*, Cab., figured, p. 212, pl. iv.; *D. similis*, Lafr., = *D. sittoides*, p. 209; P. L. Sclater, Ibis, 1875.

Eurylæmidæ.

Psarisomus assimilis, a new name suggested for a *Psarisomus* from Thayetmyo, should it prove to be distinct from *P. dalhousiæ*; A. O. Hume, Str. Feath. 1875, p. 53: = *P. dalhousiæ*; Lord Walden, Ibis, 1875, p. 460.

Timeliidæ.

Actinura daflaensis, sp. n., H. H. Godwin-Austen, Ann. N. H. (4) xvi. p. 339, Dafla Hills.

Actinodura ramsayi, sp. n., Lord Walden, Ann. N. H. (4) xv. p. 402, Karen-nee, Burma. *A. waldeni* figured; J. Gould, B. of Asia, pt. xxvii.

Bernieria zosterops, sp. n., R. B. Sharpe, P. Z. S. 1875, p. 76, with cut of heads of ♂ & ♀, Madagascar.

Drymocataphus fulvus, sp. n., Lord Walden, Ann. N. H. (4) xv. p. 401, Karen-nee, Burma.

Drymodes beccarii, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 965, Mount Arfak, New Guinea.

Gampsorhynchus torquatus, Hume, = *G. rufulus*; Lord Walden, Ibis, 1875, p. 460.

Garrulax galbanus figured; J. Gould, B. of Asia, pt. xxvii.

Hyloterpe philippensis figured; Lord Walden, Tr. Z. S. ix. pl. xxxi. fig. 2.

Oxylabes xanthophrys, sp. n., R. B. Sharpe, P. Z. S. 1875, p. 76, Madagascar.

Pellorneum subochraceum, Swinhoe, ? = *P. minor*, Hume; A. O. Hume, Str. Feath. 1875, p. 120.

Phænicomanes iora, Sharpe [P. Z. S. 1874, p. 427, pl. liv.], = *Iora lafresnayi*, Hartl., and is from Malacca and not Jamaica. R. B. Sharpe, Ann. N. H. (4) xvi. p. 236; O. Finsch, P. Z. S. 1875, p. 640.

Sphænocichla, g. n.; type, *S. roberti*, sp. n., H. H. Godwin-Austen & Lord Walden, Ibis, 1875, p. 251, Herne's Peak, N. Cachar Hills and Munipur.

Stachyrhis assimilis, sp. n., Lord Walden, J. A. S. B. (n.s.) xliii. pt. 2, Extr. No. p. 116, Burma.

Timel[i]opsis, g. n., type, *T. trachycoma*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 963, Andai, New Guinea; also sp. n. ?, described but not named, Ramoi, New Guinea, and *T.* ? *acutirostris*, sp. n., p. 964, Mount Arfak, New Guinea.

Trichostoma rubiginosa, sp. n., Lord Walden, Ann. N. H. (4) xv. p. 402, Karen-nee, Burma.

Trochalopteron cineraceum and *T. virgatum* figured; J. Gould, B. of Asia, pt. xxvii.

Hirundinidæ.

See Aitken, *suprà*, p. 25.

Chelidon urbica figured; H. E. Dresser, B. Eur. pt. xl.

Cotyle obsoleta figured; *id. op. cit.* pt. xxxvii. *C. riparia* figured; *id. op. cit.* pts. xxxv. & xxxvi.

Hirundo atrocærulea figured; Layard's B. S. Afr., Sharpe's Ed., pl. ix. fig. 2 (pt. i.). *H. rufula* figured; H. E. Dresser, B. Eur. pl. xxxvii. *H. rustica* seen in Spitsbergen; A. Newton, Ibis, 1875, p. 272. *H. rustica* and *H. savignii* figured; H. E. Dresser, B. Eur. pt. xxxvii. *H. semirufa* figured; Layard's B. S. Afr., Sharpe's Ed., pl. ix. fig. 1 (pt. i.)

Tyrannidæ.

Blacicus blancoi, sp. n., J. Gundlach, J. f. O. 1875, p. 224, Porto Rico.

Empidonax nanus, sp. n., G. N. Lawrence, Ibis, 1875, p. 386, San Domingo.

Myiarchus flammulatus, sp. n., *id.*, Ann. Lyc. N. York, xi. p. 71, Tehuantepec, Mexico.

Orchilus atricapillus, sp. n., *id.*, Ibis, 1875, p. 385, Costa Rica.
Serpophaga leucura, sp. n., *id. tom. cit.* p. 384, pl. ix. fig. 2, Ecuador.

Laniidæ.

Colluricincla sordida, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 931, Jobi Island.

Cracticus mentalis, sp. n., T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 824, Nicura, New Guinea.

Hypocolius ampelinus, Hartl., discovered in Sind; W. T. Blanford, Ibis, 1875, p. 387; Str. Feath. 1875, p. 358. The specimen obtained in Upper Sind by Mr. Blanford, compared with the original specimen in the Paris Museum and found identical; P. L. Sclater, P. Z. S. 1875, p. 633.

Laniarius quadricolor figured; Layard's B. S. Afr., Sharpe's Ed., pl. xi. (pt. 2).

Lanius lucionensis figured; Lord Walden, Tr. Z. S. ix. pl. xxix. fig. 1.

Myiolestes? bimaculatus, sp. n., T. Salvadori, Ann. Mus. Genov. vi. p. 84, Putat, New Guinea. *M.? cyanus*, sp. n., *id. ibid.*, Atam, New Guinea: should be referred to the genus *Pachycephala*; id. *op. cit.* vii. p. 934. *M.? pluto*, sp. n., *id. op. cit.* vi. p. 83, Atam, New Guinea: = *Rectes nigrescens*, Schl.; *id. tom. cit.* p. 308.

Neolestes, g. n., type *N. torquatus*, sp. n., J. Cabanis, J. f. O. 1875, p. 237, pl. i. fig. 1.

Otomela. A monograph of this sub-genus; H. Schalow, J. f. O. 1875, pp. 129–151.

Pachycephala albispecularis, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 931, Mount Arfak, New Guinea. *P. hyperythra*, sp. n., *id. tom. cit.* p. 932, Western New Guinea. *P. leucogastra*, sp. n., *id.* & L. M. D'Albertis, *tom. cit.* p. 822, Mount Epa, New Guinea. *P. leucostigma*, sp. n., T. Salvadori, *tom. cit.* p. 933, Mount Arfak, New Guinea. *P. lineolata*, Wall., the female described; *id. tom. cit.* p. 990, Ternate. *P. macrorhyncha*, sp. n., E. L. Layard, P. Z. S. 1875, p. 150, Taviuni, Fiji. *P. mentalis*, Wall., the female described; T. Salvadori, Ann. Mus. Genov. vii. p. 774. *P. schlegeli* figured; C. B. H. von Rosenberg, Reist. naar Geelvinkbaai op Nieuw Guinea, pl. xvi. fig. 1. *P.* sp. ?, described but not named; T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 822, Mount Epa, New Guinea. *P. torquata*, sp. n., E. L. Layard, P. Z. S. 1875, p. 150, Taviuni, Fiji.

Rectes cristata, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 930, Mount Morait, New Guinea. *R. tenebrosus* figured; O. Finsch, J. Mus. Godeffr. viii. pl. iii. fig. 1.

Campephagidæ.

Graucalus axillaris, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 925, Mount Arfak, New Guinea. *G. concinnus*, Hutton, = *G. parvirostris*,

Gould, *fide* Finsch; W. L. Buller, Tr. N. Z. Inst. vii. p. 211. *G. pollens*, sp. n., T. Salvadori, Ann. Mus. Genov. vi. p. 75, Kei Island. *G. striatus* figured; Lord Walden, Tr. Z. S. ix. pl. xxx. fig. 1.

Hedoliosoma montanum (Meyer), the female described; T. Salvadori, Ann. Mus. Genov. vii. p. 927, Mount Arfak, New Guinea. *H. muelleri*, sp. n., *id. ibid.* Mount Arfak, New Guinea; = *Ceblepyris plumbea*, S. Müll. (*nec* Wagl.).

Lalage nigrigularis, sp. n., E. L. Layard, P. Z. S. 1875, p. 149, Levuka, Fiji.

Pseudolalage melanoleuca figured; Lord Walden, Tr. Z. S. ix. pl. xxix. fig. 2.

Volvocivora cærulescens figured; *id. tom. cit.* pl. xxx. fig. 2. *V. insperata*, sp. n., O. Finsch, P. Z. S. 1875, p. 643, Ponape, Seniavin group. *V. monacha* figured; O. Finsch, J. Mus. Godeffr. viii. pl. iii. figs. 2 & 3.

Dicruridæ.

Dicrurus balicassius figured; Lord Walden, Tr. Z. S. ix. pl. xxxi. fig. 1.

Muscicapidæ.

Leucophantes hypoxanthus, p. 920, and *L. leucops*, p. 921, spp. nn., T. Salvadori, Ann. Mus. Genov. vii., Mount Arfak, New Guinea.

Machærirhynchus. A monograph of this genus; T. Salvadori, Atti R. Ac. Tor. x. p. 369 *et seq.*

Megalestes, g. n.; type, *M. albo-notatus*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 769, Arfak Mountains, New Guinea.

Micræca papuana, sp. n., A. B. Meyer, SB. Ges. Isis, 1875, p. 75, and MT. Mus. Dresd., i. p. 9, Arfak Mountains, New Guinea.

Monarcha aruensis, sp. n., T. Salvadori, Ann. Mus. Genov. vi. [1874] p. 309, Aru Islands. *M. axillaris*, sp. n., *id. op. cit.* vii. p. 921, Mount Arfak, New Guinea. *M. canescens*, sp. n., *id. tom. cit.* p. 991, Cape York, Australia. *M. mentalis*, sp. n., *id. op. cit.* vi. p. 310, New Guinea.

Monachella, g. n., type, *M. saxicolina*, sp. n., *id. op. cit.* vi. p. 83, Atam, New Guinea: = *Muscicapa muelleriana*, Schl.; *id. tom. cit.* p. 308.

Muscicapa atricapilla, female and young figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi. *M. grisola* figured; *id. op. cit.* pts. xliii. & xliv. *M. parva* figured; *id. op. cit.* pts. xli. & xlii.

Myiagra caledonica, Bp., described; A. v. Pelzeln, J. f. O. 1875, p. 50. *M. plumbea* in Tasmania; W. V. Legge, P. R. Soc. Tasm. 1874, p. 10. *M. pluto*, sp. n., O. Finsch, P. Z. S. 1875, p. 644, Ponape, Seniavin group.

Myiomoira dieffenbachi, Hutt., = *M. macrocephala* (Gm.); O. Finsch, Tr. N. Z. Inst. vii. p. 229.

Peltops blainvillii, Garnot, figured; J. Gould, B. of New Guinea, &c. pt. i.

Pericrocotus flammifer, a name suggested for a species of this genus,

from Tenasserim, at present referred to *P. ardens*; A. O. Hume, Str. Feath. 1875, p. 320.

Petræca kleinschmidti, sp. n., O. Finsch, P. Z. S. 1875, p. 643, Viti-Levu, Fiji.

Philentoma cyaniceps figured; Lord Walden, Tr. Z. S. ix. pl. xxxii. fig. 1.

Pœcilodryas ? cinereifrons, sp. n., E. P. Ramsay, P. Z. S. 1875, p. 588, Cardwell, Rockingham Bay, Australia.

Rhipidura albigularis, sp. n., E. L. Layard, P. Z. S. 1875, p. 29, Fiji. *R. albo-limbata*, sp. n., T. Salvadori, Ann. Mus. Genov. vi. [1874] p. 312, Atam, New Guinea. *R. atra*, sp. n., *id. op. cit.* vii. p. 922, Mount Arfak, New Guinea. *R. griseicauda*, sp. n., *id. tom. cit.* p. 924, Waigiou. *R. kubarii*, sp. n., O. Finsch, P. Z. S. 1875, p. 644, Ponape, Seniavin group. *R. lepida* figured; *id.*, J. Mus. Godeffr. viii. pl. iv. fig. 23. *R. leucothorax*, sp. n., T. Salvadori, Ann. Mus. Genov. vi. p. 311, Atam, New Guinea. *R. obiensis*, sp. n., *id. op. cit.* vii. p. 987, Obi Island, Moluccas. *R. rufa*, sp. n., *id. tom. cit.* p. 923, Mount Arfak, New Guinea. *R. rufifrons*, its eggs and nest described; E. P. Ramsay, Ibis, 1875, p. 377. *R. vidua*, sp. n., T. Salvadori, Ann. Mus. Genov. vi. p. 313, Kei Islands.

Terpsephone rufocinerea, sp. n., J. Cabanis, J. f. O. 1875, p. 236, Loango.

Xenicus haasti, Buller, = *X. gilviventris*, Pelz.; O. Finsch, Tr. N. Z. Inst. vii. p. 228. *X. stokesi* = *X. longipes*; W. L. Buller, *tom. cit.* p. 212.

Eupetidæ.

Eupetes castanotus, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 966, Mount Morait, New Guinea. *E. incertus*, sp. n., *id. tom. cit.* p. 967, Mount Arfak, New Guinea.

Turdidæ.

Bessonornis melanonota, sp. n., J. Cabanis, J. f. O. 1875, p. 235, Loango.

Catharus phæopleurus, sp. n., P. L. Sclater & O. Salvin, P. Z. S. 1875, p. 541, Antioquia, Columbia.

Copsychus mindanensis figured; Lord Walden, Tr. Z. S. ix. pl. xxxiii. fig. 1.

Cossypha pyrrhopygia, Hartl., = *Cittocincla lucionensis*, Kittl., and is from the Philippine Islands and not W. Africa; R. B. Sharpe, Ann. N. H. (4) xvi. p. 236.

Turdus chrysopleurus, Swinh., = *T. pelios*, Bonaparte; R. Swinhoe, Ibis, 1875, p. 519. *T. mystacinus*, Severtz., described, and its relationship to *T. atrigularis* discussed; H. E. Dresser, Ibis, 1875, p. 332. *T. atrigularis* in Finland; J. A. Palmén, Not. Fenn. (n.s.) xi. pp. 349–353. *T. schlegeli*, Scl., is distinct from *T. javanicus*, Horsf. (figured), with which it has been united by Gray & Salvadori; P. L. Sclater, Ibis, 1875, pp. 344–347, pl. viii.

Pycnonotidæ.

Argya fulva and *A. squamiceps* figured; H. E. Dresser, B. Eur. pt. xlv.

Ixus annectens, sp. n., Lord Walden, Ann. N. H. (4) xv. p. 401, Rangoon; = *I. davisoni*, sp. n., A. O. Hume, Str. Feath. 1875, p. 301, Rangoon.

Pomatorhinus mariæ, sp. n., Lord Walden, Ann. N. H. (4) xv. p. 403, Tonghoo Hills, Burma.

Pycnonotus barbatus, *P. capensis*, and *P. xanthopygius* figured; H. E. Dresser, B. Eur. pt. xxxix. *P. urostictus* figured; Lord Walden, Tr. Z. S. ix. pl. xxxii. fig. 2.

Oriolidæ.

Oriolus galbula figured; H. E. Dresser, B. Eur. pts. xliii. & xliv. *O. kundoo* in Turkestan; N. Severtzoff, J. f. O. 1875, p. 191.

Sylviidæ.

Abrornis atricapilla, Blyth, = *Myiodioctes pusillus*, Wils.; O. Finsch, P. Z. S. 1875, p. 640. *A. chrysea*, sp. n., Lord Walden, J. A. S. B. (n.s.) xliii. pt. 2, Extr. No. p. 106, Burma.

Accentor montanellus figured; H. E. Dresser, B. Eur. pts. xliii. & xliv.

Acrocephalus dumetorum, breeding in Northern Kumaon; A. Anderson, Str. Feath. 1875, p. 351.

Amytis goyderi, sp. n., J. Gould, Ann. N. H. (4) xvi. p. 286, Lake Eyre, Australia.

Calamodyta meridionalis, sp. n., W. V. Legge, Str. Feath. 1875, p. 369, Ceylon (= *C. brunnescens*, Jerd., *ex* Ceylon).

Calliope kamtchatkensis figured; H. E. Dresser, B. Eur. pt. xlv.

Chimarrhornis leucocephala breeding in Northern Kumaon; A. Anderson, Str. Feath. 1875, p. 355.

Cisticola celebensis, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 663, Celebes.

Drymœca blanfordi, sp. n., Lord Walden, J. A. S. B. (n.s.) xliii. pt. 2, Extr. No. p. 118, Burma. *D. fortirostris*, Jard., = *D. curvirostris*, Sundev., = *D. natalensis*, Smith; G. E. Shelley, Ibis, 1875, p. 380. *D. leucopogon*, sp. n., J. Cabanis, J. f. O. 1875, p. 235, Loango.

Drymœpus longicaudatus, Tick., is the winter plumage of *D. inornatus*, Sykes; W. E. Brooks, Str. Feath. 1875, p. 295.

Dumeticola mandellii, sp. n., W. E. Brooks, Str. Feath. 1875, p. 284, Native Sikkim: apparently = *D. brunneipectus*, Blyth; O. A. Hume, *loc. t.* note.

Gerygone aucklandica, Pelz., = *G. flaviventris*, Gray; O. Finsch, Tr. N. Z. Inst. vii. p. 229. *G. melanothorax*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 956, Mount Arfak, New Guinea. *G.? arfakiana*, sp. n., *id. tom. cit.* p. 960, Mount Arfak, New Guinea. *G.? cinerea*, sp. n., *id. tom. cit.* p. 958, Mount Arfak, New Guinea. *G.? poliocephala*, sp. n.,

id. tom. cit. p. 960, Mount Arfak, New Guinea. *G.* ? *rufescens*, sp. n., *id. tom. cit.* p. 961, Mount Arfak, New Guinea. *G.* ? *ruficollis*, sp. n., *id. tom. cit.* p. 959, Mount Arfak, New Guinea.

Hypolais caligata: nest and eggs described; H. E. Dresser, P. Z. S. 1875, p. 97; figured, B. Eur. pt. xxxviii. *H. rama*, Sykes: the type examined and the differences between it and *H. caligata*, Eversm., pointed out; *id.* Ibis, 1875, p. 513.

Horites sericea, sp. n., Lord Walden, J. A. S. B. (n.s.) xliii. pt. 2, Extr. No. p. 119, Burma.

Locustella luscinioides figured; H. E. Dresser, B. Eur. pt. xxxviii.

Malurus, sp. ?, described, and the name *M. naimii* proposed for it by D'Albertis, but perhaps it = *M. albiscapulatus*, Meyer; T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 827, Mon, New Guinea.

Melizophilus sardus and *M. undatus* figured; H. E. Dresser, B. Eur. pt. xliii. & xliv.

Melocichla pyrrhops, sp. n., J. Cabanis, J. f. O. 1875, p. 236, Loango.

Orthotomus viridis, Hume, is the female of *O. flavoviridis*, Moore; A. O. Hume, Str. Feath. 1875, p. 325.

Saxicola falkensteini, sp. n., J. Cabanis, J. f. O. 1875, p. 235, Loango, *S. homochroa*, Ibis, 1871, p. 79, = *S. erythræa* (Ehr.); J. H. Gurney, jun., Ibis, 1875, p. 140. *S. leucomela*, Severtz., = *S. morio*, Ehr.; *S. lugens*, Severtz., = *S. leucomela*, Pall.; *S. melanogenys* and *S. melanotis* = *S. vittata*, Ehr.; *S. talas*, Severtz., = *S. melanoleuca* (Güld.); H. E. Dresser, Ibis, 1875, p. 336. *S. salina*, Eversm., Severtz., = *S. deserti*, Rüpp.; *id. op. cit.* p. 337.

Sericornis arfakiana, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 962, Mount Arfak, New Guinea. *S. beccarii*, sp. n., *id. op. cit.* vi. p. 79, Aru Islands. *S. minimus*, sp. n. ?, described and figured; J. Gould, B. of New Guinea, &c., pt. i., Queensland. *S.* ? *trochiloides*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 961, Misor Island, New Guinea.

Sphœnœcus amboinensis, sp. n., T. Salvadori, *tom. cit.* p. 988, Amboina.

Stipiturus malachurus in Tasmania; W. V. Legge, P. R. Soc. Tasm. 1874, p. 33.

Suya erythropleura, sp. n., Lord. Walden, J. A. S. B. (n.s.) xliii. pt. 2, Extr. No. p. 120, Burma.

Sylvia atricapilla, *S. conspicillata*, and *S. subalpina* figured; H. E. Dresser, B. Eur. pts. xliii. & xliv. *S. melanothorax* figured; *id. op. cit.* pt. xxxix.

Tribura luteicentris belongs to the genus *Dumeticola*; W. E. Brooks, Str. Feath. 1875, p. 286.

Motacillidæ.

Anthus japonicus, Temm. & Schl., recognized; R. Swinhoe, Ibis, 1875, p. 449. *A. maculatus* breeding in Northern Kumaon; A. Anderson, Str. Feath. 1875, p. 253. *A. seebohmi*, sp. n., described and figured; H. E. Dresser, B. Eur. pt. xlv., N. Russia.

Budytes nova-guineæ, sp. n., A. B. Meyer, SB. Ges. Isis, 1875, p. 75, and MT. Mus. Dresd. i. p. 10, Arfak Mountains, New Guinea.

Corydalla lugubris, sp. n., Lord Walden, Tr. Z. S. ix. p. 198, Guimaras, Philippine Islands.

Grallina bruijni, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 929, Mount Arfak, New Guinea.

Motacilla alba figured in winter plumage; H. E. Dresser, B. Eur. pts. xli. & xlii. *M. citreola* figured; *id. op. cit.* pt. xxxviii. *M. lugubris* figured in winter plumage; *id. op. cit.* pts. xli. & xlii. *M. flava*, *M. melanocephala*, *M. raii*, and *M. viridis*, figured; *id. op. cit.* pt. xl. *M. melanope* figured; *id. op. cit.* pts. xli. & xlii.

Troglodytidæ.

Heleodytes bicolor, sp. n., A. v. Pelzeln, Ibis, 1875, p. 330, Spanish Guiana.

Microcerculus squamulatus, sp. n., P. L. Sclater, & O. Salvin, P. Z. S. 1875, p. 37, pl. vi., Venezuela.

Pnoepyga chocolatina, sp. n., H. H. Godwin-Austen & Lord Walden, Ibis, 1875, p. 253, Kedimai, Munipur Hills. *P. roberti*, sp. n., *iid. tom. cit.* p. 252, Chakha, Munipur Hills, and Asalu.

Troglodytes alascensis, Baird, from Alaska, = *T. fumigata*, Temm., from Japan; R. Swinhoe, Ibis, 1875, p. 143.

Thryothorus ludovicianus, var. n. *miamensis*; R. Ridgway, Am. Nat. ix. p. 469.

Sittidæ.

Dendrophila. Three species recognized; R. B. Sharpe, Str. Feath. 1875, p. 436.

Sitta nagaensis figured; J. Gould, B. of Asia, pt. xxvii.

Paridæ.

Ægithalus castaneus. A bird from S. Russia, supposed to belong to this species described; L. Olphe-Galliard, Ibis, 1875, p. 268.

Parus arfaki, sp. n., A. B. Meyer, SB. Ges. Isis, 1875, p. 75, and MT. Mus. Dresd. i. p. 8, Arfak Mountains, New Guinea.

Suthora munipurensis, sp. n., H. H. Godwin-Austen & Lord Walden, Ibis, 1875, p. 250, Karakhul near Munipur.

Xerophila pectoralis, Gould, figured; J. Gould, B. of New Guinea, &c., pt. ii.

Tanagridæ.

Chlorochrysa nitidissima, Scl., figured; P. L. Sclater, Ibis, 1875, p. 466, pl. x.

Chlorospingus chrysophrys, sp. n., P. L. Sclater, & O. Salvin, P. Z. S. 1875, p. 235, Merida, Venezuela. *C. nigrifrons*, sp. n., G. N. Lawrence, Ibis, 1875, p. 384, Ecuador. *C.* ? *speculiferus*, sp. n., *id. tom. cit.* p. 383, pl. ix. fig. 1, Porto Rico.

Buarremon castaneifrons, sp. n., described and figured; P. L. Sclater & O. Salvin, P. Z. S. 1875, p. 235, pl. xxxv. fig. 1, Merida, Venezuela. *B. taczanowskii*, a new name proposed for *B. mystacalis*, Tacz., preoccupied in this genus; also figured; *iid. tom. cit.* p. 236, pl. xxxv. fig. 2.

Phœnicothraupis cristata, sp. n., G. N. Lawrence, Ann. Lyc. N. York, xi. p. 70, Bogota, N. Granada.

Fringillidæ.

Ammodromus caudacutus, var. n. *nelsoni*; J. A. Allen, P. Bost. Soc. xvii. p. 292, Calamet Marshes, near Chicago, Illinois.

Carduelis elegans figured; H. E. Dresser, B. Eur. pt. xl. Heads figured; G. D. Rowley, Orn. Misc. pt. ii. pl. xiv. figs. 1, 2, & 3. *C. orientalis*, Eversm., = *C. caniceps*, Vigors; H. E. Dresser, Ibis, 1875, p. 387.

Chrysomitris citrinella figured; H. E. Dresser, B. Eur. pts. xliii., xliv., & xlv.

Coccothraustes speculigerus, Severtz., = *C. carneipes*, Hodgs.; H. E. Dresser, Ibis, 1875, p. 241. *C. vulgaris* figured; *id.*, B. Eur. pts. xli. & xlii.

Erythrospiza githaginea figured; *id. op. cit.* pts. xxxv. & xxxvi. *E. phœnicoptera*, Severtz., = *E. sanguinea*, Gould; *id.* Ibis, 1875, p. 247.

Fringilla montifringilla, head of variety figured; G. D. Rowley, Orn. Misc. pt. ii. pl. xii. figs. 1 & 2. *F. serinus*, a monograph of this species, with two plates, giving figures of both sexes and the eggs; N. Quépat, Monogr. du Cini (*F. serinus*), Paris: 1875, 8vo.

Hypolia. A new sub-generic name proposed for the smooth-billed Old World members of *Leucosticte*; R. Ridgway, Bull. U. S. Geol. Surv. (2) 2, p. 67, note [also employed by É. Mulsant in *Trochilidæ*, anteà, p. 69].

Junco. A synopsis of the species of this genus; W. H. Henshaw, Rep. upon Orn. Spec. p. 113.

Leucosticte. A monograph of the American members of this genus; R. Ridgway, Bull. U. S. Geol. Surv. (2) 2, p. 51. *L. atrata*, sp. n., *id.*, American Sportsman, 1874, p. 241 (July), Colorado, U.S.A.

Ligurinus chloris figured; H. E. Dresser, B. Eur. pts. xliii. & xliv.

Linaria cannabina figured; *id. op. cit.* pt. xlvi.

Lobiospiza notabilis, Finsch & Hartl., = *Amblyura cyanovirens*, juv.; G. Hartlaub, P. Z. S. 1875, p. 269.

Montifringilla ruficollis figured; J. Gould, Birds of Asia, pt. xxvii.

Neospiza acunhæ, Cab., figured; J. Cabanis, J. f. O. 1875, pl. i. fig. 2.

Passer hispaniolensis and *P. montanus* figured; H. E. Dresser, B. Eur. pt. xlvi. *P. stoliczkæ*, Hume, = *P. ammodendri*, Severtz.; *id.*, Ibis, 1875, p. 240.

Pyrrhula cineracea, Cab., figured; J. Gould, Birds of Asia, pt. xxvii.

Serinus hortulanus figured; H. E. Dresser, B. Eur. pts. xliii. & xliv.

Ploceidæ.

Hyphantornis aurantiigula, sp. n., J. Cabanis, J. f. O. 1875, p. 238, Loango.

Lagonosticta russi, sp. n., A. Reichenow, J. f. O. 1875, p. 453, Senegal.

Munia, sp. ?. A species from Andai, New Guinea, allied to *M. tristissima*, Wallace, described but not named; T. Salvadori, Ann. Mus. Genov. vi. [1874] p. 85.

Pytelia reichenowi, Hartl., figured; J. Cabanis, J. f. O. 1875, pl. ii. fig. 1.

Polymitra (*Fringillaria*) *cabanisi*, sp. n., A. Reichenow, J. f. O. 1875, p. 233, pl. ii. figs. 2 & 3, Camaroons.

Emberizidæ.

Emberiza brunneiceps, Severtz., = *E. luteola*, Lath.; H. E. Dresser, Ibis, 1875, p. 249. *E. caniceps*, Severtz., = *E. stewarti*, Blyth; *id. tom. cit.* p. 248. *E. cirlus* near Zürich; G. Vogel, Ber. St. Gall. Ges. 1873–74, p. 434.

Alaudidæ.

Alauda arvensis. Head of var. figured; G. D. Rowley, Orn. Misc. pt. ii. pl. xiv. fig. 4. *A. peguensis*, a name suggested for a "mere variety" of *A. gulgula*, Frankl., found in the environs of Pegu, Burma; E. W. Oates, Str. Feath. 1875, p. 343 (= *A. gulgula*; A. O. Hume, *l. c.* note). *A.* (*Megalophonus*) *plebeia*, sp. n., J. Cabanis, J. f. O. 1875, p. 237, Loango. *A. triborhyncha*, note on; N. Severtzoff, J. f. O. 1875, p. 193.

Ammomanes cinctura figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Otocorys penicillata and its allies; N. Severtzoff, J. f. O. 1875, p. 191.

Sturnidæ.

Acridotheres albo-cinctus, sp. n., H. H. Godwin-Austen & Lord Walden, Ibis, 1875, p. 251, Munipur Valley.

Aplonis pelzelni, sp. n., O. Finsch, P. Z. S. 1875, p. 644, Ponape, Seniavin group.

Calornis irwini, Hume, = *C. affinis*; Lord Walden, Ibis, 1875, p. 461.

Fregilupus. On an extinct species in Rodriguez, probably allied to [illegible] genus; A. Newton, P. Z. S. 1875, p. 41.

Artamidæ.

Artamus leucorhynchus, Lord Walden, *nec* Linn., = *A. leucogaster* (Valenc.); T. Salvadori, Ann. Mus. Genov. vii. p. 656. [But see Lord Walden, Ibis, 1876, p. 133.]

Icteridæ.

Centropsar mirus, Sclater (P. Z. S. 1874, p. 176, pl. xxvi.) turns out to be a made-up bird, having the head, wings, and body perhaps of *Icterus audubonii*, the tail of *Agelæus gubernator*, and the legs of an *Otocorys*. P. L. Sclater, P. Z. S. 1875, p. 380 [Zool. Rec. xi. p. 63].

Icterus virescens, sp. n., A. Dubois, Bull. Ac. Belg. (2) xl. p. 798, Mexico. *I. xanthornus*, var. n. *dubusi*, id. *tom. cit.* p. 799, and var. n. *marginalis*, id. *tom. cit.* p. 800, Isthmus of Panama.

Paradiseidæ.

Cf. Beccari's 'Lettera Ornithologica,' Ann. Mus. Genov. vii. pp. 704–720.

Æluradus arfakianus, Meyer [= *Æ. melanotis*, Gray, *fide* Sclater, P. Z. S. 1873, p. 697], *Æ. buccoides* (Temm.), *Æ. maculosus*, Ramsay, and *Æ. melanotis*, Gray, figured; J. Gould, Birds of New Guinea, &c., pt. i.

Chlamydodera occipitalis, sp. n., J. Gould, Ann. N. H. (4) xvi. p. 429, Northern Queensland.

Diphyllodes gulielmi-tertii, sp. n., A. B. Meyer, Zool. Gart. 1875, p. 29, Mountains of East Waigiou. Its specific distinction asserted; *id.* P. Z. S. 1875, p. 30. Redescribed and figured; *id.* MT. Mus. Dresd. i. p. 3, pl. i.

Drepanornis albertisi, Scl., figured; J. Gould, Birds of New Guinea, &c., pt. i.

Epimachus albertisi. Outline of head and bill; C. B. H. von Rosenberg, Reist. naar Geelvinkbaai op Nieuw Guinea, pl. xviii.

Manucodia chalybea, Bodd., = *Paradisea chalybeata*, Penn., in Forst. Zool. Ind. p. 40, and should stand as *Manucodia chalybeata*; T. Salvadori, Ann. Mus. Genov. vii. p. 968. *M. jobiensis*, sp. n., *id. tom. cit.* p. 969, Jobi Island.

Paradisea raggiana, Scl., described; T. Salvadori & L. M. D'Albertis, *tom. cit.* p. 829, New Guinea. Obtained in S.E. New Guinea, and its habits described; L. M. D'Albertis, P. Z. S. 1875, p. 532. *P. speciosa*, Bodd., = *P. magnifica*, Penn., in Forst. Zool. Ind. p. 40, and should stand as *Diphyllodes magnifica*; T. Salvadori, Ann. Mus. Genov. vii. p. 970.

Parotia sexpennis, Bodd., figured; J. Gould, Birds of New Guinea, &c., pt. i. New Guinea.

Ptilonorhynchus holosericeus. Its egg described; E. P. Ramsay, P. Z. S. 1875, p. 112.

Ptiloris wilsoni, sp. n., J. A. Ogden, P. Ac. Philad. 1875, p. 451, N. Guinea.

Scenopœus, g. n.; type, *S. dentirostris*, sp. n., E. P. Ramsay, P. Z. S. 1875, p. 591, N.E. coast of Queensland.

Corvidæ.

Corvus corax seen in Spitsbergen; A. Newton, Ibis, 1875, p. 272. *C.*

corax and *C. umbrinus* figured; H. E. Dresser, B. Eur. pt. xxxvii. *C. frugilegus* figured; H. E. Dresser, *op. cit.* pts. xxxv. & xxxvi. *C. insolens*, a name suggested for a crow from Burma, should it prove to be distinct from *C. impudicus*, Hodgson; A. O. Hume, Str. Feath. 1875, p. 144. *C. monedula* figured; H. E. Dresser, B. Eur. pt. xlv. *C. orientalis*, Eversm., and *C. subcorax*, Severtz., notes on (the latter perhaps = *C. lawrencii*, Hume); N. Severtzoff, J. f. O. 1875, p. 199.

Cyanocitta argentigula, sp. n., G. N. Lawrence, Ann. Lyc. N. York, xi. p. 88, Talamanca, Costa Rica. *C. yucatanica*, sp. n., A. Dubois, Bull. Ac. Belg. (2) xl. p 797, Yucatan [*C. germana*, Scl. & Salv., P. Z. S. 1876, p. 270, must doubtless be referred to this species].

Gymnocitta cyanocephala found breeding in Colorado Territory; E. Coues, Ibis, 1875, p. 270.

Lycus torquatus, Drumm. Note on; N. Severtzoff, J. f. O. 1875, p. 190.

Podoces biddulphi, Hume, *P. hendersoni*, Hume, *P. panderi*, Fischer, and *P. humilis*, Hume, figured; J. Gould, Birds of Asia, pt. xxvii.

Pyrrhocorax alpinus and *P. graculus* figured; H. E. Dresser, B. Eur. pt. xxxviii.

Streptocitta caledonica (Lath.), *fide* Wald., Tr. Z. S. viii. p. 75, = *S. albicollis*, Vieill.; T. Salvadori, Ann. Mus. Genov. vii. p. 667.

COLUMBÆ.

Columbidæ.

Carpophaga bicolor and its allies described, and their range defined; R. B. Sharpe, P. Z. S. 1875, p. 108. *C. chalconota*, sp. n., T. Salvadori, Ann. Mus. Genov. vi. [1874] p. 87, Atam, New Guinea.

Chalcopelia brehmeri, Hartl. Additional characters whereby it may be distinguished from *C. puella*; O. Finsch, Ibis, 1875, p. 467.

Chalcophaps beccarii, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 974, Mount Arfak, New Guinea. *C. margaritæ*, sp. n., T. Salvadori & L. M. D'Albertis, *tom. cit.* p. 836, New Guinea: ? its ♀ described, T. Salvadori, *tom. cit.* p. 973.

Chrysæna viridis, sp. n., E. L. Layard, P. Z. S. 1875, p. 151, Kandavu, Fiji.

Columbina aurisquamata, Leybold, redescribed; E. von. Martens, J. f. O. 1875, p. 446 [= *Chamæpelia aymara*, Knip & Prév., certe. The recorder possesses Leybold's types].

Columba bollii, *C. laurivora*, and *C. trocaz* figured; H. E. Dresser, B. Eur. pts xli. & xlii. *C. intermedia*, Strickl., and *C. neglecta*, Hume, compared; N. Severtzoff, J. f. O. 1875, p. 194.

Didunculus strigirostris now builds in trees, instead of on the ground; S. J. Whitmee, P. Z. S. 1875, p. 495.

Ducula grisecapilla, sp. n., Lord Walden, Ann. N. H. (4) xvi. p. 228, Karen Hills, Burma.

Erythrœnas pulcherrima has characters in common with *Ptilonopus* and must be classed with the Ptilonopine Pigeons; A. H. Garrod, P. Z. S. 1875, p. 367.

Geotrygon ruficentris, sp. n., G. N. Lawrence, Ann. Lyc. N. York, xi. p. 90, Talamanca, Costa Rica.

Goura scheepmakeri, sp. n., O. Finsch, P. Z. S. 1875, p. 631, pl. lxxiii. New Guinea, opposite Yule Island. Redescribed; T. Salvadori & L. M. D'Albertis, Ann. Mus. Genov. vii. p. 837.

Gymnophaps, g. n., type, *G. albertisi*, sp. n.; T. Salvadori, *op. cit.* vi. [1874] p. 86, Andai, New Guinea.

Ianthœnas leucolæma must be placed with *Columba*, &c., in the Columbine and not the Carpophagine division of the *Columbæ*; A. H. Garrod, P. Z. S. 1875, p. 367.

Iotreron melanospiza, Celebes, *I. melanauchen*, Flores, *I. chrysorrhoa*, Sula Is. & Ceram, *I. xanthorrhoa*, Sanghir, spp. nn., T. Salvadori, Ann. Mus. Genov. vii. p. 671.

Leucotreron gironieri figured; Lord Walden, Tr. Z. S. ix. pl. xxxiv. fig. 1.

Macropygia nigrirostris, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 972, Mount Arfak, New Guinea.

Phapitreron amethystina figured; Lord Walden, Tr. Z. S. ix. pl. xxxiv. fig. 2.

Phlegœnas canifrons figured; O. Finsch, J. Mus. Godeffr. viii. pl. v. fig. 1. *P. jobiensis*, sp. n., A. B. Meyer, SB. Ges. Isis, 1875, p. 75, Jobi Island, New Guinea; *id.* MT. Mus. Dresd. i. p. 10. *P. geminus*, Jobi, *P. trigeminus*, Sorong, Salwatti, spp. nn., T. Salvadori, Ann. Mus. Genov. vii. p. 786. *P. gestroi*, sp. n., T. Salvadori & L. M. D'Albertis, *tom. cit.* p. 834, Yule Island, New Guinea. *P. speciosus* figured; C. B. H. von Rosenberg, Reist. naar Geelvinkbaai op Nieuw Guinea, pl. xv. fig. 1.

Sphenocercus minor, sp. n., W. E. Brooks, Str. Feath. 1875, p. 253, Sansoo. Not distinct from *S. sphenurus*, Vig.; A. O. Hume, *l. c.*

Turtur humilior, sp. n., A. O. Hume, Str. Feath. 1875, p. 279, Andaman Islands.

Dididæ.

Pezophaps solitarius. Additional evidence respecting this species; A. Newton, P. Z. S. 1875, p. 40.

GALLINÆ.

Cracidæ.

See E. v. Martens, *suprà*, p. 41.

Crax alberti, *C. alector*, *C. carunculata*, *C. daubentoni*, *C. globicera*, *C. globulosa*, and *C. incommoda*, figured; P. L. Sclater, Tr. Z. S. ix. pls. xl.–xlix. *C. viridirostris*, sp. n., *id. tom. cit.* p. 282, S. America.

Mitua tomentosa and *M. tuberosa* figured; *id. tom. cit.* pls. li. & lii.

Nothocrax urumutum figured ; *id. tom. cit.* pl. l.

Pauxis galeata figured ; P. L. Sclater, *tom. cit.* pl. liii. On the normal and abnormal colouring of the female of this species; *id.*, P. Z. S. 1875, p. 566.

Phasianidæ.

Euplocamus lineatus figured ; J. Gould, Birds of Asia, pt. xxvii. *E. vieilloti*, considered distinct from *E. ignitus*, to which it was united in Elliot's Mon. of the Phasianidæ; P. L. Sclater, P. Z. S. 1875, p. 380, note.

Lobiophasis bulweri figured ; J. Gould, Birds of Asia, pt. xxvii.

Phasianus chrysomelas, sp. n., N. Severtzoff, J. f. O., 1875, p. 225, Central Asia [*cf.* Zool. Rec. xi. p. 66, and Ibis, 1875, p. 493, where this species is also described as new; also Elliot, Ibis, 1876, p. 131]. *P. insignis*, Elliot, = *P. shawi*, Elliot ; J. Scully, Str. Feath. 1875, p. 433. *P. persicus* redescribed ; N. Severtzoff, Ibis, 1875, p. 494. *P. semitorquatus*, sp. an var. n., *id. tom. cit.* p. 491, Foot of the Tian-Shan Mountains.

Pucrasia darwini figured ; J. Gould, Birds of Asia, pt. xxvii.

Tetraonidæ.

Lagopus rupestris figured ; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Tetrao mlokosiewiczi, sp. n., described, with two woodcuts, showing the shape of the tail of the ♂ and ♀ ; L. Taczanowski, P. Z. S. 1875, p. 266, Eastern Caucasus. Figured ; H. E. Dresser, B. Eur. pts. xli. & xlii.

Perdicidæ.

Arboricola. A supra-orbital chain of bones noticed in this genus; J. Wood-Mason, Ann. N. H. (4) xvi. p. 145 [*cf.* Zool. Rec. xi. p. 66].

Caccabis. The distribution of the members of this genus in Southern Europe ; Lord Lilford, Ibis, 1875, p. 8. *C. petrosa* and *C. rufa* figured ; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi. *C. saxatilis* figured ; *id. op. cit.* pts. xlii. & xliv.

Coturnix dactylisonans. Head of variety figured; G. D. Rowley, Orn. Misc. pt. ii. pl. xii. figs. 3 & 4.

Ortyx texanus. Head of variety figured ; *id. op. cit.* pl. xiii. figs. 3 & 4.

Francolinus vulgaris. On its extinction in Europe ; Lord Lilford, Ibis, 1875, p. 7.

Turnix beccarii, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 675, Celebes.

Megapodiidæ.

Megapodius lowi, sp. n., R. B. Sharpe, P. Z. S. 1875, p. 111, Borneo.

Megapodius senex figured; O. Finsch, J. Mus. Godeffr. viii. pl. v. figs. 2 & 3.

Opisthocomidæ.

Opisthocomus cristatus. Its myology described; J. Beswic Perrin, Tr. Z. S. ix. p. 353 *et seq.*

GRALLÆ.

Rallidæ.

Amaurornis olivacea figured; Lord Walden, Tr. Z. S. ix. pl. xxxiii. fig. 2.

Corethrura ? leucospila, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 975, Mount Arfak, New Guinea. A new generic name, *Corethruropsis*, is suggested for this species; *id. ibid.*

Erythra ruficrissa (Gould) described; *id. tom. cit.* p. 795.

Erythromachus leguati, additional evidence respecting this species; A. Newton, P. Z. S. 1875, p. 41.

Fulica australis, in Tasmania; W. V. Legge, P. R. Soc. Tasm. 1874, p. 35.

Gymnocrex, g. n., type, *Rallina rosenbergi*, Schl.; T. Salvadori, Ann. Mus. Genov. vii. p. 678.

Hypotænidia abnormis, sp. n., A. O. Hume, Str. Feath. 1875, p. 389, Corbyn's Cove, Southern Andamans.

Ocydromus australis, Buller, B. N. Z., = *O. troglodytes* (Gm.) and *O. earli*, Buller, *l. c.*, = *O. australis* (Sparrm.); O. Finsch, Tr. N. Z. Inst. vii. p. 231.

Porphyrio stanleyi, sp. n., G. D. Rowley, Orn. Misc. pt. ii. pl. ix. New Zealand.

Porzana cinereiceps, sp. n., G. N. Lawrence, Ann. Lyc. N. York, xi. p. 90, Talamanca, Costa Rica. *P. elwesi*: a name here first introduced, its author stating that it is equivalent to *Porzana bicolor*, Walden; A. O. Hume, Str. Feath. 1875, p. 283. *P.* (*Coturnicops*) *exquisita* redescribed and figured; R. Swinhoe, Ibis, 1875, p. 135, pl. iii.

Rallina tricolor. Young and eggs described; E. P. Ramsay, P. Z. S. 1875, p. 603.

Rallus brachypus believed to occur in Auckland Island; A. v. Hügel, Ibis, 1875, p. 393. *R. modestus*, Hutton, distinct from *R. dieffenbachi*; W. L. Buller, P. N. Z. Inst. vii. p. 511.

Podica petersi figured; Layard's B. S. Afr., Sharpe's ed., pl. xii. (pt. 2).

Rhinochetidæ.

Rhinochetus. The correct orthography of this word; P. L. Sclater, Ibis, 1875, p. 389. Its habits described; Le Conte Pouget, Bull. Soc. Acclim. (3) ii. p. 162.

Scolopacidæ.

Æchmorhynchus, sub-g. n., for *Tringa parvirostris*, Peale; E. Coues, B. of N. W. p. 506, note [1874].

Gallinago pusilla, perhaps distinct from *G. aucklandica*; A. von Hügel, Ibis, 1875, p. 392. *G. wilsoni*: a specimen from Hakodadi identified with this common N. American snipe; R. Swinhoe, Ibis, 1875, p. 554.

Himantopus albicollis, sp. n., W. L. Buller, Tr. N. Z. Inst. vii. p. 224, New Zealand. *H. candidus* found breeding in Ceylon; W. V. Legge, P. Z. S. 1875, p. 376. *H. spicatus*, Potts, = *H. novæ-zealandiæ*; W. L. Buller, Tr. N. Z. Inst. vii. p. 224.

Limnocinclus acuminatus (Horsf.) found in New Zealand; W. L. Buller, Tr. N. Z. Inst. vii. p. 207.

Limosa uropygialis, Gould, = *L. novæ-zealandiæ*, Gray; O. Finsch, Tr. N. Z. Inst. vii. p. 231.

Machetes pugnax from Spanish Guiana; A. v. Pelzeln, Ibis, 1875, p. 332.

Phalaropus fulicarius and *P. hyperboreus* figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Recurvirostra avocetta figured; H. E. Dresser, *op. cit.* pt. xlvi.

Scolopax rusticola breeding in Northern Kumaon; A. Anderson, Str. Feath. 1875, p. 356.

Strepsilas interpres figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Totanus glottis and *T. fuscus* figured; *id. op. cit.* pts. xxxix. & xl.

Tringa minuta found breeding at the mouth of the Petchora; H. Seebohm, P. Z. S. 1875, p. 566.

Charadriidæ.

Ægialitis cantiana found breeding in Ceylon; W. V. Legge, P. Z. S. 1875, p. 374. *Æ. indica*, Less.: its true habitat shown to be W. Africa; G. E. Shelley, Ibis, 1875, p. 382. *Æ. monarcha* in Tasmania; W. V. Legge, P. R. Soc. Tasm. 1874, p. 34.

Anarhynchus frontalis. Curious position of eggs in nest of; J. A. Harvie Brown, Ibis, 1875, p. 519.

Charadrius asiaticus. Egg described, and Harting's view respecting the application of this name confirmed (Ibis, 1870, p. 201); H. E. Dresser, P. Z. S. 1875, p. 98. *C. fulvus*: its occurrence in England; *id.* Ibis, 1875, p. 514.

Chettusia gregaria figured; *id.*, B. Eur. pt. xxxvii.

Cursorius gallicus figured; *id.*, *op. cit.* pts. xli. & xlii.

Dromas ardeola observed in Ceylon; W. V. Legge, Str. Feath. 1875, p. 220.

Eudromias morinellus figured; H. E. Dresser, B. Eur. pts. xxxv. & xxxvi.

Lobivanellus lobatus in Tasmania; W. V. Legge, P. R. Soc. Tasm. 1874, p. 33.

Sarciophorus malabaricus found breeding in Ceylon; W. V. Legge, P. Z. S. 1875, p. 375.

Squatarola helvetica found breeding in the valley of the Petchora; H. Seebohm, P. Z. S. 1875, p. 566.

Vanellus vulgaris figured; H. E. Dresser, B. Eur. pt. xxxiv.

Chionididæ.

Chionis minor. Its habits in Kerguelen Island described; J. H. Kidder, Contr. Nat. Hist. Kerg. Is. p. 1 [see Coues, *suprà*, p. 30].

Otididæ.

Otis tetrax breeding in Thuringia; W. Thienemann, Zool. Gart. 1875, p. 363. See also A. J. Jäckel, *tom. cit.* p. 453.

Ibididæ.

Geronticus davisoni, sp. n., A. O. Hume, Str. Feath. 1875, p. 300, S. Tenasserim.

Ardeidæ.

Ardea cinerea figured; H. E. Dresser, B. Eur. pts. xli. & xlii. *A. megacephala*, additional evidence respecting this species; A. Newton, P. Z. S. 1875, p. 41. *A. purpurea* figured; H. E. Dresser, B. Eur. pts. xliii. & xliv.

Ardetta involucris. Peculiar habits of; W. H. Hudson, P. Z. S. 1875, p. 623 *et seq.*

Botaurus stellaris figured; H. E. Dresser, B. Eur. pt. xxxviii.

Tigrisoma salmoni, sp. n., P. L. Sclater & O. Salvin, P. Z. S. 1875, p. 38, Antioquia, Columbia.

ANSERES.

Phœnicopteridæ.

Phœnicopterus andersoni, sp. n., W. E. Brooks, P. A. S. B. 1875, pp. 17–48. Futtehgurh, N. W. Provinces, India. Is an immature state of *P. antiquorum*; A. O. Hume, Str. Feath. 1875, p. 314.

Anatidæ.

Anas boschas, female in male plumage figured; G. D. Rowley, Orn. Misc. pt. ii. pl. xiv. fig. 5. *A. finschi*, sp. n. (foss.), P. J. van Beneden, J. Zool. iv. p. 267, New Zealand.

Anser albifrons (Gm.), Bechst., in Finland; J. A. Palmén, Not. Fenn. (n.s.) xi. pp. 353–355.

Biziura leucocephala. Its occurrence in the Netherlands, and a full account of the species; J. P. van Wickewoort Crommelin, Arch. Néerl. x. p. 175.

Chloephaga inornata figured; R. B. Sharpe, Zool. Ereb. & Terr. Birds, pl. xxx.

Clangula glaucion figured; H. E. Dresser, B. Eur. pt. xlvi.

Cnemiornis calcitrans. Its osteology, &c.; R. Owen, Tr. Z. S. ix. pp. 253–272.

Cygnus bewicki found breeding in the valley of the Petchora; H. Seebohm, P. Z. S. 1875, p. 566. *C. immutabilis* is a var. of *C. olor*; F. F. Brüggemann, Zool. Gart. 1875, p. 321.

Fuligula cristata breeding in Scotland; A. B. Brooke, Ibis, 1875, p. 514.

Harelda glacialis figured; H. E. Dresser, B. Eur. pt. xlv.

Mergus albellus, female and young figured; *id. op. cit.* pts. xxxv. & xxxvi. *M. merganser* figured; *id. op. cit.* pts. xliii. & xliv. *M. australis* from Auckland Island; A. von Hügel, Ibis, 1875, p. 392.

Metopiana peposaca, the trachea figured and described; A. H. Garrod, P. Z. S. 1875, p. 154.

Querquedula eatoni, sp. n., R. B. Sharpe, Ibis, 1875, p. 328, Kerguelen Island. Redescribed; E. Coues, Contr. Nat. Hist. Kerg. Is. p. 4.

Rhodonessa caryophyllacea. The lower portion of the trachea described and figured by woodcuts; A. H. Garrod, P. Z. S. 1875, p. 153.

Sarcidiornis melanonota. The lower portion of the trachea described and figured in two woodcuts; *id. tom. cit.* p. 152.

Tachyeres. A new generic name proposed instead of *Micropterus*, which, having been applied to a genus of Fishes, cannot be used, as Lesson suggests, for the Duck usually called *M. cinereus*; R. Owen, Tr. Z. S. ix. p. 254.

Tadorna casarca figured; H. E. Dresser, B. Eur. pts. xli. & xlii.

Laridæ.

Buphagus (= *Stercorarius*) *antarcticus*. Its habits in Kerguelen Island described; J. H. Kidder, Contr. Nat. Hist. Kerg. Is. p. 9.

Hydrochelidon leucoptera figured; H. E. Dresser, B. Eur. pt. xlv.

Larus audouini found breeding on the island of Toro in the Mediterranean; Lord Lilford, Ibis, 1875, p. 31. *L. dominicanus*, its habits in Kerguelen Island, and synonymy; J. H. Kidder & E. Coues, Contr. Nat. Hist. Kerg. Is. p. 13.

Rhodostethia rosea. The immature plumage described; H. Saunders, Ibis, 1875, p. 484. *R. rossi*, two specimens from Greenland exhibited at a meeting of the Zool. Soc.; A. Newton, P. Z. S. 1875, p. 349.

Stercorarius catarrhactes figured; H. E. Dresser, B. Eur., pts. xli. & xlii. *S. longicaudus*, nestling figured; A. Marchand, R. Z. (3) iii. pl. iv.

Sterna alba, Potts. The validity of this supposed species must remain

doubtful till specimens are obtained, and the name *alba* is pre-occupied; W. L. Buller, Tr. N. Z. Inst. vii. p. 215. *S. frontalis* figured; R. B. Sharpe, Zool. Ereb. & Terr., Birds, pl. xx.° *S. virgata*, sp. n., J. Cabanis, J. f. O. 1875, p. 449, Kerguelen Island; = *S. vittata*, Gm., *fide* Coues, Contr. Nat. Hist. Kerg. Is.

Sternula sinensis (Gm.) found breeding in Ceylon; W. V. Legge, P. Z. S. 1875, p. 377.

Procellariidæ.

Species inhabiting Kerguelen Island, and notes on their habits, &c.; E. Coues & J. H. Kidder, Nat. Hist. Kerg. Is. pp. 19–39.

Œstrelata externa, sp. n., O. Salvin, Ibis, 1875, p. 373, Mas-afuera. *Œ. kidderi*, sp. n., E. Coues, Nat. Hist. Kerg. Is. p. 28, Kerguelen Island [= *Œ. brevirostris*, Less.; O. Salvin, Rowley's Orn. Misc. pt. iv. 1876].

Prion turtur figured; R. B. Sharpe, Zool. Ereb. & Terr., Birds, pl. xxix.

Procellaria affinis, sp. n., W. L. Buller, Tr. N. Z. Inst. vii. p. 215, New Zealand.

Thalassidroma jabe-jabe [!], sp. n., J. V. Barboza du Bocage, J. Sc. Lisb. 1875, p. 120, Raso Island, Cape Verd Archipelago.

Zaprium, a new generic name suggested for *Halobæna cærulea*, should a new one be eventually required [!]; E. Coues, Nat. Hist. Kerg. Is. p. 34.

Pelecanidæ.

Pelecanus erythrorhynchus. An account of its breeding in Oregon; C. Bendire, P. Bost. Soc. xviii. p. 165. *P. onocrotalus*, nestling figured; A. Marchand, R. Z. (3) iii. pl. iii..

Halieus verrucosus, sp. n., J. Cabanis, J. f. O. 1875, p. 450, Kerguelen Island; = *Phalacrocorax carunculatus*, Gm., *fide* Coues, Nat. Hist. Kerg. Is.

Phalacrocorax cristatus, nestling figured; A. Marchand, R. Z. (3) iii. pl. ii. *P. melanoleucus* in Tasmania; W. V. Legge, P. R. Soc. Tasm. 1874, p. 35.

Plotus novæ-hollandiæ. Its occurrence in New Zealand; W. L. Buller, Tr. N. Z. Inst. vii. p. 217.

Podicipedidæ.

Podiceps rubricollis and *P. cucullatus*. Note on these species; N. Severtzoff, J. f. O. 1875, p. 197.

Colymbidæ.

Colymbus glacialis in Belfast Lough; R. Lloyd Patterson, P. Belf. Soc. 1875, p. 126.

Uriidæ.

Mormon grabæ, Brehm. On its supposed differences from *M. fratercula*; L. Olphe-Galliard, Ibis, 1875, p. 267.

Spheniscidæ.

Notes on the habits and synonymy of species inhabiting Kerguelen Island; J. H. Kidder & E. Coues, Nat. Hist. Kerg. Is., pp. 39–47.

Aptenodytes longirostris and *A. patachonica* figured; R. B. Sharpe, Zool. Ereb. & Terr., Birds, pls. xxxi. & xxxii.

Eudyptes antipodum figured; R. B. Sharpe, *op. cit.* pl. xxvii. *E. vittata*, p. 112, Dunedin, New Zealand, and *E. atrata* (Hutton), p. 114, The Snares, New Zealand, O. Finsch, Ibis, 1875, spp. nn.

STRUTHIONES.

Struthionidæ.

See Marshall, *suprà*, p. 41.

Feathers figured; G. D. Rowley, Orn. Misc. pt. i. pl. vi.

Casuariidæ.

Casuarius beccarii, sp. n., P. L. Sclater, P. Z. S. 1875, p. 87 (with woodcut of head, neck, and gular appendage), Aru Islands. The head and neck of a bird now living in the Zoological Society's Gardens figured; this specimen was obtained by the officers of H.M.S. "Basilisk" from an island off the south coast of New Guinea, and is believed to belong to the same species as that above recorded; *id. l. c.* p. 527, pl. lviii. *C. occipitalis*, sp. n., T. Salvadori, Ann. Mus. Genov. vii. p. 718, note, Jobi Island, New Guinea [*cf.* Sclater, Ibis, 1876, p. 245, note]. *C. papuanus*, head figured; C. B. H. von Rosenberg, Reist. naar Geelvinkbaai op Nieuw Guinea, pl. xvii. *C. picticollis*, sp. n., P. L. Sclater, P. Z. S. 1875, p. 85, pl. xviii., south-eastern end of New Guinea. A skin of chick, supposed to be of this species, from Milne Bay, New Guinea, exhibited at a meeting of the Zoological Society, and described; *id. tom. cit.* p. 349. *C. tricarunculatus*, n., O. Beccari, Ann. Mus. Genov. vii. p. 717, Salwatti, New Guinea. *C. uniappendiculatus*, juv. figured; P. L. Sclater, P. Z. S. 1875, pl. xx. *C. westermanni*, from the island of Jobi, figured; *id. tom. cit.* pl. xix.

Apterygidæ.

Apteryx australis, *A. haasti*, and *A. oweni* figured; G. D. Rowley, Orn. Misc. pt. i. pls. i.–v.

Dinornithidæ.

Dinornis. [See Haast, J.; McKay, A.; Hamilton, J. W.; Booth, B. S.; Hutton, F. W.; Coughtrey, M.]

ODONTORNITHES.

Hesperornis regalis. Jaw, tooth, and a dorsal vertebra figured; O. C. Marsh, Am. J. Sci. (3) x. p. 403, pl. x.

Ichthyornis dispar. Jaw and a cervical vertebra figured; *id. ibid.* pl. ix.

REPTILIA.

BY

A. W. E. O'Shaughnessy.

Special branches of the anatomy of Reptiles have been carefully investigated during the year 1875, more particularly the nervous system, the study of which has been advanced by various memoirs referred to below. As valuable contributions to the anatomy of separate groups, Wiedersheim's paper on *Salamandrina perspicillata* and *Geotriton fuscus*, and that of Dr. Peters on *Cæcilia* (continued from last year), may be mentioned. Dr. Günther, in his account of the Land Tortoises of the Galapagos Islands, has made some very interesting generalizations on the geographical distribution of these animals; and J. de la Espada's discovery of the tailed Batrachian, *Urotropis platurus*, in La Plata, is perhaps the most startling fact of the year in this department of zoology.

ANATOMY.

Calberla, E. Ueber die Endigungsweise der Nerven in den quergestreiften Muskeln der Amphibien. Z. wiss. Zool. xxiv. p. 164 (also separately, Leipzig: 1874).

Cartier, O. Studien über den feineren Bau der Haut bei den Reptilien. Verh. Ges. Würzb. v. pp. 192–212, figs. 1–10.

Colosanti, G. Untersuchungen über die Durchschneidung des Nervus olfactarius bei Fröschen. Arch. Anat. Phys. 1875, pp. 469–476.

Eimer, T. Ueber den Bau und die Bewegung der Samenfäden: 3 bei den Amphibien; 4 bei den Reptilien. Verh. Ges. Würzb. vi. pp. 104 & 105.

Gulliver, G. On the red blood corpuscles in Batrachia and Reptilia. P. Z. S. 1875, p. 480.

Huizinga, —. Untersuchungen über die Innervation der Gefässe in der Schwimmhaute des Frosches. Arch. ges. Phys. xi. pp. 207–221.

Malbranc, M. Von der Seitenlinie und ihren Sinnesorganen bei Amphibien. Z. wiss. Zool. xxvi. pp. 24–86, pls. i.–iv.

Rouget, C. Mémoire sur le développement des nerfs chez les larves des Batraciens. Arch. Phys. (2) ii. pp. 801–853, pls. 29–34.

Stieda, L. Ueber den Bau des centralen Nervensystems des Axolotl. Z. wiss. Zool. xxv. pp. 285–310, pl. xix. figs. 1–22.

——. Ueber den Bau des centralen Nervensystems der Schildkröte. *Tom. cit.* pp. 361–406, pls. xv. & xvi.

——. Ueber den Bau des centralen Nervensystems der Amphibien und Reptilien. Leipzig: 1875, 4to, 74 pages, 3 plates.

Tomes, C. On the Development of the teeth of the Newt, Frog, Slow-worm, and Green Lizard. Phil. Tr. clxv. pp. 285–296, pls. xlvi. & xlvii.

The author remarks that scarcely anything has been published bearing upon the development of the teeth of *Reptilia* and *Batrachia* since the paper in which Huxley, nearly twenty years ago, pointed out that the "papillary stage" could not be said to exist at any time, either in the frog or in certain fish; he describes the structure and method of formation of the teeth, as studied in the above common types.

——. On the Structure and Development of the Teeth of Ophidia. *Tom. cit.* pp. 297–302, pl. xlviii.

There is no cementum upon the teeth of Snakes, the tissue so named proving to be enamel; the author believes that the presence of cementum in Reptiles generally will be found associated with the implantation of the teeth in more or less complete sockets, as in the Crocodiles and Ichthyosaurs.

In "Anleitung zur wissenschaftlichen Beobachtungen auf Reisen," edited by Dr. Neumayer, Berlin, 1875, Dr. Günther has furnished (pp. 389–397) directions as to the methods of conducting original observations on Reptiles, and the points to which special attention should be given, together with full instructions how to collect and preserve specimens.

Dr. Sclater in his "Address to the Biological Section of the British Association," 1875, Belfast, makes remarks on the present state of knowledge respecting the geographical distribution of Reptiles.

FAUNÆ.

Europe.

Schreiber, E. Herpetologia Europæa. Braunschweig: 1875, 8vo, pp. 639, with numerous woodcuts in the text.

A compendious account of the Reptilian fauna of Europe, with complete descriptions of the species and carefully compiled details of habits and range. A work greatly needed to assist ordinary observers in identifying even the commoner forms, as is shown by the number of independent descriptions of species like *Zootoca vivipara*.

West Africa.

W. Peters has given an account of a collection of Reptiles made by Dr. Buchholz, consisting of 2 Crocodiles, 5 Tortoises, 16 Lizards, 37 Snakes, some of which are new species, 28 Batrachians (new species and genus). This collection adds to the fauna of Upper Guinea a species of *Platymantis*, a genus hitherto confined to the Indian and Australian Archipelagos, and Dr. Peters remarks that a number of forms met with in Upper Guinea are so similar to those of East Africa, that the utmost care is necessary in discriminating them. MB. Ak. Berl. 1875, pp. 196–211.

America.

J. de la Espada describes *Urotropis platurus*, a new tailed Batrachian from Rio de la Plata. An. Soc. Esp. iv. p. 71.

S. W. Garman gives a list of some Reptiles from the Western Coast of S. America. P. Bost. Soc. xviii. p. 204.

E. D. Cope (Note on the Herpetology of Florida, P. Ac. Philad. 1875, p. 10) states that 15 species of *Batrachia* and *Reptilia* are found in Florida, not occurring in any other part of N. America, 3 of them being also Cuban.

Asia.

The Reptiles obtained by the late Dr. Stoliczka in the course of Sir D. Forsyth's mission, from Kashmir, Ladák, Eastern Turkestan, and Wakhán, are enumerated by W. T. Blanford, in anticipation of fuller accounts with figures of the new species; they consist of Lizards and Snakes. J. A. S. B. (n. s.) xliv. pt. 2, pp. 191–196.

Dr. Günther's Second Report on Indian Reptiles, obtained by the British Museum, viz., the collections of Lieut.-Col. Beddome in Southern India, and of Dr. Jerdon in Northern India and the Himalayas (P. Z. S. 1875, pp. 224–234, pls. xxx.–xxxiv.), treats of the Lizards and Snakes; his Third Report (pp. 567–577, pls. lxiii.–lxvi.) is an account of the Batrachians.

A new and revised edition of E. Nicholson's Handbook or Elementary Treatise and Catalogue of the Snakes of India, with the useful addition of numerous illustrations from the author's original drawings, has been issued. Madras: 1874, 8vo, pp. 188, 20 pls.

Three new Lizards found in Sind are described by Blanford. P. A. S. B. 1875, p. 232 (preliminary abstract).

Australasia.

An account of the Reptiles collected by O. Beccari in Amboyna, and the Aru and Kei Islands, with descriptions of new species, is given by G. Doria in Ann. Mus. Genov. vi. pp. 325–357, pls. xi. & xii.

The same author enumerates the Reptiles (39 species) collected by G. B. Ferrari, at Buitenzorg, in Java. *Op. cit.* vii. pp. 977–982.

A complete list of the Saurians of Australia and New Zealand has been made by Dr. Günther, and published as the concluding portion of the Herpetology of the Voyage of the Erebus and Terror, left unfinished by Dr. Gray in 1845. Dr. Gray subsequently issued the unpublished plates of the Lizards in 1867, as "Lizards of Australia and New Zealand," with the exception of pls. v. & vi., of which the drawings had

been effaced. Dr. Günther has now been able to add these two plates. A few new species are described. The Zoology of the Voyage of H.M.S. Erebus and Terror, &c. ii. Reptiles (conclusion), London: 1875, 4to, pp. 9–19, pls. i.–xx. (v. & vi. new).

CHELONIA.

GÜNTHER, A. Description of the Living and Extinct Races of Gigantic Land-Tortoises. Parts i. & ii. Introduction, and the Tortoises of the Galapagos Islands. Phil. Tr. clxv. pp. 251–284, pls. xxxiii.–xlv.

The author has examined an extensive series of the remains of tortoises from the islands of Mauritius and Rodriguez, and compared them with the tortoises found in the Galapagos group, arriving at the following remarkable results:—

1. Mauritius and Rodriguez were formerly inhabited by several species of gigantic Tortoises, the Rodriguez species differing more markedly from those of Mauritius than these latter among themselves. All these species appear to have become extinct in modern times.

2. These extinct Tortoises of the Mascarenes are distinguished by a flat cranium, truncated beak, and a broad bridge between the obturator foramina.

3. The recent examples in museums, apparently derived from Aldabra, have a convex cranium, trenchant beak, and a narrow bridge between the obturator foramina, and are therefore specifically, if not generically, different from the extinct Tortoises.

4. On the other hand, there exists the greatest affinity between the extinct Mascarene Tortoises, and those still inhabiting the Galapagos islands: the latter must be considered to be indigenous.

In Part ii., the author describes the five species from the last-named archipelago, viz.:—*Testudo elephantopus*, Harl., pp. 261–267; *T. nigrita*, D. & B., pp. 267–271; *T. ephippium*, sp. n. (extinct), pp. 271–275; *T. microphyes*, sp. n., pp. 275 & 276; *T. vicina*, sp. n., pp. 277–281.

Part iii. will contain an account of the existing Tortoises of the Mascarenes, and Part iv. that of the extinct species.

Geoemyda depressus, sp. n., A. Anderson, Ann. N. H. (4) xvi. p. 284, Arakan.

Sternotherus. The skull figured by Gray in P. Z. S. 1873, p. 393, without a name, is that of *S. niger*, D. & B., which has been received from the Camaroons, W. Africa, probably its true locality, instead of Madagascar. W. Peters, P. Z. S. 1875, p. 112, and MB. Ak. Berl. 1875, p. 196.

Trionyx nigricans, sp. n., A. Anderson, Ann. N. H. (4) xvi. p. 284, Chittagong.

Trionyx. A rectification of the synonymy of some of the Indian and Burmese species, and descriptions of *T. grayi*, p. 176, pl. iii., Irawadi Valley, and *T. ephippium*, p. 177, p. 5, figs. A–C, Tenasserim, spp. nn. Also remarks on Gray's genus *Aspilus*. *T. ocellatus*, Buch. Hamilt., and *T. phayrii*, Theob., are figured, pl. iv. W. Theobald, P. A. S. B. 1875, pp. 170–179.

Remarks on the coloration of the young of *Trionyx*. J. Wood-Mason, *l. c.* p. 179.

CROCODILIA.

Crocodilus biporcatus. The young possesses a voice ; — Mohnike, SB. Niederrh. Ges. 1874, p. 63.

Gavialis gangeticus. A note on the eggs and young of the Gavial, which should properly be spelt 'Gharial;' A. Anderson, P. Z. S. 1875, p. 2.

SAURIA.

Helodermidæ.

Heloderma horridum, Wiegm. Details of habits and experiments tending to show the venomous nature of this Lizard's bite, from the observations of Sumichrast. F. Bocourt, C. R. lxxx. p. 676.

Varanidæ.

Monitor beccarii, sp. n., G. Doria, Ann. Mus. Genov. vi. p. 331, pl. xi. fig. *a*, Wokan.

Lacertidæ.

Lacerta muralis. Further remarks on its varieties; — Eimer, Zoolog. Studien auf Capri (Leipzig : 1874), ii.

Cabrita brunnea, Blanf., does not seem to differ from *C. leschenaulti*; A. Günther, P. Z. S. 1875, p. 225.

Eremias yarkandensis (*cæruleo-ocellata*, Anders., *nec* D. & B.), and var. n. *saturata*, and *E. vermiculata*, spp. nn., Eastern Turkestan ; W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 194.

Ophiops. To this genus, Günther refers—1, *O. jerdoni* (Blyth) = *Cabrita jerdoni* (Bedd., Blanf.) = *Pseudophiops theobaldi* (Jerd.) = *Ophiops bivittatus* (Bedd.). 2, *O. beddomii* (Jerd.) = *Ophiops monticola* (Bedd.). P. Z. S. 1875, p. 225.

Gymnophthalmidæ.

Ablepharus pusillus is not identical with *Blepharosteres agilis*, Stol.; W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 208.

Cryptoblepharus pœciopleurus, Wiegm., figured; A. Günther, Zool. Erebus and Terror, ii. Reptiles, pl. v. fig. 2.

Morethia anomala, Gray, differs from *Cryptoblepharus lineo-ocellatus* only in the supra-nasal, which is probably not always a reliable generic character : *id. tom. cit.* p. 10, pl. v. fig. 1.

Menetia greyi, Gr., and *Miculia elegans*, Gr , figured ; *id. tom. cit.* pl. v. figs. 4 & 3.

Scincidæ.

Hinulia gastrosticta, sp. n., A. Günther, *tom. cit.* p. 11, Kangaroo Island.

Lygosoma (*Hinulia*) *meyeri*, sp. n., G. Doria, Ann. Mus. Genov. vi. p. 332,

pl. xi.*b*, Wokan, Aru Islands. [As the only difference between this and *H. nævia*, Gray, is a small supernumerary shield separating the fronto-nasals, the Recorder considers them identical.]

Mocoa travancorica, scarcely distinguishable from *M. bilineata*, Gray; A. Günther, P. Z. S. 1875, p. 225.

Mocoa pallida, sp. n., *id.* Zool. Ereb. & Terror, ii. Reptiles, p. 12, Nicol Bay.

Eumeces aruensis, sp. n., G. Doria, Ann. Mus. Genov. vi. p. 335, pl. xi. *c*, Aru Islands.

Lygosoma. Hinulia gracilipes, Steind., = *L. australe*, Gray, figured; A. Günther, *l. c.* pl. vi. fig. 2.

Tetradactylus decresiensis and *Hemiergis decresiensis* (Gray), figured; *id. l. c.* pl. vi. figs. 4 & 5.

Siaphos æqualis, Gray, and *Chelomeles quadrilineatus*, D. & B., figured; *id. l. c.* pl. vi. figs. 1 & 2.

Ristella rurkii, Gray. Specimens from the Toracada valley agree with this species, which is quite distinct from *R. travancorica*, Bedd.; *id.* P. Z. S. 1875, p. 225.

Silubosaurus depressus, sp. n., *id.* Zool. Ereb. and Terror, ii. Reptiles, p. 15, Swan River.

Euprepes beddomii, Jerd., = *Tiliqua rufescens*, Shaw; *id.* P. Z. S. 1875, p. 225.

Euprepes (*Tiliqua*) *brevis*, sp. n., *id. ibid.*, Anamallay Mountains and Travancore.

Euprepes physicæ, D. & B., found at Wokan and redescribed; G. Doria, Ann. Mus. Genov. vi. p. 337.

Euprepes (*Mabouya*) *beccarii*, sp. n., *id. l. c.* p. 338, pl. xi. *d*, Wokan.

Euprepes hœpfferi, sp. n., J. V. B. Du Bocage, J. Sci. Lisb. 1875, p. 110, Ilheo-Raso. A third species added to the Cape Verde fauna, the other two being *E. delalandii*, D. & B., and the 2-keeled *E. fogoensis*, O'Shaughn. [Zool. Rec. xi. p. 77]. The present has the scales 3-keeled.

Macroscincus cocteaui. On the gigantic lizard of the Cape Verde Islands [described by Du Bocage, in 1873, Zool. Rec. x. p. 87], with figures of its head, teeth, and toes; F. H. Troschel, Arch. f. Nat. 1874, pp. 111–121, pl. i.

Sepidæ.

Gongylus ocellatus, Forsk. L. Perez Arcas makes some critical remarks on Böttger's notice of this species in the latter's Beitrag z. Kenntniss der Rept. Spaniens und Portugals, from which he seems to have overlooked numerous previous statements by various authors of its occurrence in Spain. He further corrects L. von Heyden's recent record of this lizard as new to the European fauna, it having been included therein by Cetti in 1777. An. Soc. Esp. i. pp. 90–92. Schreiber (Herpet. Europ. p. 358) also seems acquainted only with the last named author's supposed discovery of this species in Lanjaron.

Sphenocephalus, Blyth (1853), *nec* Agassiz (1839), *nec* Fitzinger (1843), renamed *Sphenoscincus*, and *S. tridactylus*, Blyth, figured; W. Peters, MB. Ak. Berl. 1875, p. 552, pl. figs. 6–12.

Scincodipus, g. n. Snout wedge-shaped; nostrils between four shields, the rostral, first supra-labial, supra- and small post-nasal; behind the supra-nasals an inter-nasal, a frontal, two parietals, and a moderately large inter-parietal. Eyes small; eyelids scaly. Ear-opening very small. Tongue flat, covered with scale-like papillæ. Palate toothless, with a median cleft behind, which does not reach as far back as the angle of the mouth. Sides of belly rounded. Only two posterior limbs, one-toed. Scales shining, smooth. In habit resembling *Scelotes*, but agreeing with *Sphenops* in the arrangement of the head shields. Type, *Sc. congicus*, sp. n. *Id. l. c.* p. 551, pl. figs. 1–5, Chinxoxo.

Geckotidæ.

Wiedersheim, R. Zur Anatomie und Physiologie des *Phyllodactylus europæus*, mit besonderer Berücksichtigung des Aquæductus Vestibuli der Ascaloboten im Allgemeinen. Morph. JB. i. Heft 3, pls. xvii.–xix.

Stenodactylopsis tessellatus, sp. n., A. Günther, Zool. Ereb. & Terror, ii. Reptiles, p. 16, Australia.

Note on *Phyllodactylus tuberculosus*, Wiegm. (= *P. xanti*, Cope), and description of *P. ventralis*, sp. n., from Jamaica; A. W. E. O'Shaughnessy, Ann. N. H. (4) xvi. pp. 262 & 263.

Hemidactylus echinus, sp. n., *id. l. c.* p. 264, Gaboon River.

Hemidactylus bengalensis, Anders., *H. giganteus*, Stol., and *Doryura berdmorii*, Blyth, = *H. coctæi*, D. & B.; A. Günther, P. Z. S. 1875, p. 226.

Gecko anamallensis, sp. n., *id. l. c.* p. 226, Anamallay Mountains.

Tarentola ephippiata, sp. n., A. W. E. O'Shaughnessy, *l. c.* p. 264, W. Africa.

Ascalabotes gigas, sp. n., J. V. B. Du Bocage, J. Sci. Lisb. 1875, p. 108, pl., Ilheo-Raso, Cape Verde Archipelago.

Ptyodactylus homolepis, sp. n., W. T. Blanford, P. A. S. B. 1875, p. 232, Sind.

Goniodactylus. Note on *G. fuscus*, Hallow, and *caudiscutatus*, Gthr., and description of *G. braconnieri*, from New Granada, and *G. sulcatus*, from Cuba, spp. nn.; A. W. E. O'Shaughnessy, Ann. N. H. (4) xvi. p. 265.

Cyrtodactylus yarkandensis, Anders., ex. typ., = *Gymnodactylus stoliczkæ*, Steind., and the locality given by Anderson is perhaps incorrect; W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 193.

Gymnodactylus elongatus and *microtis*, spp. nn., W. T. Blanford, P. A. S. B. 1875, p. 201; *id.* J. A. S. B. (n. s.) xliv. pt. 2, p. 193, Eastern Turkestan.

Gymnodactylus maculatus, Bedd., = *wynadensis*, Bedd., and is referred to *Goniodactylus*; *Gymn. planiceps*, Bedd., = *G. littoralis*, Jerd.; *G. gracilis*, Bedd., ? = *G. malabaricus*, Jerd.; *G. collegalensis* and *speciosus*, Bedd., = *G. nebulosus*, Bedd. A. Günther, *l. c.* p. 226.

Stenodactylus orientalis, sp. n., W. T. Blanford, P. A. S. B. 1875, p. 232, Sind.

Iguanidæ.

Anolis. A list of the species in the British Museum collection, in which the synonymy of many of them is revised; A. W. E. O'Shaughnessy, Ann. N. H. (4) xv. pp. 270-281. The following new species are described:—*Anolis nummifer*, Demerara, *turmalis*, Island of Grenada, p. 278; *tessellatus*, Costa Rica, *lentiginosus*, Surinam, p. 279; *gemmosus*, p. 280.

Norops onca, sp. n., *id. l. c.* p. 280, Venezuela and Dominicia.

Calotes grandisquamis, sp. n., A. Günther, *l. c.* p. 226, pl. xxx. Canoot Ghat.

Agamidæ.

Arua, sub-g. n. of *Gonyocephalus*, allied to sub-g. *Hypsilurus*, Peters, for *G.* (*A.*) *inornatus*, sp. n., Wokan; G. Doria, Ann. Mus. Genov. vi. p. 345, pl. ii. *c*.

Grammatophora caudicincta, sp. n., A. Günther, Zool. Erebus & Terror, ii. Reptiles, p. 19, Nicol Bay.

Stellio stoliczkanus, sp. n., W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 191, Eastern Turkestan.

Phrynocephalus caudivolvulus, Günther, Anderson (= *P. forsythi*, Anders.), and *P. stoliczkai*, Steind., is not the *P. caudivolvulus* of Pallas, which is probably a smooth species. The former is *P. theobaldi* Blyth, and has not the habit of curling its tail. *P. axillaris*, sp. n., Eastern Turkestan. *Id. tom. cit.* p. 192.

Trapelus rubrigularis, sp. n., *id.* P. A. S. B. 1875, p. 233, Sind.

Chamæleontidæ.

Chamæleo. P. Bert finds the cause of the change of colour to be the shifting of variously coloured corpuscles determined by two sets of nerves, one forcing the corpuscles to the surface of the skin, the other producing the contrary effect. C. R. lxxxi. pp. 938–941.

OPHIDIA.

Typhlopidæ.

Typhlops kraali, sp. n., G. Doria, Ann. Mus. Genov. vi. p. 347, pl. xii. Kei Islands.

Typhlops (*Ophthalmidion*) *decorosus*, sp. n., R. Buchholz & W. Peters, MB. Ak. Berl. 1875, p. 197, Camaroons.

Onychocephalus malabaricus, Bedd., = *O. acutus*, Bedd.; A. Günther, P. Z. S. 1875, p. 27.

Uropeltidæ.

Silybura. Synopsis of all the species: *S. melanogaster*, p. 227, pl. xxxi. fig. *a*, Anamallays and Travancore, *S. liura*, Malabar, p. 228, pl. xxxi. fig. *b*, *S. arcticeps*, p. 229, Tinnevelly: *id. l. c.* spp. nn.

Plectrurus canaricus (*Silybura canarica*, Bedd.) has the supra-orbital and post-orbital confluent; the separation of these shields is no longer distinctive of *Plectrurus*, which is however sufficiently characterized by the vertically compressed caudal terminal scute. *P. brevis*, Bedd., = *P. perrotteti*, juv.; *id. l. c.* pp. 229 & 230.

Calamariidæ.

Melanophidium bilineatum and *punctatum*, Bedd., described and figured; *id. l. c.* p. 230, pl. xxxii. figs. A & B.

Geophis stenorhynchus, sp. n., *id. ibid.*, Travancore.

Oligodontidæ.

Simotes splendidus, sp. n., *id. l. c.* p. 231, pl. xxxiii. Wynad.

Colubridæ.

(*Ablabes*) *Diadophis punctatus*, var. n. ? *dugesi*, M. Villada, Nat. Mex. 1875, p. 226, fig., Mexico.

Ablabes albiventer, sp. n., A. Günther, P. Z. S. 1875, p. 231, Darjeeling.

Platyceps semifasciatus, Blyth, ? = *Zamenis ventrimaculatus*, juv.; W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 208.

Pityophis melanoleucus, particulars of its habits; S. Lockwood, Am. Nat. ix. pp. 1–14.

Scaphiophis raffrayi, sp. n., Bocourt, Ann. Sc. Nat. (6) ii. art. 3, Abyssinia.

Acontiophidæ.

Fam. n., near *Colubridæ*. Nostril peculiarly situated (as in *Acontias*) in the four-sided pyramidal rostral shield. For *Acontiophis paradoxa*, g. & sp. nn. A. Günther, P. Z. S. 1875, p. 232, fig. 5, Himalayas or Khassya.

Tropidonotidæ.

Tropidonotus modestus, sp. n., *id. l. c.* Himalayas.

Homalopsidæ.

Herpeton tentaculatum. As preliminary to an intended monograph of *Herpeton*, A. Morice publishes notes on the peculiarities of this species. It is viviparous, and besides taking living prey, is herbivorous in its diet, feeding on the *Jussiæa repens*; the tentacles probably assist it in finding its prey in the water or mud. C. R. lxxx. pp. 128 & 129, and Ann. Sci. Nat. (6) ii. No. 5.

Dendrophidæ.

Dendrophis aruensis, sp. n., G. Doria, Ann. Mus. Genov. vi. p. 349, pl. xii. *g*, Aru Islands.

Philothamnus irregularis, Leach, var. n. *longifrenatus* and *nigrofasciatus*, sp. n., R. Buchholz & W. Peters, MB. Ak. Berl. 1875, p. 199, Camaroons.

Thrasops pustulatus, sp. n., *iid. ibid.*, Camaroons.

Dipsadidæ.

Dipsas nuchalis, sp. n., A. Günther, P. Z. S. 1875, p. 233, Malabar.

Elachistodon westermanni, Ruhdt. Note on this species, and description of specimen; W. T. Blanford, J. A. S. B. (n.s.) xliv. pt. 2, p. 207. The writer believes it to belong to this family.

Lycodontidæ.

Lycodon keyensis, p. 351, pl. xii. *h*, Kei Islands, and *L. aruensis*, p. 352, pl. xii. *i*, Aru Islands, G. Doria, Ann. Mus. Genov. vi.: spp. nn.

Ophites septentrionalis, sp. n., A. Günther, P. Z. S. 1875, p. 233, Northern India.

Bothrophthalmus lineatus, Schleg., var. n. *infuscatus*; R. Buchholz & W. Peters, *l. c.* p. 198, Camaroons.

Elapidæ.

Trimeresurus jerdoni, sp. n., A. Günther, *l. c.* pl. xxxiv. Khassya.

Crotalidæ.

On the nature and physiological action of the *Crotalus* poison, as compared with that of *Naia tripudians* and other Indian venomous snakes; T. L. Brunton & J. Fayrer, P. R. Soc. xxiii. pp. 261–278.

PSEUDOPHIDIA.

Cæcilia compressicauda. Description of the internal structure of the embryonic stage continued; W. Peters, MB. Ak. Berl. 1875, pp. 483–486, plate, figs. 1–4.

Geyenes, g. n. Cæciliid; allied to *Epicrium*, but with the labial groove advanced to the front margin of mouth, and very indistinct annular folds of the skin. Eyes not visible. Type, *E. carnosum*, Bedd., 1870. A. Günther, P. Z. S. 1875, p. 577.

BATRACHIA.

Born, G. Die sechste Zehe der Anuren. Morph. JB. i. Heft 3, pl. xiv.

Parker, W. K. On the Structure and Development of the Skull in the Batrachia. Part ii. (see Phil. Tr. 1871). (Abstract.) P. R. Soc. xxiv. pp. 136–138.

Tandon, G. Moquin. On the earlier phases of development of the *Anura*. Ann. Sci. Nat. (6) iii. Art. No. 3, pls. i. & ii.

The last-named author also records a case analogous to those cited

227,

228,

Leuckart, Bischof, and others, of the partial development of eggs of frogs which have not been impregnated. C. R. lxxxi. pp. 409–411.

Schnetzler has recorded observations, showing that the development of tadpoles is much slower, if deprived of light. Bull. Soc. Vaud. xiii. p. 273.

Batrachia Salientia.

Pelobates fuscus. Notes by Crivelli ; Rend. Ist. Lomb. vi. p. 172.

Xenopus (*Dactylethra*) *calcaratus*, sp. n. (= that erroneously referred by Duméril to *D. muelleri*, in Rept. de l'Afr. occid. pl. xviii. fig. 5), W. Peters, MB. Ak. Berl. 1875, p. 200, Camaroons.

Rana arvalis, Nilss. Anatomical observations by O. M. Reuter, Not. Fenn. (n.s.) xi. pp. 321–325.

Rana crassipes, R. Buchholz & W. Peters, MB. Ak. Berl. 1875, p. 201, Abo; *R. verrucosa* and *pygmæa*, A. Günther, P. Z. S. 1875, p. 657, Malabar : spp. nn.

Xenophrys gigas, Jerd., juv., = *X. monticola*, Gthr.; *id. l. c.* p. 568.

Asterrophrys melanopyga, sp. n., G. Doria, Ann. Mus. Genov. vi. p. 555, pl. xii. *k*, Wokan (Aru Islands).

Trachycephalus, g. n. [Tsch., *Reptilia*, 1838 ; Swains., *Pisces*, 1839], closely resembling *Xenophrys*, for *T. ceylanicus*, sp. n., Ferguson, Ann. N. H. (4) xv. p. 128, Ceylon : = *Nannophrys ceylonensis*, Gthr. ; A. Günther, P. Z. S. 1875, p. 568. Some remarks on other Ceylonese frogs are added in Ferguson's paper, *l. c.*

Arthroleptis dispar, Peters, figured and noticed ; W. Peters, MB. Ak. Berl. 1875, p. 210, pl. iii. figs. 1–3. The author questions the validity of the separation of *Phrynobatrachus* from *Arthroleptis*, which rests solely on the absence of the terminal expansions of the toes in the former.

Alytes obstetricans, Wagl. L. Perez Arcas corrects Böttger's mention of this species as new to Spain, it having been included by Machado in his catalogue in 1859 ; An. Soc. Esp. i. p. 93. [See *Gongylus ocellatus*.]

Nectophryne, g. n. Habit of *Atelopus*. Tongue, sternal apparatus, and sacral processes as in *Bufo*. No teeth, tympanum, acoustic tubes, tympanic pit or parotoids. Toes and fingers short, broadly webbed to their tips. Differs from *Atelopus* in the sternal apparatus, the epicoracoid cartilage being inferior in that genus. *N. afra*, sp. n., Camaroons. R. Buchholz & W. Peters, MB. Ak. Berl. 1875, p. 202, pl. ii. fig. 5.

Ansonia ornata, sp. n., A. Günther, P. Z. S. 1875, p. 568, pl. lxiii. fig. A, Brumagherries.

Bufo beddomii and *hololius*, spp. nn., *id. l. c.* p. 569, the latter figured, pl. xliv. fig. a, Malabar.

Ixalus. Notes on *I. variabilis*, Gthr., and *glandulosus*, Jerd., p. 573, and descriptions of *I. montanus*, pl. lxvi. fig. a, Kudra Mukh, *diplostictus*, pl. lxiii. fig. c, Malabar, *chalazodes*, pl. lxvi. fig. b, Travancore, p. 574, *jerdoni*, ? Darjeeling, *beddomii*, Malabar, *stictomerus*, pl. lxvi. fig. c, Ceylon, p. 575 : spp. nn. ; *id. l. c.*

Polypedates chloronotus, p. 569, pl. xv. fig. a, Darjeeling, *P. formosus*, p. 573, pl. xv. fig. b, Khassya, *P. jerdoni*, Darjeeling, *P. beddomii*, pl. lxiii.

fig. b, Malabar, &c., p. 571, *P. brachytarsus*, Anamallays and Sevagherry, *P. brevipalmatus*, Malabar, Anamallays, p. 572, *id. l. c.* spp. nn.

Chiromantis guineensis, sp. n., R. Buchholz & W. Peters, MB. Ak. Berl. 1875, p. 203 (with an account of its development), Camaroons.

Hylambates notatus, iid. *l. c.* p. 205, pl. ii. fig. 1, Camaroons; *H. dorsalis*, W. Peters, *l. c.* p. 209, pl. iii. fig. 5, Lagos: spp. nn.

Hyperolius acutirostris, p. 207, pl. ii. fig. 4, *H. spinosus*, p. 208, pl. i. fig. 3, Camaroons, *H. nitidulus*, p. 209, pl. iii. fig. 4, Lagos, spp. nn., Buchholz & Peters, *l. c.* *H. dorsalis*, Schleg., p. 206, pl. i. fig. 2, *picturatus*, Schleg., pl. ii. fig. 2, and *guttatus*, Schleg, p. 207, pl. ii. fig. 3, noticed and figured; W. Peters, *l. c.*

Phrynomantis microps, sp. n., *id. l. c.* p. 210, Gold Coast.

Platymantis cameronensis, Reichen., is erroneously separated by Reichenow as a distinct genus from *Petropedetes*; id. *l. c.* p. 211.

Kaloula guineti, sp. n., Grandidier, Ann. Sci. Nat. (6) ii. Art. No. 6, Madagascar.

Callula triangularis, Malabar, and *olivacea*, Yellagherry hills, spp. nn., A. Günther, P. Z. S. 1875, p. 576, the latter figured, pl. xliv. fig. b.

Pedostibes, g. n., differs from *Callula* in physiognomy and habit, which resemble those of *Bufo*. Palate concave, without any transverse ridges. *P. tuberculosus*, sp. n., *id. ibid.* pl. lxiv. fig. c, Malabar.

Batrachia Gradientia.

Urotropis, g. n., *Spelerpina*, sect. *Plethodonta*; greatest affinity with *Heredia*, Gir. Habit of *Onychodactylus*. Neck as broad as head, and with parotoids. Teeth simple, those on the palate disposed in two large arches, with the convexity towards the front; on the sphenoid, numerous and juxtaposed on two oblong disks; tongue supported in the centre of its two posterior thirds on a muscular foot, strengthened by a cartilage suspended from the hyoids. Anterior extremities 4-toed; posterior 5-toed. Tail pointed, rounded above, becoming keeled inferiorly. Skin almost smooth. Type, *U. platurus*, sp. n., J. de la Espada, An. Soc. Esp. iv. p. 71, pl. i. Rio de la Plata.

Wiedersheim, R. *Salamandrina perspicillata* und *Geotriton fuscus*. Versuch einer vergleichenden Anatomie der Salamandrinen, mit besonderer Berücksichtigung der Skelet-Verhaeltnisse. Ann. Mus. Genov. vii. pp. 5–206, pls. i.–xvii., and woodcuts (also published separately; Würzburg: 8vo).

The anatomy of these two forms is treated in detail, as the basis for a study of the comparative anatomy of the *Salamandrina*, and especially of their osteology.

Salamandrina perspicillata. Notes on its reproduction; M. Lessona, Atti Acc. Tor. x. pp. 47–54, pls. i. & ii. figs. 1–30.

Euproctus rusconii. Its anatomy; R. Wiedersheim, *l. c.* pp. 545–568, pl. xx.

Siredon mexicanum. On the metamorphosis or change into an *Amblystoma* of the Mexican Axolotl; A. Weismann, Z. wiss. Zool. xxv. pp. 297–334.

PISCES.

BY

A. W. E. O'Shaughnessy.

Special parts of the anatomy and development of fishes have received progressive attention and elucidation in the year 1875, in the various memoirs by Pouchet, His, Gerbe, Tomes, and others, cited below under the head of Anatomy and Physiology, or under the different groups to which they apply. The year has, however, been chiefly rich in descriptions of collections illustrating special faunæ, or enlarging our knowledge of separate families; foremost in this line are Dr. Günther's 4th part of the "Fische der Südsee," Dr. Steindachner's contributions to the Ichthyology of S. America, and Dr. Lütken's monograph of fresh-water fishes from the Rio das Velhas. The two new parts of the "Atlas Ichthyologique," furnishing plates and a portion of the letterpress of the *Percidæ*, form also a most important feature in the Ichthyology of the year.

Anatomy and Physiology.

André. J. Sur la préparation du micropyle dans la coque des œufs de Truite. J. de l'Anat. Phys. 1875, pp. 197–202.

Balfour, F. M. On the development of the Spinal Nerves in Elasmobranch Fishes. P. R. Soc. xxiv. pp. 135 & 136 (Abstract).

——. On the development of Elasmobranch Fishes. Q. J. Micr. Sci. 1874.

Bert, —. Influence des hautes pressions sur les poissons. Mém. Soc. Biol. v. p. 160.

Engström, —. Om Fjällens byggnad hos Osteopterygii jemte några undersökningar öfver Sidoliniens Fjäll hos Skandinaviens Fiske. Lund: 1874.

A dissertation on the structure of Acanthopterygian scales and of those of the lateral line.

Fürbringar, P. Untersuchungen zur vergleichenden Anatomie der Muskulatur des Kopfskelets der Cyclostomen. Jen. Z. Nat. ix. pp. 1–93, figs. 1–33.

GERBE, Z. Du lieu où se forme la cicatricule chez les poissons osseux. J. de l'Anat. Phys. 1875, pp. 329–333, pl. x.

GULLIVER, G. On the red blood corpuscles in Fishes. P. Z. S. 1875, p. 479.

HIS, W. Untersuchungen über die Entwickelung von Knochenfischen, besonders über diejenigen des Salmens. Z. Anat. Entwickel. i. (1875) pp. 1–46, 2 pls.

POUCHET, G. Du développement du squelette des poissons osseux. J. de l'Anat. Phys. 1875, pp. 288–309.

The author attempts to trace microscopically the first appearance of hard or skeletal elements in the soft tissues, following out their further development and specialization.

RETZIUS, G. Gehörlabyrinth der Knochenfische. Stockholm: 4to, 5 pls.

On the auditory apparatus of osseous fishes. A summary of this memoir is printed in J. Zool. iv. pp. 179–184.

SCHENK, S. Die Kiemfäden der Knorpelfische während der Entwickelung. Wien: 8vo, 12 pp. 1 pl.

TOMES, C. On the development of the Teeth of Fishes (Elasmobranchii and Teleostei) (Abstract). P. R. Soc. xxiii. pp. 362–364.

Brain of Fishes. An abstract of the results of examination of a large number of preparations collected by G. Fritsch during an expedition in Asia Minor; MB. Ak. Berl. 1875, pp. 508–521.

Embryogeny of Fishes. A summary of a memoir, by Van Bambeke, to be published shortly, appears in Bull. Ac. Belg. (2) 1875, pp. 75–84.

Note on the various fishes possessed of phosphorescent properties, in Tids. Naturvid. (5) v. p. 82.

THE GENERAL SUBJECT.

POEY, F. Plantilla Descriptiva Ictiologica. An. Soc. Esp. iv. pp. 17–34.

With the laudable object of promoting comprehensiveness, regularity, and exactitude in Ichthyological descriptions, the author has put forward a general plan, drawing attention to the different points in which the diagnosis of every species should be precise and explicit. Fortunately some authors have long since recognized the absolute necessity of being thus rigidly systematic in their descriptions; but as this has not been universally the case, the present code of rules, comprising as it does clear definitions of parts and terms, cannot fail to be of service.

Directions for the collection and preservation of Ichthyological specimens, are contributed by Dr. Günther, in G. Neumayer's 'Anleitung zu wissenschaftlichen Beobachtungen auf Reisen,' Berlin: 1875, 8vo, pp. 397–402.

Geographical Distribution of Fishes. A short paper by Theodore Gill is reprinted in Ann. N. H. (4) xv. pp. 251–255, being a contribution to Johnson's New Universal Cyclopædia; and Dr. Sclater in his "Address to the Biological Section of the British Association," Belfast, 1874, makes general remarks on the existing state of knowledge of this subject.

A catalogue of books and writings on Ichthyology compiled by D. Bosgoed; "Bibliotheca Ichthyologica et Piscatoria," Haarlem : 1874.

FAUNÆ.

Northern Asia.

DYBOWSKI, in a paper on the ichthyological fauna of Lake Baikal, in Verh. z.-b. Wien, xxiv. p. 383, enumerates 28 species, of which 13 are described as new.

Europe.

MCINTOSH has given a classified catalogue of the fish of St. Andrew's Bay. Marine Invertebrates and Fishes of St. Andrew's. Edinburgh : 1875, 4to, pp. 168–186, pl. vi. figs. 4, 5 & 6.

Thynnus pelamys, *Balistes maculatus*, and *Scyllium stellare* added to the list of Scandinavian Fauna. A. W. Malm, Œfv. Ak. Förh. 1875, No. 7, pp. 3 & 8, & No. 10, p. 33.

KESSLER, in a work on the Fishes of the Black Sea and the Caspian (St. Petersburg: 1874, 1 pl.), describes 9 new species of *Gobius*, which will be recorded below; the total number of species belonging to different genera is 43.

Canary Islands.

R. DE SILVA FERRO. Pesquerias y sus Productos en la Isla Graciosa. London: 1875, large 8vo, 217 pp. Contains a synoptical list with figures of the fishes of the Canaries.

St. Helena.

MELLISS, J. C. St. Helena. London : 1875, large 8vo. *Pisces*, pp. 100–113, pls. xix.–xxi.

Seventy-five species (none fresh-water) are recorded, with brief notices of peculiarities and localities; 17 are indigenous, and 21 more are closely identified with the island.

East Indies.

DAY, F. The Fishes of India. London: 1875, 4to. In four parts. Part i. pp. 168, pls. i.–xxxix.

A work giving diagnosis and figure of each species, with synoptical tables of the genera. The present part contains the families of Günther's series of "Perciformes." Several new species are described.

BLEEKER, in "Atlas Ichthyologique des Indes Orientales Néerlandaïses," livr. 28, pp. 1 & 2, states that the Indopelagic fauna contains more than 300 species of *Percidæ*, i.e., about one-fourth of the known

species of that family. He gives (pp. 2–5) a general list of them, which is followed (pp. 6–11) by a geographical table showing their distribution among the different islands.

The same author has published revisions of the species of *Cirrhitidæ*, *Mullidæ*, and *Pseudochromidæ*, belonging to this region. Verh. Ak. Amst. xv.

China.

E. Sauvage & D. De Thiersant, Ann. Sc. Nat. (6) i. Art. No. 5, 18 pages, enumerate a large number of species of freshwater fishes of this country belonging to various families, and describe many of them as new to science. The paper is preparatory to a monograph of the collection.

Polynesia.

Günther, A. Die Fische der Südsee (iv.). J. Mus. Godeffr. ix. pp. 97–128, pls. lxi.–lxxxiii.

Contains the continuation of the *Berycidæ*, *Kurtidæ*, *Polynemidæ*, *Xiphiidæ*, *Trichiuridæ*, and *Acronuridæ*, with index and alphabetical list of native names.

L. Vaillant & E. Sauvage have published descriptions of fish from the Sandwich Islands, in R. Z. (3) iii. pp. 278–287, which form part of a collection recently obtained; a more extended account will shortly be given.

St. Paul.

Note on the ichthyological fauna of the Island of St. Paul, by E. Sauvage, C. R. lxxxi. pp. 987–989. Of 6 species found at this isolated island in the Indian Ocean, only 3 have been found elsewhere. M. Sauvage adds 3 more, a *Sebastes* and 2 *Labrichthys*, remarking that the fauna presents the greatest analogy with that of Southern Australia.

New Zealand.

New species dredged off Cape Farewell, in New Zealand, during the "Challenger" expedition, are described by Hector, Ann. N. H. (4) xv. pp. 78–80; and others by Hutton, *l. c.* xvi. pp. 313–317.

West Indies and South America.

F. Poey has published the first portion of an "Enumeratio Piscium Cubensium," revising and augmenting his Synopsis of Cuban fish which appeared in the "Repertorium" in 1868. The total number of species is stated as 730. The new species and important remarks are referred to below; several other species are also indicated by the author from more or less incomplete materials, and without specific names. An. Soc. Esp. iv. pp. 76–161, pls. v.–vii.

F. Steindachner publishes descriptions and plates of the freshwater fish of Brazil, from the rich materials afforded by the collections of Agassiz and those of the "Hassler" expedition. The families *Chromidæ* and *Characinidæ* are treated of in SB. Ak. Wien, lxx. pp. 449–538, pls. i.–vi.;

xi pp. 61–136, pls. i.–viii., and pp. 211–244, pls. i.–vi; the *Siluridæ Doradina*) tom. cit. pp. 138–154, pls. i.–iv. He also describes new species of fish from the East and West coasts of South America; *op. cit.* lxxi. p. 468–480.

C. F. Lütken has produced a valuable contribution to Brazilian Ichthyology, viz., "Velhas Flodens Fiske," a monograph of the fish of the Rio das Velhas, being the scientific results of Prof. Reinhardt's collections and observations. They belong to the families *Sciænidæ*, *Siluridæ*, *Characinidæ*, and *Gymnotidæ*. The original diagnoses and descriptions of all the new species were referred to in Zool. Rec. x. & xi. The plates and figures now added will be mentioned below. Dan. Selsk. Skr. (5) xii. pp. 123–252, with synopsis in Latin, pp. i.–xxi., pls. i.–v., and numerous figures in the text.

S. W. Garman gives a list of some fishes collected along the western coast of South America. P. Bost. Soc. xviii. p. 202.

Juan Fernandez.

The fish from this island in the Vienna Museum are described by Steindachner. SB. Ak. Wien, lxxi. pp. 443–468.

PALÆICHTHYES.

GANOIDEI.

Ceratodus forsteri, Gthr. A. Meyer does not think that the separation of this species and *C. miolepis*, Gthr., will hold good, having found a specimen in which the character of the number of scales is intermediate. Ann. N. H. (4) xv. p. 368.

Sterledus ruthenus, var. n. *sibiricus*; Dybowski, Verh. z.-b. Wien, xxiv. p. 394, Angara River.

CHONDROPTERYGII.

Holocephala.

Chimæra monstrosa. On two hitherto undescribed cartilages in the visceral skeleton. B. Solger, Morphol. JB. i. Heft. i. (with fig. 3 & pl. vi.).

PLAGIOSTOMATA.

C. Semper has followed up his former account of the occurrence of segmental organs in adult *Selachia*, by a paper on their presence in Selachian embryos. Centralbl. med. Wiss. Würzb. 1874, No. 52.

P. Pavesi gives a detailed description of a shark caught in the Bay of Spezia, near Lerici, and determined as the *Squalus rostratus* of Macri. He considers the forms known as *Polyprosopus* as constituting a species of *Selache*, and not as monstrosities. Ann. Mus. Genov. vi. pp. 5–72, pls. i.–iii.

Lamna cornubica. Turner affirms the presence of a pair of spiracles in the Porbeagle. J. Anat. Phys. 1875, p. 301.

Echinorhinus spinosus. Description and figures of a female specimen caught near Bass Rock in 1874. Turner, *l. c.* p. 297.

Torpedo. F. Boll has published a historical memoir in Arch. Anat. Phys. 1874, pp. 152–158; and also in MB. Ak. Berl. 1875, pp. 238–241, and Arch. Anat. Phys. 1875, pp. 456–468, pl. xi., a description of the peculiar organs mentioned by Savi in 1844, under the name of 'Appareil folliculaire nerveux', not possessed by other *Plagiostomata*, nor by *Gymnotus* or *Melapterurus*; and *l. c.* pp. 710–721, new researches into the anatomy and physiology of *Torpedo*, under the following heads:—1. On the influence of a solution of 2–3 per cent. of common salt on the tissues. 2. Anatomy and histiology of the electric lobe. 3. Histiology of the electric nerves. 4. Structure of the electric plates. 5. Structure of the terminal plates. 6. Experiments with *curari*, showing that the electrical power is not immediately destroyed by the action of that poison.

On the immunity of *Torpedo* against a self-inflicted shock. J. Steiner, Arch. Anat. Phys. 1874, pp. 684–701; and on the electric organ, Boll, Arch. Mikr. Anat. x. p. 101, pl. viii.; Ciaccio, Rend. Ac. Bologn. 1874, p. 105, and L. Ranvier, C. R. lxxxi. pp. 1276–1278.

Trygon brevicaudata, sp. n., Hutton, Ann. N. H. (4) xvi. p. 317, Dunedin.

Myliobatis noctula, Dum. L. Paolucci describes and figures a monstrous form of this species found in the Adriatic. Atti Soc. Ital. xvii. pp. 60–63, pl. i. figs. 1–3.

TELEOSTEI.

ACANTHOPTERYGII.

Percidæ.

Parts 28 & 29 of the "Atlas Ichthyologique des Indes Orientales Néerlandaises," by P. Bleeker, Amsterdam, 1875, fo. pp. 1–40, pls. xlvii.–lxx. (pls. cccxxv.–cccxlviii. of the entire work), are principally occupied with the plates, and a portion of the text of the *Percidæ*. [The author's revised arrangement of the family is to be found in a tabular form in Arch. Néerl. xi. (1876) pp. 247–288.]

Acerina czekanowskii, sp. n., Dybowski, Verh. z.-b. Wien, xxiv. p. 383, River Angara.

Anthianini. Bleeker's above-mentioned work contains the letterpress referring to the following species:—*Dactylanthias haplodactylus*, Blkr., p. 15; *Pseudanthias pleurotænia*, Blkr., and *P. huchti*, Blkr., p. 17; *P. chirospilus*, Blkr., p. 18; *P. lepidolepis*, Blkr., with note on *Serranus* (*Anthias*) *squamipinnis*, Peters, and *P. manadensis*, Blkr., p. 19; *P. cichlops*, Blkr., p. 20.

Anthias (*Hemanthias*, sub-g. n.) *peruanus*, sp. n., Steindachner, SB. Ak. Wien, lxx. p. 380, Peru.

Serranina. Revised arrangement of the Indopelagic species; Bleeker, Verh. Ak. Amst. xiv. pp. 1–131. The same author prints the descrip-

tions of the following species of this group in Atlas Ichthyologique, livrn. 29:—

Anyperodon leucogrammicus, C. V., p. 28; *urophthalmus*, Blkr., p. 29. The latter proves to belong to this genus, on account of the absence of palatine teeth and of canines; *Serranus lineatus*, C. V., and *chlorocephalus*, C. V., are also probably referable to *Anyperodon*, Gthr.

Serranus flavimarginatus, Rüpp., p. 23; *louti*, Forsk., p. 24.

(*Serranus*) *Cromileptes altivelis*, C. V., p. 30; *Epinephelus nigripinnis*, C. V.; *janthinopterus*, Blkr., p. 36; *aurantius*, C. V., p. 37; *miltostigma*, Blkr. (? *S. sonnerati*, Playf., *nec* C. V.), p. 37; *analis*, C. V., p. 38; *microprion*, Blkr., p. 39; *boelang*, C. V., p. 40.

(*Plectropoma*) *Paracanthistius leopardinus*, C. V., p. 25; *maculatus*, Bl., p. 26; *oligacanthus*, Blkr., p. 27.

Paraserranus hasselti, Blkr., described and figured; *l. c.* p. 22, pl. liii. fig. 1.

The remainder of the plates issued in 1875, contain figures of the following species of *Serranus*:—

(*Serranus*) *Epinephelus fasciatus*, Blkr. (*S. marginalis*, C. V.), pl. xlviii. fig. 3; *analis*, C. V., pl. li. fig. 5 (description, p. 38); *miltostigma*, Blkr., pl. lii. fig. 5 (descr., p. 37); *gilberti*, Blkr. (= *pardalis*, Blkr.), pl. liii. fig. 3; *lanceolatus*, C. V., pl. liv. fig. 3; *stellans*, Rich., fig. 4; *janthinopterus*, Blkr., fig. 5 (descr., p. 36); *nebulosus*, C. V., pl. lxi. fig. 3; *formosus*, C. V., pl. lxii. fig. 3; *argus*, Blkr. (= *myriaster*, C. V.), pl. lxiv. fig. 3; *boelang*, C. V., pl. lxviii. fig. 5 (descr., p. 40); *Variola louti*, Forsk., pl. lxx. fig. 3 (descr. p. 24).

(*Serranus*) *Menephorus punctiferus*, sp. n., Poey, An. Soc. Esp. iv. p. 95, Cuba.

Serranus stoliczkai, sp. n., Day, Fishes of India, p. 11, pl. i. fig. 3, Sind.

Grammistes punctatus, C. V., and *orientalis*, Bl., figured by Bleeker, *l. c.* pl. lix. figs. 4 & 5.

Polyprion kneri, sp. n., Steindachner, SB. Ak. Wien, lxxi. p. 443, Juan Fernandez.

Diploprion bifasciatum, K. v. H., figured by Bleeker, *l. c.* pl. lxviii. fig. 3.

Aulacocephalus saponaceus, Guich. & Val., = *A. schlegeli*, Gthr.; Steindachner, *op. cit.* lxx. p. 378.

Mesoprion and *Diacope*. Revision of the Indopelagic species by Bleeker, Verh. Ak. Amst. xiii. pp. 1–89. The following species are figured by the same author in Atlas Ichth., livrns., 28 & 29:—

Lutjanus flavipes, Blkr. (C. V. ?), pl. liii. fig. 5; *argentimaculatus*, Blkr. (*M. gembra*, C. V.), pl. lv. fig. 1; *bengalensis* (= *pomacanthus*, Blkr.), pl. lv. fig. 4; *oligolepis*, Blkr., fig. 5; *johni*, Blkr. (= *M. unimaculatus*, C. V.), pl. lx. fig. 3; *decussatus*, K. v. H., pl. lx. fig. 4; *biguttatus* (= *lineolatus*, Blkr.), fig. 5; *vitta*, Blkr., pl. lxii. fig. 5; *semicinctus*, C. V., pl. lxiii. fig. 3; *macolor*, C. V., pl. lxv. fig. 3; *quinquelineatus*, Blkr., fig. 4; *fulviflamma*, Blkr., pl. lxvi. fig. 3; *lioglossus*, Blkr. (= *monostigma*, Blkr.), fig. 4; *rivulatus*, Blkr. (= *cæruleo-punctatus*, Blkr.), pl. lxix. fig. 3; *bohar*, Bl., Schn., pl. lxx. fig. 4.

Priacanthina. Bleeker (*op. cit.*) publishes the letterpress referring to

the following species :—*P. tayenus*, Rich., p. 12 (= *P. holocentrum* and *schmitti*, Blkr.) ; *P. carolinus*, C. V., p. 13 ; *P. hamrur*, C. V., p. 13 ; *Pseudopriacanthus niphonius*, Blkr. (*Priac. meyeri*, Gthr.), p. 14.

Apogonina. *Apogon nigricans*, sp. n., Day, *op. cit.* p. 58, pl. xv. fig. 3, Madras. *A. savayensis*, Gthr., = *A. baukanensis* (? *baudanensis*), Blkr. *Id. ibid.* p. 101. Plates of the following species are published by Bleeker, *op. cit.* :—

(*Apogon*) *Amia fasciata*, Gill, pl. xlviii. fig. 4 ; *monochrous*, C. V., pl. xlix. fig. 1 ; *quadrifasciata*, C. V., pl. lvii. fig. 1 ; *timorensis*, Blkr., fig. 2 ; *ceramensis*, Blkr., pl. lviii. fig. 1 ; *kallosoma*, Blkr., fig. 2 ; *aurea*, Blkr. (= *A. roseipinnis*, C. V.) pl. lix. fig. 1 ; *kallopterus*, Blkr., fig. 2 ; *orbicularis*, K. v. H., pl. lxi. fig. 1 : *frenata*, Val., pl. lxiv. fig. 2 ; *melanorhynchus*, Blkr., pl. lv. fig. 1 ; *gracilis*, Blkr., fig. 2 ; *bandanensis*, Blkr., pl. lxvii. fig. 2 ; *amboinensis*, Blkr., pl. lxviii. fig. 1 ; *macropterus*, K. v. H., fig. 2 ; *molluccensis*, Val., pl. lxix. fig. 1 ; *kartzfeldi*, Blkr., fig. 2 ; *urostigma*, Blkr., fig. 5 ; *melas*, Blkr., pl. lxx. fig. 1.

(*Chilodipterus*) *Paramia quinquelineatus*, C. V., pl. xlviii. fig. 20 ; *Amia apogonoides*, Blkr., pl. lxiii. fig. 2 ; *Pseudamia polystigma*, Blkr., pl. lxx. fig. 2.

Ambassis wolfi, Blkr., pl. lxvii. fig. 2 ; *kopsi*, Blkr., pl. lxvi. fig. 1 ; *urotania*, Blkr., fig. 2 ; *interrupta*, Blkr., pl. lxx. fig. 5.

Parambassis apogonoides, Blkr., pl. lx. fig. 1 ; *microlepis*, Blkr., fig. 2.

Grystina. *Pikea*, g. n., for *Grystes lunulatus*, Guich. (Réunion Ichth.), which has D. $\frac{7}{12}$, Guichenot's statement of $\frac{11}{1}$ being probably erroneous ; Steindachner, SB. Ak. Wein, lxx. p. 375.

Grystes. Gill adopts the name *Micropterus*, Lacép., for this genus, which consists of two species, *G. salmoides* and *G. nigricans* ; P. Soc. Portl. 1874, p. 55.

(*Dules*) *Moronopsis rupestris*, C. V., pl. lxi. fig. 2, *tæniurus*, C. V., pl. lxvii. fig. 5 ; figured by Bleeker, *op. cit.*

Pristipomatidæ. *Therapon* (?) *rubiginosus*, sp. n., Hutton, Ann. N. H. (4) xvi. p. 314, Otago.

Therapon argenteus, Gthr., pl. xlviii. fig. 1, and *argenteus*, C. V., pl. lxi. fig. 4, *micracanthus*, Blkr., pl. lxii. fig. 1, *trivittatus*, Blkr., fig. 2 ; figured by Bleeker, *op. cit.*

Helotes sexlineatus, C. V., pl. lxiv. fig. 5 ; *id. ibid.*

Pristipoma variolosum, A. Haly, Ann. N. H. (4) xv. p. 269, Camaroons ; *P. olivaceum*, Day, *op. cit.* p. 73, pl. xix. fig. 1, Beloochistan and Sind : spp. nn.

Pristipoma hasta, C. V., pl. xlvii. fig. 3, and *Pomadasys therapon*, Blkr., pl. lxiii. fig. 1 ; figured by Bleeker, *op. cit.*

(*Diagramma*) *Plectorhynchus chrysotænia*, Blkr., pl. li. fig. 1, *albovittatus*, Rüpp., fig. 2, *celebicus*, Blkr., fig. 3, *pictus*, Blkr., fig. 4 (= *punctatum*, C. V.), and pl. lv. fig. 2, *crassispina*, Rüpp., pl. lxiv. fig. 4 ; figured by Bleeker, *op. cit.*

Hapalogenys petersi, sp. n., Day, *op. cit.* p. 77, pl. xx. fig. 3, Sind and Meckran Coast.

Hæmulon continuum, Poey, An. Soc. Esp. iv. p. 120, Cuba ; *H. hians*, A. Haly, Ann. N. H. (4) xv. p. 268, Bahia : spp. nn.

Synagris bleekeri, sp. n., Day, *op. cit.* p. 92, pl. xxiv. fig. 1, Indian Seas.

The following known species are figured by Bleeker, *op. cit.* :—

Synagris. (*Synagris*) *Dentex hypselognathus*, Blkr., pl. xlvii. fig. 1; *mulloides*, Blkr., pl. xlviii. fig. 5; *upeneoides*, Blkr., *balinensis*, Blkr., *zysron*, Blkr., pl. xlix. figs. 2, 4 & 5; *tambuloides*, Blkr., *sambawensis*, Blkr., *mesoprion*, Blkr., *ovenii*, Blkr., pl. l. figs. 1, 2, 4 & 5; *blochii*, Blkr. (*S. japonicus*, Gthr.), pl. lii. fig. 4; *celebicus*, Blkr., pl. liv. fig. 2; *tæniopterus*, C. V., pl. lvi. fig. 5; *nemurus*, Blkr., pl. lvii. fig. 4; *sundanensis*, Blkr., pl. lviii. fig. 4; *isacanthus*, Blkr., pl. lvii. fig. 4; *nematopus*, Blkr., pl. lviii. fig. 4.

(*Dentex*) *Gymnocranius lethrinoides*, Blkr., pl. liv. fig. 1, and pl. lvi. fig. 3; *frenatus*, Blkr., pl. lv. fig. 3.

Aprion pristipoma (= *Pristipomoides typus*, Blkr.), pl. lviii. fig. 3; *microlepis* (= *Chætopterus microlepis*, Blkr.), fig. 5. [Synopsis and description of species of *Aprion*, id. Verh. Ak. Amst. xiii. pp. 90–98.]

(*Heterognathodon*) *Pentapus macrurus*, Blkr., pl. lxii. fig. 4; *hellmuthi*, Blkr., pl. lxvii. fig. 1.

Scolopsis trilineatus, Kn., pl. liii. fig. 2; *monogramma*, K. v. H., pl. lvii. fig. 3; *vosmœri*, C. V., pl. lxi. fig. 5; *personatus*, C. V., pl. lxiii. fig. 4; *inermis*, Schl., fig. 5; *bilineatus*, C. V., juv., pl. lxiv. fig. 1; *tæniopterus*, C. V., pl. lxv. fig. 5.

Cæsio digramma, Blkr., pl. lvi. fig. 1; *pisang*, Blkr., fig. 2; *lunaris*, Ehr., pl. lvi. fig. 4; *cærulaureus*, Lac., pl. lxix. fig. 4.

Revision and descriptions of the species of *Synagris*, *Dentex*, and *Pentapus*; Bleeker, Verh. Ak. Amst. xiii. pp. 1–64.

(*Gerres*) *Moharra*, g. n., for *Gerres rhombeus*, Cuv., and another species only once seen and not named specifically, differing from *Gerres* in having the suborbital entire; Poey, An. Soc. Esp. iv. pp. 124 & 125.

(*Gerres*) *Eucinostomus pseudo-gula*, p. 127, pl. v. fig. 1 (= *Gerres aprion*, Cuv., *nec typus*, Poey, and *Diapterus gula*, Cuv., nec *typus*, Poey), and *E. gulula*, p. 128, pl. vi. (? = *Gerres gula*, Gthr., *nec* Cuv.), Poey, *l. c.*, Cuba, spp. nn.

Pentaprion gerroides, Blkr., = *Equula longimanus*, Cantor, and has 5 (not 4) anal spines; Day, *op. cit.* p. 101, pl. lii. fig. 6.

Squamipinnes.

Chætodon bimaculatus, Bl., and *ocellatus*, Bl., are the same species. (*Chætodon*) *Sarathrodus amplexicollis*, Poey (Synops. p. 353), noticed as having characters which entitle it to generic distinction, and figured; Poey, An. Soc. Esp. iv. pp. 136 & 137, pl. vii. figs. 1–3.

Chelmo pulcher, sp. n., Steindachner, SB. Ak. Wien, lxx. p. 382, Mauritius.

Pomacanthus paru, Bl. Poey separates *Chætodon aureus*, Bl., from this species, to which it has hitherto been referred by most authors; An. Soc. Esp. iv. pp. 132-134.

Ephippus faber, Brouss., and *gigas*, Cuv. Poey remarks upon the alleged grounds for separating these species, which he now considers to be identical; *l. c.* p. 138.

Parascorpis, g. n., differing from *Scorpis* in large cleft of mouth, very narrow and deeply notched interbranchial membrane, 12-spined dorsal, with soft part shorter than anterior portion, not more than 14 or 15 rays in either dorsal or anal, scales considerably larger. Type, *P. typus*, sp. n., Bleeker, Arch. Néerl. x. pp. 380–382, pl. vii., Cape of Good Hope.

Toxotes. Bleeker recognizes four recent species:—(1), *T. microlepis*, Blyth & Günth.; (2), *T. chatareus*, Blkr., = *Coius chatareus*, Ham., Buch., = *T. jaculator*, C. V.; (3), *T. jaculator*, Cuv., *nec* C. V.; (4), *T. oligolepis*, sp. n., from the Moluccas: Versl. Ak. Amst. (2) ix. pp. 155–167.

Toxotes squamosus, sp. n., Hutton, Ann. N. H. (4) xvi. p. 313, New Zealand.

Mullidæ.

Bleeker revises and redescribes the Indo-pelagic species of this family, adding *Parupeneus xanthospilurus*, sp. n., p. 37, from Amboyna; Verh. Ak. Amst. xv. 39 pp.

Sparidæ.

Crenidens macracanthus, Gthr., = *C. indicus*, Day, Report Ind. Fish. 1873, p. 186; Day, Fishes of India, p. 132, pl. xxxii. fig. 4.

Lethrinus longirostris, Playf., = *L. rostratus*, C. V.; *id. ibid.* p. 134.

The following are figured by Bleeker, Atlas Ichth. livr. 28:—

Lethrinus harak, Rüpp., pl. xlix. fig. 3, *variegatus*, Ehr., C. V., pl. l. fig. 3, and pl. lii. fig. 2, *reticulatus*, C. V., pl. lii. fig. 1, *hypselopterus*, Blkr., fig. 3, *hæmatopterus*, Schl., pl. liii. fig. 4, *opercularis*, C. V., pl. lvii. fig. 5, *nematacanthus*, Blkr., pl. lix. fig. 3.

Sparus hasta, Bl., Schn. (*Chrysophrys calamara*, C. V.), pl. lxvii. fig. 3.

Sargus tridens, sp. n., Poey, An. Soc. Esp. iv. p. 131, Cuba.

Pimelepterus boschii, Lac.; Poey, *l. c.* p. 139, finds the vertebræ to be 10+16, not 9+16.

Cirrhitidæ.

Bleeker revises and redescribes the Indo-archipelagic species, separating under the new generic name *Paracirrhites*, *Cirrhites forsteri*, Bl., *arcatus*, C. V., *amblycephalus*, Blkr.; and giving a diagnosis of *Cirrhitichthys polyactis*, sp. n., Amboyna, p. 16. Verh. Ak. Amst. xv. 19 pp.

Cirrhites marmoratus, Blkr., figured by Bleeker, Atlas Ichth., livr. 29, pl. lxvi. fig. 5.

Scorpænidæ.

Scorpæna fernandeziana, Steindachner, SB. Ak. Wien, lxxi. p. 451, fig. 1, Juan Fernandez; *S. ballieni*, Sauvage, R. Z. (3) iii. p 278, Sandwich Islands; *S. barathri*, Hector, Ann. N. H. (4) xv. p. 80 (figured, Tr. N. Z. Inst. vii. pl. x. fig. 15), Cape Farewell: spp. nn.

Sebastes mouchezi, Sauvage, CR. lxxxi. p. 988, Island of St. Paul; *S. stoliczkai*, Day, *op. cit.* p. 148, pl. xxxvi. fig. 1, Nicobars: spp. nn.

(*Tetrarogæ*) *Cocotropus roseus*, sp. n., *id. l. c.* p. 160, pl. xxxviii. fig. 8, Coromandel.

Centropogon indicus, sp. n., Day, *op. cit.* p. 155, pl. xxxviii. fig. 2, Madras.

Synancia verrucosa, Bl. On poisonous wounds inflicted by this species; note in Tids. Naturvid. (5) v. p. 84.

Pseudosynanceia, g. n. Has vomerine teeth; if these are inconstant, will be identical with *Leptosynancia*, Blkr. *P. melanostigma*, sp. n., Kurrachee. Day, *op. cit.* p. 163, pl. lv. fig. 6.

Berycidæ.

Grammicolepidi, fam. nov. Tail without armature, ventrals with more than five soft rays, two free anal spines, caudal vertebræ numerous (10 + 36), scales very broad, smooth. For *Grammicolepis*, g. n. Body high, compressed, eye large, mouth small, head partially rugose, as also the præ- and inter-operculum, branchiostegals apparently in small number, teeth reduced to asperities, palate toothless, two dorsals, the first short, the second very long and gradually increasing in height; pectorals short and rounded, soft rays of dorsal, anal, and pectorals not branched. Type, *G. brachiusculus*, sp. n., D. $\frac{8}{21}$, A. $\frac{3}{13}$, Poey, An. Soc. Esp. ii. [1873], pp. 403–407, pl. xii. Havana.

Trachichthys intermedius, Hector, Ann. N. H. (4) xv. p. 79, Cape Farewell; *T. trailli*, Hutton, *op. cit.* xvi. p. 315, New Zealand: spp. nn.

Holocentrum riparium, sp. n., Poey, An. Soc. Esp. iv. p. 111, Cuba.

Holocentrum diploxiphus, Gthr., redescribed by Günther with the remark that *H. lacteoguttatum*, *punctatissimum*, and *stercus-muscarum*, C. V., are founded upon young examples which are more or less speckled like the young of this species, J. Mus. Godeffr. ix. 97. The other species noticed in the same work are:—*H. diadema*, Lacép., p. 97, *microstoma*, Gthr. (= *H. tahiticum*, Kner, *nec* fig.), p. 98, pl. lxiv. B., *erythræum*, Gthr., p. 99, pl. lxiii. B, *furcatum*, Gthr., p. 99, pl. lxiv. A, *sammara*, Forsk. (= *tahiticum*, Kner, fig. *nec* descript.), p. 100, *operculare*, C. V., p. 100, pl. lxvi. A. *lævе*, Gthr., p. 101, pl. lxv. B.

Kurtidæ.

Pempheris mangula, C. V. (= *otaitensis*, C. V.), redescribed and figured by Günther, J. Mus. Godeffr. ix. p. 102, pl. lix. B.

Polynemidæ.

Polynemus plebeius and *sexfilis* redescribed by Günther, *l. c.* pp. 103 & 104, and the former figured, pl. lxxvii. A.

Sciænidæ.

Revised arrangement of this family; Bleeker, Verh. Ak. Amst. xiv. pp. 1–62.

Günther remarks that one of the most curious facts in the geographical distribution of marine fishes is the absence of this family from the

waters of the Pacific Ocean, it being plentifully represented in other tropical and subtropical seas, and especially so in the Indian Ocean and Archipelago. From Australia, only two or three species are known, whilst there is not a single instance of any occurring in Polynesia; the author is inclined to attribute this to a preference for the neighbourhood of the mouth of rivers or of great beds of seaweed, rather than to coral-bottomed waters, the Red Sea being equally destitute of members of this family. He adds, however, that the great European *Sciæna aquila*, which goes round the Cape of Good Hope and reaches the coasts of Australia, may possibly hereafter be occasionally found within the limits of the Polynesian seas. J. Mus. Godeffr. ix. p. 105.

Sciæna margaritifera, sp. n., A. Haly, Ann. N. H. (4) xv. p. 269, Port Natal.

Corvina (*Homoprion*) *agassizi*, sp. n., Steindachner, SB. Ak. Wien, lxxi. p. 468, Callao.

Genyanemus peruanus, p. 471, and *G. fasciatus*, p. 478, Bay of Panama; *G. brasiliensis*, p. 476, Para, Santos. *Id. l. c.*, spp. nn.

Xiphiidæ.

Günther has not hitherto received any specimens of this family from Polynesia, their great size and strength being no doubt obstacles to their capture; but their existence in that portion of the Pacific is attested on the authority of the Rev. Wyatt Gill, who states that the young sword-fish are there captured easily in strong nets, individuals of six feet in length, the largest taken being caught with a hook baited with small fish. Larger ones, of ten or twelve feet long, are the terror of fishermen, and many instances of wounds inflicted by them on the natives are recorded. On account of the limited number of specimens accessible for study at present, the determination of the species is somewhat uncertain. Examples with low dorsal fin, the anterior rays of which are alone elevated, and others with the entire fin uniformly elevated, are known; it is probable that this fin is used as a sail while the fish lies drifting on the surface of the water. J. Mus. Godeffr. ix. p. 105.

Histiophorus. On the species of this genus, with particular description of *H. orientalis*, Schl., from a skeleton in the Copenhagen Museum; Lütken, Vid. Medd. 1875, pl. iii. figs. A–G.

Trichiuridæ.

Gempylus serpens, Sol., with which *G. coluber*, C. V., and *Lemnisoma thyrsitoides*, Less., are identical, is found at the Society and Sandwich Islands as well as at the Canaries and Antilles; being a deep-sea fish, it affords another confirmation of the principle that depth is associated with the widest possible range. Günther, J. Mus. Godeffr. ix. p. 106, pl. lxviii. fig. B.

The same remarks apply equally to *Thyrsites prometheus*, C. V., now found to be a Pacific as well as an Atlantic species, and Günther is

inclined to doubt the specific distinctness of *Gempylus solandri*, C. V., from New Holland; *op. cit.* p. 107, pl. lxviii. A.

Thyrsites niger, sp. n., indicated as a new species founded upon portions of a specimen, which can, however, be only provisionally referred to this genus; Poey, An. Soc. Esp. iv. p. 148, pl. vii. figs. 20 & 21.

Evoxymetopon taniatus, Poey, redescribed and figured, is probably the fish recorded by Hoy from Nova Scotia in 1812 (Tr. L. S. xi. p. 210); Poey, An. Soc. Esp. ii. [1873], p. 78, pl. v.

Acronuridæ.

Acanthurus, Bl. Found in all the tropical seas with the exception of the eastern portion of the Pacific, where they are at least very thinly represented; they appear to haunt coral reefs and feed upon sea-weed. The genus *Acronurus* is only the young stage of *Acanthurus*, which differs strikingly in appearance from the adult; but it is as yet impossible to refer the different forms which have been distinguished under the names of *Acron. orbicularis*, *argenteus*, &c., to the species of *Acanthurus*, to which they properly belong. Günther, J. Mus. Godeffr. ix. p. 108.

Acanthurus matoides, C. V. It is now extremely doubtful whether *A. matoides*, Klunz., from the Red Sea, is identical with the species so named hitherto by Günther, which he redescribes and figures under the name of *A. blochii*, C. V., the dorsal fin being lower in proportion to the height of the body in the latter than in the former; *l. c.* p. 109, pl. lxix. B.

Other species of *Acanthurus* noticed and figured by Günther, *l. c.*:—*A. triostegus*, L., p. 108, *guttatus*, F., p. 109, pl. lxix. A., *nigros*, Gthr., p. 110, *marginatus*, C. V., p. 111, *lineatus*, L., p. 111, pl. lxx., *dussumieri*, C. V., p. 112, pl. lxxii., *lineolatus*, C. V., p. 112, pl. lxiii. A, *flavoguttatus*, Kittl., p. 112, *olivaceus*, Bl., Schn., p. 113, *pyroferus*, Kittl., p. 113, *gahm*, Forsk., p. 113, pl. lxxiv., *glaucopareius*, C. V., p. 114, pl. lxxi. A, *aterrimus*, Gthr., p. 114, pl. lxxvii. B, *celebicus*, Blkr., p. 115, pl. lxxiii. B, *achilles*, Shaw, p. 115, pl. lxxi. B, *hepatus*, L., p. 115, pl. lxxv., *strigosus*, Benn., p. 116, pl. lxxix. B & C, *flavescens*, Benn., p. 116, pl. lxxvi., *hypselopterus*, Blkr., p. 117, and *rostratus*, Gthr., sp. n., after Garrett's notice and figure, distinguished from *A. flavescens*, which it must resemble, from the Society Islands, p. 117, pl. lxxvi. B.

Acanthurus virgatus, sp. n., Vaillant & Sauvage, R. Z. (3) iii. p. 283, Sandwich Islands, belongs to the group of *A. velifer*.

Acronurus cæruleatus and *nigriculus*, spp. nn., Poey, An. Soc. Esp. iv. p. 143, Cuba.

Naseus, Commers. The genus *Keris* is the young stage of *Naseus*. *N. unicornis*, Forsk., and its different stages of growth described and figured, pp. 118–120, pl. lxxviii. figs. 1–4. Other species described and figured:—*N. brevirostris*, C. V., p. 121, pl. lxxix. A, *marginatus*, p. 122, pl. lxxxiii., *tuberosus*, Lacép., p. 123, pl. lxxx., *vlamingii*, C. V., p. 123, pl. xxxi., *lituratus*, Forst., p. 124, pl. lxxxii.; Günther, J. Mus. Godeffr. ix.

Priodon annulatus, Val., is not identical with *Naseus marginatus*; Günther, *l. c.* p. 122.

Naseus punctulatus, C. V., described and figured; Steindachner, SB. Ak. Wien, lxx. p. 386, pl. i.

Carangidæ.

Caranx. A. Moreau furnishes a note on the swimming bladder of *C. trachurus*; it performs a purely hydrostatic function, the only opening being a canal which permits the escape of air by the bronchial cavity, but does not serve to admit air. C. R. lxxx. pp. 1247–1250.

Caranx latus, Agass., = *C. fallax*, C. V., and is distinct from *C. hippos*, L., p. 149; remarks on *C. chrysos*, Mitch., *iridinus*, Poey (= *Scomber ruber*, Bl., and *C. blochii*, C. V.), *heteropygus*, Poey (= *amblyrhynchus*, Poey), and *plumieri*, Bl., pp. 150–152; *C. aureus*, sp. n., differing in colour from *C. fallax*, p. 151, Cuba; Poey, An. Soc. Esp. iv.

Seriola. Poey, *l. c.* p. 155, redescribes his *S. gigas* from Cuba, a fish which grows to a great size, remarking that it has priority over the *S. gigas* of Günther from Australia, which Gill considers to be typical of a distinct genus *Naucrafopsis*.

Coryphænidæ.

Centrolophus peruanus, sp. n., Steindachner, SB. Ak. Wien, lxx. p. 381, Callao.

Scombridæ.

(*Thynnus*) *Orcynus*. Poey enumerates the following as separate species belonging to the Cuban fauna:—*O. thynnus*, L., *secundidorsalis*, Storer (1867), *balteatus*, C. V., *albacora*, Lowe, *thunnina*, C. V., *pelamys*, L., and *subulatus*, Poey, sp. n.; An. Soc. Esp. iv. pp. 145 & 146.

Platystethus abbreviatus, sp. n., Hector, Ann. N. H. (4) xv. p. 79, Cape Farewell.

Trachinidæ and Nandidæ.

The *Sillagini* are considered as a distinct family [*Sillaginoidei*, Gill, 1861], and a revised arrangement of them is given; Bleeker, Verh. Ak. Amst. xiii. pp. 63–74.

Trachinus draco. On the poisonous nature of wounds inflicted by the spines of this fish; F. Schmidt, in Nordiskt Medicinskt Arkiv. vi. No. 2.

Pseudochromidæ. Bleeker revises and recharacterizes the Indopelagic species of this group, in which he includes *Plesiops* and *Trachinops*, and figures *Cichlops cyclophthalmus*, M. & Tr., pl. ii. fig. 2; *melanotænia*, Blkr., fig. 3; *trispilus*, pl. iii. fig. 5; *spilopterus*, Blkr., pl. i. fig. 4; *hellmuthi*, Blkr., pl. i. fig. 6; *Pseudochromis fuscus*, M. & Tr., pl. i. fig. 5; *xanthochir*, Blkr., pl. iii. fig. 4; *melanotænia*, Blkr., pl i. fig. 3; *cyanotænia*, Blkr., pl. i. fig. 2; *tapeinosoma*, Blkr. pl. i. fig. 1; *polyacanthus*, Blkr., pl. iii. fig. 2; *Plesiops nigricans*, Rüpp., pl. iii. fig. 3; *oxycephalus*, Blkr., pl. ii.

fig. 1; *Pseudoplesiops typus*, Blkr., pl. iii. fig. 1. Verh. Ak. Amst. xv. 30 pages.

Notothenia angustata and *microlepidota*, Hutton, Ann. N. H. (4) xvi. p. 315, Dunedin, spp. nn.

Malacanthidæ.

Malacanthus parvipinnis, sp. n., Vaillant & Sauvage, R. Z. (3) iii. p. 283, Sandwich Islands.

Pediculati.

Dibranchus, g. n., Peters, MB. Ak. Berl. 1875, pp. 736–742, figs. 1–5. Allied to *Halieutæa*, but differing from other *Pediculati* in having only two gills, instead of from two and a half to three and a half, the first and fourth branchial arches being destitute of laminæ:—"Caput cum trunco latissimum, depressum, rostro rotundato, tentaculo præfrontali protractili; rictus modicus anticus transversus, dentibus intermaxillaribus mandibularibusque velutinis; palatum edentulum; cutis tuberculis osseis radiatis conicis, in capitis margine trispinosis obsita; apertura branchialis supera axillaris; radii branchiostegi seni; branchiæ binæ, arcubus branchialibus primo et quarto branchiis destitutis; lingua, pseudobranchiæ, appendices pyloricæ et vesica aërea nullæ; pinnæ dorsalis et analis breves, ventrales evolutæ." Type, *D. atlanticus*, sp. n., obtained during the voyage of the "Gazelle," near the coast of Western Africa, from a depth of 360 feet (675 metres).

Antennarius. On the habits of this genus of fishes; Whitmee, P. Z. S. 1875, p. 543.

Cottidæ.

Cottus filamentosus, Sauvage, *l. c.* p. 279, Sandwich Islands; *C. grewingki*, *kessleri*, *kneri*, *godlewskii*, *jeittelesii*, and *baicalensis*, Dybowski, Verh. z.-b. Wien, xxiv. p. 384, Lake Baikal: spp. nn.

Discoboli.

Remarks on the genera *Liparis* and *Cyclopterus*. The males of *Liparis montagui* have the first six dorsal rays prolonged and fleshy. Two new species of *Liparis* cursorily noticed. Putnam, P. Am. Ass. 1874, p. 335.

Gobiidæ.

The following are described as new species by Bleeker in Arch. Néerl. x.:—

Gobiopsis oligactis, p. 113, Amboyna.

Lophogobius chrysosoma, p. 114, Borneo and Amboyna.

Pseudogobiodon macrochir, p. 116, Amboyna.

Ctenogobius grammatogaster, p. 124, Singapore; *C. notophthalmus*, p. 126, Singapore and Amboyna; *C. gracilis*, p. 127, Singapore; *C. cylindricus*, p. 129, Singapore.

Acentrogobius leptochilus, p. 131, Amboyna; *A. oligactis*, p. 132, Singapore.

The author, *l. c.* pp. 117 & 122, also characterizes *Gobiodon quinquestrigatus*, C. V., = *G. ceramensis*, Gthr., *nec G. quinquestrigatus*, Gthr., which latter he now redescribes as *G. erythrospilus*, Blkr.

Oxyurichthys, Blkr. [Zool. Rec. xi. p. 99], rectified, and *O. auchenolepis*, sp. n., Singapore, described. *Id.* Versl. Ak. Amst. (2) ix. p. 138.

Paroxyurichthys, g. n. Teeth in upper jaw biserial. *P. typus*, sp. n., Amboyna; *id. l. c.* pp. 140–142.

Cryptocentrus, Ehr. Diagnosis rectified, p. 142, and *C. diproctotænia*, p. 143, Amboyna, *C. liolepis*, p. 145, Borneo, *C. leptocephalus*, p. 146, Singapore, spp. nn., described; *id. l. c.*

Gobius niger, L. On the development of spinules on the scales in this species, showing that they are the product of a special blastema, and not mere indentations of the edge of the scales; L. Vaillant, C. R. lxxxi. pp. 137–139.

Gobius cobitiformis, capitonellus, albo-signatus, gœbeli, lynx, bogdanowi, cyrius, weidemanni, and *eurycephalus*, spp. nn., Kessler, Fische des Schwarzen und Caspischen Meeres, St. Petersburg: 1874.

Gobius burtoni, p. 144, Fernando Po, and *G. castaneus*, p. 145, Nagasaki, A. W. E. O'Shaughnessy, Ann. N. H. (4) xv.; *G. davidi*, Sauvage, Ann. Sci. Nat. (6) 1, art. 5, p. 2, Western Tschekiang; *G. homocyanus*, Vaillant & Sauvage, R. Z. (3) iii. p. 280, Sandwich Islands: spp. nn.

Euctenogobius strigatus, p. 145, Surinam, and *E. latus*, p. 146, Brazil, A. W. E. O'Shaughnessy, *l. c.*, spp. nn.

Salarias zebra, sp. n., Vaillant & Sauvage, R. Z. (3) iii. p. 281, Sandwich Islands.

Pogoneleotris, g. n., for *Eleotris heterolepis*, Gthr.; Bleeker, Arch. Néerl. x. p. 107.

Culius insulindicus, p. 107, Sumatra, Singapore, Amboyna, &c., and *C. macrolepis*, p. 109, Amboyna, *id. l. c.* spp. nn.

Eleotris perniger, Cope. Specimens from Bahia apparently to be referred to this species, are described by A. W. E. O'Shaughnessy, *l. c.* p. 146. *E. brevirostris*, Steind., = *E. compressus*, Krefft; *id. l. c.* p. 147.

Eleotris monteiri, id. *l. c.* p. 147, Angola; *E. sandwicensis*, Vaillant & Sauvage, R. Z. (3) iii. p. 280, Sandwich Islands; *E. davidi*, Sauvage, Ann. Sci. Nat. (6) i. art. 5, p. 3, Ningpo: spp. nn.

Philypnus cinctus, Dabry. Diagnosis; Sauvage, *l. c.* Kiang-si Mountains.

Asterropteryx modestus, Blkr. Under this name, Bleeker recharacterizes *Eleotris cyprinoides*, sibi, *nec* Val., *nec* Günth. *E. cyprinoides*, Gthr. (? Val.), from Ovalau, is renamed *Asterropteryx guentheri*. Arch. Néerl. x. pp. 111 & 112.

Amblyopus mexicanus, sp. n., O'Shaughnessy, *l. c.* p. 147, Mexico.

Sphyrænidæ.

Sphyræna guentheri, sp. n., A. Haly, Ann. N. H. (4) xv. p. 270, Atlantic.

ATHERINIDÆ.

Atherinella, g. n. Form lengthened, belly much depressed. First dorsal a little behind commencement of anal; second dorsal above its last ray. Pectoral very long. Lower jaw projecting anteriorly and abruptly upwards. Teeth in jaws pointed and hooked. Scales strongly serrated. Type, *A. panamensis*, sp. n., Panama. Steindachner, SB. Ak. Wien, lxxi. p. 477.

MUGILIDÆ.

Mugil trichilus, sp. n., Vaillant & Sauvage, R. Z. (3) iii. p. 287, Sandwich Islands.

GASTEROSTEIDÆ.

Gasterostea globiceps, sp. n., Sauvage, Arch. Mus. x. p. 35, pl. i. fig. 17, N. America [omitted from Zool. Rec. xi. p. 102].

GOBIESOCIDÆ.

Sicyases petersi, sp. n., Garman, P. Bost. Soc. xviii. p. 203, West coast of S. America.

PSYCHROLUTIDÆ.

Psychrolutes latus, sp. n., Hutton, Ann. N. H. (4) xvi. p. 316, New Zealand.

OPHIOCEPHALIDÆ.

Pseudorephalus aspilotus and *O. guentheri*, spp. nn, Sauvage, Ann. Sci. Farewell, i. Art. No. 5, p. 4, China.

LABYRINTHICI.

[*Osphromenus olfax* ?] P. Carbonnier describes the nidification of the Rainbow-fish; C. R. lxxxi. p. 1136.

ACANTHOPTERYGII PHARYNGOGNATHI.

POMACENTRIDÆ.

Glyphidodon imparipinnis, sp. n., Sauvage, R. Z. (3) iii. p. 279, Sandwich Islands.

LABRIDÆ.

Labrichthys lantzii and *isleanus*, spp. nn., Sauvage, C. R. lxxxi. p. 988, St. Paul Island.

Neolabrus, g. n. Body and scales on cheek as in *Labrichthys*; three to four rows of small scales on the upper part of the operculum and one row of larger scales on its hinder edge. Præoperculum not serrated.

Teeth in jaw in a single series without posterior canines. L. lat. continuous. Dorsal only with a few simple flexible rays before the numerous branched rays, with no distinct spines. D. $\frac{8}{9}$, A. $\frac{3}{7}$. Type, *N. fenestratus*, sp. n., Juan Fernandez, Steindachner. SB. Ak. Wien, lxxi. p. 461, fig. 2.

Novacula microlepis, sp. n., Vaillant & Sauvage, R. Z. (3) iii. p. 284, Sandwich Island.

Julis ballieui, sp. n., *iid. ibid.* Sandwich Islands.

Coris (*Hemicoris*) *venusta*, *ballieui*, and *rosea*, spp. nn., *iid. l. c.* pp. 285 & 286, Sandwich Islands.

CHROMIDÆ.

STEINDACHNER gives detailed descriptions of various South American species in two papers in SB. Ak. Wien, lxx. pp. 501–523, and lxxi. pp. 61–136.

Redescriptions with critical remarks on the synonymy of known species are given, and figures of *Acara autochthon*, Gthr., p. 502, pl. i.; *Geophagus brasiliensis*, Q. & G., p. 511, pls. ii. & iii.; *Acara* (*Heros*) *spuria*, Heet., var., p. 507, pl. iv.

The following new genera and species are characterized:—

Crenicara. Body oval and compressed as in *Acara*. Spinous part of dorsal more developed than the rayed. Three anal spines in the single species. First branchial arch without skinny appendage. Præoperculum finely and equally serrated. *C. elegans*, p. 99, pl. i. fig. 1, *a*. Amazons.

Dicrossus. Body much elongate and moderately compressed. Sand-

Crenicichla. Præoperculum finely serrated. Mouth, teeth in ja gills as in *Acara*. L. lat. interrupted. Dorsal spines numerous rather large. *D. maculatus*, p. 102, Amazons.

Saraca. Body much lengthened. Appendage to anterior bra., and arch as in *Geophagus*. Rayed dorsal much the most developed. T anal spines in the single species. Scales rather large. Præopercul edge smooth. *S. opercularis*, p. 125, Amazons.

Acara thayeri, p. 68, pl. i. fig. 2, *a*, *b*; *A.* (*Heros*) *crassa*, p. 88; *A.* (*Petenia*) *spectabilis*, p. 96, pl. iv. Amazons.

Geophagus thayeri, p. 108, pl. iii. figs. 2, *a*, *b*; *G. agassizi*, p. 111, pl. viii. fig. 2, *a*, *b*, Amazons.

Chætobranchus semifasciatus, p. 130, pl. vii.; *C. orbicularis*, p. 133, pl. viii. figs. 1, *a*, *b*, Amazons.

Chromis paterfamilias, sp. n., Lortet, C. R. lxxxi. pp. 1196–1198, Lake Tiberias. A fish, the male of which carries the eggs in the buccal cavity, the young even remaining there some time after they are hatched.

ANACANTHINI.

GADIDÆ.

Motella septentrionalis, sp. n., Collett, Ann. N. H. (4) xv. p. 82, Norway.

Brotula multicirrata, sp. n., Vaillant & Sauvage, R. Z. (3) iii. p. 282, Sandwich Islands.

Ophidiidæ.

Congrogadus marginatus, sp. n., *iid. ibid.* Sandwich Islands.

Ammodytes terebrans, sp. n. (with critical remarks upon the descriptions extant of the other recognized species of this genus), R. Cisternas, An. Soc. Esp. iv. pp. 163–168, pl. viii. Mediterranean.

Macruridæ.

Macrurus armatus, sp. n., Hector, Ann. N. H. (4) xv. p. 81, Cape Farewell.

Pleuronectidæ.

Oncopterus, g. n. Eyes on sight side, cleft of mouth longer and teeth somewhat stronger on the blind side. Both jaws with a narrow band of comb-like teeth, without canines. Vomer and palate toothless. First dorsal ray stiff and situated in a crescentic deep groove on the eyeless side of the head, on the level of the upper eye. All the other dorsal and the anal rays branched and separated at the tip. Scales rather small cycloid. [illegible] with strong pectoral curve and numerous transverse out-branch-[illegible]s. Type, *O. darwini*, sp. n., E. coast of Patagonia. Steindachner, SB. Ak. Wien, lxx. p. 365, pl. i.

Rhombus maximus. Abnormal examples are figured by M'Intosh in "Marine Invertebrata and Fishes of St. Andrews," pl. vi. figs. 5 & 6.

Pseudorhombus boops, sp. n., Hector, Ann. N. H. (4) xv. p. 81, Cape Farewell.

PHYSOSTOMI.

Siluridæ.

R. Bliss describes the structural growth of the spines of Siluroids, as exemplified in *Æluriehthys*; P. Bost. Soc. xvii. 1875, p. 386.

Clarias anguillaris. Note on the male organs; P. Panceri, Ann. Mus. Genov. vi. pp. 361–365, pl. figs. 1 & 2.

Silurus cinereus, Dabry, Piscic. et Pêche en Chine, pl. xlvii. fig. 1, diagnosed; Sauvage, Ann. Sci. Nat. (6) i. Art. No. 5, p. 5.

Pseudobagrus nitidus, sp. n., *id. ibid.*, Yang-tse Kiang.

Bagropsis rheinhardti, Ltk., figured by Lütken, Dan. Selsk. Skr. 1875, pl. i. fig. 2.

Hemibagrus taphrophilus, sp. n., Sauvage, *l. c.* p. 6, Western Tschuang.

Liocassis torosilabris, sp. n., *id. l. c.* p. p. 7, Yang-tse Kiang.

The following species are figured by Lütken, *l. c.*:—

Platystoma orbignianum, Val. ?, p. 154.

Pimelodus maculatus, Lac. ?, p. 165, and *P. westermanni*, R. & L., pls. ii. & iii. fig. 4.

Pseudorhamdia fur, Ltk., pls. ii. & iii. fig. 3 ; *lateristriga*, M. & Tr., p. 172, and *vittata*, Ltk., p. 173.

Rhamdia hilarii, Val., p. 175 ; *R. microcephala*, Ltk., pl. iii. fig. 7 ; and *minuta*, Ltk., pl. iii. fig. 6.

Auchenipterus lacustris, Rhdt., Ltk., ♂, p. 148.

Doras marmoratus, Rhdt., Ltk., pl. i. fig. 1.

Glanidium albescens, Ltk., ♂, pl. iii. fig. 5.

Trichomycterus brasiliensis, Ltk., pl. iii. fig. 8.

Stegophilus insidiosus, Rhdt., p. 135.

The following new *Siluridæ* of the group *Doradina* from Brazil are described by Steindachner, SB. Ak. Wien, lxxi. :—

Oxydoras orestis, p. 138, pl. i.

Rhinodoras amazonum, p. 141, pl. ii. ; *R. teffeanus*, p. 145, pl. iii.

Doras marmoratus (Rhdt.), p. 147, pl. iv.

Cyprinidæ.

Fatio has found, in the greater number of species inhabiting the Swiss waters, a greater development of the first pectoral ray in the males, and in the Minnow (*Phoxinus lævis*) a still more marked swelling of not one only, but six, seven, or eight rays in the male, and this not exclusively at the breeding period, but more or less throughout the year. According to this author, partial melanism in the smaller Cyprinoids is invariably due to the presence of a parasite apparently somewhat different from *Diplostomum cuticola*, Nordm. (1832), the local irritation of which causes an aggregation of the dark pigmentary cellules. Arch. Sci. Nat. (n.s.) lii. pp. 29–44.

[*Sclerognathus urus*, Agass. & Gthr.] *Catastomus* [*Catostomus*] *bubalus*, Kirtl. Note on this fish, the "Buffalo sucker," in the Ouachita river, and on its peculiar oral structure. J. Leidy (quoting G. W. Lawrence), P. Ac. Philad. 1875, pp. 125 & 126.

Squalius baicalensis, sp. n., Dybowski, Verh. z.-b. Wien, xxiv. p. 388, rivers round Lake Baikal.

Discognathus prochilus, sp. n., Sauvage, Ann. Sci. Nat. (6) i. Art. No. 5, p. 8, Setchuan.

Barbus (*Systomus*) *simus*, sp. n., *id. ibid.*, China.

Gobio imberbis and *argentatus*, spp. nn., *id. l. c.* p. 9, China.

Saurogobio guichenoti, sp. n., *id. l. c.* p. 10, Yang-tse Kiang.

Rhinogobio ventralis, sp. n., *id. l. c.* p. 11, Yang-tse Kiang.

Rasbora blanchardi, sp. n., *id. l. c.* p. 12, China.

Xenocypris ænea, sp. n., *id. l. c.* p. 13, China.

Psilorhynchus sinensis, sp. n., *id. l. c.* p. 14, Setchuan.

Nemachilus variegatus, Dabry, redescribed, and *N. lividus*, *bleekeri*, and *bipartitus*, spp. nn., *id. l. c.* pp. 14 & 15, China.

Cobitis sinensis, sp. n., *id. l. c.* p. 16, Western Setchuan.

Lepidocephalichthys macrostigma, Dabry, described, *id. ibid.*, China.

Parabotia fasciata (Guich.) redescribed, *id. l. c.* p. 17, Yang-tse Kiang.

Elopichthys dahuricus, from the Yang-tse Kiang. Under this name, Bleeker redescribes and figures *Naseus dahuricus*, Basilewsky, which he thinks is distinct from *E.* (*Leuciscus*) *bambusa*, Richards. & Günth., but probably identical with *Basilius* (*Opsarius*) *bambusa*, Kner. P. Z. S. 1875, pp. 534–536, pl. lx.

Cobitis tænia, L. Observations on the habits of this species, and on external characters by which the sexes may be distinguished; Cederström, Œfv. Ak. Förh. xxxi. 1875 (1874) pp. 47–53, pl. xi. figs. 5–8.

Cobitis toni, sp. n., Dybowski, Verh. z.-b. Wien, xxiv. p. 392, Irkut, Sielenga, and Angara rivers, and Lake Kossogal.

Gastromyzon, g. n., Gthr. [Zool. Rec. xi. p. 104], was by an oversight put under *Siluridæ homalopteræ* instead of *Cyprinidæ homalopterina*, to which it belongs.

Characinidæ.

Steindachner describes the *Characinidæ* of South-eastern Brazil in SB. Ak. Wien, lxx. pp. 524–538, pls. v. & vi. & lxxi., pp. 211–244, pls. i.–vi., characterizing as new:—

Curimatus elegans, p. 529.

Prochilodus harti and *brevis*, pp. 533 & 536, pls. v. & vi.

Anostomus kneri, p. 211, pl. i. figs. 1 & 2.

Leporinus affinis, p. 228, pl. iii. *L. bahiensis*, p. 231, pl. ii. fig. 2, *L. conirostris*, p. 233, pl. iv., *L. copelandi*, p. 236, pl. v. figs. 1, 2, A, B, *L. myrops*, p. 240, pl. vi.

Leporinus elongatus, C. V., figured and described; *id. op. cit.* lxxi. p. 216, pl. ii. fig. 1.

Lütken, in 'Velhas Flodens Fiskes' (Dan. Selsk. Skr. 1875), publishes figures or cuts of the following species with the descriptions which have appeared before:—

Prochilodus affinis, Rhdt. & Lütk., p. 189.

Parodon hilarii, Rhdt., p. 194, figs. 3 & 4.

Characidium fasciatum, Rhdt., p. 194, figs. 1 & 2.

Leporinus rheinhardti, *tæniatus*, and *marcgravii*, Rhdt. & Ltk., pl. iv. figs. 9–11.

Tetragonopterus lacustris, *cuvieri*, *rivularis*, *gracilis*, and *nanus*, Rhdt. & Ltk., pl. v. figs. 12–17.

Chirodon piaba, Ltk., p. 221.

Brycon lundi, Rhdt. & Ltk., p. 223.

Piabina argentea, Rhdt., p. 226.

Serrasalmo (*Pygocentrus*) *piraya*, Cuv., p. 234, and *S. brandti*, Rhdt. & Ltk., p. 238.

Myletes (*Tometes*) *micans*, Rhdt. & Ltk., p. 243.

Salmonidæ.

On the food and habits of the common species of this family; D. Barfurth, Arch. f. N. 1875, pp. 122–158 (and separately, Bonn.: 1874).

On the breeding of various kinds of fish, especially *Salmonidæ*, in the lakes of Upper Austria: L. Fitzinger, SB. Ak. Wien, lxx. pp. 394–400.

Thymallus microlepis, sp. n., Steindachner, SB. Ak. Wien, lxx. p. 367, pl. ii., Dalmatia.

Thymallus grubii, var. n. *baicalensis*, Dybowski, Verh. z.-b. Wien, xxiv. p. 391, Lake Baikal.

Coregonus baicalensis, sp. n., *id. l. c.* p. 389, Lake Baikal.

Esocidæ.

Esox reicherti, var. n. *baicalensis*, Dybowski, *l. c.* p. 392, waters around Lake Baikal.

Clupeidæ.

Pellona fuerthi and *panamensis*, spp. nn., Steindachner, SB. Ak. Wien, lxx. pp. 388 & 389, Panama.

Murænoidei.

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Dareste confirms Syrski's views respecting the male organs of the Eel discovered by him, but finds that the variety (the 'Pimpernau') in which they exist also exhibits female organs in other individuals; this which is a purely marine variety, would thus be the agent in the reproduction of the species; the larger individuals which ascend rivers being sterile, *i.e.*, the eggs never arriving at maturity. He has found male organs also in *Anguilla marmorata* from the Indian seas. CR. lxxxi. pp. 159–162; Ann. N. H. (4) xv. p. 304, and xvi. p. 442.

Pœcilophis tritor, sp. n., Vaillant & Sauvage, R. Z. (3) iii. p. 287, Sandwich Islands.

LOPHOBRANCHII.

Osphyolax, g. n. Pectorals none; tail sub-cylindric. Body with thin, weakly-keeled scuta, with free superior edges on the lumbar region, forming a series of longitudinal lateral grooves. The lateral dorsal scuta produced upwards, and approximated on the middle line, enclosing a tube for a distance anterior to the dorsal fin. Dorsal fin short, above the vent. No ventral nor caudal pouch; caudal fin rudimental in the typical species. No adipose fins. *O. pellucidus*, sp. n., Atlantic Ocean. Cope, P. Ac. Philad. p. 450, pl. xxv.

PLECTOGNATHI.

Monacanthus brunneus, sp. n., Cistelnau, P. Z. S. Vict. 1873, p. 145, Victoria [different from *M. brunneus*, Cast., *tom. cit.* p. 108; Zool. Rec. x. p. 121].

Tetraodon (*Anosmius*) *janthinus* and *coronatus*, spp. nn., Vaillant & Sauvage, *l. c.* p. 286, Sandwich Islands.

CYCLOSTOMATA.

Petromyzon marinus. Figures of its spermatozoa; Gulliver, P. Z. S. 1875, p. 336.

LEPTOCARDII.

Amphioxus. Preliminary note on the brain and skull, the absence of which is only apparent, as, though not clearly defined, they occupy a considerable portion of the cerebro-spinal axis and the vertebral column; Huxley, P. R. Soc. xxiii. [1874] pp. 127–131.

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BY

PROF. EDUARD VON MARTENS, M.D., C.M.Z.S.

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Woodward, S. P. Manual of Mollusca, 3rd edn., with appendix by R. Tate. London: 1875, 8vo, pp. 542 & 86, 24 pls., woodcuts.

Wyman, J. Freshwater shell mounds on the St. John's river, Florida. Mem. Peab. Ac. i. No. iv. 94 pp. 9 pls.

With reference to the issue in 1875 of the periodicals specially devoted to Conchology, the Journal de Conchyliologie, and Jahrbuch der deutschen malacologischen Gesellschaft, have each published their accustomed yearly volume. A volume of the Malakozoologische Blätter, including 1874 and 1875, has been completed. The first volume of a new series of the Bullettino della Società malacologica Italiana, dormant for some time, has appeared. And in England a new publication, "The Quarterly Journal of Conchology" (Leeds: 8vo) has been commenced: Nos. i.–iii. of vol. 1, pp. 1–48, 1874; Nos. iv.–vii. of vol. 1, pp. 49–112, 1875.

Anatomy and Physiology.

M. Foster & A. G. Dew Smith have published a paper "On the behaviour of the hearts of Mollusks under the influence of electric currents." P. R. Soc. xxiii. pp. 318–343.

A. Sabatier states that the gill-threads of the common mussel, *Mytilus edulis*, are contractile like muscles. C. R. lxxxi. p. 1060, and R. Z. (3) iii. p. lxviii.

P. Fischer sketches the general disposition of the nervous ganglions in the terrestrial *Pulmonata*, dividing them into three groups: supra-œsophagean, sub-œsophagean, and stomatogastric. C. R. lxxxi. p. 782, and R. Z. (3) iii. p. lx.

H. Simroth gives an anticipatory summary of a work on the organs of sense in the *Mollusca*, chiefly of histological and morphological interest, but not capable of being extracted. Z. wiss. Zool. xxv. suppl. vol. pp. 244 & 245.

J. Ranke has examined the otocysts of *Pterotrachea* in living and dead animals. He states that the apparently rhythmic movements of the cilia within the otocyst described by Boll are of convulsive nature and caused by pain in the animal; in ordinary life, the cilia are not moved when the animal is quiet, but are erected on any rather loud noise being made. The auditory nerve does not reach these cilia, but terminates in very minute clear rods, called auditory bacilli (Hör-stäbe) by the author. According to him, these are the sensitive organs, but on a louder noise being made, the otolith approaches the auditory rods by the agency of the cilia, and acts as a tetanometer and damper. Finally, the auditory organs of other *Mollusca*, and especially those of the Cephalopods, are compared. Z. wiss. Zool. xxv. suppl. vol. pp. 77–102, pl. v.

Two kinds of Spermatozoids, different in shape and size, found in *Murex brandaris* (L.), are described by S. L. Schenk, SB. Ak. Wien, lxx. pt. 1, pp. 434–439, 1 pl.

A living specimen of *Anodonta* from Cochin China reached Paris, remaining more than eight months enveloped in dry paper. Deshayes, J. de Conch. xxiii. pp. 81–84.

Similar instances concerning *Unio litoralis* (Drap.), *Spatha rubens* (Lam.), and an Australian species of *Unio*, the last surviving 231 days, are recorded by Gassies, Martin, and Gaskoin, *tom. cit.* pp. 194–196.

Some remarks on the boring of several species by MacIntosh, Marine Invertebr. and Fishes of St. Andrews, pp. 59 & 60, and by W. D. Sutton, Q. J. Conch. i. pp. 49–50.

Embryology.

A popular account of the development of several genera of *Mollusca*, extracted from the works of Kölliker, Lacaze-Duthiers, Loven, Salensky, &c., is given by A. S. Packard, Am. Nat. ix. pp. 282–307, with numerous woodcuts.

Ussow's paper on the development of the *Cephalopoda* [Zool. Rec. xi. p. 132] is translated in Ann. N. H. (4) xv. pp. 97–113, 209–221, & 317–320.

E. Ray Lankester makes some observations on the development of the *Cephalopoda*, concerning the ovum within the ovary; the first appearance of the pen-sac in *Loligo*, and of a similar but later evanescent pit in *Octopus* and *Argonauta* [see Zool. Rec. xi. p. 117]; the first appearance of the alimentary canal as two tubes, one coming from the mouth and the other from the ab-oral face of the embryo, finally meeting; the origin of the blood-vessels and lymph-spaces from the mesoblast; the development of the eye, that of *Nautilus* corresponding to the embryonic state of the eye of the *Dibranchiata*; finally, on the white bodies, which the author regards as atrophied or suppressed nerve-ganglia, nourishing the optic ganglion by their material. Q. J. Micr. Sci. (2) xv. pp. 37–47, pls. iv. & v.

The development of the *Pteropoda* is the object of a paper by H. Fol, in C. R. lxxx. p. 196, *et seq.*, abstract in Ann. N. H. (4) xv. pp. 439–441; the segmentation of the yelk in the shell-bearing Pteropods differs little from the recognized types in the *Gasteropoda*, and leads to the formation of a nutritive portion, composed of three large spheres, and of a formative moiety of transparent spherules; the embryology of the naked Pteropods forms a transition between that above mentioned and that of the Heteropods, between the formation of embryonic lamellæ by envelopment and that by invagination. The digestive cavity is formed by a simple differentiation of the mass of the nutritive or central cells. The foot has its origin in a thickening of the ectoderm on the ventral surface of the embryo, dividing afterwards into one median and two lateral lobes, the latter being the fins. The kidney is formed at the expense of the ectoderm, the heart by the differentiation of a mass of cells in the mesoderm. The larvæ have two contractile sinuses, which send from one to the other the liquid contained in the cavity of the body; neither of them can be compared to those of the embryo of *Limax*. The appearance of the shell is preceded by an invagination of the ectoderm a little in front of the ab-oral pole; it may be compared with the conchylian invagination of the Mollusks with internal shells, observed by E. Ray Lankester, and by the author himself.

The same author, from fresh observations made on the Pteropods *Creseis* and *Styliola*, and on the Heteropod *Atlanta*, confirms Van Beneden's theory that the testis takes its origin from a proliferation of the ectoderm in the anal region; the ovary, on the contrary, from the inner wall of the intestinal tract. Arch. sci. nat. 1875, pp. 104–111, abstract in Ann. N. H. (4) xvi. pp. 157–162.

The same author has also studied the development of the *Heteropoda*: the nutritive side of the blastosphere enters into the other, and the aperture of the invagination, narrowing afterwards, is the primitive mouth; cells at the opposite pole give origin to the cerebroid ganglia, tentacles, eyes, and this stage may be named *neurula*. The primitive mouth penetrates into the interior of the embryo, but does not close up or "The F[illegible] the anus of the developed animal. There is also a preconchylian

invagination, filled with a brownish viscid mass, which, spreading out afterwards, gives origin to the external shell. The walls of the internal cavity of the embryo give direct origin to the stomach and intestine. The branchial cavity is a depression of the ectoderm. C. R. lxxxi. p. 47 *et seq.*; abstract in Ann. N. H. (4) xvi. pp. 435–437.

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H. Fol's researches on the development of the Pulmonate *Ga*gans *poda* lead him to the conclusion, that it resembles in many points th[illegible]ical the *Heteropoda*; in all, there is total segmentation, the nutritive half the yelk becomes invaginated, the aperture of the invagination or t[illegible] primitive mouth does not become the anus, as Lankester asserts, the dorsal projection at the primitive mouth enters by degrees into the œsophagus, and has nothing in common with the velum of the marine Gastropods, as Ihering asserts, but a true velum exists in all the aquatic *Pulmonata* as a zone of cilia interrupted on the back, and in *Helix* as two ciliated crescentiform ridges. The primitive kidney occurs also in the aquatic *Pulmonata*, and is in its origin a depression of the ectoderm; it has been misunderstood by Rabl and Ganin. The foot of the aquatic *Pulmonata* contracts alternately with the neck, thus producing a larval circulation; in the terrestrial *Pulmonata*, the extremity of the foot becomes converted into a great contractile vesicle, which contracts alternately with the dorsal vesicle. C. R. lxxxi. p. 523 *et seq.*; abstract in Ann. N. H. (4) xvi. pp. 375 & 376.

The development of *Helix pomatia* and *nemoralis* is discussed by H. v. Ihering; he describes a rudimentary velum provided with vibratile cilia in the embryo, stating that the shell is internal on its first appearance, and therefore homologous to the little internal plate of *Limax* (contrary to Ray Lankester's opinion). He mentions the [well known] constant correlation of the side in which the genital and anal orifices are situated, with the direction of the whorls of the shell, and declares the embryonal caudal vesicle to be a respiratory organ; the foot of *Helix* is, according to this author, essentially a propodium, in the sense proposed by Grenacher [see Zool. Rec. xi. p. 117]; peculiar attention has been given to the nervous and genital systems, the author thinking that the pallial ganglion is homologous to the ventral chain of ganglia in the *Vermes*, and that the pedal ganglion has no homologies with them, whereas Gegenbaur and others regard the pedal ganglion as homologous to the ventral chain and the pallial ganglion to be a part of the sympathetic system. In the genital system he describes a small seminal vesicle, belonging to the male apparatus, situated near the origin of the albuminous gland; as to the place in which the eggs are fecundated, he agrees with Perez [see Zool. Rec. x. p. 155] that it is not at the base of the stalked vesicle, or female receptaculum seminis, but considerably higher up. Jen. Z. Nat. ix. 42 pp. pls. xvii. & xviii.

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W. Flemming gives a very accurate and interesting account of the development of *Anodonta* (*piscinalis* and *anatina*) and *Unio* (*tumidus* and *pictorum*) from the first formation of cells within the egg to the larval stage which is attached to fishes; the further metamorphosis to the perfect bivalve has never yet been observed. The following are some of the more striking points of the author's observations:—Formation of cells within the yelk by division very soon becomes unequal, in the segment called the under one by the author, the cells of each division being of the same size, whereas in the opposed or upper segment each division is only the separation of a small new cell from a larger permanent one. In the following stage, the embryo exhibits a large internal hole, not formed by invagination or corresponding with the pallial cavity or intestine of the mature animal; the pallial cavity is formed during the larval stage by invagination from below, not by cleavage, as supposed; the intestine was not apparent in the stages observed. The author finds it very difficult to apply to these facts the usual terms of germinal layers, endoderm and gastrula, and therefore brings forward a theory that one part of the yelk overgrows and embraces the other, which however his actual observations do not corroborate. Former publications on the development of these and other bivalves, are carefully compared and analyzed, and some remarks are added on the permanency or new formation of the cellular nucleus during the division of the yelk, and on epigenesis and evolution in general. SB. Ak. Wien, lxxi. pt. 3, 132 pp., 4 pls.

Teratology.

Monstrosities of *Clausilia biplicata* (Mont.) and *rossmæssleri* (Stentz) with a double peristome described by Westerlund, Nachr. mal. Ges. 1875, pp. 84 & 85 [already described and fully explained by Hartmann, Gasteropoden d. Schweiz, 1844, p. 173].

Five sinistral specimens of *Helix adspersa* found in the same year near Epsom by J. E. Daniel, Q. J. Conch. i. pp. 50 & 51.

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account of the internal structure, biological processes, and classification of the *Mollusca*, and describes the common forms found in or immediately near London, and peculiar to the chalk of Southern England. Hints for collecting conclude the volume. There are many original observations on the occurrence and life of individual species, which will render the work not only useful to amateurs residing in London, but also to those living abroad. Most species are figured, and the figures are very good.

List of land- and freshwater shells collected in Dorsetshire by J. C. Mansel-Pleydell, in "Ornithology and Conchology of the county of Dorset"; in the neighbourhood of Wakefield, by J. Hebden, Q. J. Conch. i. pp. pp. 3–7; of Ackworth, Yorkshire, by C. Ashford, *tom. cit.* pp. 19–21; of Northumberland and Durham, by W. D. Sutton, *tom. cit.* pp. 22–29; at Tenby, Pembrokeshire, at the end of September, 1872, by G. S. Tye, *tom. cit.* pp. 30 & 31; at Erith, Kent, by H. Leslie, *tom. cit.* pp. 33–35; in the neighbourhood of Banbury, Oxfordshire, by D. Pidgeon, *tom. cit.* pp. 54–57; of Birmingham, by G. S. Tye, *tom. cit.* pp. 57–61; from Cooper's Hill, near Cheltenham, by E. Simpson, *tom. cit.* pp. 65–70.

Clausilia rugosa var. *schlechti* (Zelebor) new for Britain, and new localities of some other rare species, by W. D. Sutton, Q. J. Conch. i. pp. 33 & 34. *Limnæa glutinosa* (Müll.), by J. Fitzgerald, *tom. cit.* p. 51. *Unio pictorum*, var. *compressa*, by J. Bridgman, *tom. cit.* p. 70. *Helix caperata*, var. *ornata*, by T. Godlee, *tom. cit.* p. 70. Rare species from Bank Wood, near Wakefield, by G. Taylor, *tom. cit.* pp. 92 & 97. *Succinea oblonga* near Cork, by C. P. Gloyne, *tom. cit.* p. 97.

Planorbis dilatatus (Gould) introduced at Manchester in American cotton; T. Rogers, Mem. Soc. Manch. 1870, and Q. J. Conch. i. p. 81.

Russia and Siberia. A revised list of the land- and fresh-water shells found by (the late) Prof. Ehrenberg, during his voyage through Russia and in the Western part of Siberia, is given by the Recorder, SB. nat. Fr. 1875, pp. 88–96; they are nearly all well known Middle European species, but in the Altai, near the borders of Tartary, some peculiar species were found. 25 species of freshwater, and 6 of terrestrial shells found by Von Ihering on the banks of the Oka, a tributary of the Volga, are enumerated by S. Clessin; nearly all of them are widespread European species, only a few appear confined to Eastern Europe, and none approach the South European fauna; JB. mal. Ges. ii. pp. 36–42.

A list of shells found on the island *Wollin* on the coast of the Baltic (40 terrestrial, 19 freshwater, and 5 saltwater) is given by F. Wiegmann, Nachr. mal. Ges. 1875. pp. 1–7.

The land- and freshwater-shells of the environs of *Hamburg* are enumerated by H. Petersen, Verh. Ver. Hamb. i. pp. 166–188.

A list of 56 terrestrial and 24 freshwater-shells observed in *Alsace* is given by F. Meyer, Nachr. mal. Ges. 1875, pp. 9–15. 23 terrestrial and 4 freshwater-shells from the *Schwarzwald*, and notes on some others from *Suabia*, by F. Sandberger, *tom. cit.* pp. 51–53.

Six species of *Cyclostoma* (see below), 16 of *Pomatias*, and 3 of *Acme*, living in France, are enumerated by J. Mabille, R. Z. (3) iii. pp. 145–156.

C. Lallemant & G. Servain have published a "Catalogue des Mollusques terrestres et fluviatiles observés aux environs de Faulgonne, *Dep. Aisne*," Paris: 1869, 8vo, 53 pp. [not before seen by the Recorder]; it contains 83 terrestrial species, of which one is new, *Helix servaini*, and one only acclimatized, *H. lauta* (Lowe), and 57 freshwater-shells (one new). The author follows Bourguignat & Mabille in minute distinction of species.

2. *Southern Europe and Northern Africa.*

W. Kobelt continues the late Rossmässler's "Iconographie" (intended to illustrate the land- and freshwater-shells of Europe and the adjoining parts of Asia and Africa), interrupted for many years. Several species of *Helix*, of the groups *Pentatænia* and *Campylæa*, are figured, and will be noticed hereafter.

Forty-seven species observed in the *Val di Caffaro*, Brescia, by G. B. Adami, Bull. mal. Ital. (2) i. p. 93.

Fifty-seven species collected in the *Valley of the Serchio* and the *Apuan Alps* by C. de Stefani are enumerated, *tom. cit.* p. 35.

Some notes on Mollusks found at Viareggio, Massarose, and Camajore, *Tuscany*, by R. del Prete, *tom. cit.* p. 25.

The geographical distribution of terrestrial Mollusks in *Sicily* is discussed by W. Kobelt; there are 80 distinct species of the genus *Helix* in its old sense, and among them 44 species, or 55 per cent., peculiar to that island, most of them found only near the western extremity and the adjacent islets. JB. mal. Ges. ii. pp. 7–25.

J. G. Hidalgo has commenced a treatise on the land Mollusks of *Spain* and *Portugal* [suprà, p. 132]; the parts already published contain notes on the malacological books and on the naturalists and collectors who have contributed to the knowledge of that fauna, with an alphabetical list of 336 species, distributed in 26 genera. The plates contain 263 figures of shells of the genus *Helix*. There are some notes on them by Pfeiffer in Mal. Blatt. xxii. p. 210.

Pyrenees. The hypsometrical distribution of the land-shells in the Central Pyrenean Mountains is discussed by P. Fischer, who distinguishes five regions, and states that an elevation of about 2500 metres is the limit for the occurrence of land-shells, and that of 1000 metres for many species of freshwater-shells.

Portugal. Some notes on land- and freshwater-shells by A. Luso da Silva, J. Sc. Lisb. iv. pp. 62–65 (*Pupa*, *Vertigo*, *Anglica*, *Carychium*), and pp. 241–246 (two new species of slugs, appearance of *Dreissena fluviatilis* [*polymorpha*] in Portugal, *Paludina fasciata*).

Morocco. The shells collected near Mogador by Von Fritsch & Rein in 1872 are compared with those collected by Lowe in 1859 (P. L. S., 1860) by E. v. Martens, JB. mal. Ges. ii. pp. 95–102. Forty species (some new) collected near Tangiers by Bleicher are described by A. Paladilhe, with a concluding note on all species known from

Morocco and their near resemblance to those of Spain and Algeria. R. Z. (3) iii. pp. 75–101, pl. ix.

3. *Tropical Africa.*

Mauritius. Several new land- and subfossil shells, found by Dupont, described by A. Morelet, J. de Conch. xxiii. pp. 31 & 32.

Rodriguez Island. 9 species of non-operculated, 4 of operculated terrestrial, 6 freshwater, and 5 of submarine shells found by M. Bewsher, are enumerated by A. Morelet; the most remarkable are a large new species, *Helix bewsheriana*, and 2 new species of *Cyclostoma*, all three sub-fossil, probably contemporaneous with the extinct *Dididæ*. J. de Conch. xxiii. pp. 21–30, pl. i.

4. *Asia.*

Siberia. [See *anteà*, p. 140.]

Central Asia. A preliminary note on the shells collected by the late F. Stoliczka during the expedition to Yarkand, including *Helix phœozona* and *plectotropis* (Martens), already found by Russian travellers in Turkestan and the Thianschan, is given by the Recorder, SB. nat. Fr. 1875, pp. 96 & 97.

China. A list of 13 land-snails collected at Kiukiang on the Yangtse-kiang by O. v. Möllendorff, some new, described by him, with additional notes on them and 7 freshwater-shells from the same locality by the Recorder, JB. mal. Ges. ii. pp. 118–135. 14 species (some new) from the environs of Peking, *id. tom. cit.* pp. 214–220.

On some land- shells from *Aden*, see W. T. Blanford, J. A. S. B. (n.s.) xlv. pt. 2, pp. 41–46.

S. Hanley & W. Theobald continue to figure the land- and freshwater-shells of *Cis- and Trans-Gangetic India* in their "Conchologia Indica," pts. 6 & 7, mostly from type specimens in the British Museum or in private collections. The species not figured before in other conchological works will be mentioned *infrà*.

New operculated land-shells from *Southern India* and *Ceylon* by R. H. Beddome, P. Z. S. 1875, pp. 442–453, pls. lii. & liii.

New land-shells from the *N. E. frontier of Bengal* by H. H. Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, pp. 1–10, pls. i.–iv.

Indo-China. The land- and freshwater-shells of Siam, Cambodia, and Cochin China are described by A. Morelet, Séries Conch. pt. iv., chiefly from collections made by Bocourt, Vesco, Eyries, and Michau. Some introductory pages sketch the nature of the country and mention the chief contributors to our conchological knowledge of it; the species are generally well distinguished and described, and many of them well figured, and peculiar attention has been given to the exact indications of habitat. *Nanina cambodiensis* (R. V.) does not inhabit Cambodia itself, but the territory of the Stiengs, which geographically belongs rather to Cochin China. The fauna of Lake Tonli-sap, on the banks of the Mekong River (Cambodia), 80 leagues from the sea, of which it receives the tides, without becoming saline, is very interesting; here are found the

Chinese *Dipsas plicata*, the new *Dipsas bellua*, and a species of *Modiola* [see *infrà*]. No *Clausilia* or *Pupa* is mentioned.

Borneo. The known land- and freshwater-Mollusks are enumerated, and those collected by G. Doria & O. Beccari described by A. Issel; they are 69 species of inoperculated and 48 of operculated terrestrial snails, 17 *Auriculidæ*, 2 *Truncatella*, 6 *Paludinidæ*, 2 *Ampullariidæ*, and 18 *Melaniidæ*, 7 *Neritidæ*, 7 *Cyrenidæ*, 4 *Unionidæ*, 1 *Glauconome*, and 1 *Novaculina*: Ann. Mus. Genov. vi. [1874] pp. 366–478, pls. iv.–vii. These were collected in the territory of Sarawak, the conchological fauna of which was formerly investigated by Metcalfe and others, and the Recorder's own researches were made on the adjacent Dutch territory, viz., the banks of the rivers Sambas and Kapuas, so that the north-western quarter of this large island is now tolerably well known; but the other parts, especially the south-western or the province of Banjermassin, are still unknown to conchologists.

5. *Polynesia.*

New land-shells from *New Caledonia* by H. Crosse, J. de Conch. xxiii. pp. 136–139, pl. vi., pp. 142 & 143, pp. 216–219, pl. ix.; new land- and freshwater-shells from the same island by J. B. Gassies, *tom. cit.* pp. 227–232.

The species of *Bulimus*, sect. *Placostylus*, living on the *Fiji Islands* are enumerated [see below] and compared with those of the Solomon Islands and New Caledonia by H. Crosse, J. de Conch. xxiii. pp. 1–21.

6. *North America.*

W. G. Binney reviews the terrestrial Mollusks of North America from a geographical point of view. He distinguishes three distinct faunas:—(1) The *Pacific province*, comprising a narrow strip between the Sierra Nevada and Cascade Mountains on the east and the Pacific Ocean on the west, subdivided into the Oregon region, extending north through British Columbia into Alaska, and the Californian region from Humboldt Bay to San Diego, where the Mexican fauna begins; the former has 6, the latter 41 peculiar species, 10 others are common to both, but peculiar to the Pacific province. (2) The *Central province*, between the Rocky Mountains on the east, and the Sierra Nevada and Cascade Mountains on the west, extending from Mexico to the British possessions; 10 peculiar species are known, it appears to be poor in species, on account of its climate and soil, and more resembles the eastern than the western fauna; there is only one species of *Helix*, *H. polygyrella*, which occurs here, and is unknown in the east. (3) The *Eastern province*, subdivided into (*a*) the Northern region, from Chesapeak Bay, the Appalachian chain of mountains, the Canadian lakes, and Minnesota, to the north, including Greenland and Alaska, possessing chiefly circumpolar and forest species, 32 in all, and others introduced from Europe. (*b*) The Interior region, south of the preceding, to the alluvial regions of the Atlantic and Gulf Coasts, having 69 species, 24 of which are peculiar to this subdivision, 31 of them

being found also in its postpliocene deposits; *Mesomphix*, *Mesodon*, and *Triodopsis* are greatly developed; Ohio, Indiana, and Cumberland may have been the starting points of that fauna. (*c*) The southern region, comprising the Peninsula of Florida, and the adjacent islands, and the alluvial regions of the Atlantic and Gulf coasts; 26 species are peculiar to it, 12 others common with Cuba or the Bahama Islands, 30 common with the preceding sub-region. In the southern part of Texas, the Mexican fauna overlaps the North American, there being about 35 species, either Mexican or peculiar, but very near the Mexican. Bull. Mus. C. Z. iii. No. 9, pp. 191–220, map.

43 species of *Gastropoda* (one new, and one new var.), and 23 of *Lamellibranchiata*, collected near the 49th parallel, from the Lake of the Woods to the Rocky Mountains; G. M. Dawson, *suprà*, p. 130.

Some species collected in *Colorado* by Lieut. W. L. Carpenter are enumerated by W. G. Binney, An. Rep. of U. S. Geol. & Geogr. Survey of the Territories for 1873 (Washington: 1874), pt. iii. Zoology, p. 623 [also published separately, same pagination, Washington: 1875, 8vo]. *Zonites nitidus* (Müll.) is the only land-shell found in the alpine region of that country; *id. tom. cit.* p. 542.

Cave-Fauna. Living Pulmonate Mollusks have been found in the Carter Caves, Kentucky, Bradford Caves, Indiana, and Weyer's Cave, Virginia, but none in Mammoth or Wyandotte Caves; A. S. Packard, Am. Nat. ix. pp. 277 & 274.

7. *Central and South America.*

Mexico. The fifth part of Fischer & Crosse's work on the Mexican land- and freshwater-shells, discusses the genus *Bulimulus* (infrà).

Guatemala. 32 species collected by O. Salvin are enumerated by E. v. Martens, P. Z. S. 1875 [1876], pp. 647–649.

Hayti and *Cuba.* On some land-shells common to both islands, *cf.* T. Bland, Ann. Lyc. N. York, xi. p. 198.

Jamaica. Notes on some land-shells by C. P. Gloyne, J. de Conch. xxiii. pp. 115–126.

Porto Rico. Some notes on Gundlach's collections by L. Pfeiffer, Mal. Bl. xxii. pp. 118 & 119.

Trinidad. R. J. Lechmere Guppy compares the land- and freshwater shells with those of the continent of America and of other Caribbean Islands, and comes to the conclusion that they agree much more with the former; P. Z. S. 1875, pp. 319–322. See also Q. J. Conch. i. p. 109.

Some additional notes to the list of terrestrial shells collected in South America [see Zool. Rec. vii. p. 125] are given by F. G. Hidalgo, J. de Conch. xxiii. pp. 127–131; some species are figured on pl. vi.

Argentine States. A. Döring, Bol. Ac. Cordova, iv. pp. 432–436, continues his paper on the land- and freshwater-Mollusks, discussing conchologically, and partly also anatomically, 1 *Limax*, 1 *Hyalina*, 3 *Streptaxis*, 11 *Helix*, and 16 *Bulimus*; and giving a supplement to his previous list (*op. cit.* i. pp. 51–59) of the known species.

Some notes on Argentine species of *Bulimus* by H. Dohrn, Mal. Bl. xxii. pp. 202.

The third part of P. Strobel's "Materiali" (*suprà*, p. 135) contains an extended physico-geographical account of the Southern Argentine States, and a plate representing the new species of land-shells described in the first part.

b. Marine Mollusca.

A notice of recent general works on deep-sea soundings, containing also conchological particulars, in "Les explorations sous-marines," by J. Girard, Paris: 1874, 8vo, 248 pp. with numerous woodcuts.

1. *Northern and Western Seas of Europe.*

A list of 190 sea-shells (including 5 Brachiopods) dredged on the coast of *Norway*, chiefly in the arctic zone, including some new species, is given by T. A. Verkrüzen, JB. mal. Ges. ii. pp. 229–240, pl. viii.

Scotland. W. C. MacIntosh enumerates 73 species of Bivalves, 1 *Dentalium*, 94 Gastropods, including 27 Nudibranchiates, and 4 Cephalopods, observed by himself at St. Andrews; of these may be mentioned *Lima subauriculata* and *loscombi*, *Tellina pusilla*, *Psammobia borealis*, *Pleurotoma trevelyana*, *Aplysia punctata*, and *Philine pruinosa*. Catal. Invertebr. of St. Andrews, pp. 57–90.

The sea-shells of the coast of Dorset enumerated by J. C. Mansel-Pleydell (*suprà*, p. 133).

List of the marine-shells of Hastings by A. W. Langdon, Q. J. Conch. i. pp. 89–92.

Jeffreys' comparison of European and North American sea-shells, 1872 [Zool. Rec. ix. p. 123], reprinted in Q. J. Conch. i. pp. 8–16.

Ninety-seven species of Bivalves, 3 of *Solenoconchæ*, 95 of *Gastropoda*, and 2 of *Cephalopoda*, collected in various parts of the *North Sea* during the expedition of the German steamer 'Pommerania,' are enumerated by A. Metzger, Bericht &c., pp. 230–252; a few new species are described, with notes on varieties and occurrence of others, pp. 252–261. The conchological fauna of the northern part of the North Sea, north of the Dogger Bank, is much richer, numbering about 144 Gastropods and 107 Bivalves, that south of the Dogger Bank only about 59 Gastropods, and 79 Bivalves; the separating line between both may be traced from Scarborough to the Skagerrak. A channel of deep water going round the coast of Southern Norway, contains mere northern, even arctic species; *id. tom. cit.* pp. 262 & 263.

Shells dredged at the *Dogger Bank* in 7–50 fathoms, at least 20 miles from land, are enumerated J. Leckenby and J. T. Marshall, Ann. N. H. (4) xvi. pp. 390–334.

Several marine species are found only as dead shells in the more southern part of the North Sea, south of 60° N. lat., e.g., *Pecten islandicus* (L.) and *Astarte borealis* (Chemn.); A. Metzger, *l. c.* pp. 253 & 254.

Twenty known species, new for the *Swedish* fauna, are enumerated by A. W. Malm, Förh. Sk. Naturf. xi.

Baltic. 4 species of *Rissoa* and 3 of *Cardium* described by E. F. Koch, JB. mal. Ges. ii. pp. 181–191, and Arch. Ver. Mecklenb. xxix. pp. 158–160. 18 species of Bivalves, 5 of *Gastropoda Nudibranchia*, 3 *Tectibranchia*, 14 *Pectinibranchia*, and 1 Cephalopod have been found in the inlet of Travemünde, Baltic; H. Lenz, Wirb. Thiere, &c., pp. 17–23.

P. Fischer makes some important additions to his former lists of the *Nudibranchia* and Cephalopods of the oceanic coasts of *France* [see Zool. Rec. xi. p. 126], bringing up the number of species of *Nudibranchia* to 81, *Pleurobranchia* to 3, and Cephalopods to 21; J. de Conch. xxiii. pp. 204–214.

Note on dredging off *Brest* in 120–180 metres by Commr. Vignes, enumerating *Venus ovata* (Penn.), *Cardium minimum* (Phil.), and *Trochus millegranus* (Phil.); P. Fischer, J. Zool. iv. pp. 298–302.

Twenty species of shells attached to the Falmouth and Lisbon cable, at depths ranging from 89 to 205 fathoms, are enumerated by J. Gwyn Jeffreys, Ann. N. H. (4) xv. pp. 169 & 170.

2. *Mediterranean Sea.*

The Marchese T. A. di Monterosato gives a fresh list of all the recent shells of the Mediterranean, including the additions from his own and other dredgings, and the synonyms of later years, noting by abbreviations the zones of depth in which the species are found, and their geographical range in the Atlantic. There are 273 species of Bivalves, 11 *Solenoconchæ*, 560 other Gastropods (only shell-bearing species are enumerated), 19 Pteropods, and 1 Cephalopod (*Argonauta*). He thinks that still more remain to be discovered. Atti Acc. Palerm. 1875, pp. 1–80.

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Fusus gracilis (Dacosta) found in the depth of the Mediterranean sea near Lyons, in the living state, by M. Martin, and *Venus effossa* (Bivona) off Marseilles in a depth of 65–80 metres, by M. Marion; J. de Conch. xxiii. pp. 272 & 360.

Panopæa aldrovandi (Menard) in a sub-fossil state is not very rare on the shore of southern France, Dept. Hérault; E. Dumas, Rev. Montp. iv. (Sept. 1875), and P. Gervais, J. Zool. iv. pp. 432 & 433.

Caspian Sea. O. Grimm has found 20 species of *Mollusca*, including some new, the more interesting in depths of 100–150 fathoms on the

western side, e.g., *Dreissena rostriformis* (Desb.), and very large specimens of *Hydrobia caspia* (Eichw.) living. A preliminary notice in Z. wiss. Zool. xxv. pp. 323 & 324.

3. *Eastern Coast of North America.*

The results of dredgings in the *Gulf of Maine* in 1874 [Zool. Rec. xi. p. 127], are also given by A. S. Packard, jun., in Am. Nat. viii. pp. 145–155, with some woodcuts representing known arctic shells; he comes to the conclusion that the fauna of the deeper portions of the gulf is almost purely arctic.

4. *Tropical and Southern Atlantic.*

Cape Verde Islands. A number of shells dredged in the recent state from 47 fathoms near these islands, by the naturalists of the German corvette 'Gazelle,' proved to be species hitherto only or chiefly known in the fossil state in the sub-Apennine strata, viz., *Ranella lævigata* (Lam.), *Nassa prismatica* (Brocchi), *Xenophora crispa* (Koenig), and *Mitra scrobiculata* (Brocchi); E. v. Martens, SB. nat. Fr. 1875, pp. 25–28.

West Indies. The *Scalariidæ*, *Solariidæ*, *Pyramidellidæ*, *Eulimidæ*. *Ctiliferidæ*, *Bullidæ*, and *Aplysiidæ*, and the *Nudibranchia*, collected by Krebs & Riise, in the Danish Islands of the West Indies, are treated by O. A. Mörch, Mal. Bl. xxii. pp. 142–184.

Some marine shells from Cumana, *Venezuela*, by no means common in the West Indies, two apparently new, and some others from the shores of Trinidad, mentioned by R. J. Lechmere Guppy, Ann. N. H. (4) xv. pp. 49–52.

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Red Sea. The species of the genera *Murex*, *Tritonium*, *Ranella*, *Fasciolaria*, *Turbinella*, and *Fusus*, living in the Red Sea, are discussed by C. Tapparone-Canefri, Ann. Mus. Genov. vii. pp. 569–630, pl. i.; *Murex trunculus* (L.) is probably wrongly indicated as living in that sea by Reeve, but fossil specimens of it occur in Egypt. The species of *Vulsella*, *Crenatula*, *Malleus*, and *Avicula*, collected by C. Jickeli in the Red Sea, are enumerated and discussed by W. Dunker, JB. mal. Ges. ii. pp. 1–7; those of the genus *Conus* by C. Jickeli, *tom. cit.* pp. 63–71, pl. i.

A list of sea-shells from *Ceylon* by A. W. Langdon, Q. J. Conch. i. pp. 71–76.

New and critical shells from the Indian Sea, chiefly *Ceylon* and *Andaman* islands, and from the Persian Gulf, treated by G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, pp. 83–104, pls. vii. & viii.

R. Bergh continues to describe the *Opisthobranchiata* observed and collected by Prof. Semper in the *Philippine Isles*; in Semper's Reis. Arch. Phil. ii. [*suprà*, p. 134].

Kerguelen's Island. Twelve new species of shells, collected by the Rev. A. E. Eaton, are described by Edgar Smith, Ann. N. H. (4) xvi. pp. 67–73. Some notes on its malacological fauna by the Recorder, SB. nat. Fr. 1875, pp. 65 & 66.

6. *Seas of Australia and Polynesia.*

Interesting notes on the occurrence of several *Mollusca* are contained in the 3rd letter of the late R. von Willemoës-Suhm, written during the expedition of the 'Challenger,' and published in Z. wiss. Zool. xxv. (with Heft 2) pp. xxv.–xlvi. *Arca pectunculoides* (Scacchi) and *Limopsis borealis* (Sars) common in the deep sea of the Pacific; p. xxxv. pelagic *Mollusca* of the surface.

Tasmania. A number of new species of marine shells described by J. E. Tenison Wood, P. R. Soc. Tasm. November, 1875 [the Recorder has seen only a separate copy, paged 1–30].

New sea-shells from *New Caledonia*, by S. M. Souverbie & P. Montrouzier, J. de Conch. xxiii. pp. 33–44, pl. iv., p. 220, pls. viii. & ix., pp. 282–297, pl. xiii.; by H. Crosse, *tom. cit.* p. 139. 45 species of *Trochidæ* from the same archipelago enumerated by P. Fischer, *tom. cit.* pp. 44–51. A list of New Caledonian *Nudibranchia* by H. Crosse, *tom. cit.* pp. 305–328, pl. xii.

7. *Northern Pacific.*

98 species of marine shells (some new) collected in the *Japanese Seas* by Commander H. C. St. John, are enumerated, with descriptive notes on several, by Edgar Smith, Ann. N. H. (4) xv. pp. 414–437.

Stearns' comparison of the sea-shells of Eastern and Western North America [Zool. Rec. x. p. 140], reprinted in Q. J. Conch. i. pp. 31 & 32.

8. *West Coast of South America.*

The well-known fact, that a remarkable number of shells from the West Coast of America, belonging to very different systematic families, have a deep black colour, is discussed by P. Fischer, J. de Conch. xxiii. pp. 105–112.

Palæontology of recent species.

Shells of recent marine species of the Baltic, e.g., *Cardium edule* (L.), *Nassa reticulata* (L.), *Cyprina islandica* (L.), *Mactra solida* (L.), and *Tellina solidula* (Lam.), found, but very scarcely, in the diluvial strata in Eastern Prussia, between Thorn and Insterburg; also species at present foreign to the Baltic, as *Ostrea edulis* (L.), in the same spot, *Scalaria communis* (Lam.), and *Cardium echinatum* (L.), in Western Prussia, near Mewe. Berendt, Z. geol. Ges. 1874, pp. 517–521, pl. x.

A list of pliocene shells from the hills near Bologna has been published by L. Foresti, in a separate pamphlet (Bologna : 1874), not seen by the Recorder.

Post-pliocene freshwater shells from the banks of the Irtysch, near Omsk, in Siberia, some agreeing with recent species, among them being *Melania amurensis* (Gerstf.), and *Corbicula fluminalis* (Müll.), in company with an extinct species of *Unio*, described by the Recorder, Z. geol. Ges. 1874, pp. 741–751, pl. xx.

Spatha caillaudi (Martens) found by Prof. H. Roemer on the elevated plain of the Libyan desert, about 100 feet above the level of the inundations of the Nile ; SB. nat. Fr. 1875, p. 22.

Post-pliocene shells from Hayti described by W. Gabb, Tr. Am. Phil. Soc. (n.s.) xv. [1873] pp. 200–259, including the following new genera:— *Planorbella*, p. 201, *Metulella*, p. 206, *Glyphostoma*, p. 209, *Ectrachelizа*, p. 213, *Plochelæa*, p. 216, *Iopsis*, p. 227, *Orthaulax* and *Dolophanes*, p. 234, *Actæonidea* and *Cychlinella*, p. 245, *Bothrocorbula* and *Neæromya*, p. 247, and many new species.

Use by Man and Acclimatization.

J. Wyman gives a full description of the freshwater shell-mounds on the St. John's river, Florida, from which the following particulars are extracted :—"The mounds of the sea-coast extend around the shores of the whole peninsula of Florida, and in certain places are of gigantic proportions. They are composed exclusively of marine species, mostly of oysters on the Atlantic, but on the gulf coast of several species belonging to different genera, as *Ostrea*, *Busycon*, *Strombus*, *Fasciolaria*, *Cardium*, &c. The mounds of the river, on the contrary, consist exclusively of freshwater species, viz., *Ampullaria depressa* (Say), *Paludina multilineata* (Say), and *Unio buckleyi* (Lea). The *Paludina* forms by far the largest portion of every mound, and, with a few Unios, the whole of some. Either of the above-mentioned species, however, instead of being promiscuously mingled with the rest, as is generally the case, may be found forming considerable deposits by themselves, without the admixture of the others, as if at certain times they had been exclusively used as food." Several implements made of shell are found in these freshwater shell-mounds, "they are all made from marine species, and almost exclusively of *Strombus gigas*, *Busycon carica*, and *B. perversa* ;" the more remarkable among them are "two kinds of chisel-shaped tools," "drinking shells made from the *Busycon perversa*, from which the interior whorls are removed, the mouth enlarged, and the broken edges ground smooth ; the beak answering the purpose of either a handle or a spout," and "perforated shells," being wrought specimens of *Busycon carica*, converted into an instrument of not apparent use by grinding off the beak obliquely and by drilling a hole through the base of the shell in the last turn, and not far from the aperture." "The traffic in the said shells must have been very large, especially in *B. perversa*, since the objects made from them found their way not only through the interior of Florida, but up the Mississippi and its tributaries, and also to the great

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Kerguelen's Island. Twelve new species of shells, collected by the Rev. A. E. Eaton, are described by Edgar Smith, Ann. N. H. (4) xvi. pp. 67–73. Some notes on its malacological fauna by the Recorder, SB. nat. Fr. 1875, pp. 65 & 66.

6. *Seas of Australia and Polynesia.*

Interesting notes on the occurrence of several *Mollusca* are contained in the 3rd letter of the late R. von Willemoës-Suhm, written during the expedition of the 'Challenger,' and published in Z. wiss. Zool. xxv. (with Heft 2) pp. xxv.–xlvi. *Arca pectunculoides* (Scacchi) and *Limopsis borealis* (Sars) common in the deep sea of the Pacific; p. xxxv. pelagic *Mollusca* of the surface.

Tasmania. A number of new species of marine shells described by J. E. Tenison Wood, P. R. Soc. Tasm. November, 1875 [the Recorder has seen only a separate copy, paged 1–30].

New sea-shells from *New Caledonia*, by S. M. Souverbie & P. Montrouzier, J. de Conch. xxiii. pp. 33–44, pl. iv., p. 220, pls. viii. & ix., pp. 282–297, pl. xiii.; by H. Crosse, *tom. cit.* p. 139. 45 species of *Trochidæ* from the same archipelago enumerated by P. Fischer, *tom. cit.* pp. 44–51. A list of New Caledonian *Nudibranchia* by H. Crosse, *tom cit.* pp. 305–328, pl. xii.

7. *Northern Pacific.*

98 species of marine shells (some new) collected in the *Japanese Seas* by Commander H. C. St. John, are enumerated, with descriptive notes on several, by Edgar Smith, Ann. N. H. (4) xv. pp. 414–437.

Stearns' comparison of the sea-shells of Eastern and Western North America [Zool. Rec. x. p. 140], reprinted in Q. J. Conch. i. pp. 31 & 32.

8. *West Coast of South America.*

The well-known fact, that a remarkable number of shells from the West Coast of America, belonging to very different systematic families, have a deep black colour, is discussed by P. Fischer, J. de Conch. xxiii. pp. 105–112.

Palæontology of recent species.

Shells of recent marine species of the Baltic, e.g., *Cardium edule* (L.), *Nassa reticulata* (L.), *Cyprina islandica* (L.), *Mactra solida* (L.), and *Tellina solidula* (Lam.), found, but very scarcely, in the diluvial strata in Eastern Prussia, between Thorn and Insterburg; also species at present foreign to the Baltic, as *Ostrea edulis* (L.), in the same spot, *Scalaria communis* (Lam.), and *Cardium echinatum* (L.), in Western Prussia, near Mewe. Berendt, Z. geol. Ges. 1874, pp. 517–521, pl. x.

A list of pliocene shells from the hills near Bologna has been published by L. Foresti, in a separate pamphlet (Bologna : 1874), not seen by the Recorder.

Post-pliocene freshwater shells from the banks of the Irtysch, near Omsk, in Siberia, some agreeing with recent species, among them being *Melania amurensis* (Gerstf.), and *Corbicula fluminalis* (Müll.), in company with an extinct species of *Unio*, described by the Recorder, Z. geol. Ges. 1874, pp. 741–751, pl. xx.

Spatha caillaudi (Martens) found by Prof. H. Roemer on the elevated plain of the Libyan desert, about 100 feet above the level of the inundations of the Nile ; SB. nat. Fr. 1875, p. 22.

Post-pliocene shells from Hayti described by W. Gabb, Tr. Am. Phil. Soc. (n.s.) xv. [1873] pp. 200–259, including the following new genera:— *Planorbella*, p. 201, *Metulella*, p. 206, *Glyphostoma*, p. 209, *Ectracheliza*, p. 213, *Plochelæa*, p. 216, *Iopsis*, p. 227, *Orthaulax* and *Dolophanes*, p. 234, *Actæonidea* and *Cychlinella*, p. 245, *Bothrocorbula* and *Neæromya*, p. 247, and many new species.

Use by Man and Acclimatization.

J. Wyman gives a full description of the freshwater shell-mounds on the St. John's river, Florida, from which the following particulars are contracted :—"The mounds of the sea-coast extend around the shores of the whole peninsula of Florida, and in certain places are of gigantic proportions. They are composed exclusively of marine species, mostly of oysters on the Atlantic, but on the gulf coast of several species belonging to different genera, as *Ostrea*, *Busycon*, *Strombus*, *Fasciolaria*, *Cardium*, &c. The mounds of the river, on the contrary, consist exclusively of freshwater species, viz., *Ampullaria depressa* (Say), *Paludina multilineata* (Say), and *Unio buckleyi* (Lea). The *Paludina* forms by far the largest portion of every mound, and, with a few Unios, the whole of some. Either of the above-mentioned species, however, instead of being promiscuously mingled with the rest, as is generally the case, may be found forming considerable deposits by themselves, without the admixture of the others, as if at certain times they had been exclusively used as food." Several implements made of shell are found in these freshwater shell-mounds, "they are all made from marine species, and almost exclusively of *Strombus gigas*, *Busycon carica*, and *B. perversa* ;" the more remarkable among them are "two kinds of chisel-shaped tools," "drinking shells made from the *Busycon perversa*, from which the interior whorls are removed, the mouth enlarged, and the broken edges ground smooth ; the beak answering the purpose of either a handle or a spout," and "perforated shells," being wrought specimens of *Busycon carica*, converted into an instrument of not apparent use by grinding off the beak obliquely and by drilling a hole through the base of the shell in the last turn, and not far from the aperture." "The traffic in the said shells must have been very large, especially in *B. perversa*, since the objects made from them found their way not only through the interior of Florida, but up the Mississippi and its tributaries, and also to the great

lakes." Undoubtedly these mounds or shell-heaps "are the work of man, and though the absolute age of them cannot be determined, a minimum age of several hundred years has been approximately ascertained, justifying the conclusion that some of them were essentially finished two or three centuries before the arrival of the white man, as shown by the age of the trees—chiefly oaks and palmettoes—growing upon them." Mem. Peab. Ac. i. No. iv. pp. 1–94, the shell implements figured, pls. vi., vii., & viii.

The United States Fishing Commission has tried to acclimatize oysters in the salt lake of Utah; Nature, xi. p. 217.

Collecting and Preserving.

In the general work, "Anleitung zu wissenschaftlichen Beobachtungen auf Reisen," edited by Dr. G. Neumayer (Berlin: 1875, 8vo), the Recorder has given, pp. 403–417, hints and directions for collecting shells and observing the living animals and their distribution with regard to the different nature of the soil, as well for terrestrial and freshwater as marine shells.

F. Hübner recommends the following plan for preserving slugs in a dry state in collections:—Kill in spirits, open by a longitudinal incision on the under side, take out the intestines, fill the body with wadding, dry, and varnish. Verh. Ver. Hamb. i. p. 93.

Classification and Manuals.

Of Woodward's justly esteemed "Manual of Mollusca" a th[illegible] edition has been published under the supervision of Prof. Ralph Tat[illegible]

The generic names of Mollusks hitherto published, with author's names, synonymy, &c., and including variations of orthography and misprints, are given in alphabetical order by T. Paetel [*supra*, p. 134].

Some observations on the difficulties attending "named varieties," by T. Rogers, Q. J. Conch. i. pp. 17 & 18. On "Species *versus* Varieties," *cf.* E. Simpson, *tom. cit.* pp. 93, 96 & 97.

CEPHALOPODA.

Sepia. The spermatophores are attached in this genus, as well as in *Sepioteuthis* and *Loligo*, inside the buccal membrane of the female, in *S. aculeata* (Hasselt) outside, ? accidentally; J. Steenstrup, Dan. Selskr. Skr. (5) x. p. 478, pl. ii. figs. 1–8. *S. andreana*, Japan, *recurvirostra*, Southern China, and *brevimana*, locality unknown, spp. nn., *id. l. c.* pp. 473 & 479, the first figured, pl. i. figs. 11–19, with some notes on other described species, especially *S. tuberculata* (Lam.), *id. l. c.* p. 474, pl. i. figs. 20 & 21.

Hemisepius, g. n.; ventral side of the mantle with two rows of perforated tubercles; shell little developed, the thickening plates (calcareous cases) not covering the front part of the shell; only two rows of suckers on each of the eight arms. *H. typicus*, sp. n., *id. l. c.* p. 168, pl. i. figs. 1–10, Table Bay, Cape of Good Hope.

Loligo breviceps (Stimps.) redescribed from a specimen caught in the Baltic at Travemünde; H. Lenz, Wirbell. Thiere, &c., pp. 23 & 24, pls. i. & ii. figs. 1–9.

Gigantic Cephalopods. A. E. Verrill continues his notes on those observed in the North Atlantic. Am. J. Sci. (3) ix. pp. 123–129, & 177–184, pls. ii. & iii., also Am. Nat. ix. pp. 21 & 78.

A gigantic squid, probably *Architeuthis dux* (Steenstrup), has been killed by fishermen on the west coast of Ireland; the arms, 30 feet long, and the head, have been brought ashore, and are described by A. G. More, Ann. N. H. (4) xvi. pp. 123 & 124. It is probably *A. monachus*; A. E. Verrill, *tom. cit.* p. 268.

Another gigantic squid, probably *Architeuthis princeps* (Verr.), head and body together about 14 feet long, and the tentacular arms 26 feet, was cast ashore in the winter of 1874-75 in Newfoundland, and is described by A. E. Verrill, Am. J. Sci. (3) ix. pp. 21 & 123, copied in Ann. N. H. (4) xvi. pp. 266–268.

Dinoteuthis proboscideus[*-a*], g. & sp. nn., proposed by A. G. More on the strength of vague popular accounts concerning a gigantic squid captured two hundred years ago at Dingle, Kerry, Ireland [!]; Zool. (s.s.) p. 4526. This also was probably *Architeuthis monachus*; A. E. Verrill, Ann. N. H. (4) xvi. p. 268. Recapitulation of these and other observations by P. Gervais, J. Zool. iv. pp. 336–340, who announces the discovery by M. Velain of a gigantic Cephalopod allied to *Ommastrephes*, and measuring 7·16 metres, including the tentacular arms, cast ashore on the island of St. Paul, and recapitulates the descriptions of *Architeuthis dux* and *monachus* (Steenstrup, 1857), and *Loligo bouyeri* (Cross, 1862); *tom. cit.* pp. 88–95, and Nachr. mal. Ges. 1875, p. 59.

Spirula. The animal ejected by a fish (*Macrurus*) living in depths of 300–400 fathoms in the Pacific; R. v. Willemoës-Suhm, Z. wiss. Zool. xxvi. p. lvi.

Nautilus common on Matuka, Fiji Islands, caught by the natives in baskets; *id. op. cit.* xxv. p. xxxiv.

PTEROPODA.

Stiliola acus, sp. n., W. Dunker, JB. mal. Ges. ii. p. 240, Desterro, S. Brazil.

Larvæ of a Pteropod, probably *Thecosomata* (*Eurybia*, Rang), briefly described by R. von Willemoës-Suhm, Z. wiss. Zool. xxv. p. xxxvi.

Pelagia ?. A Pteropod without shell and without wings, with large stalked eyes, from the Pacific, briefly described; *id. l. c.* p. xxxv.

HETEROPODA.

Pterotrachea. Otocysts, see Ranke, *suprà*, p. 136.

Pterosoma (Lesson) is probably not a Mollusk, but a pelagic Nemertean; Moseley, Ann. N. H. (4) xvi. p. 382.

GASTROPODA.

F. H. Troschel, Gebiss der Schnecken, ii. p. 140, proposes to arrange the *Prosobranchia* according to the structure of the radula, as follows:—

I. Campylodonta (Macdonald); front edge of the plates reflected.
1. *Taeniglossa* (Troschel). 2. *Rhipidoglossa* (Troschel).

II. Orthodonta (Macdonald); front edge of the plates straight.
3. *Toxoglossa* (Troschel). 4. *Rhachiglossa* (Gray). 5. *Ptenoglossa* (Gray).

III. Heterodonta (Gray); plates beam-like, with heterogeneous processes in their front.
6. *Docoglossa* (Troschel).

PECTINIBRANCHIA.

Muricidæ.

Murex jickelii, sp. n., C. Tapparone-Canefri, Ann. Mus. Genov. vii. p. 582, pl. i. fig. 6, Red Sea; with notes on the species of the genus *Murex* living in the Red Sea.

Murex (*Ocinebra*) *gibbus* (Pease, as *Latirus*), = *crosseanus* (Liénard), and *M.* (*O.*) *fiscellum* (Chemn.), var. = *lienardi*, Crosse; both from Ceylon; G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 83.

Murex (*Cerastoma*) *endermonis*, sp. n., and *burnetti* (A. Ad.), from Endermo Harbour, Yesso; E. Smith, Ann. N. H. (4) xv. pp. 420 & 421.

Trophon albo-labratus, id. *op. cit.* xvi. p. 68, Kerguelen's Island; *T. umbilicatus*, *clathratus*, *brazieri*, *goldsteini*, and *australis*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875, (separate copy), pp. 3 & 4, Tasmania [the second = *T. petterdi* (Crosse), according to an additional note of the author, *op. cit.* May, 1876]: spp. nn.

Hemifusus [see next page, under *Pirula*].

Purpuridæ.

Pentadactylus grossularius (Bolten) = *Ricinula digitata* (Lam.), *globosus* (Mart.) [= *R. horrida*, Lam.], *clathratus* (Lam.), *hystrix* (Lam.), *ricinus* (L.), *rudis* (Dkr.), and *tuberculatus* (Blv.); radula described by Troschel, Gebiss der Schnecken, ii. pp. 133 & 134, pl. xiii. figs. 1–6. It is very near that of *Stramonita* [*Purpura*].

Sistrum ventricosulum, sp. n., G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 97, pl. viii. fig. 16, Ceylon.

Purpura trinitatensis, R. J. Lechmere-Guppy, Ann. N. H. (4) xv. p. 50, Gulf of Paria, West Indies; *P. littorinoides*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 3, Tasmania: spp. nn.

Pinaxia coronata (A. Adams, 1853), = *Pyrula versicolor* (Gray, Zool. Beechey's Voy.); columellar plaits exist only in the adult shell, operculum like that of *Purpura*, from Ceylon. Edgar Smith, Ann. N. H. (4) xv. p. 301: also J. de Conch. xxiii. p. 271.

Concholepas peruviana (Lam.); radula described, F. H. Troschel, Gebiss der Schnecken, ii. pp. 135 & 136, pl. xiii. fig. 9. Median plates with three very large points.

Acanthina (*Monoceros*) *imbricata* (Lam.) and *unicornis* (Brug.) = *crassilabrum* (Lam.); radula described, *id. l. c.* p. 135, pl. xiii. figs. 7 & 8. Similar to that of *Polytropa*.

Cuma muricima (Blainv.) and *kiosquiformis* (Ducl.); radula described, *id. l. c.* p. 137, pl. xiii. figs. 10 & 11.

Rapana coronata (Lam.) and *bulbosa* (Solander) = *Pyrula rapa* (Lam.); radula described, *id. l. c.* p. 138, pl. xiii. figs. 12 & 13. The former near that of *Cuma* and *Stramonita*; the other more peculiar.

Pseudomurex (Monter.) and *Coralliophila* (Adams); critical notes by T. A. di Monterosato, Bull. mal. Ital. (2) i. p. 68.

Magilus, *Leptoconchus*, and *Coralliophila*. No radula could be found; F. H. Troschel, *l. c.* p. 136.

Buccinidæ.

Pyrula [*Pirula*] (Lam.). Kobelt unites under this generic name the groups called *Melongena*, or *Cassidulus*, *Myristica*, *Pugilina*, *Volema*, and *Hemifusus*, by other authors, describing and figuring 18 known species, in Küster's Conch. Cab. pt. 231 (1874), pp. 21–32, pls. iii.–vi. and pt. 236, pp. 33–44, pl. vii.

Busycon (Bolten). 5 known species described and figured; *id. l. c.* pt. 236, pp. 45–53, pls. xvi.–xix. & xxiv.

Neptunea (Bolten), including *Sipho* or *Tritonofusus* and *Siphonalia*. 31 known species described and figured; *id. l. c.* pt. 236, pp. 54–56, pls. ix.–xiv., and pt. 240, pp. 57–88, pls. xxiii.–xxvi.

[*Sipho*] *Fusus mœbii* (Dunker & Metzger; see Zool. Rec. xi. p. 137); A. Metzger & H. A. Meyer, Ber. Unters. Pommerania, p. 260, pl. vi. fig. 1; radula, fig. 1*a*, and of *F. propinquus* (Alder), fig. 2.

Fusus (*Sipho*) *manchuricus*, sp. n. (A. Adams, MS.), Edgar Smith, Ann. N. H. (4) xv. p. 422, in lat. 42° 58′ N., long. 145° E.

Siphonalia clarkii and *turrita*, spp. nn., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 6, Tasmania.

Pisania tasmanica, sp. n., *id. l. c.* p. 2, D'Entrecasteaux Channel, Tasmania.

Cominella tasmanica, sp. n., *id. l. c.* p. 7, Tasmania.

Buccinum undatum (L.). On its varieties in the German Sea; var. n. *pygmæa*, Haugesund, Norway, 5–20 fathoms; *B. zetlandicum* (Forbes) found also off Peterhead, Scotland, 69 fathoms, may be perhaps a distinct species, as the radula is somewhat different. A. Metzger, Ber. fig. 6iers. Pommerania, pp. 258 & 259; radula of *B. zetlandicum*, pl. vi. *tacea*,

sp. n., *ccinum finmarkianum*, Verkrüzen, JB. mal. Ges. ii. p. 237, pl. viii. fig. 631–5, Porsanger Fiord, in the arctic part of Norway, very near *B. grœnlandicum*; *B. jeffreysi*, Edgar Smith, Ann. N. H. (4) xv. p. 424, lat. 42° 58′ N., long. 145° E., Japanese Seas; *B. mirandum*, id. *op. cit.* xvi. p. 107, East Yesso, 11 fathoms: spp. nn.

Dall's observations on the variability of the operculum in *Volutharpa*, and Jeffreys' note on a doubled operculum in *Buccinum undatum*, are reproduced by P. Fischer, J. de Conch. xxiii. pp. 112–114.

Buccinopsis eatoni, sp. n., Edgar Smith, Ann. N. H. (4) xvi. p. 68, Kerguelen's Island.

Nassidæ.

Cyllene (Gray). Operculum with terminal nucleus, the known species enumerated; P. Fischer, J. de Conch. xxiii. pp. 278–280, pl. xv. fig. 5. Notes on the miocene species, particularly *C. desnoyersi* (Basterot, as *Nassa*), which is very near the recent *C. lyrata* (Lam.); R. Turnouer, *tom. cit.* pp. 329–335, pl. xv.

Nassa incrassata (Strōm). Egg-case; W. C. MacIntosh, Mar. Invertebr. of St. Andrews, pl. ix. fig. 4. *N. prismatica* (Brocchi), a spotted variety, in the recent state, dredged near the Cape Verde Islands in 47 fathoms, and *N. semistriata* (Brocchi), near Madeira, in 60 to 70 fathoms; E. v. Martens, SB. nat. Fr. 1875, pp. 26 & 28.

Nassa tenuis and *fusco-lineata*, Edgar Smith, Ann. N. H. (4) xv. p. 423, Cape Sima, Japan; *N. obesa*, G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 95, pl. viii. fig. 23, Kutch (and var. n. *ceylonica*, Ceylon); *N. tasmanica*, near *pauperata* (Lam.), J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 18, Tasmania: spp. nn.

Fasciolariidæ.

Fusus leptorhynchus, Tapparone-Canefri, Ann. Mus. Genov. vii. p. 627, pl. i. fig. 5; *F. spiceri* and *legrandi*, J. E. Tenison Woods, *l. c.* p. 5, Tasmania: spp. nn.

Ptychatractus (Stimps.) = *Fasciolaria ligata* (Mighels). F. H. Troschel copies Stimpson's description and figures of the radula, and remarks that the median plate somewhat resembles that of *Oliva*, the lateral plates those of the *Muricidæ* and *Purpuridæ*. Gebiss d. Schnecken, ii. p. 139, pl. xiii. fig. 11.

"*Lathyrus*" *albellus* (Dunker & Metzger; see Zool. Rec. xi. p. 138), again described; Ber. Unters. Pommerania, p. 257, pl. vi. fig. 4 and woodcut, p. 264, fig. 4, Haugesund and Lindesnäs, Norway, 106 and 220 fathoms.

Latirus forskali, C. Tapparone-Canefri, Ann. Mus. Genov. vii. p. 616, pl. i. fig. 6, Red Sea; *L. aureo-tinctus*, J. Sowerby, P. Z. S. 1875, p. 199, pl. xxiv. fig. 2, Mauritius: spp. nn.

Fasciolaria porphyrostoma (Ad. & Rv.), = *Tudicla recurva* (A[illegible] xv. Kobelt, Nachr. mal. Ges. 1875, p. 58. [illegible]oods, P.

Leucozonia brasiliana (Orb., as *Turbinella*) redescribed from [illegible] Brazilian specimens by W. Dunker, JB. mal. Ges. ii. p. 242. [illegible], Zool.

Turbinella crosseana, sp. n., Souverbie, J. de Conch. xxiii. p. 297, locality unknown.

Mitridæ.

Mitra. Sowerby's monograph of this genus, Thes. Conch. pts. xxxi. & xxxii. (1874) pls. ccclii.–ccclxxix. contains 494 species and 1 *Dibaphus*, all figured, arranged in 13 sections. Latin diagnoses only are given for the new species, the others are only characterized by a few words, or are without any description. The following are new:—

Sect. 1. (Type, *M. episcopalis*): *mauritiana*, sp. n., p. 2, pl. ccclxxviii. fig. 610, Mauritius.

Sect. 2. (Type, *M. zonata*): *fergusoni*, sp. n., p. 3, pl. ccclvii. figs. 70 & 71, Panama; *albo-fasciata*, sp. n., p. 4, pl. ccclxvii. fig. 300, South Africa; *abbreviata*, new name for *nigra* of Reeve, *nec* Quoy and Gaimard, New Zealand, p. 5, pl. ccclxviii. fig. 328; *simplex*, sp. n., p. 5, pl. ccclxxv. fig. 528; *tenuis*, sp. n., p. 6, pl. ccclxviii. fig. 327; *insolata*, sp. n., p. 7, pl. ccclxxix. fig. 650.

Sect. 3. (Granulated or scabrous): *novæ-hollandiæ*, sp. n., p. 9, pl. ccclxx. fig. 368, and pl. ccclxxi. fig. 417, New Holland; *crebrilirata*, sp. n., p. 9, pl. ccclxxviii. fig. 626, Mauritius; *acutilirata*, sp. n., p. 16, pl. ccclxvi. figs. 273 & 274; *semiconica*, sp. n., p. 10, pl. ccclxxviii. fig. 619.

Sect. 4. (Spirally ridged): *clara*, sp. n., p. 11, pl. ccclxxix. fig. 652; *minor*, sp. n., p. 12, pl. ccclxxix. fig. 662; *hanleyi*, sp. n. p. 12, pl. ccclxxix. fig. 661, China Seas; *subrostrata*, sp. n., p. 13, pl. ccclxvii. fig. 297, Sandwich Islands; *indentata*, sp. n., p. 13, pl. ccclxxi. fig. 412.

Sect. 5. (Acorn-shaped): *lima*, sp. n., p. 13, pl. ccclxix. fig. 353; *radula*, sp. n., p. 14, pl. ccclxix. figs. 358 & 359; *arctata*, sp. n., p. 14, pl. ccclxviii. figs. 316 & 317, Australia or Central America,

Sect. 6. (Conical): *strigillata*, new name for *bacillum*, Reeve, *nec* Lamarck, p. 14, pl. ccclxv. figs. 248 & 249.

Sect. 7. (Type, *M. ziervogeliana*): no new species.

Sect. 8. (Narrow, cancellated, or granular): *foveata*, sp. n., p. 16, pl. ccclxxi. fig. 408; *roscata*, sp. n. ?, Brit. Mus. p. 16, pl. ccclxxix. fig. 664; *cernica*, sp. n., p. 16, pl. ccclxxix. fig. 670, Mauritius; *angustata*, sp. n., p. 17, pl. ccclxxix. fig. 611, Mauritius.

Sect. 9. (Outer lip shortened and recurved): *dibaphiformis*, new name for *Mauriti- barclayi* (H. Ad.), p. 17, pl. ccclxviii. figs. 309 & 310, Mauritius; *telu- tinc-*. n., p. 17, pl. ccclxxviii. figs. 613 & 614, Mauritius; *petrosa*, sp. n Un- pl. ccclxviii. fig. 314.

S fig. 5 (Columbelliform): *marginata*, sp. n., p. 19, pl. ccclxviii. fig. - *Buidula*, sp. n., p. 20, pl. ccclxvii. fig. 283, and pl. ccclxxviii. fig. 61- figs. ritius; *crassicostata*, sp. n., p. 21, pl. ccclxx. fig. 387; *cretacea*, sp. n., p. 21, pl. ccclxxvii. figs. 577 & 578, Mauritius; *microstoma*, sp. n., p. 21, pl. ccclxvii. fig. 291; *nassoides*, sp. n., p. 22, pl. ccclxxviii. fig. 631, Mauritius.

Sect. 11. (Small, short, outer lip not compressed): *picea*, sp. n. ?, Brit. Mus., p. 22, pl. ccclix. fig 658; *medio-maculata*, sp. n., p. 23, pl. ccclxxiii. fig. 472, Mauritius; *trunculus*, sp. n., p. 23, pl. ccclvii. fig. 319; *nigro-fasciata*, sp. n., p. 23, pl. ccclxxiii. fig. 468; *lævizonata*,

sp. n., p. 23, pl. ccclxxiii. fig. 469; *gemmata*, sp. n., p. 24, pl. ccclxxix. fig. 649; *aperta*, sp. n., p. 25, pl. ccclxviii. figs. 320 & 321.

Sect. 12. (*Turricula* pt.): *umbonata*, sp. n., p. 26, pl. ccclxxi. fig. 400; *subquadrata*, sp. n., p. 26, pl. ccclxxiii. fig. 485, Mauritius; *ansulata*, sp. n., p. 26, pl. ccclxxiii, fig. 474; *brevicaudata*, sp. n., p. 26, pl. ccclxxi. fig. 410, Mauritius; *paligera*, sp. n., p. 26, pl. ccclxxiv. fig. 515; *laterculata*, sp. n., p. 28, pl. ccclxxix. fig. 651; *buccinoidea*, sp. n., p. 28, pl. ccclxxi. fig. 411.

Sect. 13. (*Turricula*, pt., shell elongated): *compressa*, sp. n., p. 29, pl. ccclx. fig. 50, and pl. ccclx. fig. 133, Moluccas; *tayloriana*, sp. n., p. 29, pl. ccclx. fig. 125, and pl. ccclxi. fig. 153; *curvilirata*, sp. n., p. 29, pl. ccclx. figs. 128 & 129; *umbrosa*, sp. n., p. 30, pl. clx. fig. 123; *lævicostata*, sp. n., p. 30, pl. ccclxi. fig. 139; *nasuta*, sp. n., p. 30, pl. ccclxxviii. fig. 623; *tenuilirata*, sp. n., p. 31, pl. ccclxxi. fig. 407; *arracanensis*, sp. n., p. 31, pl. ccclxxiii. fig. 473, Arracan; *macandrewi*, sp. n., p. 31, pl. ccclxxi. fig. 421, Red Sea; *lilacina*, sp. n., p. 32, pl. ccclxxix. fig. 634; *kieneri*, new name for Kiener's *ebenus*, not characterized, p. 32, pl. ccclxviii. fig. 324; *rectilateralis*, sp. n., p. 34, pl. ccclxxi. fig. 404; *subtruncata*, sp. n., p. 34, pl. ccclxxi. fig. 405; *intertæniata*, sp. n., p. 35, pl. ccclxi. fig. 154; *hastata*, new name for *Turricula casta* (A. Ad.), p. 35, pl. ccclxxviii. fig. 620; *radix*, sp. n., p. 36, pl. ccclxxvi. fig. 552; *filistriata*, sp. n., p. 36, pl. ccclxxi. fig. 402; *longispira*, sp. n., p. 36, pl. ccclxxi. fig. 403; *salmonea*, sp. n., p. 36, pl. ccclxx. fig. 375; *obtusispinosa*, sp. n., p. 37, pl. ccclxx. fig. 373.

Mitra scrobiculata (Brocchi) dredged in the recent state near the Cape Verde Islands in 47 fathoms. E. v. Martens, SB. nat. Fr. 1875, p. 27.

Mitra cruentata (Chemn.), var. n. *proxima* (= Reeve, fig. 126), *sandvichensis* = *armillata* (Pease, *nec* Rv.), and *amanda* (Rv.), common in the Indian Ocean. G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, pp. 98 & 99.

Mitra flexilabris, p. 127, pl. xxiv. fig. 4, Mauritius, and *M. induta*, p. 128, pl. xxiv. fig. 9, locality unknown, J. Sowerby, P. Z. S. 1875; *M. tasmanica*, *scalariformis*, *legrandi*, *teresiæ*, and *scita*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), pp. 7–9, Tasmania; *M. turturina*, p. 43, *montrouzieri*, *suavis*, and *lamberti*, pp. 282–285, pl. xiii. figs. 1–3, all from New Caledonia, Souverbie, J. de Conch. xxiii.: spp. nn.

Mitra (*Turricula*) *obeliscus* (Rv.), var. n. *andamanica*, and *M.* (*T.*) *radius* (Rv.?); G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, pp. 99 & 100, pl. viii. figs. 19, 20, & 17, 18, Andaman Islands.

Mitra (*Scabricula*) *pretiosa* (Rv., 1846) = *antoniæ* (H. Ad., 1870), Gulf of Oman, *iid. l. c.* p. 100.

Columbellidæ.

Columbella pardalina (Lam.), common in Ceylon, var. *lactescens* (Souv.) and var. n. *andamanica*; G. & H. Nevill, *l. c.* p. 96.

Columbella (*Mitrella*) *balteata*, sp. n., *iid. ibid.* pl. viii. fig. 4, Mauritius.

Columbella badia, *roblini*, *legrandi*, and *minuta*, spp. nn., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), pp. 19 & 20, Tasmania.

Zafra polita, Mauritius, and *semisculpta*, Burma, spp. nn., G. & H. Nevill, *l. c.* p. 97, pl. viii. figs. 5, & 6, 7.

Marginellidæ.

Jousseaume gives a monograph of this family, enumerating all the known species, copying the original diagnoses of most of them, and describing and figuring several as new. He distinguishes the following 13 genera:—*Marginella* 60 sp., *Eguoena* 55 sp., *Volvarina* 42 sp., *Serrata* 6 sp., *Cryptospira* 17 sp., *Gibberula* 14 sp., *Granula* 13 sp., *Bullata* (*Volutella* of Swains.) 12 sp., *Closia* (Gray) 5 sp., *Persicula* (Schumacher) 27 sp., *Volvaria* (Lam.) 2 sp., *Balanetta* 1 sp., *Canalispira* 1 sp. R. Z. (3) iii. 164–271.

Marginella unilineata, new name for *fusiformis* (Hinds, *nec* Reeve), *borbonica*, new name for *Volvaria pusilla* (H. Ad., *nec M. pusilla*, Edw., foss.), *chaperi*, sp. n., p. 177, pl. vii. fig. 6, locality unknown, *lantzi*, sp. n., p. 178, pl. vii. fig. 5, Bourbon, *lævilabris*, sp. n., p. 184, locality unknown, *narel* (Adans.), = *adansoni* (Kien.), *vimonti*, sp. n., = *bifasciata* (Sow., Thes., var. fig. 13), locality unknown, *sulcata* (Orb.) = *striata* (Sow.) *scalaris*, sp. n., p. 189, pl. ii. fig. 9, Brazil, *nevilli*, new name for *inconspicua* (Nevill, *nec* Sow.); *id. l. c.* pp. 175–192.

Marginella pygmæa, Issel, *nec* Sowerby, renamed *isseli*; G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 95.

Marginella (*Glabella*) *picturata* (Nevill, 1874); *iid. l. c.* pl. viii. figs. 8 & 9.

Egouena, g. n., spire short, four columellar folds, the first continued into the outer margin by a curved spiral; Jousseaume, *l. c.* p. 167. To this genus belong *Marginella labiata* (Sow.), *prunum* (Gmel.), *apicina* (Menke) = *flavida* (Sow.) = *conoidalis* (Sow., fig. 100), *conoidalis* (Kien.) = *caribæa* (Orb.), *virginea*, new name for *conoidalis* (Sow., Thes., figs. 93 & 94), *leai*, new name for *crassilabrum* (Sow., *nec* Lea, 1833, foss.), *canella*, new name for *oblonga* (Sow., *nec* Swains.), *wallacii*, sp. n., p. 203, pl. viii. fig. 7, probably West Indies, *læta*, sp. n., p. 207, pl. viii. fig. 2, Senegal, *egouen* (Adanson), = *amygdala* (Kien.), *gibbosa*, sp. n., p. 213, pl. viii. fig. 6, locality unknown; *id. l. c.* pp. 192–214.

Marginella (*Volvarina*) *verdensis* and *medio-cincta*, spp. nn., Edgar Smith, Ann. N. H. (4) xvi. pp. 200 & 201, Cape Verde Islands.

Marginella (*Volvarina*) *inconspicua* and *deformis* (Nevill, 1874); G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 95, pl. viii. figs. 10–12.

Volvarina simeri (Adanson) = *triticea* (Lam.) var. = *exilis* (Gmel.) = *fusca* (Sow.), *secalina* (Phil.), *avena* (Val.), &c., *mexicana*, sp. n., p. 223, pl. viii. fig. 9, Mexico, *bazini*, sp. n., p. 224, pl. vii. fig. 3, *heterogena*, sp. n., p. 225, pl. vii. fig. 4, locality unknown; Jousseaume, *l. c.* pp. 215–229.

Jousseaume, *l. c.*, describes the following new genera, &c.:—

Serrata, aperture very narrow, with three or four columellar folds

close to the front edge, outer lip denticulate, with a well-defined thickening externally; *id. l. c.* p. 167. *Marginella serrata* (Gaskoin), *delessertiana* (Rechez), *triplicata* (Gaskoin), *S. lienardi*, new name for *M. triticea* (Sow., *nec* Lam.), *S. scintilla*, sp. n., p. 231, and *osteri*, sp. n., p. 232, pl. vii. fig. 7, localities unknown, pp. 230–232.

Cryptospira (Hinds); spire hidden or scarcely prominent, five to six columellar folds, front extremity of the shell covered by a large callosity; *id. l. c.* p. 167. *Marginella quinqueplicata* (Lam.), *C. glauca*, sp. n., p. 234, pl. viii. fig. 1, *marchii*, new name for *burchardi* (Reeve) = *elegans* (Sow.), Malacca, *infelix*, new name for *M. simplex* (Reeve, *nec* Edwards, foss.), &c., pp. 233–240.

Gibberula (Swains.); small, spire depressed, four folds and several supplementary teeth on the pillar; p. 167. To this genus belong *Volvaria oryza* (Lam.), *stipon* (Adanson), *miliaria* (L.), *miliacea* (Lam.), *asellina*, sp. n., p. 243, pl. vii. fig. 6, Mauritius, *benguelensis*, sp. n, p. 245, pl. viii. fig. 8, Benguela, pp. 241–246.

Granula; very small, vitreous, spire depressed, four columellar folds, p. 167. *Marginella bensoni* (Rv.), *minor* (C. B. Ad.), *G. aquægutta*, new name for *M. oryza* (Pease, *nec* Lam.), *granum* (Phil.), *cinerea*, new name for *semen* (Reeve, *nec* Lea, foss.), *pulvis*, sp. n., p. 249, pl. vii. fig. 2, Bourbon, pp. 246–249.

Bullata; somewhat doubtful, distinguished only by the hidden or flattened spire from *Egouena*. p. 167. Type, *Voluta bullata* (Born.), *B. verreauxi*, sp. n., p. 251, pl. viii. fig. 3, Ceylon, *occulta* (Monterosato), *clandestina* (Brocchi), &c., pp. 250–255.

Closia (Gray); spire hidden by the hinder end of the outer lip; four columellar folds, the two anterior united. *Marginella largillierti* (Kien.), *C. paros*, new name for *Marg. ovum* (Reeve, *nec Voluta ovum*, Gmel., = *bullata* (Born.), *lilacina* (Sow.), *sarda* (Sow.), *manceli*, sp. n., p. 256, pl. viii. fig. 4, Mauritius, pp. 168 & 255–257.

Balanetta; shell glandiform, spire hidden, three columellar folds, outer lip thickened. *B. baylii*, sp. n., pp. 168 & 269, pl. viii. fig. 5, locality unknown.

Canalispira; suture channelled as in *Oliva*. *C. olivelliformis*, sp. n., pp. 168 & 270, pl. vii. fig. 8, locality unknown.

Persicula porcellana (Gmel.) = *tessellata* (Lam.), *duchon* (Adanson) = *interrupta* (Lam.), *swainsoniana* (Petit, 1851) = *guttata* (Swains., 1832, *nec* Dillwyn), *grisea*, new name for *Marginella obtusa* (Sow., P. Z. S. 1870, *nec* Thes.); Jousseaume, *l. c.* pp. 257–268.

Cassididæ and Ranellidæ.

Dolium. List of 26 known species (including *Malea*, Sws.), with synonyms and localities; Kobelt, J B. mal. Ges. ii. pp. 263–266.

Tritonium beccarii, sp. n., C. Tapparone-Canefri, Ann. Mus. Genov. vii. p. 587, pl. i. fig. 7, Red Sea.

Ranella marginata (Gmel.) = *lævigata* (Lam.) dredged alive near the Cape Verde Islands in 47 fathoms; E. v. Martens, SB. nat. Fr. 1875, p. 26.

Cerithiopsidæ.

Cerithiopsis crocea (Angas) var. n. *atkinsoni*; J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 7, Tasmania.

Cyprædæ.

Cypræa nigricans, sp. n., P. Montrouzier, J. de Conch. xxiii. p. 220, pl. viii. fig. 5, and pl. ix. fig. 3, New Caledonia; near *C. mappa* (L.), but nearly black and rostrated at the extremities, like many other New Caledonian species.

Pediculariidæ.

Pedicularia (Swains.), three species in Reeve's Conchologia Icon., part 323, one plate.

Naticidæ.

Natica gaidei (Souverbie) = *lineozona* (Jousseaume), which last has priority of a few weeks, operculum calcareous; Souverbie, J. de Conch. xxiii. p. 292, pl. xiii. fig. 8.

Natica tasmanica and *nana*, spp. nn., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), pp. 16 & 17, Tasmania.

Ruma globosa, sp. n., *id. l. c.* p. 17, Tasmania.

Naticina (Gray, *nec* Guilding). Operculum with a peculiar appendage, the same as that in *Sigaretus lævigatus* (Lam.); P. Fischer, J. de Conch. xxiii. p. 215 [*cf.* Zool. Rec. xi. p. 141].

Haliotinella, g. n.; "testa umbilicata, auriformi, epidermate tenui, perdepressa; spira postica, brevissima, anfractibus paucis, ultimo amplissimo, apertura perampla, marginibus disjunctis, sinistro inflexo, ad insertionem columellarem reflexo." Animal unknown; provisionally placed near *Sigaretus*. Type, *H. montrouzieri*, sp. n., New Caledonia, Souverbie, J. de Conch. xxiii. p. 33, pl. iv. fig. 1.

Velutinidæ.

Vanikoro (Q. & G.); 24 species in Reeve's Conchologia Icon., part 322, described and figured on 3 plates.

Marseniidæ.

The development of *Lamellaria* [*Marsenia*] *perspicua* (L.) is the object of a paper by A. Giard, C. R. lxxx. p. 736; translated in Ann. N. H. (4) [illegible] pp. 119–122; abstract in J. de Conch. xxiii. pp. 344–346. The [illegible] are situated in a nest hollowed out in the colonies of compound Ascidians, such as *Leptoclinum maculosum* and *Polyclinum succineum*, and [illegible] accompanied by rudimentary eggs, which at a later period are devoured by the young embryo. The plastic spherules of the yelk invade and cover up the nutritive part, and form the ectoderm, the

nutritive part forming the endoderm. The definite mouth is formed by an invagination of the ectoderm. The preconchylian invagination is not so strongly marked as that observed by the author in *Dendronotus* and *Goniodoris*. The first shell is of a nautiloid form and presents two dorsal and two lateral keels; inside of it a second shell is formed, more simple, resembling that of *Carinaria*, and united to the first at the aperture by a very thin membrane.

Different aspects of this species are given by W. C. MacIntosh, Mar. Invertebr. of St. Andrews, pl. iii. figs. 2–10.

Marsenia gemma and *isabellina*, spp. nn., figured, but not described, by R. Bergh, in Semper's Reis. Archip. Phil. ii. pl. xli. figs. 7 & 8, Philippine Islands.

Chelyonotus semperi, sp. n., figured, but not described, *id. l. c.* pl. xli. fig. 9, Philippine Islands.

Conidæ.

Conus. The monograph of this genus in Küster's Conchylien Cabinet has been finished by H. C. Weinkauff [*suprà*, p. 132]; it contains the descriptions and coloured figures of 401 species, with valuable critical remarks, an alphabetical index, and synonyms.

Conus. The species living in the Red Sea are enumerated from personal observation, with full synonymy. *C. schech* (Jickeli) and varieties of *textilis* (L.), *acuminatus* (Ilwass), and *erythræensis* (Beck) being figured, by C. Jickeli, JB. mal. Ges. ii. pp. 43–71, pl. i. figs. 1–8.

Conus ceylonensis (Brug.) and *pusillus* (Chemn.). The animals as well as the shells are distinct; G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 83.

Conus pseudomarmoreus, G. P. Deshayes, J. de Conch. xxiii. p. 223, pl. ix. fig. 4, locality unknown, very near *C. marmoreus* (L.), but spirally grooved; *C. coxeni*, Brazier, P. Z. S. 1875, p. 34, Moreton Bay, Australia; *C. gracilis* and *unilineatus*, J. Sowerby, *tom. cit.* pp. 125 & 126, pl. xxiv. figs. 6 & 5, locality unknown; *C. tasmanicus*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 7, Tasmania; *C. traversianus*, Edg. Smith, Q. J. Conch., i. p. 107, woodcut, locality unknown: spp. nn.

Dibaphus philippi (Crosse) = *edentulus* (Swains., sp.) and *læbbecki*, sp. n., H. C. Weinkauff, in Küster's Conch. Cab. pt. 258, pp. 1–3, pl. A, figs. 1–3, the locality of the latter unknown. The author thinks that possibly the typical species may be a deformed *Conus mitratus*, and the second the young state of *Mauritia barclayi* (A. Ad.).

Pleurotomidæ.

Pleurotoma. H. C. Weinkauff has commenced a monograph of this genus in Küster's Conch. Cab. pt 238; in the introduction, he gives a systematic arrangement of the family, distinguishing the following genera:—*Pleurotoma*, *Drillia*, *Conopleura*, *Clavatula*, *Lachesis*, *Clionella*, *Raphitoma*, *Borsonia*, *Halia*, and *Taranis*, some of them with subdivisions. 49 species of *Pleurotoma* proper and *Drillia* are described and figured, pp. 9–48, and pls. i.–x., including *P. jickelii*, sp. n., p. 20,

pl. iv. figs. 2 & 3, and *erythræa* (Jickeli, MS.), sp. n., p. 22, pl. iv. fig. 10, both from the Red Sea, *gracillima*, sp. n., p. 26, pl. v. figs. 4 & 5. *P.* (*Genota*) *luchdorffi* (Lischke), p. 32, pl. vi. fig. 8; *P.* (*Surgula*) *cærulea*, sp. n., p. 34, pl. vii. figs. 4 & 6. Localities of the three latter unknown.

Pleurotoma vertebrata, *sancti-joannis*, *inconstans*, *tuberosa*, and *patruelis*, Edgar Smith, Ann. N. H. (4) xv. pp. 416–419, Japanese Seas; *P. carinulata*, Souverbie, J. de Conch. xxiii. p. 289, pl. xiii. fig. 6, New Caledonia: spp. nn.

Drillia jeffreysi and *chocolata*, Edgar Smith, *l. c.* p. 417, Japanese Seas, Persian Gulf; *D. atkinsoni*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 10, Tasmania; *D. lucida*, G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 84, pl. viii. fig. 15, Indian Ocean: spp. nn.

Drillia acuminata (Mighels), G. & H. Nevill, *l. c.* p. 84, pl. viii. fig. 14, Andaman Islands and Ceylon.

Clathurella exquisita, Mauritius, *smithi*, Persian Gulf, *perplexa*, Bombay and Ceylon, *singularis* and *masoni*, Andaman Islands, *martensi*, *enginiformis* and *contortula*, Ceylon, *blanfordi* and *armstrongi*, Andaman Islands, spp. nn., *C. rugosa* (Mighels) varr. nn. *curculio* and *fallax*, Ceylon and Mauritius, *scalarina* (Desh.) distinct from the preceding, *apiculata* (Montrouz.) var. n. *minor*, Andaman Islands, *malleti* (Recl.) and *nigro-cincta* (Montrouz.), Andaman Islands, *lemniscata* (Nevill), Ceylon and Mauritius; G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, pp. 86–93, pl. vii. figs. 3–14.

Clathurella philomena, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 9, Tasmania.

Mangelia fulvo-cincta and *fairbanki*, G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 85, Bombay; *M. atkinsoni*, *immaculata*, and *meredithiæ*, J. E. Tenison Woods, *l. c.* pp. 9 & 10, Tasmania: spp. nn.

Mangelia ? *interrupta* (Rv.) = *Daphnella bella* (Pease) = *Pleurotoma gemmulata* (D.), common in the Indian Sea, Souverbie, J. de Conch. xxiii. pp. 286–289, pl. xiii. figs. 4–6, New Caledonia.

Cythara [*Cithara*] *gradata* and *isseli*, with var. (? sp. n.) *cernica*, Ceylon and Mauritius, *dubiosa*, Mauritius and Andaman Islands, G. & H. Nevill, *l. c.* pp. 93 & 96, pl. vii. figs. 15–18; *C. tasmanica*, J. E. Tenison Woods, *l. c.* p. 13, Tasmania: spp. nn.

Pleurotoma [*Cithara*] *onager* and *coniformis*, spp. nn., Souverbie, J. de Conch. xxiii. pp. 286–288, pl. xiii. figs. 4 & 5, New Caledonia.

Pleurotoma [*Bela*] *gigas* (Beck ?) described by Verkrüzen, JB. mal. Ges. ii. p. 239, pl. viii. figs. 6 & 7, from specimens dredged at Vadsö, Norway.

Bela iessoensis, sp. n., Edgar Smith, Ann. N. H. (4) xv. p. 419, south-east of Yesso Island, Japan.

Terebridæ.

Terebra albo-zonata, *melanacme* and (*Myurella*) *bathyrhaphe*, spp. nn., E. Smith, *l. c.* p. 415, Japanese Seas.

Euryta brazieri, sp. n., Angas, P. Z. S. 1875, p. 390, pl. xlv. fig. 5, Port Jackson, 45 fathoms.

Cancellariidæ.

Cancellaria tasmanica, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 18, Tasmania.

Admete tabulata, J. Sowerby, P. Z. S. 1875, p. 128, pl. xxiv. fig. 3, Arctic Ocean; *A. undato-costata*, Verkrüzen, JB. mal. Ges. ii. p. 237, Vadsö, Norway; *A. ovata* and *globularis*, E. Smith, *l. c.* p. 426, Japanese Seas: spp. nn.

Strombidæ.

Strombus. List of known species (66) with synonyms and localities; Kobelt, JB. mal. Ges. ii. pp. 255–262.

Pterocera. List of known species (11), with synonyms and localities; *id. l. c.* pp. 266 & 267.

Xenophoridæ.

Xenophora mediterranea (Tiberi), not sufficiently distinct from *crispa* (Koenig), dredged in the recent state near the Cape Verde Islands; E. v. Martens, SB. nat. Fr. 1875, p. 27.

Ovulidæ.

Ovulum depressum, sp. n., J. Sowerby, P. Z. S. 1875, p. 128, pl. xxiv. fig. 1, N. W. Australia.

Trichotropidæ.

Torellia vestita (Jeffr.), fresh specimens found on the coast of Norway in 106 fathoms, epidermis and radula described; A. Metzger, Ber. Unters. Pommerania, pp. 248 & 257, pl. vi. fig. 6.

Lævocochlis pommeraniæ (Dunker & Metzger, see Zool. Rec. xi. p. 142); shell and radula described and figured, *id. l. c.* p. 258, pl. vi. fig. 3, woodcut, p. 264, fig. 3. Its affinity to the *Trichotropidæ*, not to the *Cerithiidæ*, proved by the radula; Martens, JB. mal. Ges. ii. pp. 116–118.

Struthiolariidæ.

Struthiolaria mirabilis, sp. n., Edgar Smith, Ann. N. H. (4) xvi. (July, 1875) p. 67, = *S. costulata*, sp. n., E. v. Martens, SB. nat. Fr. (June) 1875, p. 66, both from Kerguelen's Island.

Aporrhaidæ.

[*Aporrhais*] *Chenopus* (Phil.). The known species enumerated; Kobelt, JB. mal. Ges. ii. p. 262.

Cerithiidæ.

Triphoris conspersus, E. Smith, Ann. N. H. (4) xvi. p. 107, Cape Sima, Japan.

Melaniidæ.

Melania. Brot continues his valuable monograph in Küster's Conch. Cab. pts. 235 & 244, discussing the sub-genera *Pachychilus* (continued) Nos. 23–64, *Sulcospira* (Troschel), p. 56, Nos. 52–64, *Nigritella* (Brot, *nec* Martens, 1869, subg. of *Nanina*, nec Richard, Botanical), p. 65, Nos. 65–72, *Melanoides* (Oliv.), Nos. 73–113, type *asperata* (Lam.), but not including Oliver's type *fasciolata*, = *tuberculata* (Müll.), *Melania* proper (H. & A. Adams), p. 113. Many corrections and sound critical remarks concerning the known species, their varieties, and synonyms, are to be found in this work. The following are described as new:—*M.* (*Sulcospira*) *davidis* (Desh., MS.), p. 62, pl. vii. fig. 3, Kiukiang, Prov. Kiangsi, China, *hongkongiensis* (Desh., MS.), p. 62, pl. vii. fig. 2, Hongkong; *M.* (*Nigritella*) *mœrchi* (Beck, MS.) p. 65, pl. vii. fig. 5, Guinea, *goudoti*, p. 72, pl. vii. fig. 11, Madagascar; *M.* (*Melanoides*) *filocarinata* (Mouss., MS.), p. 76, pl. ix. fig. 1, Polillo, *sumatrensis*, p. 87, pl. xiii. fig. 1, Sumatra, *godwini*, new name for *hanleyi* (Godwin, 1872, *nec* Brot), p. 90, North Cachar Hills, *julieni* (Desh., MS.), p. 93, pl. xi. fig. 2, Tonkin, *claviformis*, p. 103, pl. xiii. fig. 3, *mandarina* (Desh., in litt.), p. 109, pl. xiii. fig. 9, Pekin; *Melania* (proper) *sulcatina*, new name for *petiti* (Reeve, *nec* Philippi), p. 120, pl. xvi. fig. 8, *obesula*, p. 121, pl. xv. fig. 8, Java.

Melania variabilis (Bens.) varr. *echinata*, *cincta*, and *aspera* (Bens.), Assam, *M. tigrina* (Bens.), Affghanistan, *pyramis* (Bens.), River Goomty, and var. = *adspersa* (Troschel), Shan States, *scabra* (Desh.) var. *spinulosa*, Ceylon, *jugicostis* (Bens.), Tenasserim, and *acanthica* (Dohrn), Ceylon; Hanley & Thobald, Conch. Ind. pp. 44 & 45, pl. cix. figs. 3, 5 & 6, pl. cx. figs. 1–4 & 7–10.

Melania infracisa, sp. n., Morelet, Séries Conch. iv. p. 318, pl. xiii. fig. 3, Cochin China. *M. tourannensis* (Souv.), perhaps a variety of *variabilis* (Bens.), and *M. gemmulata* (Reeve) = *pyramis* (V. d. Busch, *nec* Bens.); *id. l. c.* pp. 316 & 318.

Melania infracostata (Mouss.) varr. *brookii* (Reeve), and *sparsimnodosa* (V. d. Busch), Sarawak; Issel, Ann. Mus. Genov. vi. pp. 459 & 460. *M. tuberculata* (Müll.), var. n. *malayana*, id. *l. c.* p. 463, Sarawak.

Melania sargi, sp. n., Crosse & Fischer, J. de Conch. xxiii. p. 226, Guatemala.

The North American *Melaniidæ* or *Strepomatidæ* (433 species) are discussed in a monograph, illustrated by 888 woodcuts, by G. Tryon, Contr. Sm. Inst. No. 253.

Hemisinus baudonianus (Mal. & Melse) = *helena* (Meder) var., from Cambodia; Morelet, Séries Conch. iv. p. 320.

Melanopsis cariosa and *prærosa* (L.). On several varieties from Mogador; E. v. Martens, JB. mal. Ges. ii. pp. 101 & 102, footnote.

Paludomus stomatodon (Bens.), Travancore, *lævis* (Layard), Ceylon, *regulata* (Bens.), Burma, *parva* (Layard), Ceylon, *ornata* (Bens.), and *labiosa* (Bens.), Burma, Hanley & Theobald, Conch. Ind. p. 44, pl. cviii. figs. 1, 3 & 5–10; *P. crinaceus* (Rv.), *skinneri* (Dohrn), *ærea* and *layardi* (Rv.), *reevii* (Layard), *melanostoma* (Thorpe, MS.), *regalis* and *similis*

(Layard), *distinguenda*, *solida*, *dromedarius*, and *fulgurata* (Dohrn), *decussata*, *clavata*, and *bicincta* (Rv.), *swainsoni*, *nasuta*, *sphærion*, *torrenticola*, and *pyriformis* (Dohrn), *dilatata* and *abbreviata* (Rv.), *thwaitesi* (Layard), *hanleyi* (Dohrn), *constricta* (Rv.), *palustris* (Layard), *cumingiana* and *nodulosa* (Dohrn), all from Ceylon, *acuta* (Rv.), Pondichery, *tanschaurica* (Gmel.), Coromandel, *paludinoides* (Rv.), Sikkim, and *maurus* (Rv.), Ganges; *iid. l. c.* pp. 49–51, pls. cxxi.–cxxvi.

Paludomus broti and *moreleti*, spp. nn., Issel, Ann. Mus. Genov. vi. (1874) pp. 455 & 456, pl. vii. figs. 19 & 20, 21 & 22, Sarawak, Borneo [see also *Vivipara*, p. 166].

Paludomus parvus (Lea, 1856, as *Pachychilus*) = *Melania crassilabrum* (Reeve, 1860) = *P. cyanostomus* (Morelet, 1864), from Siam, operculum with radiating striæ, like that of *Tanalia*; Morelet, Séries Conch. iv. p. 315.

Planaxidæ.

Alaba (H. & A. Ad.) proper, whorls tumidly varicose, columella more or less truncated, labrum thickened in the adult; sub-genus *Diala* (A. Ad.), whorls not varicose, columella rather straight, labrum not thickened; the known species enumerated. *D. rufilabris* (A. Ad.) belongs to *Hydrobia*. Edgar Smith, P. Z. S. 1875 [1876], pp. 537–540, woodcut.

Diala leithi, id. *l. c.* p. 539, California (living animal described); *D. simplex* and *tenuis*, id. Ann. N. H. (4) xvi. p. 105, North Japan; *D. tumida*, *tessellata*, and *punctata*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 15, Tasmania: spp. nn.

Littorinidæ.

Littorina setosa, Edgar Smith, Ann. N. H. (4) xvi. p. 69, Kerguelen's Island; *L. hisseyiana*, J. E. Tenison Woods, *l. c.* p. 16, Tasmania: spp. nn.

Lacuna vestita, A. Metzger, Bericht, &c., p. 256, Coast of Norfolk, 12 fathoms; *L. unicarinata*, Edgar Smith, Ann. N. H. (4) xvi. p. 104, on a littoral *Sargassum*, North Japan: spp. nn.

Hela glabella, sp. n., not described, depth of 120 metres; Monterosato, Atti Acc. Palerm. 1875, p. 25.

Fossarus caledonicus (Crosse) fully described and figured by the author; J. de Conch. xxxiii. p. 139, pl. vi. fig. 6. [Nonne *Risella* ?]

Fossarina simsoni, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 17, Tasmania; = *F. petterdi* (Crosse), according to later note of the author, *op. cit.* May, 1876.

Rissoidæ.

Rissoina gertrudis, sp. n., J. E. Tenison Woods, *l. c.* p. 14, Tasmania.

Rissoina (*Setia*) *brazieri*, sp. n., *id. ibid.*, Tasmania.

Rissoina ? *abnormis*, sp. n., G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 100, pl. viii. fig. 23, Mauritius.

Rissoa. Many notes concerning the synonymy and varieties of the 60 Mediterranean species; Monterosato, Atti Acc. Palerm. 1875, pp. 26–28.

Rissoa octona (L), *membranacea* (Adams) = *labiosa* (Montagu), *cornea* (Loven), and *parva*, var. *interrupta* (Adams), all from the Baltic, comparatively described by F. E. Koch, JB. mal. Ges. ii. pp. 181–187.

Rissoa watsoni (Schwartz) var. in the Mediterranean; Monterosato, *l. c.* p. 27.

Rissoa kergueleni, sp. n., Edgar Smith, Ann. N. H. (4) xvi. p. 69, Kerguelen's Island.

Rissoa (*Cingula*) *mariæ*, sp. n., J. E. Tenison Woods, *l. c.* p. 15, King's Island, Bass' Straits.

Eatonia, g. n. (pre-occupied by Hall, 1859, fossil *Brachiopoda*, Q. J. Conch. i. p. 97—*Eatoniella*, Dall, 1876). Shell resembling that of *Rissoa*, aperture subcircular, peristome simple, continuous, not thickened on the outside; operculum pauci- or uni-spiral, with a prominent appendage, directed towards the columellar margin. *E. kerguelensis*, *caliginosa*, and *subrufescens*, spp. nn., Edgar Smith, *l. c.* pp. 70 & 71, Kerguelen's Island.

Skenea subcanaliculata, sp. n., *id. l. c.* p. 71, Kerguelen's Island.

Hydrobia ventrosa (Montagu) = *stagnalis* (Baster, Linné); Metzger, Ber. Unters. Pommerania, p. 256.

Hydrobia plicata, sp. n., Edgar Smith, *l. c.* p. 103, Avomori Bay, north of Nippon, 7 fathoms.

Peringia [Zool. Rec. xi. p. 144] *minoricensis*, sp. n., Paladilhe, Ann. Sci. Nat. (6) ii. art. 8, p. 14, pl. xxi. figs. 27–29, Port Mahon.

Amnicola prætutiorum, id. *l. c.* p. 11, pl. xxi. figs. 21–23, Abruzzi, Italy; *A. moussoni* and *borneensis*, Issel, Ann. Mus. Genov. vi. [1874], p. 450, pl. vii. figs. 13–15 and 16–18, Sarawak, Borneo: spp. nn.

Paludinella andorrensis, sp. n., Paladilhe, *l. c.* p. 13, pl. xxi. figs. 24–26, Val d'Andorre and Catalonia.

Paludinidæ.

Paludina okaensis, sp. n., Clessin, JB. mal. Ges. ii. p. 38, pl. ii. fig. 5 [scarcely distinct from *fasciata* (Müll.)], Oka River, Russia.

Paludina digona (Blanf.), Irawaddy, *variata* (Frauenf.), Pondichery, and *ceylonica* (Dohrn) var. *ecarinata*, Ceylon; Hanley & Theobald, Conch. Ind. p. 47, pl. cxv. figs. 7–9.

Paludina frauenfeldi (Morelet, 1869) = *ingallsiana* (Reeve, 1863, *nec* Lea) [= *cingulata*, Martens, 1860, = *martensi*, Frauenfeld, 1865]; *trochoides* (Martens, 1860) = *umbilicata* (Reeve, 1863, *nec* Lea); *sumatrensis* (Dunker, 1852) = *polygramma* (Martens, 1860) = *lineolata* (Mousson, 1862) = *filosa* (Hanl., 1863); *præmorsa* (Bens.) = *fulva* (Reeve), the young of which = *carinata* (Reeve); all these and other species from Siam reviewed by Morelet, Séries Conch. iv. pp. 297–311. *P. cochinchinensis* (Morelet, 1866), *id. l. c.* p. 299, pl. xiv. fig. 3; *P. eyriesi* (Morelet, 1865), a variety of which = *fischeriana* (Mabille & Mesle),

1866), and *P. lurida* (Morelet, 1862), from Cambodia ; *id. l. c.* pp. 302 & 308, the last pl. xiv. fig. 4.

Vivipara costata (Q. G.). Operculum with two nuclei ; Issel, Ann. Mus. Genov. vi. p. 453. *V. hamiltoni* (Metc.) var. n. *persolida* ; id. *l. c.* p. 454, Borneo. [The Recorder has seen this shell, and thinks it a *Paludomus* allied to *crassus* (V. d. Busch.), quite distinct from the true *V. hamiltoni*.]

Paludina (*Melantho*) *auriculata*, sp. n., E. v. Martens, SB. nat. Fr. 1875, p. 2, Mal. Bl. xxii. p. 186, Nov. Conch. pl. cxxxv. figs. 4–6, Siang-kiang River, Hunan, China.

Bithynia subangulata, sp. n., *id.*, JB. mal. Ges. ii. p. 133, pl. iii. fig. 4, Kiukiang, China.

Bithynia goniomphalus (Morelet, 1866, as *Paludina*), Cochin China, very near *truncata*, Eyd. & Soul., and *B. lævis*, sp. n., Siam and Cochin China ; Morelet, Séries Conch. iv. pp. 311 & 313, pl. xiii. figs. 4 & 2.

Valvatidæ.

Valvata fluviatilis (Colbeau) and *spirorbis* (Drap.) discussed by S. Clessin, JB. mal. Ges. ii. p. 39.

Phaneta [Zool. Rec. vii. p. 142] is considered most nearly allied to *Helicina* ; Issel, Ann. Mus. Genov. vi. p. 446.

Ampullariidæ.

Ampullaria. Bavay has published some very interesting observations on the respiration of *Ampullaria effusa* (Lam.), made from living specimens at Guadeloupe ; according to him, the right gill is well developed, but the left atrophied, with a distinct pulmonary sac near it, to the opening of which the air is guided by the fleshy siphon ; Rev. Montp. Dec. 1873, with two figures, and J. de Conch. xxiii. pp. 298–305. [These observations confirm the anatomical statements made long ago by Troschel in Arch. Zool. 1835, on *A. urceus* (Müll.), which appear to have been unknown to the author.]

Ampullaria tischbeini (Dohrn), Ceylon, *theobaldi* (Hanl.), Burma or Pegu ?, *woodwardi* (Dohrn), Ceylon, *digena* (Blanf.), Irawaddy ; Hanley & Theobald, Conch. Ind. pp. 46 & 47, pl. cxiv. fig. 3, pl. cxv. figs. 2 & 5.

Ampullaria theobaldi, sp. n., Hanley, P. Z. S. 1875 [1876], p. 605, Bhamo, Burma.

Ampullaria turbinis (Lea), *globosa* (Swains.), *borneensis* (Phil.), *conica* (Gray), *polita* (Desh.), a variety of which is *pagoda* (Morelet, 1865), and *callistoma* (Mor., 1866), live in Siam and Cambodia ; Morelet, Séries Conch. iv. pp. 288–293, the last pl. xiii. fig. 7.

Ampullaria semitecta (Mouss.) ; Pfeiffer, Novitat. iv. p. 137, pl. cxxxi. figs. 1–3, Bogota.

Ceratodes rotula (Mouss.) ; *id. l. c.* p. 138, pl. cxxxi. figs. 4–7, Magdalene River.

Turritellidæ.

Turritella granulifera and *acuta*, spp. nn., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 11, Tasmania.

Vermetidæ.

Vermetus glomeratus (Bivona), operculum described by Monterosato; Atti Acc. Palerm. 1875, p. 29.

Tenagodus weldi, sp. n., J. E. Tenison Woods, *l. c.* p. 12, Tasmania.

Cæcidæ.

Folin, L. de. Monographie de la famille des *Cæcidæ*. Pt. i. pp. 31, pl. Bayonne: 1875, 8vo.

Contains a general description of shell and animal, and the following systematical arrangement into four genera:—

Fam. *Cæcidæ*: testa nucleosa spiralis, posteà tubularis, regularis, haud affixa; apertura orbiculari; operculum corneum, multispirale, margine haud fimbriato.

1. Gen. *Cæcum* (Flem.): Testa nucleosa planata; animal una in plana solute orbiculari crescens [the author's meaning is that the young shell grows in a spiral which lies in one plane, and the whorls of which are detached one from the other]; testa animali crescente iterum iterumque decollata; septo regulari, varie constructo, partem decollatam tegente; superficie seu annulata, seu lirata, seu lævi; apertura plerumque primum constricta, posteà expansa; operculum concavum seu subplanatum, sutura sæpius linea elevata instructa, interdum lævi.

   Sects. 1, Lævia; 2, Annulata; 3, Costulata; 4, Quadrilata; 5, Armata.

2. Gen. *Mioceras* (Carp.): Testa adolescens solute spiralis haud planata; adulta sæpe inflata. Apertura obliqua; operculum spirale, extus concavum, anfractibus linea spirali instructis. [The shell resembles the shape of the horn of an ox; all species are smooth.]

3. Gen. *Strebloceras* (Carp.): Testa haud decollata; vertice nucleoso orbiculari, planæ tuberculari perpendiculariter affixo. Habitus increscentis plerumque orbicularis seu subtortuosus. [Nucleus permanent, and lying in a plane perpendicular to that of the following parts of the shell. All the species fossil.]

4. Gen. *Parastrophia* (Folin), olim *Moreletia* (Folin): Testa tubularis, elongata, basin versus inflata, haud decollata; apice nucleoso subspirali.

The animal of all but the first unknown.

Cæcum corneum, sp. n., Dunker, JB. mal. Ges. ii. p. 244, Desterro, S. Brazil.

Calyptræidæ.

Galerus parvulus, sp. n., Dunker, JB. mal. Ges. ii. p. 244, S. Brazil.

Amathina angustata, sp. n., Souverbie, J. de Conch. xxiii. p. 43, New Caledonia.

F. H. Troschel discusses the value of the division Ptenoglossa, in which he comprises the *Scalariidæ*, *Ianthinidæ*, *Actæonidæ*, and *Solariidæ*, the two latter may be removed from it if they prove hermaphrodite; Gebiss der Schnecken, ii. pp. 143–145.

Scalariidæ.

Scalaria. Mörch's paper on the Caribbean species of this genus [see Zool. Rec. xi. p. 147] is also given in Mal. Bl. xxii. pp. 142–154.

Scalaria sp., *S. grænlandica* (Perry) and *S. obeliscus* (Mörch) = *communis* (Lam.); radula described by Troschel, Gebiss d. Schnecken, ii. pp. 153 & 154, pl. xv. figs. 1–3.

Crossea labiata, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 19, Tasmania.

Solariidæ.

[*Solarium*] *Architectonica perspectiva* (Lam.); radula described by Troschel, Gebiss der Schnecken, ii. p. 156, pl. xv. fig. 4.

Solarium conulus (Weinkauff) from the Mediterranean, distinguished from *luteum* (Lam.), from Australia; the radula and operculum prove them to belong to this family and not to the *Trochidæ* (*Philippia*, Gray). *S. hybridum* (Lam.) and *cingulum* (Kien.), with several colour-varieties, differentiated; both are from the Indian and Polynesian Seas, not the Mediterranean; *Trochus hybridus* (L.) remains unknown; *S. siculum* (Cantr.) from the Mediterranean, distinguished from the Indian *stramineum* (Chemn.). E. von Martens, JB. mal. Ges. ii. pp. 113–116.

Philippia lutea (Lam.); radula, Troschel, Gebiss der Schnecken, ii. p. 156, pl. xv. fig. 5.

Architectonica (*Philippia*) *krebsi*, sp. n., Mörch, Mal. Bl. xxii. p. 155, West Indies.

Episcynia, subg. n. of *Architectonica*; testa hyalina, carina duplice serie ciliorum, apice simplice, non inverso. Type, *Solarium inornatum* (Orb.), West Indies, *id. ibid.*

Torinia cylindracea (Chemn.). Troschel has examined the radula and found that it is very different from that of the other *Solariidæ*, belonging rather to the type of the *Tænioglossa*, exhibiting a median plate which is pectinated on its front edge, and (two or three) lateral plates with 7 or 8 curved joints, somewhat like that of *Pedicularia*. He therefore proposes for it a new family, *Toriniacea*, to be placed among the *Tænioglossa*. Gebiss der Schnecken, ii. p. 157, pl. xv. figs. 6 & 7.

Torinia riisei, sp. n., Mörch, Mal. Bl. xxii. p. 156, St. Thomas, West Indies.

IANTHINIDÆ.

Ianthina casta, *planospirata*, and *cæruleata* (Rv.), *violacea* (Bolten), *fibula* (Rv.), *nitens* (Mke.), *globosa* (Swains.), *iridicolor* (Rv.), *pallida* (Harv.), *exigua* (Lam.), and *umbilicata* (Orb.); mouth organs, and especially the radula, described by Troschel, Gebiss der Schnecken, ii. pp. 145–151, pl. xiv. figs. 1–11.

PYRAMIDELLIDÆ.

A large number of species from the West Indies enumerated, and many of C. B. Adam's species recharacterized and placed in sub-generic divisions; O. A. Mörch, Mal. Bl. xxii. pp. 157–169.

Longchæus [*Lonchæus*], subg. n. of *Obeliscus*; testa imperforata, anfr. ult. sulco mediano. Type, *O. punctatus* (Chemn.), also *O.* (*L.*) *candidus*, St. Thomas, West Indies, and *floridanus*, Florida, spp. nn., *id. l. c.* p. 158.

Triptychus, subg. n. of *Obeliscus*; testa spiraliter paucilirata; columella triplicata; labium intus liratum; nucleus reversus. *O.* (*Tr.*) *niveus*, sp. n., West Indies. *Id. l. c.* p. 159.

Tiberia (Jeffr., MS.), subg. n. of *Pyramidella*, for *P. minuscula*, Monter. (J. de Conch. 1874, p. 265), umbilicated, coast of Algeria, 1456 fath., and Palermo, 190–210 metres; Monterosato, Atti Acc. Palerm. 1875, pp. 5 & 31.

Odostomia. The 63 known Mediterranean species enumerated and distributed into the following sub-genera: *Odostomia* proper, *Auriculina*, *Nemia*, *Menestho*, subg. n., for *O. humboldti* (Risso), *Pyrgulina*, *Turbonilla*, and *Eulimella*; id. *l. c.* pp. 31–34.

Odostomia rufula, sp. n., Souverbie, J. de Conch, xxiii. p. 290, pl. xiii. fig. 7, New Caledonia. *Pyramidella pupiformis* (Souverbie), described from a damaged specimen, belongs also to *Odostomia*, and ? = *Parthenia kreffti* (Angas); *id. l. c.* pp. 291 & 292.

Turbonilla mariæ and *tasmanica*, spp. nn., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 13, King's Island, Bass' Straits.

Odostomia (*Turbonilla*) *venusta*, sp. n., Monterosato, Atti Acc. Palerm. 1875, p. 33, Palermo, depth of 210 metres.

Odostomia (*Eulimella*) *superflua*, sp. n., *id. l. c.* p. 34, Palermo, depth of 210 metres.

Syrnola bifasciata, sp. n., J. E. Tenison Woods, *l. c.* p. 13, Tasmania.

Cingulina australis, sp. n., *id. l. c.* p. 14, Tasmania.

Dunkeria fasciata, sp. n., *id. ibid.*, Tasmania.

Stylopsis rufo-fasciata, sp. n., Edgar Smith, Ann. N. H. (4) xvi. p. 103, east of Yesso, Japan.

Chemnitzia (*Elusa*) *krebsi* and *erythrosclera*, spp. nn., Mörch, Mal. Bl. xxii. pp. 159 & 160, St. Thomas, West Indies.

Chemnitzia (*Mumiola* ?) *riisei*, sp. n., *id. l. c.* p. 165, St. Thomas, West Indies.

Mathilda trochlea, sp. n., *id. ibid.*, St. Thomas, West Indies.

Spirolimax, g. n. "Testa subcylindrica, forma *Rissoæ vitreæ*, pellu-

cida, sutura contabulata ; apertura obauriformi ; labio incrassato sigmoideo submarginate ad suturam inflexo ; columella crassiuscula funiculari vix plicifera. Nucleus politus, sub angulo recto instructus." *S. scalaris*, sp. n., St. Thomas, West Indies, Mörch, Mal. Bl. xxii. p. 168.

Careliopsis, subg. n. of *Monoptygma*, for *M.* (*C.*) *styliformis*, sp. n., St. Thomas, West Indies, shape of *Carelia cumingi* (Pfr.). *Id. l. c.* p. 169.

Monoptygma (*Myonia*) *clathratula*, sp. n., *id. ibid.*, St. Thomas, West Indies.

Cioniscus (Jeffr.) and *Pherusa* (Jeffr., pre-occupied among *Crustacea*) are to be regarded as sub-genera of *Aclis* ; Monterosato, Atti Acc. Palerm. 1875, p. 5.

Eulimidæ.

Eulima breviuscula, Dunker, JB. mal. Ges. ii. p. 243, Desterro, S. Brazil ; *E. micans*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 12, Tasmania ; *E. acuformis*, G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 98, pl. viii. fig. 1, Andaman Islands : spp. nn.

Arcuella (Nevill, 1874 ; Zool. Rec. xi. p. 142), subg. of *Eulima*, = *Bacula* (A. Adams, 1863), which is pre-occupied ; G. & H. Nevill, *ibid.*

Subeulima, g. n., similar to *Eulima*, but shell calcareous, not porcellaneous, all whorls with a lateral varix. Animal unknown. *S. lamberti*, sp. n., New Caledonia, Souverbie, J. de Conch. xxiii. p. 296.

Styliferidæ.

Stylina [*Stylifer* ?] *comatulicola*, sp. n., on the pinnulæ and anal tube of *Comatula mediterranea* (Risso), fixed by the trunk, which is imbedded in the skin of the *Comatula*, at Naples ; Graff, Z. wiss. Zool. xxv. suppl. vol. pp. 124–126. A similar fixture of a species of *Stylifer* in the cloaca of *Holothuria* has been stated some years ago by the Recorder, SB. nat. Fr. 1865, p. 14.

Murchisonia (*Murchisonella*) *spectrum*, sp. n., Mörch, Mal. Bl. xxii. p. 184, St. Thomas, West Indies.

SCUTIBRANCHIA.

F. H. Troschel discusses the value of the division *Rhipidoglossa* [= *Scutibranchia*], in which he comprises the families *Helicinacea*, *Proserpinacea*, *Hydrocanacea*, *Neritacea*, *Trochoidea*, *Stomatellacea*, *Haliotidæ*, and *Fissurellacea*, the first two being terrestrial and pulmonate, the *Hydrocanacea* and a part of the *Neritacea* living in freshwater [*Hydrocana* rather terrestrial], the rest marine ; the gills, when they exist, are rather pinnate (feather-shaped) than pectinate (comb-shaped). Gebiss der Schnecken, ii. pp. 161 & 162.

Neritidæ.

Neritopsis radula (L.). The operculum provided with a peculiar appendage, described by H. Crosse [*cf.* Zool. Rec. xi. p. 147]; he confirms Beandouin's supposition that *Peltarion* (Eudes) is founded on the operculum of a fossil species of *Neritopsis*; J. de Conch. xxiii. pp. 57–66, pl. iv. fig. 8, and pl. ii. fig. 4. P. Fischer also has examined the anatomy of this species; it proves to be allied to *Nerita*; the radula is decidedly rhipidoglossate, and analogous to that of the *Neritidæ*, but the central and the first lateral teeth are wanting; *tom. cit.* pp. 197 & 204, pl. xi. The only known species figured in Reeve's Conchologia Iconica, part 322.

Neritina. A monograph is commenced by E. v. Martens in Küster's Conch. Cab. pt. 243, a general introduction gives the conchological and anatomical peculiarities of this genus, which can be distinguished from *Nerita* (L.) only by slight differences in the operculum and by the general facies. It is divided into the sub-genera:—*Neritona* (Martens, 1869), *Neritæa* (Roth.), with several sub-divisions, *Neritodryas* (Martens), *Clithon* (Montf.), *Theodoxus* (Montf.), and *Neritilia*, subg. n., chiefly on account of peculiarities in the appendages of the operculum, though the differences in the radula also are compared. 30 species belonging o the first two sub-genera are described and figured, the following being new:—*N. rubicunda*, p. 32, pl. vi. figs. 20–23, Borneo; *conglobata*, p. 57, pl. viii. figs. 7–9, Celebes; *cryptospira*, p. 61, pl. viii. figs. 10–12, Labuan; *N. immersa* (Martens, 1860), not before figured, p. 54, pl. ix. figs. 18 & 19, Japan. The geographical occurrence is pointed out as fully as possible in each species.

Neritina knorri (Recl.) [*iris*, Mouss.], *becki* (Recl.) [*cryptospira*], *picta* (Sow.), *labiosa* (Sow.), *reclivata* (Say), *zebra* (Brug.) [*communis*], *cumingiana* (Brod.), *semiconica* (Lam.), *turrita* (Chemn.), *sumatrensis* (Sow.), *dubia* (Chemn.), *gagates* (Lam.) [*cornea*, L.], *fluviatilis* (L.), *antiquata* (Küst.), *prevostiana* (Partsch), *bellardi* (Mouss.), *velascoi*, (Graells), *pupa* (L.), *salonitana* (Küst.), *stragulata* (Menke), *dalmatina* (Ziegl.), *pustulosa* (Parr.), and *belladonna* (Parr.); radula described by Troschel, Gebiss d. Schnecken, ii. p. 176–180, most of them, and also *N. virginea* (L.), *transversalis* (Ziegl.), *viridis* (L.), *jordani* (Sow.), and *crepidularia* (Lam.), figured, pl. xvi. figs. 7–18. The author comes to the conclusion that of these only *N. viridis* (L.) by its radula justifies the use of a distinct genus, *Smaragdia* (Issel); the others indeed exhibit some differences (the hood edge and the edge of the marginal teeth being in some entire, and in others denticulated), but it is not possible to form natural groups by these characters; *l. c.* p. 173. [The Recorder has examined some of the shells, out of which Prof. Troschel took the radula which he describes and figures, and has recognized that some were wrongly named, as shown by the corrections above. Species of *Neritina* are often wrongly named in collections, and this is very prejudicial to the general understanding of their natural groups.]

Neritina maroccana, Paladilhe, R. Z. (3) iii. p. 93, pl. ix. figs. 26–28, Mequinez, Morocco; *N. montrouzieri*, *guttata*, and *expansa*, Gassies, J. de

[*Turcica*] *Trochus moniliferus* (Lam.), = *alwinæ* (Lischke), from Japan; Fischer, J. de Conch. xxiii. pp. 131–133.

Trochus (*Gibbula*) *japonicus*, *yamadanus*, and *corallinus*, spp. nn., E. Smith, Ann. N. H. (4) xvi. pp. 110 & 111, Japan.

Trochus (*Gibbula*) *holdsworthiana* (Nevill, 1871), = *Minolea variabilis* (H. Ad., 1874); G. & H. Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 102.

Gibbula aurea and *depressa*, spp. nn., J. E. Tenison Woods, *l. c.* p. 21, Tasmania.

Margarita bella, sp. n. [insufficiently indicated], Verkrüzen, JB. mal. Ges. ii. p. 237, Hammerfest, Norway.

Liotia tasmanica, sp. n., J. E. Tenison Woods, *l. c.* p. 21, Tasmania.

Cyclostrema eburnea[*-eum*], sp. n., G. & H. Nevill, J. A. S. B. (n.s.) pt. 2, p. 101, pl. viii. figs. 21 & 22, Bay of Bengal.

Adeorbis imperspicuus, sp. n., not described, Palermo, in depths of 90–110 metres, Monterosato, Atti Acc. Palerm. 1875, p. 36.

Stomatella granosa (Lambert, 1875) figured; Montrouzier, J. de Conch. xxiii. pl. iv. fig. 2, New Caledonia.

Haliotidæ.

Scissurella supra-plicata, sp. n., E. Smith, Ann. N. H. (4) xvi. p. 72, Kerguelen's Island.

Fissurellidæ.

Subemarginula lamberti, sp. n., Souverbie, J. de Conch. xxiii. p. 294, pl. xiii. fig. 10, New Caledonia.

Macroschisma tasmanica[*-cum*], sp. n., J. E. Tenison Woods, *l. c.* p. 25, Tasmania.

CYCLOBRANCHIA.

Acmæidæ.

Acmæa marmorata, sp. n., J. E. Tenison Woods, *l. c.* p. 25, Tasmania.

Patellidæ.

Patella (*Tectura* ?) *muelleri*, Dunker, JB. mal. Ges. ii. p. 246, Desterro, S. Brazil; *P. tasmanica* and *chapmani*, J. E. Tenison Woods, *l. c.* p. 25, Tasmania: spp. nn.

Patella (*Patina*) *pellucida* (L.); on its varieties, Metzger, Ber. Unters. Pommerania, p. 255.

Chitonidæ.

The vent is clearly defined, posterior and terminal, in *Stimpsoniella emersoni* (Couth.) and *Tonicella marmorea* (Fabr.); terminal, on a papilla,

in *Trachydermon album* (L.); not perceptible from the outside, very small and a little higher up, and exactly in the median line in *Tr. rubrum* (L.). The orifices for the eggs are bilaterally symmetrical, two or three fenestræ on each side, near the last gill; the author could not satisfy himself that there is a true oviduct; perhaps the eggs pass by dehiscence of the ovary into the perivisceral cavity, from which they are expelled through the fenestræ. W. Dall, Bull. Ess. Inst. vi. Aug. 1874, and Ann. N. H. (4) xv. pp. 442, & 443.

TECTIBRANCHIA.

Tornatellidæ.

Ringicula acuta (Phil., 1849) = *minuta* (H. Ad., 1870), Persia, and *R. abbreviata*, sp. n., Ceylon; Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 102.

Tornatella fasciata, Lam. The description and figure of the radula given by Loven repeated by Troschel, Gebiss der Schnecken, ii. p. 152, pl. xiv. fig. 12.

[*Tornatella*] *Actæon exiguus* (Dunker, MS.) and *splendidula* [*-us*], spp. nn., Mörch, Mal. Bl. xxii. pp. 169 & 170, West Indies.

Bullidæ.

Cylichna krebsi, Mörch, *l. c.* p. 172, West Indies; *C. pertenuis*, E. Smith, Ann. N. H. (4) xvi. p. 113, North Japan; *C. atkinsoni*, J. E. Tenison Woods, P. R. S. Tasm. 1875 (sep. copy), p. 24, Tasmania: spp. nn.

Retusa omphalis, sp. n., Mörch, *l. c.*, St. Thomas, West Indies.

Atys riiseana, sp. n. (Dunker, M.S.), *id. l. c.* p. 173, West Indies.

Haminea grisea, sp. n., E. Smith, *l. c.* p. 112, North Japan.

Lophocercidæ.

Volvula persimilis, sp. n., Mörch, Mal. Bl. xxii. p. 179, West Indies.

Aplysiidæ.

Aplysia punctata (Cav.); MacIntosh, Mar. Invertebr. of St. Andrews, pl. iii. fig. 1.

Aplysia tasmanica, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 24, Tasmania.

Phyllaplysia lafonti (Fischer); a new variety of 35 mill. length described, and its manners of life observed, by H. Crosse, J. de Conch. xxiii. pp. 101–104.

Pleurobranchidæ.

[*Umbrella*] *Operculatum bermudense*, sp. n., indicated, but not sufficiently described by Mörch, Mal. Bl. xxii. p. 179, Bermudas.

NUDIBRANCHIA.

Pleurophyllidiidæ.

Linguella elforti (Blainv.), ex. typ. (in Brit. Mus.), is a *Sancara* (Bergh), certe, and ? = *S. quadrilateralis* (Bergh); R. Bergh, in Semper's Reis. Arch. Philipp. ii. p. 248. *L. quadrilateralis*, Pulo Pinang, *iaira* (Bergh), and *punctilucens*, sp. n., China Sea, described with anatomical notes, *id. l. c.* pp. 266–275, pls. xxxiv. & xxxv. fig. 1.

Phyllidiidæ.

The peculiarities of this family recapitulated, and the known species enumerated; R. Bergh, *l. c.* pp. 377–380.

Phyllidia varicosa (Lam.), *elegans* (Bergh), and *Phyllidiella pustulosa* (Cuv.); on their occurrence in various parts of the Philippines and Moluccas, *id. l. c.* pp. 380–382; figured from life, pl. xxv. figs. 4–7. Male organ of the first figured; *id.* J. Mus. Godeffr. viii. pl. xi. fig. 1.

Phyllidiella nobilis (Bergh, 1869) described from specimens found at the Pelew Islands; *id.* Verh. z.-b. Wien, xxv. pp. 661 & 662.

Fryeria rueppelli (Bergh, 1869), from the Red Sea, fully described, *id. l. c.* pp. 663–669, pl. xvi. figs. 5–10. The disposition of the tubercles and pharynx is as in genuine *Phyllidia*, but the vent is lateral.

Phyllidiopsis, g. n. Vent dorsal, as in *Phyllidia*, tentacles soldered in their whole length to their basis, as in *Doridiopsis*. Type, *P. cardinalis*, sp. n., Tonga. *Id. l. c.* pp. 670–672, pl. xvi. figs. 11–15.

Doriopsidæ.

The only genus is *Doriopsis* (Pease, 1860) = *Doridopsis* (Ald. & Hanc., 1864) = *Haustellodoris* (Pease, 1871) = *Rhacodoris* (Mörch, 1863). External shape of *Doris*, but mantle soft and weak, its edges waved; mouth small, without jaw or radula. Internal structure resembling that of *Phyllidia*; penis armed with hooks; pericardial folds. To it, belongs also *Doris limbata* (Cuv.), from the Mediterranean. The known species enumerated, and *D. krebsi* (Mörch), from the West Indies, *tristis*, sp. n., Philippines, and *affinis*, sp. n., Tahiti, described with anatomical notes. R. Bergh, J. Mus. Godeffr. viii. pp. 82–93, pl. vii. fig. 6, pl. x. figs. 22 & 23, pl. xi. figs. 3–23, and pl. xxxiii. fig. 9. The generalities repeated, and *D. tristis*, *semperi*, *modesta*, *pellucida*, *pudibunda*, *maculigera*, and *spiculata*, spp. nn., all from the Philippines, shortly described; *id.* in Semper's Reis. Arch. Phil. ii. pp. 384–387.

Doridiidæ.

The history and characters of this family recapitulated; *id. l. c.* pp. 388–390.

Doris johnstoni and *repanda* (A. & H.); MacIntosh, Mar. Invertebr. of

St. Andrews, pl. ii. fig. 16, and pl. vii. figs. 13–15, the latter with the spawn.

Doris rubra (Orb., *nec* Risso) = *coccinea* (Ald. & Hanc.), *D. tomentosa* (Cuvier) = *johnstoni* (Ald. & Hanc.); P. Fischer, J. de Conch. xxiii. p. 211, footnote. *D. limbata* (Cuv.) found in the Bay of Biscay; *id. l. c.* p. 207.

Doris marieri, *rossiteri*, and (*Doriopsis* ? ?) *fabrei*, spp. nn., Crosse, J. de Conch. xxiii. pp. 307–311, pl. xii. figs. 1–3, New Caledonia.

Doris arrogans and *brunnea*, spp. nn., figured but not described; Bergh, in Semper's Reis. Arch. Phil. ii. pl. xli. figs. 2 & 4. Philippines.

Hexabranchus faustus, sp. n., figured, but not described; *id. ibid.* pl. xli. fig. 3, Philippines.

Nembrotha citrina, g. & sp. nn., figured but not described; *id. ibid.* pl. xli. fig. 5, Philippines.

Kentrodoris [*Cen-*], g. n. "Pallium latum, molle, latere superiore ubique minutissime granulatum; rhinophoria retractilia, tentacula conica; branchia retractilia, foliis tripinnatis. Podarium latum, antice margine profunde sulcatum, labio superiore veliformi profunde emarginato, postice rotundatum. Armatura labialis nulla. Dens medianus nullus, dentes laterales uncinati. Penis aculeo armatus." *K. rubescens*, *gigas*, and *annuligera*, spp. nn., Pelew and Philippine Islands, with anatomical description; R. Bergh, in Semper's Reis. Arch. Phil. ii. pp. 413–427, pl. xxxiii. fig. 8; pl. xli. fig. 1; pl. xlix. figs. 14–19; pl. l. figs. 1–23; pl. li. figs. 1–5; pl. lii. figs. 3–16.

Goniodoris montrouzieri, *verrieri*, *lamberti*, *petiti*, and *souverbiei*, spp. nn., Crosse, J. de Conch. xxiii. pp. 311–317, pl. xii. figs. 4–8, New Caledonia.

Chromodoris (Ald. & Hanc., 1855) = *Gonibranchus* (Pease, 1866); near *Goniodoris*, but distinguished by very vivid colours, arranged mostly in longitudinal stripes; gills retractile, simply pinnate; no median plate on the radula, lateral teeth numerous, hooked; lips armed with small hooks. 73 species enumerated from the Mediterranean, the West Indies, the Indian Seas, and the Pacific. R. Bergh, J. Mus. Godeffr. viii. pp. 72–78. *C. scurra*, *gloriosa*, and *pallescens*, spp. nn., all from Tahiti; *id. l. c.* pp. 78, 79, & 81, pl. 1. figs. 6–13, pl. vii. fig. 4, and pl. ix. figs. 5–31. Anatomical figures of different species, without descriptions, are also published by Bergh, in Semper's Reis. Arch. Phil. ii. pls. li. lii. & liii.; *C. scurra* and *C. lineolata*, spp. nn., figured from life, *l. c.* pl. xxxiii. figs. 3 & 4.

Trevelyana nigerrima, *cristata*, and *morosa*, spp. nn., figured but not described; *id.* in Semper's Reis. Arch. Phil. ii. pl. xxxiii. figs. 5–7, pl. xxv. fig. 9.

Miamira, g. n. "Notæum antice in velum frontale productum, lateribus lobis applanatis infrà lamellatis instructum, postice in velum caudale continuatum, suprà carinatum cum costis transversalibus. Podarium angustius. Apertura oralis indumento buccali hamuligero armata. Lingua lata, brevis, seriebus dentium numerosis, rhachide inermi, pleuris multidentatis." *M. nobilis*, sp. n., Philippines, Amboina, and Samoa Islands. *Id.* J. Mus. Godeffr. viii. pp. 53–63, pl. viii. figs. 1–30, and pl. ix.

figs. 1–4, and in Semper's Reis. Arch. Phil. ii. pp. 411 & 412, pl. xxxiii. fig. 2.

Casella philippinensis, g. & sp. nn., figured only; *id. l. c.* pl. xxxiii. fig. 1 (very near *Doris atro-marginata*, Cuv.).

Orodoris, g. n.; near *Miamira*, but without frontal or caudal velum or lateral lobes; back also keeled and transversely ribbed. Type, *O. miamirana*, sp. n. *Id.* J. Mus. Godeffr. viii. pp. 67–71, pl. viii. fig. 3, pl. x. figs. 9–20.

Notodoris, g. n. "Corpus limaciforme, dorso a lateribus non distincto. Rhinophoria integra, cavitate valvula protecta, retractilia. Armatura labialis nulla. Dentes linguales mediani nulli, laterales erecti, hamiformes." Type, *N. citrina*, sp. n. *Id. l. c.* pp. 64–67, pl. ix. figs. 32–45.

Plocamophorus tilesii (Bergh); anatomical figures, without descriptions, *id.* in Semper's Reis. Arch. Phil. ii. pl. lii. figs. 17–27, pl. liii. figs. 1–4.

Ceratosoma (A. Ad. & Rv.). Upper tentacles retractile; back with three lobes, two short rounded lateral, and a tongue-shaped posterior; lips clothed with very minute hooks; radula with numerous lateral hooks, no median one. *C. cornigerum* (A. Ad.), Zebu, Philippines, *gracillimum* (Semper, MS.), sp. n., Bohol, Philippines, and *trilobatum* (Gray), Red Sea, externally and anatomically described. *Id. l. c.* pp. 391–408, pl. xlviii. figs. 15–27, pl. xlix. figs. 1–10, and pl. xxv. fig. 8.

Tritoniidæ.

Tritonia plebeia (Johnst.); a specimen with bifid hinder extremity. MacIntosh, Mar. Invertebr. of St. Andrews, pl. ii. fig. 15.

Tethys. Probably only one species, *leporina* (L.), is known, though it is somewhat variable; its anatomy fully described. R. Bergh, in Semper's Reis. Arch. Phil. ii. p. 345, pl. xlv. figs. 19–26, pl. xlvi. figs. 1–22, pl. xlvii. figs. 1–3. No distinct pharynx, no radula, but first ventricle armed with strong cuticular folds.

Scyllæa (L.). The known species enumerated, *S. pelagica* (L.) and its varieties, *marginata* (Bergh, 1871) = ? *grayæ* (A. Ad., 1850) var., *ghomfodensis* (Forsk.), varr. nn. *sinensis* and *orientalis*, and *elegantula*, sp. n., Philippine Islands, fully described, with their anatomy; *id. l. c.* pp. 315–343, pls. xl. & xlii.–xliv.

Bornella (Gray). The known species enumerated, *B. calcarata* (Mörch, 1863), St. Thomas, West Indies, and *digitata* (A. Ad. ?, Ald. & Hanc.), from Bohol, Philippines, fully described, with their anatomy; *id. l. c.* pp. 287–308, pls. xxxvi.–xxxviii.

A list of the known species also by Crosse, J. de Conch. xxiii. pp. 323–325.

Bornella caledonica, sp. n., Crosse, *l. c.* p. 318, pl. xii. fig. 10, New Caledonia.

Doto coronata (Gmel.); MacIntosh, Mar. Invertebr. of St. Andrews, pl. ii. fig. 14.

Melibe (Rang, 1829), = *Chiorhæa* (Gould, 1852). The known species enumerated, *M. capucina*, Zebu, Philippines, and *rangi*, Red Sea,

spp. nn., anatomically described: Bergh, *l. c.* pp. 362–376, pl. xlv. fig. 27, pl. xlvi. figs. 23–28, pl. xlvii. figs. 4–28, and pl. xlviii. figs. 1–14. Head unusually large by the strong development of that part which is called "prohistion" by Mörch, upper tentacula or rhinophoria retractile, perfoliate, pharynx with a strongly toothed jaw, but without radula; back with unequal leaf-, tree-, and club-shaped papillæ; no distinct gills.

ÆOLIDIDÆ.

The cerebral ganglion of *Æolidia*, *Coryphella*, *Facelina*, *Sparilla*, and *Janus*, is the object of a paper by S. Trinchese in Rend. Acc. Bologn. Febr. 1875; a very large cell, called polar cell by the author, is found in the anterior part of it, surrounded by many small cells; the same structure is found in the buccal ganglions.

[*Æolidia*] *Eolis adelaidæ* (Thomps.), and *farrani* (A. & H.), purple variety; MacIntosh, Mar. Invertebr. of St. Andrews, pl. ii., figs. 11, 12, & 13.

Æolidia (Cuv.) = *Æolidiana* (Quatref.), limited to *Æ. papillosa* (L.), from the Northern Seas of Europe, and *Æ. serotina* (Bergh), from the Pacific; Bergh, Verh. z.-b. Wien, xxiv. pp. 395 & 396.

Æolidiella (Bergh, 1867) *occidentalis*, sp. n., *id. l. c.* p. 397, pl. viii. figs. 9–19, Caribbean Sea.

Facelina drummondi (Thomps.), *veranyana*, sp. n., *janii* (Verany), and *panizzæ* (Verany), described; *id. l. c.* pp. 400–409, pl. ix. figs. 2–17, pl. x. figs. 1–13, pl. xi. figs. 1 & 4–11, the first from Jütland, the others from the Mediterranean.

Coryphella (Gray). Rhinophoria simplicia; mandibula denticulata; radula dentibus triseriatis *C. athadona*, sp. n., Japan, and *argenteolineata* (Costa), Mediterranean, fully described, and 17 other species belonging to this genus enumerated; *id. op. cit.* xxv. pp. 633–640, pl. xiii. figs. 1–13, pl. xv. fig. 20, and pl. xvi. figs. 1–3.

Coryphella robusta, sp. n, Trinchese, Rend. Acc. Bologn., Febr. 1875, Mediterranean.

Favorinus (Gray). Rhinophoria infra apicem bulbo prædita; mandibula acute denticulata; radula uniseriata. *F. albus* (A. & H.) = ? *Matharena oxyacantha* (Bergh, 1871), and *F. versicolor* (Costa), Mediterranean, the latter described; Bergh, Verh. z.-b. Wien, xxv. p. 641, pl. xiv. figs. 2 & 3, and pl. xv. figs. 2–5.

Calma (Ald. & Hanc.). Rhinophoria simplicia; papillæ dorsales non caducæ, pedamentis brachiiformibus insertæ; mandibula acute denticulata; radula triseriata, dentibus lateralibus lævibus; penis stylo armatus. *C. cavolinii* (Verany, 1840) = *digitata* (Costa, 1866), described. *Id. l. c.* p. 644, pl. xiv. figs. 4–21, and pl. xv. fig. 1, Mediterranean.

Flabellina (Cuv.). Rhinophoria perfoliata; papillæ non caducæ, pedamentis brachiiformibus insertæ; mandibula triseriata, dentibus lateralibus denticulatis; penis stylo armatus. *F. affinis* (Gmel.), Mediterranean, described, and five other species from the Mediterranean and Pacific enumerated; *id. l. c.* pp. 647–651, pl. xv. figs. 6–19, pl. xvi. figs. 3 & 4.

Pterælidia, g. n. "Rhinophoria perfoliata; tentacula (inf.) elongata; papillæ dorsales non caducæ, pedamentis compressis aliformibus insertæ, eradiantes; podarium margine antico inflato, angulis tentaculatim productis; margo masticatorius mandibulæ seriebus denticulorum compluribus præditus; radula dentibus uniseriatis; penis non armatus." Type, *P. semperi* (Bergh, 1870, as *Flabellina*). Id. *l. c.* p. 652.

Cerberilla (Bergh, 1873; see Zool. Rec. xi. p. 153). To this genus belongs also *Eolida annulata*, Quoy and Gaim., redescribed from Tahiti; *id. l. c.* pp. 652–655, pl. xiii. figs. 14–17, pl. xiv. fig. 1.

Hervia modesta (Bergh, 1871) fully described; *id. op. cit.* xxiv. pp. 409–411, pl. viii. figs. 1–3, Kattegat.

Matharena oxyacantha (Bergh, 1871) fully described; *id. l. c.* pp. 412 & 413, pl. viii. figs. 4–8, Liimfjord, Jütland.

Glaucus. On the anatomy, especially the nervous system, A. Vayssière, Ann. Sc. Nat. (6) i. art. 7 [1874], 17 pp. pls. x. & xi. Eyes and otocysts are present, but little developed. [It is to be regretted that the author did not know of Bergh's elaborate monograph in Dan. Selsk. Skr. (5) vii. 1867.]

Hermæidæ.

Hero formosa (Loven), Kattegat, and a probably new species, known only from a drawing by A. Boeck, described by R. Bergh, in Semper's Reis. Arch. Phil. ii. pp. 309–314, pl. xxxviii. figs. 23–26, pl. xxxix. figs. 14–26.

Elysiidæ.

Placobranchus gassiesi, sp. n., Crosse, J. de Conch. xxiii. p. 319, pl. xii. fig. 9, New Caledonia. List of the known species of this genus; *id. l. c.* pp. 325–328.

Pelta coronata (Quatref.) = *Runcina hancocki* (Forbes), the former founded on imperfect specimens; P. Fischer, J. de Conch. xxiii. p. 214, footnote.

PULMONATA.

L. Pfeiffer has published the first part of a new (seventh) volume of his justly renowned "Monographia Heliceorum viventium," a systematic enumeration of all the known species, with descriptions (for the most part copied verbatim) of those published from 1868 to 1875. This contains the genera *Testacella*, *Gœotis*, *Parmella*, *Binneya*, *Daudebardia*, *Vitrina* (including *Helicarion*), *Simpluopsis*, *Succinea*, *Strebelia*, and about the half of *Helix* in its old vast extent.

W. G. Binney gives a recapitulation of the results of his researches into the structure of the jaw and radula of the North American *Pulmonata geophila*; these parts are at present known in nearly two-thirds of the species (188 out of 280), which are arranged by the author in the following manner:—

Oleacinidæ; gen. *Glandina* (no jaw).

Helicidæ; sub-fam. Vitrininæ, marginal teeth aculeate; *Macrocyclis*, *Zonites*, *Vitrina*, *Limax*.

Helicinæ, jaw simple, marginal teeth quadrate:—

(1) Jaw without decided ribs on its anterior surface; *Patula*, *Hemitrochus* (*Helix varians*), *Tebennophorus*, *Holospira*, *Helicodiscus*, *Ferussacia*, *Cæcilianella*, *Stenogyra*, *Pupa*, *Vertigo*, *Strophia*.

(2) Jaw with decided short vertical ribs to its anterior surface; *Arion*, *Ariolimax*, *Prophysaon*, *Binneyia*, *Hemphillia*, *Pallifera*, and *Helix* (with 17 sub-genera).

(3) Jaw with delicate distant ribs to its anterior surface, usually running obliquely to its median line; *Cylindrella*, *Macroceramus*, *Bulimulus*.

Orthalicinæ, jaw composed of distinct plates, free and imbricated below; *Liguus*, *Orthalicus*, *Punctum*.

Succineinæ, jaw with an accessory quadrate plate; *Succinea*.

Veronicellidæ; *Veronicella*.

The jaw and radula of all these are illustrated by woodcuts, the teeth of many species figured in the plates; P. Ac. Philad. 1875 (also as notes on Am. land-shells, ii. pt. iii.), pp. 140–243, pls. i.–xviii.

Veronicellidæ.

[*Veronicella*] *Vaginula*. The known species named, and descriptions of *V. olivacea* (Stearns) and *paranensis* (Burmeister) reproduced; P. Fischer, J. de Conch. xxiii. pp. 53–57.

Vaginula wallacii, sp. n., Issel, Ann. Mus. Genov. vi. [1874] p. 385, pl. iv. figs. 1–3, Sarawak, Borneo.

Testacellidæ.

Helix (*Rhytida*) *sheridani*, sp. n., Brazier, P. Z. S. 1875, p. 33, pl. iv. fig. 7, N. E. Australia.

Diplomphalus fabrii, H. Crosse, sp. n., J. de Conch. xxiii. p. 136, pl. vi. fig. 1; *D. megii* (Lambert) var., *id. l. c.* p. 138, pl. vi. fig. 2: both from New Caledonia.

Glandina truncata (Say). Central tooth; Binney, Ann. Lyc. N. York, xi. p. 167, pl. xiv. fig. F.

Streptostyla sargi, sp. n., Crosse & Fischer, J. de Conch. xxiii. p. 225, Guatemala.

Spiraxis incerta[*-us*] (Mouss.); Pfeiffer, Novitat. iv. pl. cxxxiii. figs. 12 & 13, South America.

Streptaxidæ.

Streptaxis rimatus (Pfr.) and *recluzianus* (Petit) = *monrovia* (Rang, as *Helix*) [*nobilis*, Gray] varr.; Dohrn, Mal. Bl. xxii. pp. 203–205.

Streptaxis uberiformis (Pfr.) figured; J. de Conch. xxiii. pl. vii. fig. 8, South America.

Scolodonta, subg. n. of *Streptaxis*; shell similar to that of *Hyalina*, but

all teeth of the radula dagger-shaped, the median very short, rhombic; front part of the animal elongated. *S. semperi*, sp. n., Sierra de Cordova, Argentine States; A. Döring, Bol. Ac. Cordova, i. pp. 438–441, with a woodcut representing the radula.

Ammonoceras (Pfr.). All teeth spiniform, median small. Type, *A. ammoniformis* (Orb., as *Helix*), Sierra de Tucuman; *id. l. c.* p. 440.

Ennea bulbulus (Morelet) and *michaui* (Crosse & Fisch.). Michau has observed at Pulo Condore, that both are viviparous and bear only one young at a time. Morelet, Séries Conch. iv. pp. 268 & 270.

Francesia (Paladilhe, 1872; Zool. Rec. x. p. 171) = *Cœlostele* (Benson, 1864), and should probably be placed near *Streptostele*. The species from Aden, *F. scalaris* (Palad.), appears to be distinct by its costulation from the smooth Indian *C. scalaris* (Bens.); Blanford, J. A. S. B. (n.s.) xlv. pt. 2, pp. 41–44.

Vitrinidæ (Oxygnatha).

Limax bocagii, Luso da Silva, J. Sc. Lisb. iv. p. 244 [1873], Portugal; *L. montanus*, Ingersell, Ann. Rep. U. S. Geol. & Geog. Survey of the Territories for 1873 [1874], p. 130 (animal, radula, and genital system), Binney, Ann. Lyc. N. York, xi. p. 169, pl. xii. fig. 4, and pl. xvii. fig. D, Colorado: spp. nn.

Limax argentinus (Strobel); Strobel, Mat. malac. Argent. pt. iii. pl. i. fig. A, internal shell.

Agriolimax meridionalis, sp. n., Döring, Bol. Ac. Cordova, i. p. 434, Sierra de Cordova, Argentine States, near *agrestis* (L.), but distinct by the want of the tripartite appendage to the male generative organs.

Parmarion beccarii and *doriæ*, Issel, Ann. Mus. Genov. vi. [1874] pp. 386 & 388, Sarawak, Borneo; *P. rubrum* [*-er*], H. H. Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, p. 6, pl. ii. fig. 4, Naga Hills, described from living specimen: spp. nn.

Vitrina russeola and *unguiculus* (Morelet, 1865); Morelet, Séries Conch. iv. pp. 242 & 243, pl. xii. figs. 6 & 7, Cochin China.

[*Helicarion*] *Vitrina cochinchinensis* (Morelet, 1866), from Cochin China, figured for the first time; *id. l. c.* p. 241, pl. xii. figs. 7, 6 &1.

Helicarion shillongense and *brunneum*, Shillong, Khasi Hills, *nagaense*, Naga Hills, spp. nn., *solidum* (Godw. Aust., 1872), Assam [*-is* and *-us*, *Helic-Arion*, Fér.], and *gigas* (Bens.), described and figured from living animals by Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, pp. 4–7, pl. ii. figs. 1, 2, 3 & 5.

Nanina radians (Pfr.), *conula* (Pease), and *calculosa* (Gould). Jaw and radula; Binney, Ann. Lyc. N. York, xi. p. 168, pl. xvi. fig. 1, the last viviparous.

Nanina decrespignii (Higgins) figured; A. Issel, Ann. Mus. Genov. vi. [1874] p. 392, pl. v. figs. 13–15, Sarawak, Borneo.

Nanina subcircula (Mouss.). Radula; Binney, P. Ac. Philad. 1875, p. 248, pl. xx. fig. 1.

Helix (*Nanina*) *atricolor*, H. H. Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, p. 2, pl. i. fig. 2, animal quite black, North Cachar Hills; and

H. (N.) shisha, id. *ibid.* fig. 3, allied to *plicatula* (Bens.), the animal of which is described, Moyong, north side of Khasi Hills: spp. nn.

[*Nanina*] *Helix undosa*, var. (Blanf.), Shan Hills, and *sisparica* (Blanf.), Nilgherries; Hanley & Theobald, Conch. Ind. pp. 45 & 46, pl. cxi. figs. 2, 3 & 6, pl. cxii. figs. 4–6.

[*Nanina*] *Helix weinkauffiana* (Crosse, 1863) = *crossii* (Pfr., 1862), var.; Morelet, Séries Conch. iv. p. 245. *H. pumicata*, Siam, and *bocourti*, Cambodia, spp. nn., *id. l. c.* pp. 248 & 249, pl. xii. figs. 2 & 9.

Thapsia indecorata (Gould). Note by Dohrn, Mal. Bl. xxii. p. 205.

Macrochlamys sinica, sp. n., E. von Martens, JB. mal. Ges. ii. pp. 214 & 215, Western Mountains, near Peking.

(—) *Helix vitrinoides* (Desh., 1830) = *pedina* (Bens.); Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 104.

Nanina (*Macrochlamys*) *tersa* and ? *macdougalli*, spp. nn., Issel, Ann. Mus. Genov. vi. pp. 399 & 400, pl. v. figs. 1–4 & 9–12, Borneo.

Hyalina. The species allied to *H. crystallina* (Müll.) are again discussed by S. Clessin; he distinguishes *H. contracta* (Westerl.) = *crystallina* (Reinh.), probably peculiar to N. Europe, and *H. crystallina* (Müll. ?, Bourg.), of which *subterranea* (Bourg.) is a var.; JB. mal. Ges. ii. pp. 25–36, pl. ii. figs. 1–3.

Hyalina ? *lowi* and *perlucida*, spp. nn., Issel, Ann. Mus. Genov. vi. [1874], pp. 401 & 402, pl. v. figs. 16–19 & 20–23, Sarawak, Borneo.

Hyalina argentina (Strobel); Strobel, Mat. malac. Argent. pt. iii. pl. i. fig. 1.

Zonites cerinoideus (Anthony). Foot, jaw, and radula; Binney, Ann. Lyc. N. York, xi. p. 169, pl. xiii. fig. B, allied to *Z. ligerus* (Say).

Zonites algirus (L.). Anatomy given, with peculiar attention to the nervous system, by H. Sicard, Ann. Sc. Nat. (6) No. 2, pp. 1–86, pls. iv.–vii. The tentacular nerve is considered to be probably olfactory; the retina is of cellular composition, the black pigment is not uniformly spread over the choroidea, and the optic nerve is quite distinct in origin from the tentacular nerve. The salivary glands form a ring round the œsophagus. There are interorganic cavities, true lacunæ, into which the blood vessels are opened, and through which the blood circulates. Vesiculæ multifidæ, flagellum, and arrow-bag are absent; instead of the former there is a gland enveloping the vagina like a sleeve, and the spermatophore is developed in the under broader part of the vas deferens itself. Male and female orifices are close together, surrounded by a common sphincter, but there is no common orifice. The border surrounding the lateral edges of the foot is cleft in its whole extent at the hinder end, and in this part the glandular elements predominate.

Zonites hamelianus, Crosse (1874); J. de Conch. xxiii. p. 216, pl. ix. fig. 1, New Caledonia.

Macrocyclis euspira (Pfr., as *Helix*). Jaw and radula; Binney, P. Ac. Philad. 1875, p. 247, pl. xxi. fig. 3.

Trochomorpha cressida (Gould); Ann. Lyc. N. York, xi. p. 168, pl. xvi. fig. II.

Trochomorpha ? *angulata*, sp. n., Issel, Ann. Mus. Genov. vi. p. 405,

pl. v. figs. 5–8, and *T. planorbis* (Less.), var. n. *nummus*, id. *l. c.* p. 404, Sarawak, Borneo.

HELICIDÆ (ODONTOGNATHA).

Anadenus sp., from the Himalaya, jaw and radula; Binney, Ann. Lyc N. York, xi. p. 180, pl. xviii. fig. F.

Letourneuxia lusitana, sp. n., Luso da Silva, J. Sc. Lisb. iv. p. 242 [1873], Portugal.

Ariolimax hemphilli, sp. n., California, and *andersoni* (Coop.), animal jaw, radula, and genital system; Binney, *l. c.* pp. 181 & 182, pl. xii. figs. 7 & 9, and pl. xviii. fig. H.

Binneya notabilis (Coop.). Animal, jaw, and radula; *id. l. c.* pp. 183 & 184, pl. xvii. figs. 2–4, allied ta *Xanthonyx*.

Damayantia, g. n. No shell; mantle forming a rounded prominence in the front half of the animal; a mucous pore at the hinder end of the foot; no jaw?; radula not described. *D. dilecta*, sp. n., Sarawak, Borneo; Issel, Ann. Mus. Genov. vi. [1874] pl. iv. figs. 4–6, and woodcut.

[*Patula*] *Helix servaini*, sp. n., Bourguignat, in Lallemant & Servain's Cat. Moll. terr. & fluv. de Jaulgonne, 1869, p. 20, Forêt de Riz, near Treloup, Dep. Aisne; allied to *pygmæa* (Drap.).

Patula cumberlandiana (Lea), *mordax* (Shuttl.), and *alternata* (Say), var.; radula and genital system; Binney, Ann. Lyc. N. York, xi. pl. xv. fig. E, and pl. xvii. fig. 15. *P. huahinensis* (Pfr.), radula; *id. l. c.* p. 171 pl. xvii. fig. 17.

[*Patula*] *Helix confinis*, sp. n., Gassies, J. de Conch. xxiii. p. 227, New Caledonia.

Endodonta tumuloides (Garrett), radula; Binney, P. Ac. Philad. 1875, p. 248, pl. xxi. fig. 6. *E. incerta* (Mouss.), radula; *id.* Ann. Lyc. N. York, xi. p. 171, pl. xvii. fig. 16.

[*Endodonta*] *Helix derbesiana* and *berlierii*, spp. nn., Crosse, J. de Conch. xxiii. pp. 143 & 144, New Caledonia.

Leucochroa (Beck, Albers), defended as a genus, and the known species enumerated, but *Helix turcica* (Chemn.) excluded from it because it agrees with *Helix* in the jaw, radula, and arrow; Kobelt, Nachr. mal. Ges. 1875, pp. 37–40. M. Schepman, Tijdschr. Ned. Dierk. Ver. ii., comes to the same conclusion.

Helix. Species from Europe and Northern Africa: —

[*Caracollina*] *Helix annai*, sp. n., Paladilhe, R. Z. (3) iii. p. 82, pl. ix. figs. 13–18, Tangiers.

[*Fruticicola*] *Helix rufescens* (Penn) occurs near Kalmar, Sweden; Westerlund, Nachr. mal. Ges. 1875, p. 72. Its radula; Binney, Ann. Lyc. N. York, xi. p. 172.

[*Xerophila*] *Helix moricola*, sp. n., Paladilhe, Ann. Sci. Nat. (6) ii. Art. 8, p. 1, pl. xxi. figs. 1–6, Aniane, Dep. Hérault, S. France.

[*Xerophila*] *Helix spirilla*, sp. n., *H. candidula*, var. n. *vortex*, and *H. ericetorum*, var. n. *devians*, from Southern France; Westerlund, Nachr. mal. Ges. 1875, pp. 72 & 73.

[*Xerophila*] *Helix rusticula* and *jaylii*, spp. nn., Paladilhe, R. Z. (3) iii. pp. 84 & 85, pl. ix. figs. 7–9 & 10–12, Tangiers.

[*Xerophila*] *Helix degenerans* (Mouss.) and *mograbina* (Morelet). Anatomy given by M. Schepman, Tijdschr. Ned. Dierk. Ver. ii.; they agree with *Xerophila*, not with *Leucochroa*, and differ somewhat one from the other, the arrow-sac being simple in the former and bilobed in the latter.

[*Campylæa*] *Helix serbica* (Möllend.), *pancici* (Möllend.), *pouzolzi* (Payr.) varr., *raspailii* (Payr.) var., *revelierii* (Debeaux), *styriaca* (Frauenf.), *gasparinæ* (Charp.), *olympica* (Roth), *chamæleon* (Parr.), *joannis* (Mortillet), *langi* (Parr.), *phocæa* (Roth), and *trizona* (Mhlfld.), varr., described and figured by W. Kobelt, Iconographie, pp. 5–12, pls. xc.–xcv. figs. 982–1002.

Campylæa. The brown-coloured species of *Campylæa* from Northern Italy are discussed by W. Kobelt; he distinguishes *H. zonata* (Stud.) = *fœtens*, Moq. Tand., Western Alps to the St. Gothard, with the varieties *fœtens* (Stud.) and *flavo-virens* (Dum. & Mort.); *H. planospira*, Lam., widely spread on the southern slope of the Alps, from Piedmont to Hungary and Servia, with the varr. *padana* (Strobel) and *umbilicaris* (Brumati), and var. n. *etrusca*; *H. fœtens* (C. Pfr., *nec* Stud.), in the Eastern Alps, more northwards than the former, with varr. *achates* (Ziegl.), *ichthyomma* (Held.), *rhætica* (Mouss.), and *cisalpina* (Stabile) = *vittata* (Jan.) and var. n. *adamii*. JB. mal. Ges. pp. 192–213.

[*Tachea*] *Helix nemoralis* and *hortensis*. H. Schmidt discusses their differences in colour of shell and disposition of bands; F. Koch makes some observations on their local occurrence in Mecklenburg, Rhenish Prussia, and Switzerland, and mentions some apparently intermediate specimens, possibly hybrids; and C. Arndt states that the offspring of unicolorous specimens is partly banded. Arch. Ver. Mecklenb. xx. pp. 130–143.

[*Tachea*] *Helix atro-labiata* (Kryn.), several varr., *tigiana* (Gerv.), *punica* (Morelet), *massylæa* (Morelet), *rerayana* (Mouss.), *jourdaniana* (Bourg.), and *constantina* (Forbes) var., described and figured; W. Kobelt, Iconographie, pp. 1–5, pls. xci. & xcii. figs. 970–981.

[*Tachea*] *Helix tingitana* and *bleicheri*, spp. nn., Paladilhe, R. Z. (3) iii. p. 78, pl. ix. figs. 4–6 & 1–3, Tangiers.

(*Pomatia*.) The 22 known species of this sub-genus, living in Europe and Western Asia, reviewed by Kobelt, Nachr. mal. Ges. 1875, pp. 65–71.

Helix. Asiatic species :—

Helix anserina (Theob.), Shan Provinces, and *andersoni* (Blanf.), Bhamo and Yunnan, Hanley & Theobald, Conch. Ind. p. 46, pl. cxii. figs. 7–10; *H. acalles* (Pfr.), Nilgherries, *convexiuscula* (Pfr.), Ceylon, *euomphalos* (Blanf.), Nilgherries, *conulus* (Blanf.), Aracan, *miccyla* (Bens.), Ceylon, *vidua* (Blanf., MS.), Khasi Hills, *patane* (Bens.), Darjeeling, *feddeni* (Blanf.), Pegu, *shiplayi* (Pfr.), Anamally Hills, *nepos* (Pfr.), Ceylon, and *sericata* (Godwin-Austen), North Cachar; *iid. l. c.* pp. 52 & 53, pls. cxxviii.–cxxxii.

Helix pulvisculum, Issel, Ann. Mus. Genov. vi. [1874] p. 406, pl. v.

figs. 24–27, Borneo; *H. fimbriosa*, E. von Martens, JB. mal. Ges. ii. p. 128, pl. iii. fig. 6 (and 122), Kiukiang, China; *H. papilliformis*, Kobelt, Nachr. mal. Ges. 1875, p. 56, Nippon, Japan, allied to *japonica* (Fér.); *H. senckenbergiana*, *amaliæ* [= *callizona*, Crosse], and *brandti*, id. *l. c.* pp. 55 & 56, Nippon, Japan; *H. tetrodon*, Möllendorff, JB. mal. Ges. ii. p. 218, Prov. Chi-li, N. China, very near *yantaiensis* (Crosse); *H. angusticollis*, *triscalpta*, and *kiangsinensis*, E. v. Martens, SB. nat. Fr. 1875, p. 2, Mal. Bl. xxii. pp. 185 & 186, and in Pfeiffer's Novitat. Conch. iv. pl. cxxxiv. figs. 7–10, 1–4 & 15–17, banks of Lake Poyang, Kiangsi, China; spp. nn.

Helix (*Fruticicola*) *kalganensis* and (*Acusta*) *lineolata*, spp. nn., Möllendorff, *l. c.* pp. 216 & 217, Prov. Chi-li, China.

Helix delibrata (Bens.), var. n. *fasciata*, H. H. Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, p. 1, pl. i. fig. 1, West Khasi Hills.

Helix stoliczkana (Nevill) from Central Asia, previously indicated by the Recorder, SB. nat. Fr. 1875, p. 97.

Helix (*Pomatia*) *sieboldtiana* (Pfr.), jaw and radula; Binney, P. Ac. Philad. 1875, p. 250, pl. xxi. fig. 8.

Helix (*Dorcasia*) *pyrozona* (Phil.), jaw and radula; *id. l. c.* p. 251, pl. xx. fig. 8.

Helix (*Plectopylis*) *trilamellaris*, sp. n., Godwin-Austen, P. Z. S. 1875, p. 43, Burma. *H. dextrorsa* (cujus?) is not a variety of *refuga* (Gould), but a distinct sp., and *liophis* (Bens.) = *refuga* (Gould); *id. l. c.* p. 44.

Helix tectum-sinense and *richthofeni* (Martens); Pfeiffer, Novitat. ix. pl. cxxxiv. figs. 5 & 6, 11–14, Province Shantung, China.

Helix (*Camena*) *latilabris*, sp. n., Möllendorff, JB. mal. Ges. ii. p. 124, Kiukiang on the Yangtsekiang; this is scarcely distinct from *quæsita* (Fér.), E. v. Martens, *tom. cit.* p. 129. *H.* (*C.*) *tchiliensis*, sp. n., Möllendorff, *l. c.* p. 217, Province Chi-li, N. China [= *pekiniensis*, Desh.].

Helix (*Obbina*). Notes on the bands and variations of *H. rota*, *scrobiculata*, *moricandi*, *lasalii*, *listeri*, *bigonia*, and *marginata*, and arrangement of the known species in natural sequence; E. v. Martens, JB. mal. Ges. xxiii. pp. 157–163.

[*Cochlostyla*] *Helix leytensis* (Pfr.) described from more perfect specimens; H. Crosse, J. de Conch. xxiii. pp. 133–136, pl. vi. fig. 3. [Stated by the Recorder in 1867 to have the edge of the aperture reflexed.]

Helix. African species:—

Helix grandidieri, Crosse & Fischer, J. de Conch. xxiii. p. 226, Madagascar, allied to *H. goudotiana* (Fér.); *H. bewsheriana*, Morelet, *l. c.* p. 23, pl. i. fig. 1, Rodriguez Island; *H. cyclaria* and *boryana*, id. *l. c.* p. 31, Mauritius, the former subfossil: spp. nn.

Helix ochroleuca (Férussac) = *rufo-zonata* (Fér.) from Mauritius; Nevill, J. A. S. B. (n.s.) xliv. pt. 2, p. 104.

Helix (*Stylodon*) *studeriana* (Fér.). Jaw and radula; Binney, Ann. Lyc. N. York, xi. p. 172, pl. xiv. fig. c, viviparous.

Eurycratera farafanga, sp. n., H. Adams, P. Z. S. 1875, p. 389, pl. xlv. fig. 1, Madagascar.

Helix. Species from Australia :—

Helix dictyodes (Pfr.). Jaw smooth, radula agreeing with that of typical *Helix*, a distinct arrow-bag; P. Fischer, J. de Conch. xxiii. pp. 272–275, pl. xiv. figs. 3–6.

Helix astur (Souverbie). Jaw smooth, with median projection, radula as usual in *Helix*; Binney, P. Ac. Philad. 1875, p. 248, pl. xx. figs. 11 & 12.

Helix vimontiana (Crosse, 1874), J. de Conch. xxiii. p. 217, pl. ix. fig. 2, New Caledonia [perhaps a young shell].

Helix convicta (Cox). Jaw [oxygnath] and radula; Binney, *l. c.* p. 251, pl. xxi. fig. 7.

Helix (*Merope*) *fringilla* (Pfr.). Jaw and radula, the latter somewhat approaching that of *Orthalicus*; id. Ann. Lyc. N. York, xi. p. 175, pl. xiv. fig. A, and pl. xv. fig. A.

Helix (*Hadra*) *mourilyani*, *johnstonii*, *hilli*, *coxenæ*, and *mossmanni*, Queensland, and *bellenden-kerensis*, N.E. Australia, spp. nn., J. Brazier, P. Z. S. 1875, pp. 31–33, pl. iv. figs. 1–6.

Helix forrestiana, N.W. Australia, and *broughami*, Port Lincoln, S. Australia, spp. nn., G. F. Angas, P. Z. S. 1875, pp. 389 & 390, pl. xlv. figs. 3 & 4.

Helix (*Xanthomelon*) *daintreei*, sp. n., Brazier, *l. c.* p. 33, pl. iv. fig. 8, Queensland.

Helix. North American Species :—

Helix limitaris, sp. n., G. M. Dawson, Rep. Brit. N. Amer. Boundary Comm. 1875, p. 347, Waterton Lake, Rocky Mountains.

Helix (*Microphysa*) *ingersolli*, sp. n., Bland, Ann. Lyc. N. York, xi. p. 151, with woodcut, S.W. corner of Colorado; jaw ribbed, teeth as usual in *Helix*. Jaw and radula described; *id. l. c.* p. 171, pl. xii. fig. E, and pl. xviii. fig. C.

Helix (*Stenotrema*) *spinosa* (Lea), *stenotrema* (Fér.), and *barbigera* (Redf.). Genital system; Binney, Ann. Lyc. N. York, xi. p. 174, pl. xi. fig. 3.

Helix (*Triodopsis*) *van-nostrandi*, sp. n., Bland, Ann. Lyc. N. York, xi. p. 200, South Carolina. *H.* (*T.*) *tridentata* (Say), *fallax* (Say), *hopetonensis* (Shuttl.), *rugeli* (Shuttl.), *van-nostrandi* (Bland), and *harfordiana* (Coop.), genital system of all, radula and jaw of the two last; Binney, *tom. cit.* pp. 174 & 175, pl. xvii. figs. 8, 11, 12, 14, 18 & 19, and pl. xviii. fig. A.

Helix (*Polygyra*) *leperina* (Gould), *auriculata* (Say), *uvulifera* (Shuttl.), *septemvolva* (Say), *febigeri* (Bland), *cereolus* (Mhlfld.), and *carpenteriana* (Bland), genital system of all, radula of the second and the two last; Binney, Ann. Lyc. N. York, xi. pp. 176 & 177, pl. xii. fig. 6, pl. xiii. fig. K, pl. xvi. fig. C, pl. xviii. fig. B & E.

Helix (*Mesodon*) *exoleta* (Binn.). Radula; *id. l. c.* p. 178, pl. xvi. figs. D & E.

Helix (*Arionta*) *ruficincta* (Newc.), *carpenteri* (Newc.), *ayresiana* (Newc.), *exarata* (Pfr.), *diabloensis* Coop.), *arrosa* (Gould), and *fact* Newc.), genital system of all, radula of the second, fifth and last; *iv*.

l. c. pp. 178–180, pl. xii. fig. 5, pl. xiii. fig. A, pl. xv. figs. B & G, pl. xvii. figs. 9 & 13.

Helix (*Euparypha*) *tryoni* (Newc.). Radula and genital system ; *id. l. c.* p. 180, pl. xvii. figs. 5 & 10.

Helix. Species from Central and South America :—

[*Stephanoda*] *Helix coactiliata* (Fér.) = *parkeri* (Tryon), found in Trinidad and Venezuelan Guiana; R. J. Lechmere Guppy, P. Z. S. 1875, p. 318 (known hitherto from Central America).

[*Stephanoda*] *Helix wallisiana* (Mousson) ; Pfeiffer, Novitat. Conch. iv. p. 142, pl. cxxxiii. figs. 1–3, South America.

Helix (*Fruticicola*) *pubescens* (Pfr.). Jaw and radula ; Binney, Ann. Lyc. N. York, xi. p. 172, pl. xv. figs. C & D.

Helix (*Dentellaria*) *dentiens* (Fér.). Radula; *id. l. c.* p. 173, pl. xvi. fig. G.

Helix (*Thelidomus*) *auricoma* (Fér.), jaw (ribbed), radula, and genital system described ; *id.* P. Ac. Philad. 1875, p. 248, pl. xxi. fig. 3, and pl. xix. fig. 3. *H.* (*T.*) *aspera* (Fér.), genital system ; *id.* Ann. Lyc. N. York, xi. p. 173, pl. xii. fig. 2. *H.* (*T.*) *jamaicensis* (Chemn.), jaw, radula, and genital system ; *id. ibid.* pl. xiv. fig. B, and pl. xiii. fig. F.

Helix (*Aglaia*) *yocotulana*, sp. n., Yocotula, Sierra de Belen, and *estella* (Orb.), var. n. *tucumanensis*, western slope of the Sierra de Tucuman ; Döring, Bol. Ac. Cordova, i. pp. 446 & 447.

Eurycampta monographa (Burmeister), sp. n., allied to *H. trenquelleonis* (Gratel.) ; in both, the jaw is 4-ribbed, crenate, the arrow biangulate, slightly curved, and two short mucous follicles present; *id. l. c.* pp. 448–451, Sierra de Catamarca.

Helix, new sub-division *Epiphragmophora* ; shell umbilicate, fusco-calcareous, one-banded, peristome expanded, nearly circular ; a solid calcareous epiphragma ; jaw 4-ribbed, crenate ; arrow-bag lengthened ; two stalked mucous follicles ; receptaculum seminis short-stalked, with appendage. *H. hieronymi*, sp. n., Sierra de Catamarca, and *H. cuyana* (Strobel) ; *id. l. c.* pp. 446–448, the latter figured by Strobel, Mat. mal. Argent. pt. iii. pl. i. fig. 2.

Helix (*Caracolus*) *sagemon* (Beck), jaw smooth with median projection, radula and genital system described ; Binney, P. Ac. Philad. 1875, p. 249, pl. xxi. fig. 4, and pl. xix. fig. 3. *H.* (*C.*) *arangiana* (Poey) ; *id. l. c.* p. 250, pl. xxi. figs. 1 & 2.

Helix (*Eurycratera*) *crispata* (Fér.), genital system ; *id.* Ann. Lyc. N. York, xi. p. 174, pl. xii. fig. 8.

Helix (*Eurycratera*) *jamaicensis* (Chemn.) agrees in jaw and radula with the group *Thelidomus* ; Bland, Ann. Lyc. N. York, xi. pp. 146 & 147.

Helix (*Eurycratera*) *obliterata* (Fér.), comes from Hayti ; *id. l. c.* p. 148 [already found by Dr. Weinland in that island].

Helix (*Isomeria*) *ænigma* and *vexans*, spp. nn., Dohrn, Nachr. mal. Ges. 1875, pp. 56 & 57, New Granada.

[*Amphidromus*] *Bulimus perversus* (L.) Morelet thinks that *B. comes* (Pfr.), *sultanus* (Lam.), *chloris* (Rv.), *dohrni* (Pfr.), and *cambodiensis* (Rv.) may be united as varieties with *perversus*, specimens of the first four having been found in Cochin China, and of *dohrni* in Pulo Condone; a var. of *perversus* with pale green bands, common in Cochin China, is described [*comes* ?]. *B. mouhoti* (Pfr.) and *glaucolarynx* (Dohrn) are distinguished from *schomburgki* (Pfr.), and *B. cruentatus*, sp. n., from Cambodia, is described; Morelet, Séries Conch. iv. pp. 254–265, the last figured, pl. xiii. fig. 5.

[*Amphidromus*] *Bulimus adamsi* (Rv.) from Borneo, variations in colour; Issel, Ann. Mus. Genov. vi. p. 412, pl. v. figs. 28 & 29.

Bulimus appuni and *tetensi*, spp. nn., Dunker, Nachr. mal. Ges. 1875, pp. 28 & 29, and JB. mal. Ges. ii. pp. 220 & 221, pl. vi. figs. 1, 2 & 3, 4, Sierra Nevada di Sta. Marta, New Granada.

Bulimus grevillii (Sow.); Pfeiffer, Novitat. Conch. iv. p. 143, pl. cxxxiii. figs. 4 & 5, Quito.

Bulimus (*Plecochilus*) *guildingi*, sp. n., Dohrn, Nachr. mal. Ges. 1875, p. 57, New Granada.

Bulimus constrictus, var. n. *tateanus*, R. J. Lechmere Guppy, P. Z. S. 1875, p. 322, Venezuelan Guiana.

Odontostomus multiplicatus, *subsexdentatus*, *olainensis*, *riojanus*, *martensi*, *maculosus*, *profundidens*, *tumulorum*, *pucaranus*, and *philippii*, spp. nn., Cordova and Rioja, Argentine States; Döring, Bol. Ac. Cordova, i. pp. 452–456.

Bulimus (*Odontostomus*) *leptodon*, sp. n., E. v. Martens, JB. mal. Ges. ii. p. 276, Argentine States.

[*Macrodontes*] *Bulimus cordovanus* (Pfr.) comes from Cordova, in the Argentine States, not from Mexico; Dohrn, Mal. Bl. xxii. p. 202.

Placostylus [see below, p. 191.]

Limicolaria bourgignati (Paladilhe, see Zool. Rec. x. pp. 165 & 167) = *Stenogyra gracilis* (Hutt.), var.; Blanford, J. A. S. B. (n.s.) xlv. pt. 2, p 45.

Achatina schweinfurthi (Martens), Pfeiffer, Novitat. iv. p. 142, pl. cxxxii. figs. 1 & 2, Niam-niam country, Central Africa.

Perideris torrida (Gould, *nec* Pfr., which is *saulcydi*, Joannis), *mucida* (Gould), and *interstincta* (Gould); notes by Dohrn, Mal. Bl. xxii. pp. 205 & 206.

Carelia turricula (Mighels) figured; JB. mal. Ges. ii. p. 225, pl. vii. fig. 1, Sandwich Islands.

Buliminus (*Rhachis*) *pallens* (Jonas); note by H. Dohrn, Mal. Blatt. xxii. p. 203.

[—] *Bulimus semannii*, sp. n., Morelet, J. de Conch. xxiii. p. 282, Djurjura, Kabylia.

Buliminus fabianus, sp. n., Gredler, Nachr. mal. Ges. 1875, p. 88, Central Africa, country of the Shilluk negroes.

[—] *Bulimus samavaensis*, *cerealis*, and *vermiformis* (Paladilhe), = the Indian *B. canopictus*, Hutt., var., but this is very probably distinct from the North American *B. fallax* (Say, as *Pupa*); Blanford, J. A. S. B. (n.s.) xlv. pt. 2, p. 45 [*cf.* Zool. Rec. x. p. 166].

Glessula orthoceras, West Khasi Hills, *illustris*, North Cachar and Jaintia Hills, 6000 and 1000 feet, *burrailensis*, and *butleri*, Eastern Burrail range, 7000 and 6000 feet, spp. nn., H. H. Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, pp. 2–4, pl. i. figs. 4–7, the first allied to *cassiaca* (Bens.).

[*Glessula*] *Achatina peguensis* (Blanf. ?), Irawadi Valley, *beddomii* (Blanf.), Anamallay Hills, *illustris* (Godwin-Austen, MS.), Hanley & Theobald, Conchol. Ind. p. 41, pl. cii. figs. 6, 8, & 9.

Achatina (*Glessula*) *senator* and *isis*, spp. nn., Hanley, P. Z. S. 1875 [1876], p. 606, Southern India.

Cionella columna, sp. n., Clessin, JB. mal. Ges. ii. p. 41, pl. ii. fig. 4, Germany and Russia [scarcely distinct from *lubrica* (Müll.)]

[*Cionella*] *Cochlicopa tridens* (Pult.) var. *crystallina* (Dupuy) found at several localities near Birmingham, by G. S. Tye, Q. J. Conch. i. p. 7.

Ferussacia mabilliana, sp. n., Paladilhe, R. Z. (3) iii. p. 89, pl. ix. figs. 19–22, Tangiers.

Lovea, g. n.; mantle thinly spread over the outside of the shell, and extending like a tongue backwards behind the posterior corner of the aperture. Tail abruptly truncate, with a mucous gland. *Achatina tornatellina*, *melampoides*, *triticea*, and *oryza* (Lowe), Madeira, jaw and radula described. Watson, P. Z. S. 1875 [1876], pp. 677–680, with woodcuts.

Cæcilianella isseli (Paladilhe, 1872), = *balanus* (Bens., 1849); Bland, J. A. S. B. (n.s.) xlv. pt. 2, figs. 41 & 43.

Albia gundlachi (Pfr., as *Achatina*) four tentacles, no eyes, jaw and radula described, they agree also with those of *Cæcilianella*; Bland, Ann. Lyc. N. York, xi. pp. 152–154 & 185, pl. xiii. figs. D. & H.

Tornatellina aperta (Pease) and *oblonga* (Pease), radula agreeing with that of *Achatinella*; Binney, Ann. Lyc. N. York, xi. pp. 189 & 190, with woodcut.

Partula. Jaw, radula, and genital system, ovoviviparous; Binney, P. Ac. Philad. 1875, pp. 244–247, pl. xix.

Achatinella marmorata (Gould), *auricula* (Fér.) (*Leptachatina*) *textilis* (Pfr.), (*Laminella*) *obesa* (Newc.), (*Newcombia*) *venusta* (Mighels); radula described by Binney, Ann. Lyc. N. York, xi. pp. 190 & 191. pl. xiv. figs. D, G, & H. The arrangement of the sub-genera is discussed; according to the radula, two groups are to be distinguished, the one comprising Gulick's sub-genera *Achatinella*, *Bulimella*, *Apex*, *Partulina*, and *Auriculella*, the other his *Laminella*, which is arboreal, and *Amastra* and *Leptachatina*, both terrestrial; *id. l. c.* pp. 192–194.

Stenogyra hasta (Pfr.), jaw and radula; Binney, P. Ac. Philad. 1875, p. 251, pl. xx. figs. 2 & 3. *S. juncea* (Gould), radula; *id.* Ann. Lyc. N. York, xi. p. 186.

[*Stenogyra*] *Bulimus paivæ* (Lowe, 1860), = *Rumina decollata*, var. *maura* (Crosse, 1874); JB. mal. Ges. ii. p. 100.

[*Stenogyra*] *Achatina turricula* (Martens); Morelet, Séries Conch. iv. p. 267, pl. xii. fig. 3, Siam.

Stenogyra wallisi (Mouss.); Pfeiffer, Novitat. iv. pl. cxxxiii. figs. 10 & 11, South America.

Stenogyra martensi (Strobel); Strobel, Materiali Malac. Argent. pt. iii. pl. i. fig. 5, Argentine States.

Rhodea gigantea (Mouss.) figured; JB. mal. Ges. ii. p. 222, pl. vi. fig. 5.

Rhodea wallisiana, sp. n., Dohrn, Nachr. mal. Ges. 1875, p. 57, New Granada.

Clausilia. The arrangement of the European species, chiefly those belonging to the groups *Siciliaria* (Vest), *Medora* (Ad.), *Herilla* (Ad.), *Delima* (Hartm.), *Dilataria* (Vest), *Alinda* (Ad.), and *Pirostoma* (Vest), is revised and ameliorated in many instances by O. v. Möllendorff, Nachr. mal. Ges. 1875, pp. 17–28; those of the group *Agathylla* (Ad.), by Westerlund, *tom. cit.* pp. 75, 76, & 81.

Clausilia. 80 species described and figured on 9 plates in Reeve's Conchologia Iconica, parts 320–323: among them, not before figured, are *C. tristrami*, Pfr., pl. v. fig. 45, Atlas, and *C. stimpsoni* (A. Ad.), pl. v. fig. 47, Japan.

Clausilia oleosa and *longicollis*, spp. nn., Westerlund, *l. c.* pp. 75 & 76, Dalmatia; *C. brevissima* (Benoit), var. n. *collini*, id. *l. c.* p. 83, Syracuse; *C. pauli* (Mabille) is to be placed near *filograna* (Ziegl.), *id. l. c.* p. 84.

Clausilia pumicata, sp. n., Paladilhe, Ann. Sci. Nat. (6) ii. art. 8, p. 2, pl. xxi. figs. 7–10, S. France.

Clausilia (Phædusa) chinensis, sp. n., Möllendorff, JB. mal. Ges. ii. p. 124, Kiukiang. Renamed *mœllendorffi*, the name *chinensis* being preoccupied; E. v. Martens, *tom. cit.* p. 130.

Nenia karsteniana (Dohrn), and *perarata* (Martens) figured; JB. mal. Ges. ii. p. 227, pl. vii. figs. 3, 4, & 5, 6, New Granada.

Pupa. Westerlund publishes a list of all European species and varieties, viz., 30 species of the sub-genus *Torquilla*, 13 *Modicella* (Ad.), 12 *Pupilla*, 5 *Orcula* (Held), 6 *Isthmia*, 27 *Vertigo*, 1 *Charadrobia*, 6 *Sphyradium*, 2 *Scopelophila*, 1 *Cylindrus*, and two species of the genus *Alloglossa* (Lindstr.); Mal. Bl. xxii. pp. 120–131. *P. circumplicata* (Mouss., MS.), Carinthia, and *ventilatoris* (Parreyss, MS.), Dalmatia, described; *id. l. c.* p. 131. Critical notes on *P. biplicata* (Mich.) and *truncatella* (Pfr.), *id. l. c.* pp. 134 & 135.

Pupa. 16 species figured on 2 plates in Reeve's Conchologia Iconica, pt. 322.

Pupa. The occurrence of a spiral lamella within the aperture of some species stated by Küster, Ber. Ges. Bamb. x. [already described from young specimens of *P. uva*, *umbilicata*, &c., by the Recorder, Mal. Bl. 1860, and by C. Jickeli]. On the difference between *P. pachygastra* (Ziegl.), and *frumentum* (Drap.); *id. ibid.*

Pupa fusiformis, var. *eximia* (Pfr.), is considered a good species; *P. alpicola* (Charp., 1837) = *aridula* (Held, 1837–1846), = *sterri* (Voith, 1838). Westerlund, Nachr. mal. Ges. 1875, pp. 73 & 74.

Pupa planguncula (Bens.) Orissa, *huttoniana* (Bens.) Simla, *himalayana* (Hutt.), Simla, *crezardi* (Blanf., MS.), Singhur Hill, Dekan, *eurina* (Bens.), river Gogra, *scriola* (Bens.), Orissa, *gutta* (Bens.), Kunawar, *diopsis* (Pfr.), Nerbudda; Hanley & Theobald, Conch. Ind. p. 41, pl. ci. figs. 2–10.

Pupa helodes and *muelleri*, spp. nn., Morelet, J. de Conch. xxiii. pp. 31 & 32, Mauritius, both sub-fossil.

Pupa pazi (Hidalgo) figured in J. de Conch. xxiii. pl. vii. fig. 7, South America.

Strophia incana (Binn). Radula; Binney, Ann. Lyc. N. York, xi. p. 186, pl. xiii. fig. J.

[*Vertigo*] *Pupa minutissima*, var. n. *odontostoma*; Westerlund, Mal. Bl. xxii. p. 132.

[*Vertigo*] *Pupa kuesteriana*, sp. n., distinct from *moulinsiana* (Dupuy), = *lævigata* (Kokeil), = *ventrosa* (Heynem.), *id. l. c.* pp. 133 & 132, Mergentheim, Württemberg.

Vertigo malayana, sp. n., Issel, Ann. Mus. Genov. vi. [1874], p. 416, pl. v. figs. 30–32, Borneo.

Orthalicidæ (Goniognatha).

Placostylus. The species living in the Fiji islands, 14 in number, are enumerated by H. Crosse, and arranged into two sub-divisions:—

I. *Euplacostylus*: hinder part of the body obtuse; edge of the aperture thickened; live on the ground: *Bulimus korocnsis* (Garrett), pl. i. fig. 5, *kantavuensis* (Crosse), *seemanni* (Dohrn), *moussoni* (Graeffe), pl. i. fig. 6; *elobatus* (Gould), with var. *minor*, pl. i. fig. 7, = *colubrinus* (Pfr.), and *hoyti* (Garrett), pl. i. fig. 8.

II. *Charis* (Alb.): hinder part of the body flat and rounded; edge of the aperture less thickened; live on trees; *Bulimus fulguratus* (Jay), *crassilabrum* (Garrett), *rugatus* (Garrett), *rambiensis* (Garrett), *guanensis* (Garrett), *ochrostoma* (Garrett), *malleatus* (Jay), and *morosus* (Gould), pl. viii. fig. 1. J. de Conch. xxiii. pp. 1–21, the last figured, also JB. mal. Ges. ii. pl. vii. figs. 7 & 8.

[*Placostylus*] *Bulimus porphyrostomus* and *ouveanus*, varr., with white aperture; *id. l. c.* p. 218, pl. viii. figs. 2 & 4. *B. eddystonensis* (Pfr.), from New Caledonia, not Eddystone Island, re-named *hienguenensis*; id. *ibid.* figs. 3 & 4. *B.* (*Pl.*) *morosus* (Gould) figured; JB. mal. Ges. ii.

[*Placostylus*] *Bulimus alexander*, var.; H. Crosse, J. de Conch. xxiii. p. 139, pl. vi. fig. 4, New Caledonia.

Orthalicus undatus (Brug.), radula; Binney, Ann. Lyc. N. York, xi. p. 181, pl. xiii. fig. E.

Porphyrobaphe powisiana (Petit) figured in JB. mal. Ges. ii. p. 223, pl. vii. fig. 2.

Bulimulus (Leach). Fischer & Crosse adopt this genus in a somewhat extended sense, and divide it into two sections, on account of the jaw and radula: *Goniognathinus* (n.) and *Orthotomium* (n.) the first subdivided into the groups or sub-sections *Drymæus*, *Liostracus*, *Scutalus*, *Mesembrinus*, *Leptomerus*, and *Peronæus* (all of Alb.), the latter into *Leptobyrsus* (n.), *Thaumastus* (Alb.), and *Globulinus* (n.) = *Mormus* (Tryon, *nec* Albers). Moll. terr. et fluv. de Méxique, pt. v. pp. 465–478.

The following Mexican or Central American species are fully described and figured by Fischer & Crosse, *tom. cit.*:—

Bulimulus (*Drymæus*) *lilacinus* (Rv.), *delattrei* (Pfr.), emended name for

lattrii, chiapasensis (Pfr.), *castus* (Pfr.), *botterii*, sp. n., p. 487, pl. xxiv. fig. 10, *serperastrus* (Say), *paivanus* (Pfr.), *attenuatus* (Pfr.), with *keferssteini* (Pfr.) as variety, *hepatostomus* (Pfr.), *lirinus* (Morelet), *sulphureus* (Pfr.), *liliaceus* (Fér.), *moricandi* (Pfr.), *aurifluus* (Pfr.), pp. 479–499, pls. xx., xxi. & xxiv.

Bulimulus (*Liostracus*) *alternans* (Beck) with *ziegleri* (Pfr.) as variety, *tropicalis* (Morelet), pp. 500–506, pls. xxiii. & xx.

Bulimulus (*Scutalus*) *pallidior* (Sow.), *gabbi*, sp. n., p. 517, pl. xx. figs. 19 & 20, *xantusi* (Binn.), *cucullus* (Morelet), *ghiesbreghti* (Pfr.), *rudis* (Anton), *jonasi* (Pfr.), *hegewischi* (Pfr.), *uhdeanus* (Martens) var., *cuernavacensis*, sp. n., p. 532, pl. xxiii. fig. 11, *droueti* (Pfr.), *sargi*, sp. n., p. 534, pl. xxiv. fig. 6, *sporlederi* (Pfr.), *gealii* (H. Ad.), *inglorius* (Rv.), pp. 507–538, pls. xx., xxi. & xxiii. *B. humboldti* (Pfr.) = *mexicanus* (Lam.), p. 541.

Bulimulus (*Mesembrinus*) *inscendens* (Binn.), p. 544, pl. xxi. fig. 1.

Bulimulus sargi, Guatemala, and *botteri*, Orizaba, Mexico, spp. nn., Crosse & Fischer, J. de Conch. xxiii. pp. 52 & 53.

[*Bulimulus*] *Bulimus ochseni* (Dkr.), *colmerioi* (Hidalgo), *scalarioides* (Phil.), *atacamensis* (Pfr.), and *fontanii* (Orb.), from South America, figured by Hidalgo, in J. de Conch. xxiii. pl. vii. figs. 2–6 (pp. 128 & 129).

Bulimulus pallidior (Sow.), genital system, and *B. limnæoides* (Fér.), jaw and radula; Binney, Ann Lyc. N. York, xi. p. 186, pl. xii. fig. 1, pl. 16, figs. A & B. *B. bahamensis* (Pfr.) from Hayti; Bland, *tom. cit.* p. 199.

Bulimulus cordilleræ and *mendozanus* (Strobel), Strobel, Materiali Malac. Argent. pt. iii. pl. i. figs. 3 & 4.

Bulimulus (*Scutalus*) *stelzneri*, sp. n., Dohrn, Mal. Bl. xxii. p. 202, Cerro de Chepe, Argentine States.

Bulimulus (*Nesiotes*) *asperatus* (Albers), Pfeiffer, Novitat. iv. pl. cxxxiii. figs. 8 & 9, Galapagos Islands.

[*Otostomus*] *Bulimus peelii* (Reeve); *id. l. c.* p. 144, pl. cxxxiii. figs. 6 & 7, Ecuador.

Macroceramus turricula (Pfr.), jaw and radula; Binney, P. Ac. Philad. 1875, p. 251, pl. xx. fig. 9.

Macroceramus johannis, Pfeiffer, Mal. Bl. xxii. p. 119, Porto Rico.

Cylindrella. Notes on its subdivisions and groups, chiefly according to Crosse & Fischer; C. P. Gloyne, Q. J. Conch. i. pp. 51–54.

Cylindrella. 73 species described and figured on 8 plates by Sowerby, in Reeve's Conchologia Iconica, pts. 320 & 321, including (apparently new) *C. tumidiora*[*-or*], pl. viii. fig. 65, locality unknown.

Cylindrella cyclostoma (Pfr.), (*Gongylostoma*) *elegans* (Pfr.), and (*Thaumasia*) *humboldtiana* (Pfr.), radula; Binney, P. Ac. Philad. 1875, pp. 251 & 252, pl. xx. fig. 6.

Cylindrella poeyana (Orb.) and *ornata* (Gundl.), jaw and radula; *id.* Ann. Lyc. N. York, xi. p. 187, pl. xv. fig. F.

Amphibulima rawsonis, sp. n., Bland, Ann. Lyc. N. York, xi. p. 199, Island of Montserrat, West Indies: its jaw, radula, and genital system; Binney, *tom. cit.* pp. 187 & 188, pl. xiii. fig. C, and pl. xiv. fig. E.

Pellicula depressa (Rang), and *appendiculata* (Fischer), shells comparatively described, both from Guadeloupe; P. Fischer, J. de Conch. xxiii. pp. 276 & 277, pl. xiv. figs. 1 & 2.

Succineidæ (Elasmognatha).

Succinea campestris (Say), genital system, *pallida* (Pfr.), and *papillata* (Pfr.), jaw and radula; Binney, Ann. Lyc. N. York, xi. p. 189, pl. xvii. figs. 6 & 7.

Succinea alpestris, sp. n., Möllendorff, JB. mal. Ges. ii. p. 219, Mt. Po-chwa-schan, N. China.

Succinea cochinchinensis (Pfr.), and *tenuis* (Morelet, 1865); Morelet, Séries Conch. iv. pp. 243 & 244, pl. xii. figs. 4 & 5, Cochin China.

Succinea peruviana (Philippi) figured; Hidalgo, J. de Conch. xxiii. pl. vii. fig. 1.

Auriculidæ.

Auricula malchi (Müll.) = *subnodosa* (Metcalfe), from Borneo; anatomical notes by Issel. Ann. Mus. Genov. vi. pp. 420 & 421.

Auricula (*Rhodostoma*) *dyeriana*, sp. n., J. E. T. Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 26, Tasmania.

Plecotrema siamensis [*-se*], sp. n., Morelet, Séries Conch. iv. p. 273, pl. xiii. fig. 6, Siam.

Melampus siamensis (Martens, 1865) redescribed; *id. l. c.* p. 271.

Melampus dupontianus, sp. n., *id.* J. de Conch. xxiii. p. 25, pl. i. fig. 2, Rodriguez Island.

Canefria, g. n. Shell small, cylindrico-conical, with a somewhat shining epidermis; apex decollate; few whorls; suture somewhat irregular; aperture simple, without teeth or plaits. Probably no operculum. *C. splendens*, sp. n., Issel, Ann. Mus. Genov. vi. 1874, p. 418, pl. vi. fig. 1–3. [As the radula has not been examined, the systematic place of this new genus is very uncertain.]

Lithotis and *Lantzia*. A. Morelet calls attention to the likeness of the shells in these genera, but states that in the latter the tentacles are flat and triangular, and the eyes situated in front of them; J. de Conch. xxiii. pp. 280 & 281. [*Cf.* Zool. Rec. ix. p. 1620, and xi. p. 176.]

Francesia [see *suprà*, p. 181, among the *Streptaxidæ*].

Limnæidæ.

The power of the *Limnæidæ* of living for some time under water without coming up for air, already known to Moquin-Tandon and others, is recorded by Forel, who states that the pulmonary cavity in such specimens contains water, and by T. v. Siebold, who watched different species of *Limnæa* and *Planorbis* for some time without seeing them come to the surface of the water. SB. bayer. Ak. 1875, pp. 39–54, abstract in Zool. Gart. 1875, p. 156, and Nachr. mal. Ges. 1875, pp. 53 & 54.

Limnæa pevegra, varr. nn. *ullepitschi*, *producta*, and *alpicola*, Westerlund, Nachr. mal. Ges. 1875, pp. 85 & 86. *L. gingivata* (Goupil) = *glabra* (Müll.), juv.; *id. ibid.*

Limnæa reynesi, sp. n., Paladilhe, Ann. Sci. Nat. (6) ii. art. 8, p. 4, pl. xxi. figs. 11–14, South France.

Limnæa virginiana (Lam.), = *spadicea* (Morelet, 1862), occurs in Siam and Cochin China; Morelet, Séries Conch. iv. p. 279, pl. xiii. fig. 10. *L. javanica* (Hasselt), = *succinea* (Mouss., *nec* Desh.) = *crosseana* (Mab. & Mesle, 1866), Siam and Cochin China; *id. l. c.* p. 277.

Limnæa mauritiana, Morelet, J. de Conch. xxiii. p. 33, Mauritius.

Physa souanica, sp. n., Paladilhe, R. Z. (3) iii. p. 92, pl. ix. figs. 23–25, River Souani, near Tangiers.

Planorbis centrogyratus, sp. n., Tyrol, *ressmannianus*, sp. n., Transylvania, and *clessini*, var. *clausulatus* (Fér., Parr.), Heidelberg, Westerlund, Nachr. mal. Ges. 1875, pp. 86 & 87.

Planorbis dazuri (Mörch), distinguished from *spirorbis* (Müll.), and recorded from Russia; Clessin, JB. mal. Ges. ii. p. 37.

Planorbis exustus (Desh., 1834) = *indicus* (Bens., 1837), = *coromandelicus* (Fabr., Beck, 1837), = *circumspissus* (Morelet, 1862), Goa, Ceylon, Burma, and Cambodia; *P. compressus* (Hutt.), the young state of which is *P. saigonensis* (Crosse & Fischer, 1863); *P. dicælus* (Morelet, 1865, as *Helix*), Siam; Morelet, Séries Conch. iv. pp. 274–277, the last pl. xii. fig. 8.

Planorbis bavayi, sp. n., Crosse, J. de Conch, xxiii. p. 329, Guadeloupe.

Segmentina armigera (Say) var. n. *campestris*, G. M. Dawson, Rep. Brit. N. Amer. Boundary Comm. 1875, p. 349, Red River Valley, &c.

Carinifex ponsonbii, sp. n., Edgar Smith, P. Z. S. 1875 [1876], p. 536, with woodcut, California.

PULMONATA OPERCULATA.

L. Pfeiffer has published the first part of a third supplement to his "Monographia Pneumonopomorum," containing copies of the original descriptions of all species published subsequently to the second supplement. The systematic arrangement is nearly the same as in the former volumes, with the intercalation of new genera and sub-genera as follows (the number signifying the amount of known species):—

A. Opisthophthalma.

Fam. 1. Aciculacea: gen. *Acicula* (Hartm.) 12, *Geomelania* (Pfr.) 21, *Chittya* (Livesay) 1, *Truncatella* (Risso) a, *montanæ*, = *Blandiella* (Guppy) 8, b, *littorales*, 54, *Blanfordia* (A. Ad.) 4.

B. Ectophthalma.

Fam. 1. Cyclostomacea.

Sub-fam. Cyclotacea: *Cyathopoma* (Blanf.) 10, *Cyclotus* (Guild.) 12, *Opisthoporus* (Bens.) 16, *Mychopoma* (Blanf.) 2, *Rhiostoma* (Bens.) 6, *Spiraculum* (Pearson) 5, *Pterocyclus* (Bens.) 26, *Heterocyclus* (Crosse) 1, *Diadema* (Pease) [pre-occupied among the *Crustacea*, Echinoderms, and *Lepidoptera*, = *Garretia* (Pätel)] 3, *Calopoma* (A. Ad.) 1, *Alycæus* (Gray) a, *Orthalycæus* 26, b, *Charax* (Bens.) 18, c, *Dioryx* (Bens.) 20, *Hybocystis* (Bens.) 3.

Sub-fam. Diplommatinacea: *Opisthostoma* (Blanf.) 4, *Diplommatina* (Bens.), a, *normales* 49, b, *Diancta* (Martens) 4, c, *Nicida* (Blanf.) 6, d, *Arinia* (H. & A. Ad.) 2, e, *Palæna* (Semper) 19, f, *Moussonia* (Semper) 2, *Paxillus* (H. & A. Ad.) 5, *Clostophis* (Bens.) 1.

Sub-fam. Cyclophorea: *Craspedopoma* (Pfr.) 9, *Aulopoma* (Troschel) 4, *Cyclophorus* (Montf.), a, *Pterocycloidei*, including *Myxostoma* (Troschel) and *Scabrina* (Blanf.) 8, b, *normales* 179, c, *Lagochilus* (Blanf.) 5, d, *Ditropis* (Blanf.) 3, e, *Eupty-chia* (Crosse) 1, *Leptopoma* (Pfr.) 65.

Sub-fam. Pupinea; *Megalomastoma* (Guild), a, *Hainesia* (Pfr.), including *Dacrystoma* (Crosse), 3, b, *normales*, including *Coptochilus* (Gould), 26, *Tomocyclus* (Crosse & Fischer) 3, *Cataulus* (Pfr.) 17, *Rhaphaulus* (Pfr.) 5, *Streptaulus* (Bens.) 1, *Pupinella* (Gray), a, *normales* 3, b, *Papinopsis* (H. Ad.) 10, *Pupina* (Vignard), a, *Eupupina* (n.) 23, b, *Registoma* (Hass.) 12, c, *Hargravesia* (H. Ad.) 2, d, *Hyalopsis* (Pease) 1, e, *Callia* (Gray) 4.

Sub-fam. Licinea: *Jamaicia* (C. B. Ad.) 2, *Licina* (Gray) 6, *Choanopoma* (Pfr.) 55, *Cyclotopsis* (Blanf.) 3, *Ctenopoma* (Shuttl.) 26, *Diplopoma* (Pfr.) 1, *Adamsiella* (Pfr.) 17.

Sub-fam. Cyclostomea: *Lithidion* (Gray) 5, *Otopoma* (Gray) 19, *Cyclostomus* (Montf.), a, *Tropidophora* (Troschel) 36, b, *ecarinatæ* [European, African, and Caribbean] 91, *Tudora* (Gray) 94, *Leonia* (Gray) 2.

Sub-fam. Cistulea: *Cistula* (Gray) 42, *Chondropoma* (Pfr.) 100.

Sub-fam. Pomatiatea: *Pomatias* (Stud.) 39.

Sub-fam. Realiea: *Realia* (Gray), a, *Liarea* (Gray) 7, b, *Atropis* (n.) 32, c, *Japonia* (Gould) 3, d, *Scalinella* (Pease) 3, e, *Omphalotropis* (Pfr.) 72 [including several species belonging to *Assiminea*, e.g., *maculata* (Martens) = *carinata*, Lea, and probably others], ? *Cyclomorpha* (Pease) 2, *Cecina* (A. Ad.) 1.

Sub-fam. ? *Bourciera* (Pfr.) 2.

Fam. 2. Helicinacea.

Sub-fam. Stoastomea: *Stoastoma* (C. B. Ad), including *Electrina* (Gray), *Hemicyclostoma* (C. B. Ad.) and the seven genera of Chitty, as before, 83.

Sub-fam. Helicinacea: *Trochatella* (Swains.) 31 [with which the part finishes].

Cyclophoridæ.

Cyathopoma latilabre, South Canara Ghats, 2000–3000 feet elevation, *travancoricum*, Travancore Mountains, 3000 feet, and *shevaroyanum*, Shevaroys and Yellagherry hills, Salem district, Southern India, spp. nn., Beddome, P. Z. S. 1875, pp. 450 & 451, pl. liii. figs. 28–33. Notes on the operculum of this genus, *id. l. c.* p. 445.

Cyathopoma (*Jerdonia*) *nitidum* and *anamallayanum*, Anamallay Mountains, 6000 feet elevation, *blanfordi*, Tinnevally Mountains, 4000 feet,

album and *ovatum*, Yellagherry Mountains, 2500 feet, and the former perhaps also in Ceylon, *sivagherrianum*, Sivagherry Mountains, 3000 feet, *atro-setosum*, South Canara Ghats, 3000 feet, *elatum*, Golconda Hills, Vizagapatam, 3000 feet, *vitreum*, Sivagherry Mountains, 1000 feet, *seticinctum*, Anamallay Mountains, 2000 feet, and *ceylonicum*, Rambuddi waterfalls, Ceylon, spp. nn., *id. l. c.* pp. 445–450, pl. lii. figs. 12–20, and pl. liii. figs. 21–26.

Jerdonia phayrii (Theob.), Shan; Hanley & Theobald, Conch. Ind. p. 54, pl. cxxxv. fig. 3.

Opisthoporus biciliatus (Mouss.). Note on the animal, from specimens in spirits; Issel, Ann. Mus. Genov. vi. pp. 436 & 437, woodcuts.

Mychopoma (Blanf.), must on account of the operculum be referred to the *Jerdonia* section of *Cyathopoma*; Beddome, *l. c.* p. 445.

Pterocyclus (*Spiraculum*) *beddomii*, Vizagapatam, and *avanus*, Shan Hills (Blanf.), Hanley & Theobald, Conch. Ind. p. 54, pl. cxxxiv. figs. 5, 6 & 8, 9. *P. parvus* (Pearson), typical form; *iid. l. c.* p. 56, pl. cxlii. fig. 7, var. fig. 10.

Pterocyclus cambodiensis, Morelet, Séries Conch. iv. p. 286, pl. xiii. fig. 1, Cambodia; *P. chinensis*, Möllendorff, JB. mal. Ges. ii. p. 119, pl. iii. fig. 5, Kiukiang: spp. nn.

Cyclophorus affinis, var. *picta* (Theob.), and *C. speciosus*, var. *philippi*; Hanley & Theobald, Conch. Ind. p. 42, pl. 104, figs. 1 & 7. *C. scurra* (Beus.), Pegu, *stenostoma*, var. *anguis* (Sow.), Nilgherries, and *cadiscus* (Beus.), Ceylon; *iid. l. c.* pp. 42 & 43, pl. cv. figs. 2, 3, 9, & 10.

Cyclophorus subplicatus, Ceylon, *biliratus*, South Canara Ghats, 2500 feet elevation, and *salemensis*, Shevaroy Hills, Salem district, Beddome, P. Z. S. 1875, pp. 452 & 453, pl. liii. figs. 25–27, & 36, 35; *C. ophis*, Hanley, P. Z. S. 1875 [1876], p. 605, Tenasserim; *C. metcalfii*, near *garreli* (Eyd.), Issel, Ann. Mus. Genov. vi. p. 432, pl. vi. figs. 4–6, Sarawak, Borneo; *C. martensianus*, Möllendorff, JB. mal. Ges. ii. p. 120, pl. iii. fig. 3, Kiukiang: spp. nn.

Cyclophorus monachus (Morelet, 1866, as *Cyclostoma*) = *annamiticus* (Crosse, 1867), very near *Pterocyclus brevis* (Martyn) = *lychnus* (Morelet, 1862), but without appendage to the peristome; Morelet, Séries Conch. iv. p. 285.

Craspedotropis fimbriatus[*-a*], sp. n., Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, p. 7, pl. iv. fig. 1, Naga Hills, 7000 feet.

Lagochilus leporinus (Blanf.), Pegu; Hanley & Theobald, Conch. Ind. p. 54, pl. cxxxv. fig. 2.

Leptopoma bourguignati, sp. n., Issel, Ann. Mus. Genov. vi. 1874, p. 428, pl. vi. figs. 7 & 8, Sarawak, Borneo. *L. undatum* (Metc.), some notes on the animal from specimens in spirits; *id. l. c.* p. 428, woodcut. *L. sericatum* (Pfr.); on its varieties, *id. l. c.* p. 427, pl. vi. figs. 9–12.

Alycæus sculpturus [sic], Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, p. 8, pl. iv. fig. 2, Munipur; *A. kobeltianus*, Möllendorff, JB. mal. Ges. ii. p. 121, Kiukiang: spp. nn.

Aleyæus crispatus (Godw.-Aust.), Godwin-Austen, *l. c.* fig. 3. *A. vestitus* (Blanf.), Aracan Hills; Hanley & Theobald, Conch. Ind. p. 42, pl. ciii. fig. 4.

Pupinidæ.

Megalomastoma hjalmarsoni, Pfeiffer, Mal. Bl. xxii. p. 119, Porto Rico; *M. doriæ*, very near *anostoma* (Bens.), Issel, Ann. Mus. Genov. vi. [1874] p. 430, both figured, pl. vi. figs. 18, 19 & 16, 17, Borneo: spp. nn.

Megalomastoma funiculatum var. (Bens.); Hanley & Theobald, Conch. Ind. p. 53, pl. cxxxiii. fig. 1.

Cataulus aureus (Pfr.), Ceylon; *iid. l. c.* p. 43, pl. cvi. fig. 9.

Raphaulus pfeifferi, sp. n., Issel, *l. c.* p. 443, pl. vii. figs. 4–6, Sarawak, Borneo.

Pupinopsis angasi, sp. n., H. Adams, P. Z. S. 1875, p. 389, pl. xlv. fig. 2, Louisiade Archipelago.

Pupina vescoi (Morelet, 1862), Morelet, Séries Conch. iv. p. 287, pl. xiii. fig. 11, Cochin China.

Pupina pettardi (Crosse, 1874) fully described by the author, J. de Conch. xxiii. p. 141, pl. vi. fig. v. N. E. Australia.

Pupina coxeni, sp. n., Brazier, P. Z. S. 1875, p. 34, pl. iv. fig. 9, Port Denison, N. E. Australia.

Diplommatinidæ.

Opisthostoma deccanense, Nallay-Mallay Hills, Kurnool District, 3000 feet elevation, and *distortum*, Golconda Hills, Vizagapatam, 3000 feet, spp. nn., Beddome, P. Z. S. 1875, pp. 444 & 445, the first figured, pl. lii. figs. 10 & 11.

Plectostoma decrespignii (H. Adams) figured by Issel, Ann. Mus. Genov. vi. p. 439, pl. vi. figs. 13–15.

Diplommatina canarica, Yellapore, N. Canara, 2500 feet elevation, *gracilis* and *minima*, Gudnam Hills, Vizagapatam, 3000 feet, spp. nn., Beddome, P. Z. S. 1875, pp. 442 & 443, pl. lii. figs. 1–4; *D. burti*, sp. n., Assam, *sherfaiensis* (G.-A.) var., Peak of Japvo, 10,000 feet, *tumida* (G.-A.) var., Naga Hills, and *convoluta*, sp. n., Eastern Burrail, 6000 feet, Godwin-Austen, J. A. S. B. (n.s.) xliv. pt. 2, pp. 8–10, pl. iv. figs. 4–8; *D. blanfordi* (Bens.) and *pullula* (Bens.), Darjiling, *exilis* (Blanf.), Ava, and *costulata* (Hutt.), Sub-Himalayan, Hanley and Theobald, Conch. Ind. p. 49, pl. cxix. figs. 5–7 & 10, pl. cxx. fig. 8; *D. puppensis* (Blanf.), Upper Burma, *nana* (Blanf.), Pegu, *id. l. c.* p. 55, pl. cxxxix. figs. 8 & 9.

Diplommatina (*Nicida*) *anamallayana*, Anamallay, 2000 feet, *subovata*, South Canara, 1000–3000 feet, *pedronis* and *ceylonica*, Ceylon, spp. nn., Beddome, P. Z. S. 1875, pp. 443 & 444, pl. lii. figs. 5–9.

Paxillus beccarii, sp. n., Issel, Ann. Mus. Genov. vi. p. 441, pl. vi. figs. 20–22, and woodcut, representing the animal contracted in spirits, Sarawak, Borneo.

Clostophis sankeyi (Bens.), Moulmein; Hanley & Theobald, Conch. Ind. p. 53, pl. cxxxiii. fig. 10, somewhat resembling an imperfect *Opisthostoma*.

Cyclostomatidæ.

Cyclostoma elegans (Mll.), Constantinople; Kobelt, Nachr. mal. Ges. 1875, p. 58.

Cyclostoma bourguignati, sp. n., near *C. sulcatum* (Drap.) and *mammillare* (Lam.), but smooth and glossy, and *C. asteum* (Bourg., MS.), sp. n., both in the public gardens at Niort, Sèvres, *C. physetum* and *lutetianum*, Bourg., Cat. moll. terr. diluv. Paris (1869) in quaternary beds at several places in France; Mabille, R. Z. (3) iii. pp. 145–149.

Cyclostoma bipartitum and *bewsheri*, spp. nn. (sub-foss.), Morelet, J. de Conch. xxiii. pp. 26 & 28, pl. i. figs. 3 & 4, Rodriguez Island.

Adamsiella irrorata, sp. n., Gloyne, J. de Conch. xxiii. p. 124, Jamaica.

Cistula aguadillensis, sp. n., Pfeiffer, Mal. Bl. xxii. p. 207, Porto Rico.

Omphalotropis paladilhii, sp. n., Issel, Ann. Mus. Genov. vi. p. 448, pl. vii. figs. 10–12, Sarawak, Borneo. *O. carinata* (Lea), Borneo, *id. l. c.*, p. 447, pl. vii. figs. 7–9 (shell), and woodcut of the animal contracted in spirits, which appears to confirm a former observation of the Recorder that the species belongs to the genus *Assiminea*.

Pomatias. 16 species living in France enumerated by J. Mabille, R. Z. (3) iii. pp. 150–154.

Truncatellidæ.

Acme [*Acicula* or *Pupula*]. Jaw and radula of *A. spectabilis* (Rossm.), *banatica* (Rossm.), *lineata* (Drap.), *benoiti* (Bourg.), and *polita* (Hartm.) described and figured by G. Schako; they agree in general with *Cyclostomidæ*, but are peculiarly characterized by the many notches in the second lateral tooth and by the third being bent in its whole length over the second. JB. mal. Ges. ii. pp. 137–152, pls. iv. & v.

Truncatella tasmanica, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 11, Bass' Straits.

Assimineidæ.

Assiminea eliæ, Rochelle and Coimbra, and *cardonæ*, Port Mahon, Minorca, spp. nn., Paladilhe, Ann. Sci. Nat. (6) ii. art. 8, pp. 6 & 9, pl. xxi. figs. 15–17 & 18–20.

Assiminea brevicula (Pfr., 1854, as *Hydrocæna*) = *H. marginata* (Morelet, 1865), Bangkok, *A. turbinata* (Morelet, 1855, as *Hydrocæna*), Saigon, and *A. lirata* (Morelet, 1862, as *Hydrocæna*), delta of the River Mekong; Morelet, Séries Conch. iv. pp. 294–296, the last two figured, pl. xiii. fig. 9 & 8.

Helicinidæ.

Helicina. Many critical remarks concerning the American species figured in Reeve's Conchologica Iconica are given by T. Bland, J. de Conch. xxiii. pp. 245–252, and Q. J. Conch. i. p. 105.

Helicina intus-plicata, Pfr. (1850) = *smithiana*, Pfr. (1866), and *H. cumingiana* (Pfr.), both from Hayti; Bland, Ann. Lyc. N. York, xi. pp. 149 & 150.

Helicina scrupulum (Bens.), Andaman Islands; Hanley & Theobald, Conch. Ind. p. 53; pl. cxxx. figs. 8 & 9.

Helicina anozona, Martens, P. Z. S. 1875 [April, 1876], p. 649, Coban, Guatemala; *H. martensi*, near *citrina* (Grat.), Issel, Ann. Mus. Genov. vi. [1874] p. 444, pl. vi. figs. 23–25, Labuan: spp. nn.

Troschel states that the radula of *Hydrocæna* and *Georissa* (Blanf., 1869) agree considerably, but he is disposed to keep them as distinct but nearly allied genera, because *Georissa* is terrestrial [*Hydrocæna*, however, does not live in water, but only in damp spots]; he thinks that *Acmella tersa* (Blanf.) is near *Hydrobia*, the number of five plates in each transverse row being probably an error; *Realia* (Gray) belongs evidently to the *Cyclostomatidæ*, its radula most resembling that of *Cistula*. Gebiss d. Schnecken, ii. pp. 163 & 164.

Hydrocæna pyxis (Bens.), *illex* (Bens.), *frustillum* (Bens.), *rawesiana* (Bens.), all from Burma, and *sarrita* (Bens.), Garo Hills; Hanley & Theobald, Conch. Ind. p. 48, pl. cxvii. figs. 3–7.

SOLENOCONCHÆ.

[*Cadulus*] *Helonyx jeffreysi*, new name for *Cadulus subfusiformis* of Jeffreys, Brit. Conch., which is distinct from *subfusiformis* (Sars), both being found in the Mediterranean. Monterosato, Atti Acc. Palerm. 1875, p. 20.

LAMELLIBRANCHIA.

The structure of the gills of the Bivalves has been studied by C. Posner in *Anodonta* and some marine genera. According to him, the gills are plates of conjunctive tissue, which contain blood in lacunar intervals, and are provided with an internal skeleton of parallel straight solid rods, probably of chitinous nature, and with numerous channels taking up water from without; the afferent and efferent vessels or arteries and veins are not sharply separated one from the other, but the main movement goes in some parts towards the heart and in others in the opposite direction. Williams is wrong in attributing merely respiratory functions to those vessels which are supported by the chitinous rods, and in denying lateral communications and ramifications in them. The most simple form of the gill is exhibited by *Anodonta* and *Unio*, a thick continuous plate with very copious conjunctive tissue; that of *Scrobicularia* comes near it; but in *Pholas*, *Venus*, *Mya*, *Ostrea*, *Solen*, *Solecurtus*, and *Pinna*, the plate gradually becomes longitudinally plaited, ridges arising on both surfaces; in *Pecten* and *Mytilus* these ridges are entirely separated by discontinuity instead of mere depressions, and become thread-like, the threads answering in *Pecten* to the primary, and in *Mytilus* to the secondary, system of ridges in the continuous gill. Arch. mikr. Anat. xi. pp. 517–560, pls. xxxi. & xxxii.

Pholadidæ.

Teredo. Some species figured in Reeve's Conchologia Iconica, pt. 323, pl. i.

Kuphus [*Cyphus*]. Two species, including *clausa* [*-us*], sp. n., locality unknown, described and figured by Sowerby in Reeve's Conchologia Iconica, pt. 323, 1 pl. figs. 1 & 2.

Myidæ.

Mya. 13 species, including *Platyodon* and *Cryptomya*, described and figured on 3 plates in Reeve's Conchologia Iconica, pts. 320 & 322, among which, apparently new, are *M. mindorensis* (Ad. & Rv.), pl. iii. fig. 9, (*Cryptomya*) *elliptica*, *divaricata*, *decurtata*, and *princeps* (A. Ad., MS.), pl. i. fig. 2, pl. iii. figs. 10, 11, & 13, Ceylon and Philippine Islands.

Saxicavidæ.

Saxicava arctica (L.) and *rugosa* (L.) cannot be distinguished as species, the former representing the more free-living specimens, the second those imbedded in foreign bodies; Metzger, Ber. Unters. Pommerania, p. 255.

Anatinidæ.

Pholadomya loveni, sp. n., Jeffreys, Rep. Br. Ass. 1873, p. 112, Coast of Algeria, 1456 fathoms, ? = *Thracia pholadomyoides* (Forbes, 1843); Monterosato, Atti Acc. Palerm. 1875, pp. 4 & 19.

Thracia dissimilis, sp. n., R. J. Lechmere Guppy, Ann. N. H. (4) xv. p. 52, Trinidad.

Myodora rotundata, Sowerby, P. Z. S. 1875, p. 129, pl. xxiv. fig. 8, New Zealand; *M. tasmanica* and *albida*, J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 28, Tasmania: spp. nn.

Mytilimeria (Conrad). 7 species described and figured in Reeve's Conchologia Iconica, pt. 323, 1 pl., among which, apparently new, are *plicata* and *cuneata* (Gray, MS.), figs. 3 & 7, localities unknown.

Solenidæ.

Novaculina gangetica var. *theobaldi* (Bens.), River Tenasserim; Hanley & Theobald, Conch. Ind. p. 48, pl. cxvi. fig. 10.

Tellinidæ.

Tellina mariæ, sp. n., J. E. Tenison Woods, *l. c.* p. 30, Tasmania (? two lateral teeth, nearly without flexure).

Nesis prima, g. & sp. nn., Monterosato, Atti Acc. Palerm. 1875, pp. 4 & 17, Palermo, depth of 210 metres, indicated but not described.

Paphiidæ.

Anapa tasmanica, sp. n., J. E. Tenison Woods, *l. c.* p. 28, Tasmania.

Mactridæ.

Mactra solida (L.). Varieties in the German Sea; Metzger, Ber. Unters. Pommerania, p. 254.

Mactra anserina, sp. n., R. J. Lechmere Guppy, Ann. N. H. (4) xv. p. 49, pl. vii. fig. 1, Cumana, Venezuela.

Veneridæ.

Dosinia immaculata, sp. n., J. E. Tenison Woods, *l. c.* p. 26, Tasmania, *Callista victoriæ*, sp. n., *id. l. c.* p. 27, Tasmania.

Venus superba, sp. n., R. J. Lechmere Guppy, Ann. N. H. (4) xv. p. 49, pl. vii. fig. 2, Cumana, Venezuela.

Tapes edulis (Chemn.) = *virginea* of English authors = *virago* (Loven); Metzger, Bers. Unters. Pommerania, p. 254.

Venerupis reticulata, sp. n., J. E. Tenison Woods, *l. c.* p. 27, Tasmania.

Cyrenidæ.

Cyrena sumatrensis (Sow.), with *C. siamica* (Prime) as variety, from Siam, Cambodia, and Cochin China; Morelet, Séries Conch. iv. p. 358.

Cyrena buschi (Phil.) = *triangularis* (Metcalfe), Borneo; Issel, Ann. Mus. Genov. vi. p. 472.

Corbicula moreletiana (Prime), Cambodia, *bocourti* (Morelet, 1865), Saigon, *insularis* (Prime), Siam, *castanea* (Morelet, 1865), Cochin China, *amiralis* (Prime), Saigon, *larnaudiei* (Prime), Siam, *episcopalis* (Prime), Siam, and *gubernatoria* (Prime), Saigon; Morelet, *l. c.* pp. 360–365, all figured, pl. xv. figs. 2, 4, 5 & 7, pl. xvi. figs. 2–4, and pl. xvii. fig. 4.

Corbicula dayakorum, sp. n., Issel, Ann. Mus. Genov. vi. [1874] p. 473, pl. vii. figs. 25–27, with varr. nn. *olivacea* and *inæquilatera*, and *C. ducalis* (Prime), p. 475, both from Sarawak, Borneo.

Corbicula bensoni (Desh.), River Jumna, *cashmirensis* (Desh.), Cashmire, and *regularis* (Prime), Madras; Hanley & Theobald, Conch. Ind. p. 55, pl. cxxxviii. figs. 1–6.

Sphærium bourguignati, Lallemant & Servain, Cat. moll. terr. & fluv. de Jaulgonne, 1869, p. 46, River Marne, near Jaulgonne; *S. galitzini*, Clessin, JB. mal. Ges. ii. p. 40, pl. ii. fig. 6, River Oka, Russia: spp. nn.

Cardiidæ.

Cardium edule, L. Varieties in the German Sea; Metzger, Ber. Unters. Pommerania, p. 254.

Cardium fasciatum (Mont.) and *exiguum* var. *parvum* (Phil.), from the Baltic, comparatively described; E. F. Koch, JB. mal. Ges. ii. pp. 189 & 190.

Cardium eburniferum [*eboriferum*], sp. n., R. J. Lechmere Guppy, Ann. N. H. (4) xv. p. 51, pl. vii. fig. 3, Trinidad and Grenada. *C. haitense* Sow., J. G. Soc. vi. p. 52, pl. x. fig. 11, as fossil), found in a recent state in the Gulf of Paria, Trinidad; *id. ibid.*

Adacna protracta (Eichw.) exhibits vestiges of cardinal teeth; E. von Martens, SB. nat. Fr. 1875, p. 96.

Verticordiidæ.

Verticordia insculpta, sp. n., Jeffreys, Rep. Brit. Ass. 1873, p. 112, coast of Algeria, 40–80 fathoms; also at Palermo in a depth of 210 metres, with another species, perhaps *Pecchiolia arenosa* (Rayn., Bull. mal. Ital. 1870). Monterosato, Atti Acc. Palerm. 1875, pp. 4 & 15.

Lucinidæ.

Lucina minima, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 30, Tasmania.

Kelliidæ.

Neolepton, subg. n. of *Lepton*, shell oblique or rounded, sculpture concentric; for *L.* (*N.*) *sulcatulum* (Jeffr.), *clarkiæ* (Clark), *glabrum* (Fischer), and *obliquatum*, sp. n., not yet described. Monterosato, Atti Acc. Palerm. 1875, p. 12.

Montacuta maltzani, sp. n., Verkrüzen, JB. mal. Ges. ii. p. 236, pl. viii. fig. 8, Vadsö, Norway.

Scacchia phaseolina, sp. n. (not described), Monterosato, Atti Acc. Palerm. p. 13, Palermo, depth of 110 metres.

Sportella [see Zool. Rec. xi. p. 184] *recondita* (Fischer) and *abscondita*, sp. n. (not described), found in the Mediterranean at Palermo in a depth of 110 metres; *id. ibid.*

Pythina tasmanica, sp. n., J. E. Tenison Woods, *l. c.* p. 30, Tasmania.

Solemyidæ.

Solemya. 5 species described and figured in Reeve's Conchologia Iconica, pt. 320, 1 pl.

Astartidæ.

Mytilicardia tasmanica, sp. n., J. E. T. Woods, *l. c.* p. 29, Tasmania.

Unionidæ.

Unio contortus (Lea) has the mantle-lobes separate, as a true *Unio*, not united as in *Hyria*; Deshayes, J. de Conch. xxiii. p. 85.

Unio richthofeni and *retortus*, E. von Martens, SB. nat. Fr. 1875, pp. 3 & 4, Mal. Bl. xxii. pp. 187 & 188, and Novitat. Conchol. pl. cxxxvi. figs. 1–3 & 4, 5 [= *leleci* and *pisciculus* (Heude, 1874)]; *U. vulcanus*, Hanley, P. Z. S. 1875 [1876], p. 606, Burma or Pegu: spp. nn.

Unio triembolus (Bens.), River Nerbudda, *favidens* (Bens.) var., Calcutta, *indicus* (Sow.) var. *aurea* (Sow.), River Nerbudda, *exolescens*

(Gould), Savoy, and *sikkimensis* (Lea), Assam; Hanley & Theobald, Conch. Ind. pp. 43 & 44, pl. cvii. figs. 2–7.

Unio massini, sp. n., Morelet, Séries Conch. iv. p. 348, pl. xv. figs. 2 & 3, Cochin China, near *gravidus* (Lea); *U. misellus*, *micropterus*, and *pellis-lacerti* (Morelet, 1865 & 1866), *id. l. c.* pp. 341, 349 & 355, pl. xiv. fig. 2, pl. xv. fig. 6, and pl. xvii. fig. 5; *U. scobinatus* (Lea) = *mandarinus* (Mor., 1864), including as a variety *venustus* (Morelet, 1865), and *U. rusticus* (Lea), including as a variety *paivæanus* (Morelet, 1865), *id. l. c.* pp. 354 & 353, pl. xvii. figs. 6 & 2; *U. imperialis* (Mor., 1862) = *hainesianus* (Lea), *megapterus* (Mor., 1864), = *delphinus* (Gruner) juv., *abnormis* (Mor., 1862) = *gravidus* (Lea), *id. l. c.* pp. 342, 345 & 347: all from Siam, Cambodia, or Cochin China.

Unio parreyssi (V. d. Busch, 1848) = *sennariensis* (Küster) var. n. *schweinfurthi*; E. von Martens, in Pfeiffer's Novitat. iv. p. 140, pl. cxxxii. figs. 3–5, Tondj River (Upper Nile, Western tributary).

Plagiodon rotundatus (Mouss.); Pfeiffer, Novitat. iv. p. 139, pl. cxxxi. figs. 8 & 9, S. America.

Castalia ecarinata (Mouss.); *id. l. c.* p. 140, pl. cxxxi. figs. 10 & 11, Puerto Nuevo, Magdalena.

Pseudodon (Gould) is distinct from *Monocondylus* [*-æa*, Orb.) by the teeth of the hinge being smaller, sometimes rudimentary, and the position of the left tooth behind the right. To it belong *P. depressus* (Mühlf.) = *Unio bonellii* (Fér.), and an undescribed species in Europe, *rhomboideus* (Lea), from Mesopotamia, *cambodiensis* (Petit, 1865) = *U. subtrigonus* (Sow., 1867), *zollingeri* (Mouss., as *Margaritana*) = *cumingi* (Lea, as *Anodonta*), *mouhotianus* (Lea, 1863, as *Monocondylæa*), *tumidus*, *orbicularis*, and *exilis* (Morelet, 1866, as *Monocondylus*), from Siam and Cambodia. Morelet, Séries Conch. iv. pp. 334–341, the last three figured, pl. xvi. figs. 1 & 5, and pl. xvii. fig. 1.

Dipsas, Leach, 1814, *nec* Laur., 1768 (*Reptilia*), = *Barbala*, in an anonymous catalogue attributed to Humphrey, without definition, 1797, = *Cristaria*, Schumacher, 1817, which last name should be used; E. v. Martens, JB. mal. Ges. ii. p. 136.

[*Cristaria*] *Dipsas bellua* (Morelet, 1866, as *Anodonta*) and *plicatus*[*-ta*] (Solander) var., both from Cambodia, described; *id. l. c.* pp. 331–333.

Cristaria megadesma, E. von Martens, SB. nat. Fr. 1875, p. 3, Mal. Bl. xxii. p. 187, and Novitat. Conch. iv. pl. cxxxv. fig. 1, Lake Poyang, China; *C. reiniana*, id. JB. mal. Ges. ii. p. 136, pl. iii. fig. 1, Yeddo: spp. nn.

Anodonta complanata (Ziegl.) differs from the other European species in some histological peculiarities, the stalk by which the egg is attached within the ovary being larger and surrounded by a solid refractory ring, and the larger granula of the yelk being fewer; also by the colour of the eggs within the gills being white instead of yellow. Flemming, Nachr. mal. Ges. 1875, pp. 35–37.

Anodonta. Several exotic species are described and figured by Clessin, in Küster's Conch. Cab. pts. 234 & 239.

Anodonta martensi, id. *l. c.* p. 183, pl. lxiii. fig. 2, Siam; *A. lemeslii* and *linguiformis*, Morelet, Séries Conch. iv. pp. 328 & 329, pl. xiv. figs. 1 & 5, Cambodia: spp. nn.

Ætheria [*cailliaudi*, Fér.]. On some specimens from the countr the Shilluk negroes, Central Africa; Gredler, Nachr. mal. Ges. 1 pp. 88 & 89.

Mycetopus (Orb.) 10 species, all South American, except one dou ful, described and figured; S. Clessin, in Küster's Conch. Cab. pt. 25 pp. 198–208, pls. lxvi.–lxx.

Spatha (Lea). The mantle-lobes form two distinct orifices, the respi ratory and the anal, separated from the general ventral opening; the laminæ of the gills are united in perpendicular rows; the anterior pedal muscle is united with the anterior adductor; and the under muscle for fixing the abdominal sac is very large. 6 species, all African, are described and figured. *Id. l. c.* pt. 234, p. 183 *et seq.* pls. lxi.–lxiii.

Mutela (H. & A. Adams). Mantle lobes united as far as the middle of the ventral margin, with two stout siphons; shell gaping in front; no teeth. 5 species, all African, described and figured. *Id. l. c.* pts. 234 & 239, pp. 191–198, pls. xxv., lx. & lxii.

Mytilidæ.

Mytilus edulis (L.). Particulars concerning the circulating and respiratory organs; M. A. Sabatier, C. R. lxxix. [1874] pp. 581–584, translated, Ann. N. H. (4) xv. p. 157–159. Young specimens partially blinding a shore crab; MacIntosh, Mar. Invertebr. of St. Andrews, pl. ix. figs. 10 & 11. Variety from Bergen; Metzger, Ber. Unters. Pom rania, p. 353.

Mytilus muelleri and *exiguus*, Dunker, JB. mal. Ges. ii. pp. 250 & Desterro, S. Brazil; *M. tasmanicus*, J. E. Tenison-Woods, P. R. Tasm. 1875 (sep. copy), p. 29, Tasmania: spp. nn.

Modiola lacustris, sp. n., E. von Martens, SB. nat. Fr. 1875, p Mal. Bl. xxii. p. 2, and Novitat. Conchol. pl. cxxxv. figs. 2 & 3, 1 Tungting, China.

Modiola siamensis (Morelet, 1866, as *Dreissena*), Lake Tonli-sap, be tween Siam and Cambodia; Morelet, Séries Conch. iv. p. 365, pl. xvii fig. 3.

Aviculidæ.

Malleus albus (Lam.) and *regula* (Forsk.) = *vulsellatus* (Lam.); notes on their forms from Red Sea specimens by W. Dunker, JB. mal. Ges. ii. pp. 4 & 5.

Crenatula picta (Gmel.) = *phasianoptera*, *mytiloides*, *modiolaris*, and *avicularis* (Lam.), *C. nigrina* (Lam.), = *avicularis* (Sow. gen.), = *mytiloides* (Reeve, not Lam.), and *C. folium* (Gray), all from the Red Sea; *id. l. c.* pp. 3 & 4.

Vulsella lingulata (L.), = *mytilina* (Lam., Reeve), *V. minor* (Chemn.), = *rugosa* (Lam.), = *spongiarum* (Lam.), and *V. hians* (Lam., = *isocardia*, *crenulata*, and *linguæ-felis* (Reeve), all from the Red Sea; *id. l. c.* pp. 1–3.

Pinna tasmanica, sp. n., J. E. Tenison Woods, P. R. Soc. Tasm. 187 (sep. copy), p. 29, Tasmania.

Arcidæ.

Arca ventrosa (Guppy, 1867, as fossil) described from recent specimens; R. J. Lechmere Guppy, Ann. N. H. (4) xv. p. 51, pl. vii. fig. 4, Trinidad.

Nuculidæ.

Yoldia subæquilateralis, sp. n., Edgar Smith, Ann. N. H. (4) xvi. p. 73, Kerguelen's Island.

Solenella gigantea, id. *l. c.* p. 72, Kerguelen's Island, and *S. magellanica*, id. *l. c.* p. 118, Otter Island, Straits of Magelhaens, spp. nn.

Phaseolus (Jeffr., MS.) [long ago pre-occupied by Linné], g. n.; three oblique lateral teeth as in *Cucullæa*, ligament internal. *P. ovatus* (Jeffr., MS.) and *tumidulus*, spp. nn., Palermo, in a depth of 210 metres, indicated, but not described. Monterosato, Atti Acc. Palerm. 1875, pp. 4 & 11.

Pectinidæ.

Pecten varius (L.). Varieties of colour, the white being distinguished by fewer ribs from *P. niveus* (Macg.); Metzger, Ber. Unters. Pommerania, p. 253.

Pecten pusio (L.) = *multistriatus* (Poli), from the Mediterranean and Southern Africa, distinguished by the very unequal ears from *P. sinuosus* (Gmel.) = *distortus* (Dacosta); *id. ibid.*

Pecten mariæ, sp. n., J. E. Tenison-Woods, P. R. Soc. Tasm. 1875 (sep. copy), p. 26, Tasmania.

Ostreidæ.

Ostrea edulis (L.). On its banks and varieties in the German Sea; Metzger, Ber. Unters. Pommerania, p. 252.

Fischer's remarks on oyster breeding at Arcachon [Zool. Rec. xi. p. 189] are reprinted in J. Zool. iv. pp. 207–214. The acclimatization of *Ostrea angulata* (Lam., as *Gryphæa*), from Lisbon, has been also successful.

Notes on oyster-fisheries in North America; Nature, xi. p. 217.

MOLLUSCOIDA.

BY

PROF. EDUARD VON MARTENS, M.D., C.M.Z.S.

LIST OF MORE IMPORTANT PUBLICATIONS.

BARROIS, J. Sur les formes larvales des Bryozoaires. C. R. lxxxi. p. 443; abstract in Ann. N. H. (4) xvi. pp. 301 & 302.

CHANDELON, T. Recherches sur une annexe du tube digestif des Tuniciers. Bull. Ac. Belg. (2) xxxix. pp. 911–949, pls. i. & ii.

GIARD, A. Note sur l'embryogénie des Tuniciers du groupe des *Luciæ*. C. R. lxxxi. p. 1214; R. Z. (3) iii. p. lxx.

HELLER, C. Untersuchungen über die Tunicaten des adriatischen Meeres. II. Abtheilung. Denk. Ak. Wien, xxxv. pp. 107–25, 6 pls.

KIRCHENPAUER, —. Bryozoa in: Bericht über die Untersuchungs-Fahrt der Pommerania in der Nordsee, 1872. Berlin: 1875, fol. pp. 173–196.

KOWALEWSKY, A. Ueber die Entwicklungsgeschichte der *Pyrosoma*. Arch. mikr. Anat. xi. pp. 597–635, pls. xxxvii.–xli.

——. Sur le développement du *Perophora listeri*. Rev. Montp. Sept. 1874, with 3 pls. and R. Z. (3) iii. p. xxxiii.

LACAZE-DUTHIERS, H. DE. Note sur l'origine des vaisseaux de la tunique chez les Ascidies simples. C. R. lxxx. pp. 600–604; R. Z. (3) iii. p. xi.

NITSCHE, H. Ueber den Bau und die Knospung von *Loxosoma keferstenii* (Clap.). Z. wiss. Zool. xxv. pp. 451–456.

——. Beiträge zur Kenntniss der Bryozoen. No. v. *Tom. cit.* suppl. vol. pp. 343–402, pls. xxiv.–xxvi.

REICHERT, K. B. Zur Anatomie der Ascidien-Larven (*Botryllus violaceus*). Abh. Ak. Berl. 1875, pp. 131–191, pls. i.–v.

REPIACHOFF, W. Zur Entwickelungsgeschichte der *Tendra zostericola*. Z. wiss. Zool. xxv. pp. 129–142, pls. vii.–ix.

SEMPER, C. Ueber die Entstehung der geschichteten Cellulose-Epidermis der Ascidien. Verh. Ges. Würzb. (2) viii. pp. 63–86, pls. iii. & iv.; also Arb. Inst. Würzb. ii. pp. 1–24, pls. i. & ii.

TODARO, F. Sopra lo sviluppo e l'anatomia delle Salpe. Atti Acc. Rom. (2) ii. pp. 720–792, pls. ii.–v.

Contributions to Faunas.

61 species of *Bryozoa*, and 14 of *Tunicata*, observed at St. Andrews, are enumerated by W. C. MacIntosh, Marine Invertebrata of St. Andrews, pp. 40–56.

Several new localities for *Crania anomala* (Müll.), *Rhynchonella psittacea* (Gmel.), *Terebratulina caput-serpentis* (L.), and *Waldheimia cranium* (Müll.), in the North Sea, are given by A. Metzger, in Ber. Unters. Pommerania, p. 230.

55 species of *Bryozoa* collected in various parts of the North Sea during the expedition of the German steamer Pommerania in 1872, are enumerated, with their synonymy and a comparative table of their generic and specific characters, by Kirchenpauer, *tom. cit.* pp. 173–196.

5 species of *Bryozoa*, viz., *Crisia eburnea* (L.), *Alcyonidium gelatinosum* (Müll.) and *mytili* (Pal.), *Membranipora lineata* (L.) and *pilosa* (L.), and 4 species of *Tunicata*, viz., *Molgula macrosiphonia* (Kupf.), *Cynthia grossularia* (Bened.), *rustica* (L.), and *Ascidia canina* (Müll.), occur in the inlet of Travemünde, Baltic; H. Lenz, Die wirbellosen Thiere der Travemünder Bucht, i. p. 13.

Note on dredging off Brest in 120–180 metres by Commr. Vignes, enumerating *Eschara foliacea* (Ellis), *Cellaria fistulata* (L.) and *Cellepora tuberosa* (Orb.); P. Fischer, J. Zool. iv. p. 299.

Several *Bryozoa* found attached to the Falmouth and Lisbon cable at depths ranging from 85 to 205 fathoms are enumerated by A. M. Norman, Ann. N. H. (4) xv. pp. 171 & 172.

The 10 known Brachiopods of the Mediterranean are enumerated by Monterosato, Atti Acc. Palerm. 1875, p. 7.

Caspian Sea. *Bowerbankia densa* (Faire), found by O. Grimm, Z. wiss. Zool. xxv. p. 322.

BRACHIOPODA.

Discina radiata (Dunker, 1861) on *Arca umbonata* (Lam.) from Desterro, S. Brazil; Dunker, JB. mal. Ges. ii. p. 254.

TUNICATA.

Ussow's "Untersuchungen über den Bau und der Entwicklung der Tunicaten," referred to in Zool. Rec. xi. pp. 192 & 195, are translated in Ann. N. H. (4) xv. pp. 321–333, and may be summarized as follows:—In *Appendicularia*, the plan of structure of the nervous system is in some degree like that of Ascidians; the nervous system of *Pyrosoma* may be regarded as a transitional form between the transformed nervous system of the adult Ascidians and the type of structure in the *Salpæ* and *Cyclomyaria*. The so-called ciliated pit in *Salpa*, *Doliolum*, *Pyrosoma*, &c., is combined with a special nerve, and is to be regarded as an olfactory organ. The so-called ocelli of Ascidians represent the eyes of the lower *Crustacea* and *Vermes*; the compound eyes of *Salpa* are

homologous with the visual organs of the *Arthropoda*, the single eye of *Pyrosoma* is furnished with a lens, and may be likened to those of some *Mollusca*. The author is satisfied that the *Tunicata* are not *Mollusca*; he enumerates briefly the chief differences between both, and the resemblances of the former to the types of the *Vermes* and *Vertebrata*, and gives the preference to O. Schmidt's view that the *Tunicata* form a special class, *Protovertebrata*.

A tubular gland belonging to the intestinal tract, found in most species of *Tunicata*, is described by T. CHANDELON [*suprà*, p. 206]: its functions are affirmed to be digestive.

LACAZE-DUTHIERS has observed in young specimens of *Molgula*, that the mantle is formed by exudation from the ectoderm of the larva, after this has fixed itself, and that the vessels in it come from ray-like prolongations (villosités) of the ectoderm penetrating into the mantle. C. R. lxxx. pp. 600–604; R. Z. (3) iii. p. xi.

K. B. REICHERT gives an anatomical description of the larva of *Botryllus violaceus* observed at Trieste; he states that in the normal situation of the swimming larva, the branchial sac is above, and the heart, intestine, and genital organs are beneath, on account of their weight, and he therefore purposely avoids the terms "dorsal" and "ventral." Three front appendages, probably for fixing the animal, and eight others, called girdle-appendages, are described. Concerning the skin, the author distinguishes first, an extremely thin homogeneous stratum, called by him *testa*, and a thick cellular stratum or wall, which lies in a part of the body immediately under the *testa*, but in the anterior part forms the floor of the branchial sac, this latter being situated between the cellular wall and the testa, and therefore not quite internal; in other parts of the body, there are some small cavities between the testa and wall, which are sometimes filled by foreign bodies, and have been incorrectly described as testa. The tail consists of the following parts:—1, innermost, the axial string (Achsenstrang), homogeneous, not cellular, without cover, not entering into the main part of the body; 2, a stratum of spindle-shaped contractile cells which cause the movements of the tail by their contraction, whereas the elastic axial string tends to re-establish the straight position; 3, the testa, which envelops the tail all round, but is elevated in the median plane above and below into a vertical fin, and this fin shows oblique linear thickenings which have the appearance of the fin-rays in a fish. The cellular stratum is composed of eight longitudinal bands, each being a row of hexagonal cells. The author thinks that the axial string is a product of the secretion of the cellular stratum, and therefore calls it an "internal cuticular formation." That which has been described by Kupfer as a spinal nerve is, according to Reichert, probably an artificial slit or chink between the longitudinal bands of the cellular stratum and the hexagonal cells of these bands. He is therefore of opinion that the tail of the Ascidian larva exhibits a striking analogy to, but by no means a homology with, that of a fish or tadpole. Abh. Ak. Berl. 1875, pp. 131–196, 5 pls.

A. GIARD has discussed the question of the affinity of the Ascidian larvæ to the *Vertebrata*, applying the principle of abbreviation of the

stages of development, in a communication to the Scientific Congress at Lille, 1874, briefly indicated by Gervais, J. Zool. iv. p. 437.

Ascidiidæ.

Semper has observed the development within the egg in *Molgula nana* (Kupf.), *Phallusia pedunculata* (Hoffm.), *Cynthia depressa* (Frey & Leuck.), and *Clavelina vitrea* (Frey & Leuck.), and comes to the conclusion that the so-called testa-cells (or rather, testa-drops, as they contain no nucleus) come from the envelope of the egg, and have nothing to do with the formation of the mantle; the latter is to be regarded as of true epidermic nature, with abundant intercellular substance. Verh. Ges. Würzb. (2) viii. pp. 63–86, pls. iii. & iv.; Arb. Inst. Würzb. ii. pp. 1–24, pls. i. & ii.

Lacaze Duthiers makes some observations concerning the origin of the vessels in the mantle of the simple Ascidians; C. R. lxxx. pp. 600–603.

Cynthia echinata (Müll.), woodcut; MacIntosh, Mar. Invertebr. of St. Andrews, p. 52.

Ascidia sordida (Hanc.); *id. l. c.* p. 53, pl. ix. figs. 1 & 2.

Ascidia involuta and *reptans*, spp. nn., C. Heller, Denk. Ak. Wien, xxxiv. pp. 114 & 115, pl. iii. figs. 4, 5, & 6, 7, Dalmatia.

Ascidia fumigata (Grube), *virginea* (Müll.), *mamillata* (Cuv.), and *prunum* (Müll.), described and figured, with anatomical observations; *id. l. c.* pp. 107–114, pls. i., ii., & iii. figs. 1–3.

Parascidia flemingi (Alder); MacIntosh, *l. c.* p. 53, pl. ix. fig. 3.

Ciona intestinalis (L.), outside and anatomy described from Adriatic specimens; C. Heller, *l. c.* pp. 117–120, pl. iii. figs. 8 & 9, pls. iv. & v. *C. canina* (L.), common in the Northern seas, is distinguished from it only by the colour; *id. l. c.* p. 120.

Rhodosoma callense (Lacaze Duthiers), found at Lesina, in Dalmatia, by G. Buchich, and described by C. Heller, *l. c.* pp. 120–122, pl. vi.

Pelonæa corrugata (Forbes & Goodsir), MacIntosh, *l. c.* pl. ii. fig. 10.

Molgula. Observations on their reproduction, the parent disappearing at the close of the summer, and only the eggs remaining, and on the first development of the larvæ, which never swim, by Lacaze Duthiers, C. R. lxxx. pp. 600 & 1056; R. Z. (3) iii. pp. xi. & xvii.

Clavelinidæ.

Clavelina lepadiformis (Müll.), MacIntosh, *l. c.* p. 54, woodcut, and pl. ii. fig. 9.

Perophora listeri (Wiegm.), found in the Mediterranean (Trieste and Naples), and its multiplication by eggs and buds described; A. Kowalewsky, Rev. Montp. Sept. 1874, 3 pls.

Botryllidæ.

Botryllus violaceus; development observed by Reichert [*suprà*, p. 208].

Diplosomatidæ.

Astellium spongiforme (Giard). Development of the larvæ, which are at first free swimmers and afterwards fix themselves, described by Giard, C. R. lxxxi. p. 1214; R. Z. (3) iii. p. lxx.

Pyrosomata.

The development of *Pyrosoma* has been studied by A. Kowalewsky, who describes the partial segmentation of the egg, and the formation of the embryonal disk and its two layers, in which at a very early stage the first traces of the later perithoracic tubes appear. The embryo is simple in this stage, representing Huxley's "cyathozoid;" but in the subsequent stage, when the hinder end of the embryo separates and elevates itself from the nutritive base, four transverse constrictions appear, by which the embryo is divided into the anterior nutrix or cyathozoid and four ascidioids, following each other in their longitudinal axis. The orifices of the perithoracic tubes unite and form a funnel-shaped terminal orifice in the cyathoid, opposite the first ascidioid, and answering morphologically to a cloak and not to a mouth. As to the further development, the author has observed, that the male sexual elements make their appearance in young colonies of not more than an inch in length, long before the eggs. Arch. Mikr. Anat. xi. pp. 597–635, pls. xxxvii.–xli.

Pyrosoma. Brilliant spectacle offered by it at the Kermadek Islands, Pacific; Willemoës-Suhm, Z. wiss. Zool. xxv. pt. 2, p. xxxvii.

Salpæ.

Todaro has published in full his researches on the embryology of *Salpa pinnata* [Zool. Rec. xi. p. 195]. First, he states that although both sexes are united in the same individual, fecundation by another is needed for the production of eggs, the elements of which, as soon as the blastodermic circle appears, divide themselves into two portions, one developing itself immediately into a solitary *Salpa*, the other emigrating and giving origin to a heap of cells, situated at first between the skin and the outwards-bent part of the branchial sac of the solitary embryo, and afterwards included in the middle layer of the skin. This organ, no true ovary, produces by gemmation the aggregate individuals, which are to be regarded not as children, but as younger brothers of the solitary individual, which represents the elder brother, unmarried, fostering the younger ones. This view is intermediate between that proposed by Chamisso, and now almost generally adopted, that a true alternating generation exists in the *Salpæ*, and the other defended by Eschricht, that the same individual produces at one time solitary and at another aggregate or chained *Salpæ*. In both forms, the three usual embryological strata are observed, the middle or mesoderm giving origin to the circulatory organs; and the outer or ectoderm to the skin and nervous system: but this ectoderm is simple in the aggregate, and subdivided into two layers in the solitary form. The intestinal cavity is formed by invagination of the ectoderm in the solitary form; in the aggregate, by lateral folding of the whole blasto-

derm towards the underside. The dorsal disk in the solitary form makes its appearance between the ectoderm and mesoderm, nervous centre and intestine, just as the chorda dorsalis in the Vertebrates, and there are also organs which the author thinks analogous to the amnion and placenta; even in the young aggregate individuals, although they want a placenta, there is something like umbilical circulation. Thus there are some points in which the development of the *Salpæ* resembles that of even the higher Vertebrates. The mantle is considered by the author to be of epidermic nature [as also by Semper]. Atti Acc. Rom. (2) ii. pp. 720–792, pls. ii.–v. An abstract of the author's previous communication is to be found in Q. J. Micr. Sci. (2) xv. p. 87.

POLYZOA.

J. Barrois states that the larval forms of different genera of *Bryozoa* are identical in the *Alcyonidiidæ* and *Vesiculariidæ* from the first to the bell-shaped stage, though afterwards the histological differentiation and completion of the organs is very different in different genera and families. C. R. lxxxi. pp. 442; abstract Ann. N. H. (4) xvi. pp. 301 & 302.

W. Repiachoff observes that in *Tendra zostericola* (Nordm.) some zoœcia contain only an ovarium, others only male elements, and others both together; he describes the first appearance of the egg, and the swimming larva, in which a dorsal and ventral face, and on the latter a tuft of cilia, a sort of œsophagus, and a protractile sucker, are to be seen The internal and external changes which the larva undergoes after fixing itself are mentioned and compared with those observed by Nitsche and Claparède in *Bugula*; the chief difference is, that the brown body or formative mass is contained inside the intestine, and that therefore the development of the middle and posterior part of the intestine is in the primary zoœcia different from that of the secondary zoœcia. The tentacular sheath consists of two distinct layers, both in young and full grown polypids, the inner layer being continuous with the epithelium of the tentacles, the inner layer of which gives origin to their muscular layer. Z. wiss. Zool. xxv. pp. 129–142, pls. vii.–ix.

H. Nitsche describes the budding of *Alcyonella fungosa* (Pall.), especially as to which layer of the cystid is continuous with and gives origin to the individual organs of the polypid; viz.:—the ectocyst to the outside of the tentacles, the epithelial layer of the intestinal tract of the polypid, and the ganglion, and the endocyst to the inner layer of the tentacles, the outer layer of the intestinal tract, the wall of the peritoneal cavity, and the cover of the ganglion; all these organs are formed by inward folded processes of the cystid, some of which meet and coalesce. This appears to be the case in all *Bryozoa Phylactolæma*. If the polypid and cystid are to be regarded as distinct individuals, according to Allman, Leuckart, and Nitsche himself, it follows that the ectoderm of the parent gives origin to the endoderm of the descendant, and *vice versâ*. In *Loxosoma*, on the contrary, and probably in all *Bryozoa Endoprocta*, the ectoderm of the parent alone gives origin to the whole bud, in which afterwards ectoderm, mesoderm and endoderm can be dis-

tinguished; one histological element of the parent thus giving rise to all the elements of the descendant. These observations contradict Häckel's theory that in all *Metazoa* the ectoderm is genetically identical, as is likewise the endoderm. Z. wiss. Zool. xxv. suppl. vol. pp. 343–361, and pp. 390–402, pls. xxv. & xxvi.

Chilostomata.

Cellepora tridens, sp. n., Kirchenpauer, Ber. Unters. Pommerania, p. 188, woodcut; Bukenfjord, Norway, 106 fathoms.

Hippothoa divaricata, var. n. *carinata*, Norman, Ann. N. H. (4) xv. p. 171, pl. xii. figs. 4–7, Falmouth and Lisbon cable.

Flustra. The species of this genus occurring in the Northern seas are discussed by Kirchenpauer, Ber. Unters. Pommerania, pp. 175–178, and 184 & 185, including *F. dichotoma*, sp. n., p. 177, Belt, 10–16 fathoms.

Caberea ellisi (Flem., as *Flustra*) = *Cellularia hookeri* (Johnst.). Critical notes on this, and on *Caberea* and *Canda* (Lamx., *nec* Busk); *id. l. c.* p. 182.

Cyclostomata.

Idmonea, *Discoporella*, *Crisia*, and *Hornera*. Notes on their larval stages by Barrois; C. R. lxxxi. p. 1134; R. Z. (3) iii. p. lxvii.

Ctenostomata.

Vesicularia and *Alcyonidium*. Note on their larval stages by Barrois; C. R. *l. c.* pp. 288 & 443; R. Z. (3) iii. pp. li. & liv.

Alcyonidium gelatinosum (Pall.) observed at Buenos Ayres; Weyenbergh, Period. Zool. Argent. i. pt. xi. [1874].

Lophopoda.

Alcyonella fungosa: see Nitsche, *suprà*, p. 211. Notes on the larval stage by Barrois; C. R. lxxxi. p. 904; R. Z. (3) iii. p. lxiii.

Endoprocta.

Loxosoma kefersteini (Clap.), living on *Zoobotryon*, agrees in structure very much with *Pedicellina*, but is solitary; its propagation by budding is minutely described, the buds are situated alternately on the right and left sides, and are formed only by the ectoderm of the parent, but very soon show distinctly ectoderm and endoderm, affording an instance of the direct origin of endoderm from ectoderm. The young animal has only 10, the adult 14 tentacles. *L. neapolitanum* (Kowalewsky) much resembles this young state. Nitsche, Z. wiss. Zool. xxv. pp. 451–456.

Loxosoma differs from *Pedicellina* only by being solitary (as *Ascidia* from *Clavelina*), every individual being therefore provided with a pedal gland, and by producing only a few eggs, the breeding pouch of *Pedicellina* being therefore wanting; Schmidt's view, that the lateral offspring comes from eggs, is opposed. *Id. op. cit.* suppl. vol. pp. 361–389.

Pedicellina. Notes on the larval stage by Barrois; C. R. lxxxi. p. 904; R. Z. (3) iii. p. lxiii.

CRUSTACEA.

BY

PROF. EDUARD VON MARTENS, M.D., C.M.Z.S.

LIST OF MORE IMPORTANT PUBLICATIONS.

BRAUN, MAX. Ueber die histologischen Vorgänge bei der Häutung von *Astacus fluviatilis*. Arb. Inst. Würzb. ii. pp. 121–166, pls. viii. & ix.

BROCCHI, —. Recherches sur les organes génitaux males des Crustacés Decapodes. Ann. Sci. Nat. (6) ii. art. 2, 131 pp. pls. xiii.–xix.

BRITO CAPELLO, F. DE. Lista dos Crostaceos decapodios de Portugal, existentes no museu de Lisboa. J. Sc. Lisb. iv. pp. 233–240.

——. Descripcaõ d'uma nova especie de *Telphusa* d'Africa occidental. *Tom. cit.* pp. 254–257.

——. Algumas especies novas ou pouco conhecidas de Crustaceos pertencentes aos generes *Calappa* e *Telphusa*. Op. cit. iii. [1871] pp. 128–134.

CLAUS, C. Zur Kenntniss des Baues und der Entwicklung von *Branchipus stagnalis* und *Apus cancriformis*. Abh. Ges. Götting. xviii. [1873] 8 pls.

——. Schriften Zoologischen Inhalts. Part i. Wien: 1874, fol.

——. Die Gattungen und Arten der Halocypriden. Verh. z.-b. Wien, xxiv. [1874] pp. 175–189 (abstract of the above work).

——. Die Schalendrüse der Daphnien. Z. wiss. Zool. xxv. pp. 165–173, pl. xi.

——. Über die Entwicklung, Organisation, und systematische Stellung der Arguliden. *Tom. cit.* pp. 217–224, pls. xiv.–xviii.; also separately.

——. Neue Beiträge zur Kenntniss parasitischer Copepoden, nebst Bemerkungen über das System derselben. *Tom. cit.* pp. 327–360, pls. xxii.–xxiv.

GRUBE, E. Beitrag zur Kenntniss der Gattung *Serolis* und einer neuen Art derselben. Arch. f. Nat. xli. pp. 208–234, pls. v. & vi.

Hoek, P. P. C. Eerste Bijdrage tot de Kennis der Cirripedien der Nederlandsche Fauna. Tijdschr. Ned. Dierk. Ver. ii. (sep. copy, pp. 1–46) pl.

Hutton, F. W. Descriptions of two new species of *Crustacea* from New Zealand. Ann. N. H. (4) xv. pp. 41 & 42.

Jobert, —. Recherches sur l'appareil respiratoire et la mode de respiration de certains Crustacés brachyures. C. R. lxxxi. p. 1198; R. Z. (3) iii. p. xix.

Lilljeborg, W. De under Svenska vetenskapliga expeditionem till Spetsbergen derstädes samlade Hafs Entomostraceer. Œfv. Ak. Förh. xxxii. No. 4, pp. 3–12.

Macdonald, J. D. On the external anatomy of *Tanais vittatus*, occurring with *Limnoria* and *Chelura terebrans* in excavated pier-wood. Tr. L. S. (2) i. pp. 67–70, pl. xv.

Metzger, A. Crustaceen in: Bericht über die Untersuchungs-Farth der Pommerania. Berlin: 1875, fol. pp. 277–309, pl.

Miers, E. J. Descriptions of new species of *Crustacea* collected at Kerguelen's Island, by the Rev. A. E. Eaton. Ann. N. H. (4) xvi. pp. 73–76, 115–117.

——. On some new or undescribed species of *Crustacea* from the Samoa Islands. *Tom. cit.* pp. 341–344.

Möbius, H. *Copepoda* und *Cladocera* in: Bericht über die Untersuchungs-Farth der Pommerania. Berlin: 1875, fol. pp. 269–276, pls. vii. & viii.

Nitsche, H. Ueber die Geschlechts-organe von *Branchipus grubii* (Dybowsky). Z. wiss. Zool. xxv. pp. 281–296, pl. xxii.

Packard, Junr., A. S. Synopsis of the Fresh-water Phyllopod Crustaceans of North America. Ann. Rep. U. S. Terr. for 1873 [published 1875] pp. 613–622, 4 pls.

——. On the development of the nervous system of *Limulus*. Am. Nat. ix. pp. 422–424.

——. Life-histories of the *Crustacea* and Insects. *Tom. cit.* pp. 582–622, woodcuts.

Putnam, F. W. On some of the habits of the blind crawfish, *Cambarus pellucidus*, and the reproduction of lost parts. P. Bost. Soc. xviii. pp. 16–19.

Schmankowitsch, W. J. Ueber das Verhältniss der *Artemia salina* (M. E.) zur *Artemia mühlhausenii* (M. E.), und dem genus *Branchipus* (Schäff.). Z. wiss. Zool. xxxv. suppl. vol. pp. 103–116, pl. vi.

Smith, S. F. Report on the Amphipod Crustaceans of Colorado. Ann. Rep. U. S. Terr. pp. 608–611, 2 pls.

Spangenberg, F. Zur Kenntniss ven *Branchipus stagnalis*. Z. wiss. Zool. xxv. suppl. vol. pp. 1–64, pls. i.–iii.

STEBBING, T. On the Genus *Bathyporeia*. Ann. N. H. (4) xv. pp. 74–78, pl. iii.

STUXBERG, A. Om Nord Amerika's Oniscider. Œfv. Ak. Förh. xxxii. No. 2, pp. 43–63.

VOGL, CAJETAN v. Beitrag zur Kenntniss der Land-Isopoden. Verh. z.-b. Wien, xxv. pp. 501–518, pls. xi. & xii.

WILLEMÖES-SUHM, R. v. Briefe von der Challenger Expedition. Z. wiss. Zool. xxv. pt. 2, pp. xxv.–xlvi.

——. On some Atlantic *Crustacea* from the Challenger Expedition. Tr. L. S. (2) i. pp. 23–58, pls. vii.–x.

WOOD-MASON, J. On new or little-known Crustaceans. P. A. S. B. 1875, pp. 230–232.

PHYSIOLOGY AND EMBRYOLOGY.

A. S. PACKARD gives a popular account of the development in the different orders of *Crustacea*, extracted from the works of Rathke, Thompson, Fr. Müller, Claus, Dohrn, Metschnikoff, and others, and from his own observations; he recapitulates the stages through which they pass to the perfect state, in the following manner:—

Barnacles and root-barnacles: 1, Morula; 2, Nauplius or larva; 3, a bivalved "pupal" stage; 4, Adult retrograde condition.

Copepods: 1, Morula; 2, Nauplius; 3, Cyclopian (in certain genera embryonic) stage; 4, Adult Copepod, in some forms being a degraded more or less amorphous parasitic condition (*Lernæidæ*).

Ostracoda and *Cladocera*: Nauplius stage in the egg.

King Crab (*Limulus*): 1, Peripheral or partial segmentation of the yelk; 2, No true Nauplius stage, but the six legs appear simultaneously; 3, Trilobitic stage; 4, Adult *Limulus* form attained before hatching.

Phyllopods: Embryological development not known. After hatching, they pass through a Nauplius stage, and attain the adult condition after a number of moults.

Nebalia: 1, Partial segmentation of the yelk; 2, Nauplius stage in the egg; 3, Larval form like the adult, no metamorphosis.

Tetradecapods (Isopods and Amphipods): 1, Segmentation of the yelk partial or total (*Morula*), even in the same genus (*Gammarus*) both modes have been observed; 2, Nauplius stage in the egg; 3, Larva hatching in the form of the adult, with the full number of feet, no metamorphosis.

Decapods: 1, Partial segmentation of the yelk; 2, Nauplius stage, either free swimming (*Peneus setigerus*) or undergone in the egg; 3, Zoea stage, sometimes (common lobster) suppressed; 4, Megalops stage in many crabs, in a few cases no metamorphosis; 5, adult.

Am. Nat. ix. pp. 582–605, with many woodcuts.

Sars' observations on the development of the lobster [Zool. Rec. xi. p. 201] are recapitulated by GERVAIS, J. Zool. iv. pp. 362 & 363.

A. SANDERS, Tr. Micr. Soc. 1875, pp. 104–111, pls. liv. & lv., has

published some further notes on the Zoosperms of *Crustacea* (*Pagurus maculatus*, *callidus*, and *ornatus*, *Porcellana platycheles*, *Galathea squamifera*, and *Palæmon squilla*), the forms of which are stated to be strictly regulated in accordance with the external shape of the animal; a state of things not easily reconcilable with the theory of derivation from a primitive form.

The moulting of the common cray-fish is the object of a paper by Max Braun, who states that between the chitinogen cells and the old chitinous shell a layer of hair-like processes is produced which serves to loosen the shell; a similar production of microscopical hairs precedes the formation of the so-called "eyes," or calcareous deposits within the stomach, and this production also occurs between the chitinogen cells and the old chitinous layer of the stomach, so that it must be regarded as analogous to a cuticular production. Arb. Inst. Würzb. ii. pp. 121–166, pls. viii. & ix.

Contributions to Faunas.

145 species of *Crustacea*, including 2 Pycnogonids, 9 Cirripeds, 6 Copepods, 21 *Ostracoda*, 64 Tetradecapods, 1 Cumacean, and 43 *Podophthalma* observed at St. Andrews by W. C. MacIntosh, Mar. Invertebr. of St. Andrews, p. 133 *et seq.*

6 species of *Læmodipoda*, 77 of *Amphipoda*, 17 of *Isopoda*, 8 of *Cumacea*, 1 Stomapod (*Erichthus*), 14 of *Mysidæ*, 1 *Nebalia*, 30 of *Podophthalma Macrura*, 8 of *D. Anomura*, and 21 of *D. Brachyura* found in different parts of the North Sea during the expedition of the Ge[illegible]–276, steamer "Pommerania" are enumerated by A. Metzger, Ber. Unters. Pommerania, pp. 278–295, some new among them are described, and critical and biological observations added, pp. 296–306. A considerable faunistic difference exists between the more southern and northern parts of the North Sea, north and south of the Dogger Bank, separated by a line from Scarborough to the Skagerrak; in the southern part, the temperature of the water in the summer is higher and nearly the same (about 13°–14° R.) from the surface until 20–30 fathoms; in the northern, it decreases considerably beneath the surface, and is therefore more fitted for northern species; *id. l. c.* pp. 306–309.

14 species of *Copepoda* and 2 of *Cladocera* (*Evadne*) found in different parts of the North Sea during the above-mentioned expedition are enumerated and a new one described, by K. Möbius, *tom. cit.* pp. 269–276, pls. vii. & viii.; the Copepods are more common near land than in the open sea.

One species of *Ostracoda*, *Philomedes globosus* (Lillj.), and 6 of Copepods have been found in the sea near Spitzbergen by the Swedish expedition of 1872–73; W. Liljeborg, Œfv. Ak. Förh. xxxii. No. 4, pp. 3–12.

Some species, new for the Swedish Fauna, are enumerated by Malm, Förh. Sk. Naturf. xi.

Three species of *Balanus*, 7 of *Amphipoda*, 4 of *Isopoda*, 1 *Cuma*, 2 *Mysis*, and 3 of *Decapoda*, viz., *Palæmon squilla*, *Crangon vulgaris*, and

Carcinus mænas (L.), occur in the inlet of Travemünde, Baltic; H. Lenz, Die wirbellosen Thiere der Travemünder Bucht, Berlin: 1875, fo., pp. 14–17.

Seven species of Cirripeds belong to the Netherlands' Fauna; P. P. C. Hoek, Tijdschr. Ned. Dierk. Ver. ii. (sep. copy) p. 5. A systematic account of the known European species; *id. l. c.* pp. 38–45.

Several *Crustacea* found attached to the Falmouth and Lisbon cable, at depths ranging from 89 to 205 fathoms, are enumerated by A. M. Norman, Ann. N. H. (4) xv. pp. 170 & 171.

Forty-one species of Decapods living on the coasts of Portugal, and represented in the Museum of Lisbon, are enumerated by F. de Brito Capello, J. Sc. Lisb. iv. [1873] pp. 233–240.

Mediterranean. About 70 species of Amphipods found in the Gulf of Marseilles, by J. D. Catta, C. R. lxxx. p. 831.

Caspian Sea. O. Grimm has found about 35 species of *Crustacea* by dredgings until 150 fathoms, chiefly on the west coast; among them are very large species of *Gammaridæ*, and very commonly *Idotea entomon*; this and some other genera give to the Caspian fauna a somewhat nearer relationship to the Glacial Ocean than to the Black Sea and the Mediterranean. Z. wiss. Zool. xxv. pp. 323–326.

Two species of land-crabs in the island Rodriguez; G. Gulliver, Ann. N. H. (4) xv. p. 366.

Kerguelen's Island. Ten new species belonging to the Tetradecapods Cirripedes Pycnogonids collected by A. E. Eaton, described by E. J. Miers, Ann. N. H. (4) xvi. pp. 73–76 and 115–117. A common European species of *Cyclopidæ*, *Harpacticus fulvus* (Fischer) has been found in the former island in a probably brackish lake, another new one in the open sea; G. S. Brady, *tom. cit.* p. 162. *Entomostraca* abound in the lakes; A. E. Eaton, *tom. cit.* p. 291.

Very interesting notes on the pelagic and deep-sea *Crustacea* of the Antarctic and Pacific Oceans are to be found in letters written by Willemoës-Suhm, on board the "Challenger," to Professor Siebold, Z. wiss. Zool. vol. xxiv. 1874, pp. xvi.–xlvi. vol. xxv. pt. 2, pp. xxvi., xxvii., xxix., xxxiii., xxxvii., and vol. xxvi. pp. lv., lxxxiv., cii., cvi. A letter on the same subject also in Arch. sci. nat. 1875, and in J. Zool. iv. p. 399. Among deep-sea animals, *Munnopsis* and *Scrolis* are common in the higher latitudes of the southern hemisphere, but are wanting in the warmer parts of the Pacific; *Willemoesia* and *Gnathophausia*, on the contrary, common in the warmer parts of the Atlantic and Pacific, are wanting in the Antarctic Ocean; *Evadne* sp. near the shore of Japan.

Samoa Islands. Some new Decapods described by E. J. Miers, Ann. N. H. (4) xvi. pp. 341–344.

Twenty-nine species of North American *Oniscidæ* are enumerated by A. Stuxberg, Œfv. Ak. Förh. xxxii. pp. 43–63; among them are seven European species, viz., *Ligidium hypnorum* (Cuv.), Niagara and San Francisco, *Trichoniscus pusillus* (Brandt), Niagara, *Porcellio maculicornis* (Koch), San Francisco and San Pedro, California, *P. scaber* (Latr.), Newfoundland, Niagara, and California, *P. pictus* (Brandt),

Niagara, *P. trilineatus* (Koch) and *P. convexus* (Geer), both New England and Niagara. Fifteen species are peculiar to California or Mexico, among them five genera not represented in Europe, viz., *Styloniscus*, *Alloniscus*, *Rhinoryctes*, *Pseudarmadillo*, and *Sphærillo*.

Cave Fauna.

The following species of *Crustacea* living in caves are enumerated and shortly described by E. Simon, J. Zool. iv. pp. 114–116:—

Decapoda: *Troglocaris schmidti* (Dorm.), Carniolia, and *Cambarus pellucidus* (Tellk.), Kentucky.

Amphipoda: *Niphargus subterraneus* (Leach) = *puteanus* (C. Koch) *aquilex* and *stygius* (Schiödte), Carniolia, also in wells.

Isopoda: *Titanethes albus* (Schiödte), Carniolia and Istria, *Cæcidothea stygia* (Packard, 1872), Kentucky, *Armadillo cacahuamilpensis* (Bilimek, 1867), Mexico, and *Monolistra cæca* (Gerstäcker, 1856), Carniolia, the last belonging to the *Sphæromidæ*.

Hints and directions for collecting *Crustacea* by Möbius and Gerstäcker in Neumayer's "Anleitung zu wissenschaftlichen Beebachtungen auf Reisen," Berlin: 1875, 8vo, pp. 418, 419, & 457–459.

DECAPODA.

Brocchi describes and figures the male generative organs, especially the external appendages, of a large number of Decapods of nearly all the chief families; he comes to the conclusion that the situation of the genital orifice is not very important for purposes of classification; in all *Macrura*, and in the large majority of *Brachyura*, it is situated in the basilar joint of the fifth pair of legs, only in most *Catometopa* (except *Telphusidæ*) its place is apparently on the sternal shield, though on closer examination it is found to be in a prolongation of the basilar joint enclosed by the plates of the sternum; in *Palinurus*, *Birgus*, and *Cœnobita* the orifice is situated on a tubercle of the basilar joint, which has a peculiar form in each of those three genera. The external appendages offer more differences; they are entirely wanting in the *Carides* (except the *Penеidæ*), the genus *Astacoides* among the *Astacidæ*, the *Palinuridæ* and *Scyllaridæ*, and the abnormal *Macrura* generally: they consist of only one pair of transformed abdominal feet in the *Penеidæ*, *Homarus*, and the *Galateidæ*; two pairs of abdominal feet are transformed into genital appendages in the males of the rest of the Decapods. Their shape is very different in the various families, genera, and even species: each family usually has its peculiar facies as regards them, though sometimes considerable differences are found in different species of the same genus, *e. g.*, in *Cambarus*, *Goniosoma*, and *Plagusia*. Ann. Sci. Nat. (6) ii. art. 2, 131 pp. pls. xiii.–xix.

The presence of spermatophores in the Decapods upheld, in opposition to Hallez; *id. l. c.* pp. 29, 65 & 96.

The copulation of the Decapod *Crustacea* is discussed by the same author, who thinks it improbable that true copulation is effected in the *Macrura*, and quotes the observations of many naturalists and fishermen on the point; *l. c.* pp. 44–49. The copulation of the *Brachyura* is described; *id. l. c.* pp. 113–115, pl. xvi. figs. 98–104.

The spermatozoids of the *Macrura* are immobile vesicles with a styliform appendage; *id. l. c.* p. 50, pl. xiii. fig. 7, pl. xiv. figs. 30–32 & 36–39, pl. xv. fig. 43. Those of the *Brachyura* vary considerably in shape; *id. l. c.* pp. 115 & 116, pl. xviii. fig. 147.

Inachidæ.

Leptopodia sagittaria, male appendages; Brocchi, *l. c.* p. 88, pl. xix. fig. 176.

Camposcia retusa, male appendages; *id. l. c.* p. 89, pl. xviii. fig. 156.

Eurypodius sp., male appendages; *id. l. c.* p. 90, pl. xviii. fig. 165, and pl. xix. figs. 177 & 178.

Maiidæ.

Libinia canaliculata, male appendages; *id. l. c.* p. 91, pl. xix. figs. 179 & 180.

Hyas araneus (L.). On its parasites; MacIntosh, Mar. Invertebr. of St. Andrews, p. 162. Male appendages; Brocchi, *l. c.* p. 93, pl. xix. figs. 187 & 188.

Maia squinado, male appendages and spermatophores; *id. l. c.* p. 95, pl. xviii. figs. 144–148.

Mithrax verrucosus, male appendages; *id. l. c.* p. 94, pl. xix. figs. 185 & 186.

Paramithrax sp., male appendages; *id. l. c.* p. 95, pl. xviii. figs. 150–152 & 164.

Lissa chiragra, male appendages; *id. l. c.* p. 92, pl. xviii. figs. 153 & 154.

Naxia diacantha, male appendages; *id. l. c.* p. 94, pl. xix. figs. 172 & 173.

Acanthonychidæ.

Acanthonyx lunulatus (Risso), male appendages; *id. l. c.* p. 98, pl. xix. fig. 181.

Parthenopidæ.

Lambrus contrarius, male appendages; *id. l. c.* p. 98, pl. xviii. figs. 166 & 167.

Cancridæ.

Lophactæa granulosa, male appendages; *id. l. c.* p. 71, pl. xvii. fig. 138.

Chlorodius samoensis, sp. n., Miers, Ann. N. H. (4) xvi. p. 341, Samoa Islands.

Eriphiidæ.

Eriphia spinifrons, male appendages; Brocchi, Ann. Sci. Nat. (6) ii. art. 2, p. 69, pl. xvii. figs. 136 & 137.

Portunidæ.

Neptunus pelagicus (L.), *sanguinolentus* (Herbst), and *diacanthus* (Latr.), male appendages; *id. l. c.* pp. 51–56, pl. xv. figs. 74 & 75, and pl. xvii. figs. 76–84.

Goniosoma erythrodactylum (Lam.), *anisodon* (M. E.), and *orientale* (Haan), male appendages; *id. l. c.* pp. 57–59, pl. xv. figs. 70–73, and pl. xvii. figs. 105–107.

Thalamita speciosa, sp. n., Miers, Ann. N. H. (4) xvi. p. 341, Samoa Islands.

Thalamita integra (M. E.) and *sima* (M. E.), male appendages; Brocchi, *l. c.* p. 56, pl. xvi. figs. 91–94.

Portunus holsatus (F.) and *corrugatus* (Penn), male appendages; *id. l. c.* pp. 59–62, pl. xvi. figs. 85–88, 96–99 & 104.

Carcinus mænas (L.), maxillipeds and ventral face of a brilliantly coloured male; MacIntosh, Mar. Invertebr. of St. Andrews, p. 165, pl. v. figs. 7 & 8; gills, &c., pl. ix. figs. 9–13. Its male genitals; Brocchi, *l. c.* pp. 62–66, pl. xvi. figs. 89, 90, 100 & 101.

Podophthalmus vigil (F.), male appendages; Brocchi, *l. c.* p. 67, pl. xvii. figs. 108–110.

Telphusidæ.

Telphusa fluviatilis (Latr.), male appendages; Brocchi, *l. c.* p. 86, pl. xvii. figs. 122 & 123.

Telphusa bayoniana, var. n., Caconda, and *anchietæ*, sp. n., S. José d'Anchieta, West Africa, Brito Capello, J. Sc. Lisb. iii. [1871] pp. 131 & 132, pl. ii. figs. 10 & 11. *T. dubia*, sp. n., *id. op. cit.* iv. [1873] p. 254, pl. i. figs. 1 & 2, Rio Cunene, interior of Mossamedes, West Africa.

Paratelphusa. J. Wood-Mason points out the geographical distribution of this genus, embracing Java, Sumatra, and Borneo, Burma, Assam, and Eastern Bengal, and describes *P. martensi*, sp. n., throughout the Gangetic valley from Hardwar to Jessor, *P. edwardsi*, sp. n., Cachar, Saddya and the Garo, Naga and Dafla Hills, and *P. crenulifera*, sp. n., Pegu, Yomali. P. A. S. B. 1875, pp. 230 & 231.

Boscia dentata, male appendages; Brocchi, *l. c.* p. 86, pl. xviii. figs. 119–121.

Gecarcinidæ.

Gecarcinus lateralis (Freminv.), *Cardisoma guanhumi* (Latr.) and *C. carnifex* (Herbst.), male appendages; Brocchi, *l. c.* pp. 84 & 85, pl. xvii. figs. 113–118.

Uca una (Latr.). Its branchial cavity contains air and has a double system of blood-vessels; Jobert, C. R. lxxxi. p. 1198; R. Z. (3) iii. p. lxix.

Ocypodidæ.

Ocypode ceratophthalma (Pall.) and sp., male appendages; Brocchi, *l. c.* p. 74, pl. xviii. figs. 141 & 142.

Gelasimus maracoani (Latr.) and *latreillii* (M. E.), male appendages; *id. l. c.* p. 73, pl. xvii. figs. 126 & 135.

Gonoplax rhomboides (F.) male appendages; *id. l. c.* p. 76, pl. xix. figs. 183 & 184.

Pinnoteridæ.

Elamene pilosa, male appendages; *id. l. c.* p. 87, pl. xix. fig. 182.

Grapsidæ.

Grapsus rudis (M. E.), male orifice and appendages; *id. l. c.* p. 78, pl. xvii. figs. 111 & 112.

Leptograpsus marmoratus (F.), male appendages; *id. l. c.* p. 79, pl. xvi. fig. 103.

Goniopsis cruentata (Latr.), male appendages; *id. l. c.* p. 77, pl. xvii. figs. 124 & 125.

Varuna literata (F.), male appendages; *id. l. c.* p. 80, pl. xix. fig. 196.

Xantilograpsus minutus (L.), male appendages; *id. l. c.* p. 80, pl. xvii. fig. 133.

Cyclograpsus punctatus (M. E.), male appendages; *id. l. c.* p. 84, pl. xvii. fig. 132.

Heterograpsus sp., male appendages; *id. l. c.* p. 83, pl. xviii. fig. 143.

Helice granulata (Dana), male appendages; *id. l. c.* p. 83, pl. xviii. figs. 127 & 128.

Plagusia sayi and *depressa* (H.), male appendages very different; *id. l. c.* pp. 80 & 81, pl. xix. figs. 168–170.

Acanthopus planissimus (H.), male appendages; *id. l. c.* p. 81, pl. xix. fig. 171.

Sesarma livida (M. E.), *smithi* (M. E.), and *tetragona* (F.), male appendages; *id. l. c.* pp. 82 & 83, pl. xvii. fig. 130, and pl. xviii. figs. 139 & 140.

Sesarma pentagona, sp. n., Hutton, Ann. N. H. (4) xv. p. 41, New Zealand.

Calappidæ.

Calappa granulata (L.), *tuberculata* (F.) and *marmorata* (F.), male genitals; Brocchi, *l. c.* p. 100, pl. xvi. fig. 102, pl. xviii. figs. 157–163.

Calappa guerini, Yamaon [?], *moniziana*, Cape of Good Hope ?, and *bocagii*, Angola, spp. nn., Brito Capello, J. Sc. Lisb. iii. [1871] pp. 128–130, pl. ii. figs. 1–3. A table indicating the chief characters of all known species of the genus, *id. l. c.* p. 130; etchings of the dorsal shields and fronto-orbital borders of some of them, *l. c.* figs. 4–9.

Matuta victor (F.), male appendages; Brocchi, *l. c.* p. 99, pl. xix. figs. 174 & 175.

Hepatus fasciatus (Latr.), male appendages; *id. l. c.* p. 100, pl. xix. figs. 188 & 189.

Leucosiidæ.

Leucosia whitmeei, sp. n., Miers, Ann. N. H. (4) xvi. p. 342, Samoa Islands.

Corystidæ.

Corystes dentatus (F.), male appendages; Brocchi, *l. c.* p. 102, pl. xix. figs. 192 & 193.

Atelecyclus cruentatus (Desm.), male appendages; *id. l. c.* p. 103, pl. xix. figs. 197–199.

Dorippidæ.

Dorippe lanata (L.), male appendages; *id. l. c.* p. 102, pl. xix. figs. 194 & 195.

Ethusa mascarone (Herbst.), male appendages; *id. l. c.* p. 131, pl. xix. fig. 191.

Homolidæ.

Homola spinifrons (Lam.), male appendages; *id. l. c.* p. 107, pl. xix. figs. 200–202.

Dromiidæ.

Dromia vulgaris (M. E.), *rumphi* (F.), *hirtissima* (Lam.), and *nodipes* (M. E.), male appendages; *id. l. c.* pp. 105–107, pl. xv. figs. 56–67.

Hippidæ.

Hippa talpoidea (Say), male appendages; *id. l. c.* p. 41.

Paguridæ.

Pagurus striatus (Latr.), male genitals; *id. l. c.* pp. 34–38, pl. xiv. figs. 35–39, pl. xv. fig. 43.

Pagurus bernhardus (L.) described by MacIntosh, Mar. Invert. of St. Andrews, p. 159.

Pagurus (*Bernhardus*) *solitarius* (Roux), male appendages; Brocchi, *l. c.* p. 39, pl. xiv. figs. 40 & 41.

Cœnobita perlata (M. E.) and sp., male orifice; *id. l. c.* p. 40, pl. xv. figs. 45–47.

Birgus latro (L.), male orifice; *id. l. c.* p. 39, pl. xv. fig. 44. On its occurrence on the Philippines; Willemöes-Suhm, Z. wiss. Zool. xxvi. p. lxxiii.

Porcellanidæ.

Porcellana platycheles (Penn.) described by MacIntosh, Mar. Invert. of St. Andrews, p. 160.

Porcellana sp., from Portugal, described without name, by Brito Capello, J. Sc. Lisb. iv. p. 238.

Porcellana sp., male appendages ; Brocchi, *l. c.* p. 40, pl. xv. figs. 68 & 69.

Galateidæ.

Galatea strigosa (L.), male genitals ; *id. l. c.* p. 14, pl. xiv. figs. 25, 26, 29–31.

Grimotea gregaria (F.), male appendages ; *id. l. c.* p. 16, pl. xiii. figs. 20 & 21, pl. xiv. figs. 23 & 24.

Palinuridæ.

Palinurus vulgaris (Lam.), male genital organs ; *id. l. c.* p. 8, pl. xiii. figs. 1 & 2, and pl. xiv. fig 22.

Palinurus edwardsi, sp. n., Hutton, Ann. N. H. (4) xv. p. 42, New Zealand.

Scyllaridæ.

Scyllarus arctus (L.), male genitals ; Brocchi, *l. c.* p. 12, pl. xiii. fig. 19, and pl. xiv. fig. 32.

Astacidæ.

The common crayfish attracted by red-coloured objects ; Zool. Gart. 1875, p. 37. Its male genital appendages described by Brocchi, Ann. Sci. Nat. (6) ii. art. 2, p. 21, pl. xiii. figs. 8–14.

Homarus vulgaris (M. E.), male appendages and spermatophores ; Brocchi, *l. c.* p. 28, pl. xiii. figs. 3–7.

Nephrops norvegicus (L.), male appendages ; *id. l. c.* p. 30, pl. xiii. figs. 16–18.

Cambarus pellucidus (Tellk.) observed in the living state by F. W. Putnam : it is very timid, and not at all voracious ; lost parts are not reproduced in perfection on one shedding of the shell, but at each moulting they become more nearly perfect than before ; the great claw requires about four moulting periods before being restored to its full size, the posterior legs two ; the antennæ are redeveloped more rapidly and approach their full size in one moulting. P. Bost. Soc. xviii. pp. 16–19.

Eutrichocheles, g. n., for *Astacus modestus* (Herbst, 1794), again found by J. Wood-Mason, P. A. S. B. 1875, p. 231.

Polycheles (Heller, 1862)) = *Deidamia* (Willemöes-Suhm, 1873) = *Willemoesia* (Grote). Heller's description translated, and a new family, *Polychelidæ*, proposed for it by J. Wood-Mason, Ann. N. H. (2) xv. pp. 131–135. Willemöes-Suhm distinguishes three species, *W. lepto-*

dactyla, crucifer, and *euthrix*, sp. n., the latter from the Pacific, and points out the affinity to the fossil genus *Eryon*. Z. wiss. Zool. xxv. part 2, p. xxxiii.

Thaumastocheles, g. n., for *Astacus zaleucus* (Willemöes-Suhm; see Zool. Rec. xi. p. 208), J. Wood-Mason, P. A. S. B. 1874, p. 181; facies of the *Thalassinidæ*, but characters of *Astacidæ*.

THALASSINIDÆ.

Thalassina scorpionides (F.), *Axia stirhyncha* (Leach), *Gebia littoralis* (Leach), and *Callianassa subterranea, californiensis*, and *gigas*, male appendages; Brocchi, *l. c.* pp. 17–20, pl. xv. figs. 48–55.

CRANGONIDÆ.

Pontophilus norvegicus (Sars) = *Hippolyte costata* (Leuck., 1847) from Heligoland; Metzger, Ber. Unters. Pommerania, p. 305.

ATYIDÆ.

Atya scabra (Leach), first pair of abdominal feet modified; Brocchi, *l. c.* p. 32, pl. xiv. figs. 33 & 34.

Atya gabonensis, sp. n., Giebel, Z. ges. Naturw. (2) xi. p. 52, Gaboon, West Africa.

ALPHEIDÆ.

Alpheus lineifer, sp. n., Miers, Ann. N. H. (4) xvi. p. 343, Samoa Islands.

Nika edulis (Risso) found in the German Ocean, probably immigrated through the English Channel; Metzger, Ber. Unters. Pommerania, p. 306.

PALÆMONIDÆ.

Hippolyte cranchi (Sabine) and *polaris* (Sabine); critical notes by Metzger, *l. c.* p. 305, pl. vi. fig. 10.

Virbius fasciger (Gosse) is scarcely distinct from *varians* (Leach); *id. ibid.*

Palæmonetes varians (Leach), common in the estuaries of the shores of Northern Germany; *id. l. c.* p. 304.

Palæmon gracilirostris, sp. n., Miers, Ann. N. H. (4) xvi. p. 343, Samoa Islands.

Bythocaris simplicirostris (G. O. Sars), found near Mandal, Norway, 250 & 400 fathoms, and described by Metzger, *l. c.* p. 305.

PENEIDÆ.

Peneus caramote (Risso) and *semisulcatus* (Haan), male appendages; Brocchi, *l. c.* pp. 32 & 33, pl. xiv. figs. 27 & 28.

Sergestes meyeri, sp. n., Metzger, Ber. Unters. Pommerania, pp. 202–204, pl. vi. fig. 7, Korsnäes, Norway, 337 fathoms.

STOMATOPODA.

Mysidæ.

Siriella sp., probably male specimen of *S. norvegica* (G. O. Sars), from the coast of Norfolk, described by Metzger, Ber. Unters. Pommerania, p. 301.

Petalophthalmus, g. n., with large concave chitinous plates instead of eyes, for *P. armiger*, sp. n., Tropical Atlantic, *P. inermis*, sp. n., Antarctic Sea; Willemoës-Suhm, J. Zool. iv. p. 401.

Gnathophausia zoea, sp. n., dredged in the tropical parts of the Atlantic and Pacific, Willemoës-Suhm, Z. wiss. Zool. xxiv. [1874] p. xxix.

Squillidæ.

Squilla supplex, sp. n., J. Wood-Mason, P. A. S. B. 1875, p. 232, Bombay.

Clorida decorata, sp. n., *id. l. c.* p. 237, Andamans.

Gonodactylus glyptocercus, id. *l. c.* p. 232, Nicobars; *G. graphurus* (White, MS., 1847), Miers, Ann. N. H. (4) xvi. p. 344, Samoa Islands: spp. nn.

Coronis spinosa, sp. n., J. Wood-Mason, *l. c.* p. 232, Andamans and New Zealand.

Amphion. Specimens provided with gills and testicle, thus probably adult, found in the Pacific; Willemoës-Suhm, Z. wiss. Zool. xxvi. p. cvi.

AMPHIPODA.

Gammaridæ.

Lysianassa kergueleni, sp. n., Miers, Ann. N. H. (4) xvi. p. 74, Kerguelen's Island.

Lepidepecreum carinatum (Bate & Westw.), Generic and specific characters more fully given from perfect specimens; Metzger, Ber. Unters. Pommerania, pp. 299 & 300.

Bathyporia robertsoni (Sp. Bate) = *pelagica* (Sp. B.) immat., = *pilosa* (Lindstr.), ♂, and is accurately described; Stebbing, Ann. N. H. (4) xv. pp. 74–78, pl. iii.

Metope pollexana (Bate, as *Montagua*) = *Leucothoe clypeata* (Kröyer); Metzger, Ber. Unters. Pommerania, p. 299.

Tritropis helleri (Beck), Skagerrak, 320 fathoms, *id. ibid.*

Dexamine antarctica, sp. n., Stebbing, Ann. N. H. (4) xv. p. 184, pl. xv. fig. 1, Antarctic Sea, in a sponge dredged up by Sir J. Ross in S. Lat. 77½°, and E. Long. 175°, from a depth of 300 fathoms.

Hyalella, g. n., near *Hyale* (Rathke); first pair of maxillæ with rudimentary uni-articulate palpi; palpus of the maxillipeds 5-articulate; telson short, entire. *H. dentata* and *inermis*, spp. nn., Colorado. S. F. Smith, Ann. Rep. U. S. Terr. 1875, pp. 608 & 609, pl. vi. figs. 1–6.

Gammarus robustus, sp. n., Utah, and *limnæus*, new name for *lacustris* (1871, pre-occupied), Colorado; *id. l. c.* pp. 610 & 609, pl. ii. figs. 7–14.

Paramæra, g. n., = *Melita* (Dana, *nec* Leach); superior antennæ exappendiculate, but little longer than the inferior. Gnathopods subequal, well developed; dactylus closing along the inferior margin of the palm; posterior pair of pleopoda with the rami very unequal, the inner ramus short or rudimentary; telson cleft nearly to the base. For *Melita fresneli* (Audouin), *M. tenuicornis* (Dana), and *P. australis*, sp. n.; Miers, Ann. N. H. (4) xvi. p. 75, the last from Kerguelen's Island, and subsequently referred to *Atylus*, id. Ann. N. H. (4) xvi. p. 117.

Seba saundersi, sp. n., Stebbing, Ann. N. H. (4) xv. p. 185, pl. xv. fig. 2, Algoa Bay.

Ampelisca eschrichti (Kröyer), description and critical note; Metzger, Ber. Unters. Pommerania, p. 298.

Byblis crassicornis, sp. n., *id. l. c.* p. 297, pl. vi. fig. 9, Jaederen, Norway, 106 fathoms.

Domicolæ.

Podocerus ornatus, sp. n., Miers, Ann. N. H. (4) xvi. p. 75, Kerguelen's Island.

Corophiidæ.

Hela monstrosa (Böck), sexual differences indicated; Metzger, Ber. Unters. Pommerania, p. 296.

Dulichiidæ.

Dulichia monocantha [*monac-*], sp. n., *id. l. c.* p. 296, pl. vi. fig. 8, Skagerrak, 115 fathoms; a doubtfully new species of the same genus indicated, *id. ibid.*

Arcturidæ.

Arcturus lineatus (Stebbing). The fourth segment of the thorax is not elongated in young specimens; Stebbing, Ann. N. H. (4) xv. p. 187.

Idotea pelagica (L.), and *tricuspidata* (Desm.), variations in colour and in the breadth of the body; Stebbing, J. L. S. xii. pp. 148 & 149, pl. vii. fig. 12. The latter species occurs also in the Baltic at Travemünde; Lenz, Wirbell. Thiere Trav. Bucht, p. 15.

Tanaidæ.

Tanais vittatus (Rathke), found in the excavated wood of piers, in company with *Limnoria* and *Chelura terebrans* (Phil.), described by J. D. Macdonald, Tr. L. S. (2) i. pp. 67–70, pl. xv.

Asellidæ.

Limnoria terebrans (Leach), attacking the gutta-percha of telegraph cable; A. Andrews, Q. J. Micr. Sci. (2) xv. p. 332.

Oniscidæ.

Oniscus vicarius, Stuxberg, Œfv. Ak. Förh. xxix. 1872, p. 3, more fully described, *id. op. cit.* xxxii. No. 2, p. 50, Newfoundland and Canada; is possibly *O. affinis* (Say), but the description of the latter is too short for recognition.

Rhinoryctes, g. n.; antennæ 8-jointed; no special respiratory organ in the opercular branch of the caudal feet; forehead with a prominent upcurved median appendage and conical lateral lobes. *R. mirabilis*, sp. n., Stuxberg, *l. c.* xxxii. No. 2, p. 51, California.

Porcellio albo-marginatus, Vogl, Verh. z.-b. Wien, xxv. p. 516, pl. xii. fig. 7, Syra; *P. formosus*, Stuxberg, *l. c.* p. 57, California: spp. nn.

Armadillo tuberculatus, Vogl, *l. c.* p. 501, pl. xi. fig. 1, Tinos; *A. speciosus*, Stuxberg, *l. c.* p. 62, California: spp. nn.

Armadillidium globosum, sp. n., Tinos, *morbillosum* (C. Koch ?), Dalmatia, *granulatum* (Brandt), Dalmatia, Corfu, and Egypt, *guttatum* (Koch), Dalmatia, *astriger* [*-erum*] (C. Koch), Dalmatia and Corfu, fully described; Vogl, *l. c.* pp. 505–516, pl. xi. figs. 2–4, and pl. xii. figs. 5 & 6.

Sphæromidæ.

Sphæroma rugicauda (Leach), estuaries of North Sea and Baltic, in the former considerably larger; Metzger, Ber. Unters. Pommerania, p. 301. Also in the inlet of Travemünde, Baltic; H. Lenz, Wirb. Thiere Trav. Bucht, p. 15.

Sphæroma algoense, sp. n., Stebbing, Ann. N. H. (4) xv. p. 186, pl. xv fig. 3, Algoa Bay.

Cyclura, g. n.; inner plate of the uropoda (lateral blades of the terminal fin) attached to a tooth which projects both forwards and upwards from the extremity of the tail (telson), both plates extending beyond this tooth, the outer plate folding partially beneath the inner, but extending beyond it. *C. venosa*, sp. n., *id.* J. L. S. xii. [1874] p. 146, pl. vi. Australia.

Dynamene rubra (Mont.), = *viridis* (Leach), differing only in colour and the broader or narrower form of the body; variation in the latter character, and even partial narrowness in the same individual, is found also in *D. varians* and *D. montagui*; id. *l. c.* pp. 148–151, pl. vii.

Dynamene eatoni, sp. n., Miers, Ann. N. H. (4) xvi. p. 73, Kerguelen's Island.

Cymothoidæ.

Serolis. The known species discussed, and *S. tuberculata*, sp. n., Bass' Straits, described by Grube, Arch. f. Nat. xli. pp. 208–234; the last and *S. schythii* (Lütken) figured, pls. v. & vi.

Serolis latifrons and *septemcarinata*, spp. nn. (White, MS., 1847), Miers, Ann. N. H. (4) xvi. p. 74, the first from Kerguelen's and Auckland Islands, the second from Crozet Island.

Æga semicarinata, sp. n., *id. l. c.* p. 115, Kerguelen's Island.

Eurydice pulchra (Leach) = *Slabberina agilis* (Sars), is very rapacious; Metzger, Ber. Unters. Pommerania, p. 301. This species = *Oniscus achates* (Slabber) = *Slabberina agata* (Beneden), and is described from specimens found near Travemünde in the Baltic, on weed cast ashore, by H. Lenz, Wirb. Thiere Travem. Bucht, p. 15, pl. ii. figs. 10–17.

PHYLLOPODA.

The fresh-water *Phyllopoda* of North America are reviewed, with the addition of some general remarks on their development, by A. S. Packard, jun.; he enumerates 2 *Limnetis*, 3 *Limnadia*, 1 *Limnadella*, 6 *Estheria*, 1 *Lepidurus*, 4 *Apus*, 3 *Artemia*, 3 *Branchinecta*, 1 *Eubranchipus*, and 1 *Streptocephalus*, all with short diagnosis, and figures the Nauplius-stage of *Branchipus* and *Apus*. Ann. Rep. U. S. Terr. 1875, pp. 613–622.

Apodidæ.

Apus cancriformis (Schäff.). The development from the egg to the perfect state described; C. Claus, Abh. Ges. Götting. xviii. [1873].

Apus æqualis (Packard, 1871) figured; Ann. Rep. U. S. Terr. 1875, pl. iii. fig. 10.

Lepidurus couesi, sp. n., Packard, Am. Nat. ix. p. 312, Montana. *L. glacialis* (Kröyer) figured; Ann. Rep. U. S. Terr. 1875, pl. iii. fig. 9.

Branchipodidæ.

T. Spungenberg describes the breeding and development of *Branchipus stagnalis*, comparing it with that of *Apus cancriformis*; he observes that its fresh eggs sink to the bottom, but after having dried up, they swim on the surface before hatching; he discusses also the morphology and anatomy of the adult *Branchipus*, attributing 3 segments to the head, 2 to the thorax, 19 to the abdomen, and 1 segment to the post-abdomen or tail, this last wanting the feeling bristles, and not containing any part of the heart. Z. wiss. Zool. xxv., suppl. vol. pp. 1–64, pls. i.–iii. The question as to what is to be regarded as the abdomen and post-abdomen in this genus and the allied *Artemia*, is also discussed by Schwankowitsch, and decided in another sense, attributing 7 (6) segments to the post-abdomen; *tom. cit.* pp. 114 & 115. On the development of *Branchipus*, see also Claus, Abh. Ges. Götting. xviii. [1873].

The sexual organs of *Branchipus grubii* (Dyb.) are described, and the formation of the spermatozoids discussed, the cells of the testicle giving origin to other round smaller cells, in which the spermatozoids are formed; H. Nitsche, Z. wiss. Zool. xxv., suppl. vol. pp. 281–296, pl. xxii.

W. J. Schwankowitsch comes to the conclusion, from his observations on the shores of the Black Sea, that both in natural ponds and by artificial breeding *Artemia salina* (M.E.) is transformed in the course of several generations into *A. muehlhauseni* (M.-Edw.) by increased con-

centration of the salt-water, and into a form very near *Branchipus* by decreasing concentration. The only reliable difference, according to him, between *Artemia* and *Branchipus* is that the former exhibits 8 segments without feet, the last nearly twice as long as the preceding, and *Branchipus* 9, the last corresponding to the last two of *Artemia*. Parthenogenesis is known only in *Artemia*. A certain degree of concentration of the water favours the appearance of males and the fecundation of the eggs in *Artemia* and in *Daphnia magna* (Leydig). Z. wiss. Zool. xxv. suppl. vol. pp. 103–116, pl. vi.

Branchinectes coloradensis, sp. n., Packard, Rep. Peab. Ac. vi. [1874], p. 57, and Ann. Rep. U. S. Terr. 1875, p. 621, pl. iv. fig. 12, Colorado.

Streptocephalus texanus (Packard, 1871), *id. l. c.* pl. iv. fig. 13.

Artemia gracilis (Verr.), *id. l. c.* p. 621, pl. iv. fig. 11.

Limnadiidæ.

Limnadia agassizi, sp. n., *id.* Rep. Peab. Ac. vi. [1874] p. 54, and Ann. Rep. U. S. Terr. 1875, p. 618, pl. ii. fig. 5, Penikese Island, Buzzard Bay, Mass., U. S. A.; *L. americana* (Morse), *id. l. c.* pl. ii. fig. 4.

Estheria californica, California, and *clarki*, Cincinnati, Ohio, and Kentucky, spp. nn., *id.* Rep. Peab. Ac. vi. [1874] pp. 55 & 56, and Ann. Rep. U. S. Terr. 1875, pp. 618 & 619, pl. ii. fig. 6, and pl. iii. fig. 1. *E. belfragii* (Pack.) figured; *id. l. c.* pl. iii. fig. 2.

Lymnetis [*Limn-*] *mucronatus* [*-ta*], sp. n., *id.* Am. Nat. ix. p. 312, Montana.

CLADOCERA.

The so-called shell-gland in the *Daphniidæ* has been re-examined by C. Claus, who has found that there is a minute excretory opening on the ventral side near the ampulla (detected by Dohrn), and that the body of the gland makes several convolutions, the ampulla being the opposite blind end of it. Z. wiss. Zool. xxv. pp. 165–173, pl. xi.

OSTRACODA.

Cypridæ.

Philomedes globosus (Lillj.), from the Spitsbergen Sea, and note on the generic difference of *Cypridina* from *Philomedes*, by Lilljeborg, Œfv. Ak. Förh. xxxii. No. 4, pp. 3–5.

Conchœciidæ.

Claus accurately defines this family, proposed by G. O. Sars, and discusses its genera. The differential characters proposed by Dana for his genera *Halocypris* and *Conchœcia* are partly accidental and partly sexual, but the genera can nevertheless be maintained, as follows:—

Conchœcia (Dana); shell lengthened, laterally compressed, deeply notched in front; anterior antennæ in both sexes extended, in the male larger and provided with three long bristles and two bristle-bags; second

pair of feet in the male very large, provided with three long flagelliform bristles. *C. serrulata*, Atlantic and Pacific, *spinirostris*, Mediterranean, and *magna*, locality unknown, spp. nn., also *C. rostrata* and *agilis* (Dana), *C. atlantica* (Lubbock), and ? *C. elegans* and *borealis* (Sars).

Halocypris (Dana); shell short, swollen, obscurely notched in front. Anterior antennæ angularly bent, with one long bristle and four bristle-bags in both sexes, but larger in the male; second pair of feet equal in both sexes. *H. concha*, sp. n., Atlantic and coast of Chili; also *H. inflata* and *brevicornis* (Dana), which are not specifically distinct, but described from females only, and *Conchæcia obtusata* (G. O. Sars), also only known from the ♀, and sp. ? from the South Sea, possibly identical with *inflata* (Dana).

Halocypria, g. n.; shell nearly globose, distinctly notched in front; antennæ as in the preceding; second pair of feet in the female very short and broad; male unknown. *H. globosa*, sp. n., Atlantic.

C. Claus, Schriften zoologischen, Inhalts i. [1874], and Verh. z.-b. Wien, xxiv. [1874] pp. 175–178.

COPEPODA.

Kossmann's classification of the *Copepoda* [Zool. Rec. xi. p. 218] is rather severely criticized by C. Claus, Z. wiss. Zool. xxv. pp. 335–338; with several notes on the buccal organs of *Lichomolgus*, *Sapphirina*, and other genera.

ARGULIDÆ.

Argulus. C. Claus gives a full description of the whole structure, and especially the embryology of this genus, and comes to the conclusion that it is more nearly allied to the *Copepoda*, as suggested by Milne-Edwards, than to the *Phyllopoda*, with which Zenker, Leydig, and latterly also Gerstäcker have associated it. This conclusion is founded on the whole arrangement of the segments, the structure of the antennæ and buccal organs, the furcal appendages of the abdomen, and especially the fact (first established here by the author) that the legs in the larva are two-branched and oar-like, as in the other *Copepoda*. As, however, the differences in the legs of the adult animal, and some other points in the structure and development are very striking, the author proposes to divide the order of *Copepoda* into two sub-orders, (1) *Branchiura* (Thorell), for the *Argulidæ*, and (2) *Eucopepoda*, for all the rest. According to the author, the respiratory function has its chief seat not in the tail, but on the ventral side of the dorsal shield, which is continually swept by the natatory feet; the blood circulating in the caudal blade does not come direct from the heart, but from the cavity of the body, and it may serve rather as an accessory organ for the circulation. *Argulus* is only a stationary parasite; it can leave its host at will, and live several weeks without food, and even moult in this state; the same species occurs on very different species of fish, *e.g.*, *A. foliaceus* (L.), not only on carp, bream, tench, bleak, and other *Cyprinidæ*, but on stickleback, pike, perch, and salmon-trout; *A. coregoni* (Thorell), with which *A. phoxini* (Leydig)

is certainly identical, not only on *Salmonidæ*, but also on *Lucioperca sandra* and minnow. Z. wiss. Zool. xxv. pp. 217–284, pls. xiv.–xviii.

Calanidæ.

Cetochilus finmarchicus (Gunner) = *septentrionalis* (Goodsir), an important article of food of the herring, found near the Doggerbank and on different parts of the coast of Southern Norway, described by Möbius, Ber. Unters. Pommerania, pp. 270 & 271, pl. viii. figs. 1, 4–6.

Euchæta carinata, sp. n., *id. l. c.* p. 271, pl. vii. and pl. viii. figs. 2 & 3, coast of Southern Norway.

Centropages brevicaudatus, sp. n., Brady, Ann. N. H. (4) xvi. p. 162, open sea, near Kerguelen's Island.

Metridia armata (Böck, 1864) described from Spitsbergen specimens; Lilljeborg, Œfv. Ak. Förh. xxxii. No. 4, p. 6.

Harpacticidæ.

Camptonyx, g. n. [pre-occupied in the *Crustacea* by Heller, 1861]. Corpus cylindraceum, trunco et cauda non bene disjunctis; antennæ superiores circiter octoarticulatæ, valde setosæ; inferiores appendice biarticulata; palpus mandibulæ biarticulatus, ramo accessorio uno; pes maxillaris subcheliformis, ungue gracili et debili; pedes 1mi–4ti parium solummodo natatorii, omnes ramo exteriore triarticulato, duo priora paris ramo interiore biarticulato eodemque parium ambo posteriorum triarticulato; pedes 5ti paris valde rudimentarii, tantummodo tuberculo in aculeum producto confecti. *C. parenti*, sp. n., Lilljeborg, Œfv. Ak. Förh. xxxii. No. 4, pp. 9–12, sea near Spitsbergen.

Peltidiidæ.

Hersilia apodiformis (Philippi, 1839) = *Clausidium testudo* (Kossmann, 1874) described, and its systematic affinities discussed; by the shape of the body, the structure of the skin and the conformation of the legs it is nearly allied to *Peltidium*, from which it differs in its parasitical life and consequent reduction of the buccal organs and inequality of sexes. C. Claus, Z. wiss. Zool. xv. pp. 327–334, pl. xxii.

Notodelphyidæ.

This family may be subdivided as follows:—

1. Sub-fam. *Notodelphyinæ*, body flat, upper antennæ 10–15 jointed, in the male fit for clasping, as in *Cyclops*: *Notodelphys* (Allm.).
2. Sub-fam. *Doropygina*, body laterally compressed, upper antennæ short, with fewer, often 8, joints, not clasping; furca clasping: *Doropygus* (Thorell), *Notopterophorus* (Costa), *Goniodelphys*, *Gunentopherus* (Costa), and *Botachus* (Thorell).
3. Sub-fam. *Ascidicolinæ*; matrical duplicature of the fifth thoracic segment separated into two leaves: *Ascidicola* (Thorell).

C. Claus, Z. wiss. Zool. xxv. pp. 350 & 351, pl. xxiv. fig. 30, antennæ and buccal organs of *Ascidicola*.

Buproridæ.

Enterocola (Bened.) probably belongs to this family, and some notes on a young female specimen are given; C. Claus, Z. wiss. Zool. xxv. pp. 355 & 356, pl. xxiv. fig. 31.

Ergasilidæ.

C. Claus distinguishes this family by the Cyclops-like appearance of the body, the unusually large size of the under antennæ, which are the only clasping organs, the six-articulated upper antennæ, and the want of a second pair of maxillipeds. *Thersites* (Pagenstecher) is probably not distinct as a genus from *Ergasilus*. Z. wiss. Zool. xxv. pp. 339 & 340, pl. xxiii. figs. 12–18, representing *E. sieboldi*.

Lichomolgus (Thorell) probably = *Sepicola* (Claus), and is nearly allied to *Doridicola* (Leydig), *Eolidicola* (Sars), and *Sabelliphilus* (Clap.). They have a remarkable affinity with the *Corycæidæ*, on account of the size and segmentation of the body, and the conformation of the buccal organs and under antennæ, but are distinguished from them by the structural results of their parasitic life. C. Claus, Z. wiss. Zool. xxv. pp. 346–349, pl. xxiii. figs. 27 & 28, *Lichomolgus forficula*, and pl. xxiv. fig. 29, *Doridicola*.

Nereicola ovalis (Keferst.), described; *id. l. c.* pp. 342–344, pl. xxiii. figs. 19–24.

The Nereidicolar *Copepoda*, or those living parasitically on *Annulata*, are to be distributed, according to C. Claus, in different families:—*Sabelliphilus* (Sars) belongs to the *Lichomolgidæ*, *Sabellochares* (Sars) perhaps to the *Dichelesthiidæ*, *Selius* (Krŏyer) and *Nereicola* (Keferst.) to the *Chondracanthidæ*, *Silenium* (Krŏy.) perhaps to the *Lernæopodidæ*; Z. wiss. Zool. xxv. pp. 341 & 342.

The Ascidiicolar *Copepoda* are to be dispersed among the families *Lichomolgidæ*, *Ascomyzontidæ*, *Notodelphyidæ*, and *Buproridæ*; id. *l. c.* pp. 345, 350 & 351.

Hesse's descriptions of parasitical *Copepoda* are too insufficient for classification; *id. l. c.* p. 350, footnote.

Bomolochidæ.

C. Claus proposes this new family for the genera *Bomolochus* (Burm.), *Eucanthus* (Claus), and *Taniacanthus* (Sph.), distinguishing them from the *Ergasilidæ* by the short under antennæ, the strong under maxilliped, the transformed first pair of thoracic legs, and the accessory hooks on the ventral side of the cephalothorax, as in the *Caligidæ*; Z. wiss. Zool. xxv. pp. 340 & 341.

Ascomyzontidæ.

This family is characterized by a flat body with normal segmentation, and a long suctorial proboscis with stiletto-shaped mandibles; the

maxillæ and maxillipeds resemble those of the *Caligidæ* and *Chondracanthidæ*. To it belong *Ascomyzon* (Thorell) and *Dyspontius* (Thorell) living on Ascidians, *Artotrogus* on *Limacidæ*, and *Asterocheres* (Böck) on Sea-stars. Claus, Z. wiss. Zool. xxv. p. 349.

Caligidæ.

Specilligus [*-er*] (Dana) is the free-swimming male of *Nogagus*, including *Dinematura*, *Echthrogaleus*, and *Pandarus*; the eyes much resemble those of the male *Sapphirinæ*; id. *l. c.* pp. 352 & 353, pl. xxiv. fig. 32.

Dichelestiidæ.

Lamproglena pulchella (Nordm.) fully described; the upper antennæ are somewhat compressed, with a row of feeling bristles; maxillipeds strong, clasping; mandibles small, stiletto-shaped; mouth with an upper and an under lip somewhat as in *Lichomolgus*. Even the very young females bear spermatophores; they are fecundated probably during the free-swimming, Cyclops-like stage; male unknown. C. Claus, *l. c.* pp. 353–358, pl. xxiv. figs. 33–41.

Family uncertain.

A parasitic Crustacean from *Couchia glauca* (Couch), *Gadidæ*, and another from *Antedon*, found at Lochmaddy, Scotland, are figured (woodcut) by MacIntosh, Mar. Invertebr. of St. Andrews, p. 140.

Briarella, g. n. Femina: cephalothorax distinctus; duo antennarum paria; antennæ anteriores sat elongatæ, posteriores paulo breviores, prensoriæ; abdomen utroque latere in brachia productum; cauda brevis, appendicibus brevissimis setigeris. Mas ignotus. *B. microcephala*, sp. n., in the urinary cavity of *Cerastoma trilobatum* (Gray), from the Red Sea. R. Bergh, in Semper's Reisen im Archipel der Philippinen, ii. Malacologische Untersuchungen, p. 408, pl. xlix. figs. 11–13.

Lernæidæ.

Hesse's sixth stage of development in *Lernæa branchialis* (L.) [Ann. Sc. Nat. 1870] is evidently the larva of a Cirriped; Claus, Z. wiss. Zool. xxv. p. 350, footnote.

Lernæopodidæ.

Achtheres carpenteri, sp. n., Packard, Ann. Rep. U. S. Terr. 1875, p. 612, East River, Colorado, on Trout.

Silenium polynoes (Kröy.). Some notes by C. Claus, Z. wiss. Zool. xxv. pp. 344 & 345, pl. xxiii. fig. 26; it appears to be a very reduced Lernæopodid, and *Herpyllobius* (Steenstr.) is probably identical with it.

CIRRIPEDIA.

A systematic account, with brief generic characters and localities, of the known European species; P. P. C. Hoeck, Tijdschr. Ned. Dierk. Ver. ii. (sep. copy) pp. 38–45.

Lepadidæ.

Ornitholepas australis (Targioni) [see Zool. Rec. ix. p. 204], is recognized as only a larval stage of a Cirriped; Gerstäcker, SB. nat. Fr. 1875, pp. 113–115.

The larvæ of *Lepas*, during the Nauplius-stage, live several feet below the surface; in the Cypris-stage, on the surface adhering to the shells of *Velella*; Willemoës-Suhm, Z. wiss. Zool. xxvi. pp. cvii. & cviii.

Balanus improvisus (Darw.), *crenatus* (Brug.), *balanoides* (L.), *hameri* (Asc.), *Verruca stræmia* (Müll.), and *Lepas anatifera* (L.), fully described, from the Netherlands, and anatomical details of the first figured; Hoeck, *l. c.* pp. 6–36, pl. i.

Peltogastridæ.

Theoretical considerations on the relations betweeen the Cirripeds and *Rhizocephala* (*Peltogastridæ*) and the transmutation of the organs of fixation in the former to the suctorial organs of the latter, exemplified by *Anelasma squalicola*, are published by A. Dohrn in his pamphlet, "Über den Ursprung der Wirbelthiere und das Princip des Funcktionswechsels," Leipzig: 1875, 8vo, pp. 77–87; he mentions at the close of this paper some oral communications made by himself to Kossmann on this subject, and the latter defends the originality of his own work in Arb. Inst. Würzb. ii. pp. 510–515.

Thompsonia globosa (Kossmann). Semper maintains his former statement, that the larva leaves the egg in the Cypridina-form; Arch. Z. expér. iv. p. viii., and Ann. N. H. (4) xv. pp. 83 & 84 [*cf.* Zool. Rec. x. p. 196].

Sacculina carcini (Thomps.) and an undetermined (perhaps new) species on *Portunus holsatus* (F.); MacIntosh, Mar. Invertebr. of St. Andrews, pl. ix. figs. 13, 14 & 15.

XIPHOSURA.

A. S. Packard has observed the development of the nervous system in *Limulus*; it makes its first appearance after the first moult of the blastoderm and before the appearance of the legs, and is quite separate from the outer or so-called nervous layer, as in *Hydrophilus*; afterwards five separate ganglions are found in the cephalothorax, corresponding to the five anterior pairs of legs, and the brain is situated before, not above, the œsophagus. A previously unknown symmetrical organ of bright red colour situated on each side of the stomach, and regarded as a kidney, is described. Am. Nat. ix. pp. 422–424, 511–514, 589–592, abstract in Ann. N. H. (4) xv. pp. 255–258, and J. Zool. iv. pp. 233–236.

ARANEIFORMIA.

Nymphon spp. common in dredgings on the French coast in 100–200 metres; Fischer, J. Zool. iv. p. 300, footnote.

Nymphon gracilipes, *styligerum*, and *brevicaudatum*, spp. nn., Miers, Ann. N. H. (4) xvi. pp. 76 & 117, Kerguelen's Island.

ARACHNIDA.

BY

THE REV. O. P. CAMBRIDGE, M.A., C.M.Z.S.

LIST OF PUBLICATIONS.

AUSSERER, ANTON. Zweiter Beitrag zur Kenntniss der Arachniden-Familie der *Territelariæ*, Thorell (*Mygalidæ*, Autor.) Verh. z.-b. Wien, xxv. pp. 125–206, pls. v.–vii.

Continues the author's former paper [Zool. Rec. viii. p. 200], containing a list of works on the *Territelariæ*, with notes on their dwellings (from J. T. Moggridge's "Harvesting Ants and Trap-door Spiders," 1873 & 1874), and on their geographical distribution; also an analytical review of genera, three of which, with several subgenera, are characterized as new. 77 species, additional to those contained in the former work, are enumerated, 36 of them being described as new.

BARTA, EMANUEL. Verzeichniss der Spinnen des nördlichen Böhmens. [Sep. copy, ? of SB. böhm. Ges., 1868 & 1869] pp. 211 & 212, 133–140.

Records 178 known species of *Araneidea*, distributed among 58 genera of various families, and 7 species of *Phalangidea*, belonging to 6 genera.

BEDEL, L., & SIMON, E. [See SIMON.]

BERTKAU, —. Ueber den Generations-apparat der Araneiden. Ein Beitrag zur Anatomie und Biologie derselben. Arch. f. Nat. xli. 1, pp. 235–262.

Minutely describes the sexual apparatus of the *Araneidea*, which differs from that of all the other *Arachnida* as yet examined, in having the testicles or ovaries (according to sex) in pairs and not odd numbers. The structure of these organs is discussed in the different groups, and also the form of the spermatozoids. Spermatophores, so common in other *Arthropoda*, are here as yet unknown (only in *Segestria* anything similar being observed). Copulation was observed in *Agelena labyrinthica* *Sparassus virescens*, and *Tetragnatha extensa*, in which the details were very different. The author has never been able to observe a ♀ depositing eggs. The plate consists of highly magnified figures of portions of

the male organs, spermatozoids, stages of egg-development, and seminal receptacles of various species.

BRADY, GEORGE STEWARDSON. A review of the British Marine Mites, with descriptions of some new species. P. Z. S. 1875, pp. 301–311, pls. xli. & xlii.

The author describes and records 12 species, of which 4 are new.

CAMBRIDGE, O. P. Encyclopædia Britannica (9th edn.), pp. 271–299, Article "Arachnida." Edinburgh: 1875, 4to, woodcuts.

Gives a general view of the position of the *Arachnida* in relation to the rest of the animal kingdom; the *Insecta*, *Myriapoda*, *Arachnida*, and *Crustacea* being considered as so many sub-classes of the class *Condylopoda* or *Arthropoda*. The muscular, circulatory, digestive, and generative systems of the *Arachnida* are briefly detailed in a general summary of their external and internal organization. The sub-class *Arachnida* is divided into seven orders—1, *Acaridea*; 2, *Pycnogonidea*; 3, *Phalangidea*; 4, *Solpugidea*; 5, *Scorpionidea*; 6, *Thelyphonidea*; 7, *Araneidea*. The external and internal structure of each of these orders is shortly detailed, with some general observations on habits, habitat, &c., and a notice of some of the chief works on the different orders.

——. On some New Species of *Erigone*. Part i. P. Z. S. 1875, pp. 190–224, pls. xxvii.–xxix.

Describes, and figures portions of, 25 new species from Europe, Algiers, and Morocco, the greater part European.

Part ii. *Tom. cit.* pp. 323–335, pl. xliv. Describes, and figures portions of, 9 new species belonging to *Neriene*, Bl.; all are from France. A list is also appended of 45 other known species, mostly French.

——. On some New Species of *Erigone* from North America. *Tom. cit.* pp. 393–405, pl. xlvi.

Records 11 species, of which 9 are described as new. All are from the neighbourhood of Boston, Massachusetts.

——. On a New Genus and Species of Trap-door Spider from South Africa. Ann. N. H. (4) xvi. pp. 317–322, pl. x.

The genus is named (*Moggridgea*) after the late J. T. Moggridge, author of "Harvesting Ants and Trap-door Spiders." The spider is found at Uitenhage, South Africa, where it forms a short tubular nest in the interstices of the bark of trees, closing it with a hinged lid, or 'trap-door.' This situation of the nest is as yet unique, and the lid is of a distinct type from those hitherto known. *Cf.* note by H. Lucas, in Bull. Soc. Ent. Fr. (5) v. p. ccxx.

——, Notes and Descriptions of some New and Rare British Spiders. *Tom. cit.* pp. 237–260, pl. viii.

18 species of various families and genera are recorded, 8 of which are described and figured as new.

——. List of *Araneidea* and *Phalangidea* collected from October, 1871,

to October, 1874, in Berwickshire and Northumberland by Mr. James Hardy. P. Berw. Club, vii. pp. 307–323.

The list contains 160 species of *Araneidea*, distributed among 42 genera; three species are recorded as new to Britain, and three others as new to science. Three of the genera (*Linyphia*, *Neriene*, and *Walckenaera*) monopolize together 87 species. The *Phalangidea* comprise two species only.

CANESTRINI, GIOVANNI. Caratteri sessuali secondarii degli Aracnidi. Atti Soc. Pad. i. [1873] pp. 184–188.

These characters are considered to be, 1st, *Size*, the female being greater than the male; 2nd, *Colour*, the difference between the sexes in this respect rarely great; 3rd, *Palpi*, the difference between the sexes of some (as in the *Araneidea*) marvellous; 4th, *Falces*, difference in some spiders very great; 5th, *Form of Cephalothorax*, difference occasionally great, as in *Walckenaera*, Bl.; 6th, *Legs*, differing much in length and armature; 7th, *Abdomen*, generally larger in the females; in Scorpions the lamellæ of the pectens differ. The object of these differences is accounted for.

——. Nuove specie Italiane di Aracnidi. *Op. cit.* ii. [1873] pp. 45–52.

Describes 6 new species of various families and genera of *Araneidea*, and 2 new species of two genera of Phalangids.

——. Intorno ai Chernetidi ed Opilionidi della Calabria. Atti Soc. Pad. "Ottobre, 1875" [no vol. or fasc. mentioned], pp. 1–12.

Enumerates 4 species of *Chernetides* (*Roncus*, 1; *Chthonius*, 2; *Obisium*, 1) and 19 species of *Opilionides* (*Ischyropsalis*, 1; *Nemastoma*, 2; *Liobunum*, 2; *Liodes*, 1; *Acantholophus*, 1; *Platylophus*, 1; *Cerastoma*, 1; *Opilio*, 5; *Trogulus*, 3; *Dicranolasma*, 1; *Amopæum*, 1).

——. Catalogo degli Araneidi del Trentino: in Intorno alla Fauna del Trentino. *L. c.* pp. 25–34.

The author, who has specially studied the *Arachnida* with Prof. Pavesi, records 243 spp. of *Araneidea*, 15 of *Opilionides*, and 6 Pseudoscorpions, from the Trentino.

EMERTON, J. H. On the Structure of the Palpal Organs of Male Spiders. P. Bost. Soc. xvii. pp. 505–507 (with two woodcuts).

The progress of knowledge as to the real function of the palpal organs of male spiders is traced (from Treviranus, 1802, to Hermann, 1868, through the writings of Lyonet, 1829, Menge, 1843, and Bennett, 1851), and their essential structure is stated to be similar in all spiders, consisting of a bulb prolonged into a hollow tube, within which is a sac narrowed to the orifice of the tube. The sac and its continuation varies greatly in length and in its convolutions in different spiders, as well as in the corneous processes and spines connected with the bulb and tube arising from it. The fecundating fluid is taken up by the spider into the bulb and communicated to the female parts through the orifice at the end of the tube, which thus acts as a penis.

[Emerton, J. H.] Spiders common to New England and Europe. Psyche, i. pp 129–131.

21 species are recorded as common to Europe and the United States, and, of these, 9 or 10 have been described by Hentz under other names. 10 others, described by Hentz, are enumerated as being represented in Europe by very closely allied species.

——. Notes on Spiders from Caves in Kentucky, Virginia, and Indiana. Am. Nat. ix. pp. 278–281, pl. i.

11 species are recorded from the caves; of these 6 are described and figured, 5 being new.

Fanzago, Filippo. Sugli Scorpioni Italiani. Atti Soc. Pad. i. [1872] pp. 75–89, pl. iii.

Records 8 species, of which 1 is new.

Fickert, C. Myriopoden und Araneiden vom Kamme des Riesengebirges, ein Beitrag zur Faunistik der sub-Alpinen Region Schlesiens. [? Breslau: 1875] pp. 1–48, with 1 pl.

Diagnoses of the characters of the *Arachnida*, *Araneidea*, and the various sub-orders, families, and genera of *Araneidea* are given; 26 species are described, of different genera: *Epeira*, 3; *Zilla*, 1; *Meta*, 1; *Tetragnatha*, 1; *Linyphia*, 3; *Pachygnatha*, 1; *Erigone*, 3; *Steatoda*, 1; *Amaurobius*, 1; *Celotes*, 2; *Clubiona*, 1; *Drassus*, 2; *Xysticus*, 1; *Lycosa*, 2; *Tarentula*, 2; *Attus*, 1. Of these, 3 belonging to *Linyphia* are described as new, and portions of them are figured.

——. Verzeichniss der Spinnen Schlesiens. Z. e. Ver. Schles. 1875, pp. 1–32 (sep. copy).

Begins with some faunistic remarks; compares the subjoined list of spiders with the spider faunas of other countries in Europe; and mentions several forms as connecting that under consideration with more southern faunas. The list contains 356 species divided among 79 genera. 4 species are described as new to science.

Giebel, C. Zur Schweizerischen Spinnen-fauna. Z. ges. Naturw. (2) xxx. [1867] pp. 425–443.

In this paper (omitted in Zool. Rec. hitherto) 26 species of *Araneidea* and six of *Phalangidea* are recorded. The former are distributed among 16 genera, and 6, belonging to as many genera, are described as new.

Grube, A. E. Zwei Röhren von Minnispinnen und zwar von *Cteniza orientalis*, Auss., aus Corfu und von *Pachylomerus nidulans*, Sello, aus Jamaica. JB. schles Ges. liii. p. 73.

Hentz, N. M. The Spiders of the United States. A collection of the Arachnological writings of Nicolas Marcellus Hentz, M.D. Edited by Edward Burgess, with notes and descriptions by James H. Emerton. Occasional papers of Boston Soc. N. H. ii. 1875, 171 pages, 21 pls.

Hentz's descriptions are given verbatim; Emerton's notes, &c., being included in brackets; and the original paging is preserved. Hentz's plates

are also reprinted, excepting some few, which have been reproduced by photography. Emerton adds two plates of some of Hentz's species. The number of species included in this volume is 229. Some few are ascertained by Emerton to be synonymous with European species already described. [*Cf.* Psyche, i. pp. 129–131.] This work is reviewed by the Recorder, Nature, xiii. pp. 281–283.

HERMAN, OTTO. Magyarország Pók-faunája Királyi Magyar Természettudomanyi Tarsulat Megbizásából. (Ungarns Spinnen-fauna, im Auftrage der kön. Ungarischen naturwissenschaftlichen Gesellschaft.) 1 Kotet, i. pp. 1–119, pls. i.–iii.

The first volume of a work on Hungarian Spiders, written in Hungarian and German in parallel columns. The work is divided into two parts, i. General, ii. Special. The first sub-division of part i. belongs to spider literature; the second is on the form and external structure of spiders; the third is on their appearance and mode of life. The first subdivision of part ii. contains the systematic arrangement; the second is the descriptive portion. Two appendices are added, 1st on species recorded as Hungarian in other works; 2nd giving a full review of Hungarian *Opiliones*. The present volume contains part i., under the first sub-division of which are discussed the general literature, the literature of the ancients, and that of modern times, followed by a list of works. Under the second sub-division, the bodily parts or organs, the covering of the body, the external structure of the spinning organs, and the variations in the external form of the sexes are discussed. Under the third subdivision, the author discusses the development of spiders, their moultings, reproduction of mutilated parts, instinct, dwellings and construction, food, increase and propagation of their kind, aerial wanderings, relation to the scheme of nature, and geographical distribution. All these topics appear to be ably treated, and are illustrated by 67 excellent figures.

KOCH, CARL. Beiträge zur Kentniss der Arachniden Nord-Afrikas, insbesondere einiger in dieser Richtung bisher noch unbekannt gebliebenen Gebiete des Atlas und der Küsten-Länder von Marocco. Ber. senck. Ges. 1873, pp. 104–118.

Records 4 species of *Scorpionidea*, 1 (new) of *Phalangidea*, and 24 (2 new) of *Araneidea*.

KOCH, LUDWIG. Die Arachniden Australiens, nach der Natur beschrieben und abgebildet. Nürnberg: 1875, pts. 12–16, pp. 577–740, pls. xlv.–lxiv.

In continuation of the work [*cf.* Zool. Rec. xi. p. 223]. 86 species, of which 70 are new to science, are described. 9 genera also, of *Thomisides*, are characterized as new.

——. Aegyptische und Abyssinische Arachniden gesammelt von Herrn C. Jickeli beschrieben und abgebildet. Nürnberg: 1875, pp. 1–96, pls. i.–vii.

1 species of *Ixodides*, 7 of *Scorpionidea* (3 of which are new) and 59

of *Araneidea* are recorded and described in this paper; of the *Araneidea* 35 are described as new. Nearly all the new as well as several of the known species are figured.

KRAMER, P. Beiträge zur Naturgeschichte der Hydrachniden. Arch. f. Nat. xli. i. pp. 263–332, pls. viii. & ix.

A bare outline only of the scope of this valuable paper can be given. Under the head of Anatomy, the skin, the mouth-parts and limbs, the organs of digestion, the breathing apparatus, the nervous system, and the generative organs are all separately treated. Next follow analytical tables of genera and species. The family *Hydrachnides* is divided into 7 genera, comprising 27 species; 2 of the former and 20 of the latter are given as new to science.

KRONENBERG, A. In A. Fedchenko's Puteshestvie v Turkestan [Travels in Turkestan]; zoogeographicheskia Izledovania, *Arachnida*, pp. 1–58, pls. i.–v. St. Petersburg and Moscow: 1875, 4to [Nachr. Ges. Mosc.; *cf.* Zool. Rec. xi. p. 250].

This paper is written in Russian, the diagnoses of new species in Latin. 146 species of 57 genera are recorded, 45 of the former being described as new. The plates are excellent, and give figures of nearly all the new species.

LEBERT, H. Über den Werth und die Bereitung des Chitinskeletes der Arachniden für mikroscopische Studien. SB. Ak. Wien, lxix. [1874] pt. i. pp. 605–656, pls. i.–iii. figs. 1–33.

Discusses the mode of preparing various structural features, male palpal organs, &c., for microscopic examination, and the value of those features in classification. The species referred to are—ARANEIDEA; *Philœca domestica*, C. L. Koch, *Tegenaria civilis*, Walck., *Bathyphantes brevipalpus*, Menge, *Linyphia triangularis*, Clk., *Epeira cornuta*, Clk., *Pholcus phalangioides*, Fuess., *Sparassus ornatus*, Westr.: PHALANGIDEA; *Cerastoma cornutum*, Linn.: PSEUDO-SCORPIONES; *Obisium muscorum* (C. L. Koch): and ACARIDEA; *Campognatha forcli*, a new genus and species.

——. Verzeichniss Schlesischer Spinnen, mit Aufzählung der schlesischen Myriapoden. Tübingen: 1875.

[Not seen by the Recorder.]

LUCAS, H. Bull. Soc. Ent. Fr. (5) v. p. cxxxii.

Gives a list of Arachnids (all known species) from the neighbourhood of Chambourcy, Paris. *Araneidea*, 31 species; *Phalangidea*, 5; *Acaridea*, 1.

MELLISS, J. C. Arachnida, in "St. Helena," &c. London: 1875, large 8vo, pp. 206–218.

The species found in the island are briefly discussed. They have been already described by the Recorder in P. Z. S. 1869 & 1873. *Pasithea pulchra*, Blackw., is figured, pl. xxiii. fig. 6.

MENGE, A. Preussische Spinnen. vii. Fortsetzung. Schr. Ges. Danz. (n.f.) iii. pp. 375–422, pls. lxiv.–lxx. (Fortsetz. viii., containing pp. 423–454, and pls. lxxi.–lxxv., was also issued in 1875, but is not included in this Record).

This part continues the work [*cf.* Zool. Rec. x. p. 198], bringing the family *Drassides* to a conclusion, and containing several genera of the family *Thomisides*. 24 species are described, of which 6 are new.

NEUMAN, C. F. Gottlands och Ölands Spindlar och Vattenqvalster. Öfv. Ak. Förh. 1875, No. 2, pp. 91–104.

A classified list, with localities, of 107 species of *Arachnida* and 29 of *Acaridea* found in Gothland and Oeland. The author refers to an illustrated monograph of the Swedish species (50) of *Hydrachnoidæ*, upon which he is engaged, and in anticipation of which he describes a new genus and some new species. A var. n. *metallica* of *Hydrodoma umbrata*, Koch, is described from Gothland, p. 104.

PACKARD, JR., A. S. Development of the Mites—False Scorpions—Scorpions, etc. (Pedipalps)—Spider; in Life Histories of the Crustacea and Insects. Am. Nat. ix. pp. 610–615, figs. 265–270.

The author, under the head of *Acaridea*, pp. 610–611, sums up in respect to the "Development of the Mites" as follows:—certain mites pass through, first, a *Morula*-state, in which the yelk only partially divides; secondly, sometimes one or two embryonal stages (*deutovum* and *tritovum*); thirdly, a six-legged larval state; fourthly, an eight-legged pupal state; and fifthly, the adult stage. On the "Development of the False Scorpions," pp. 612 & 613, the conclusion is that they pass through, first, a *Morula*-stage; secondly, a first larval state, when they are hatched with only one pair of appendages (maxillæ); and thirdly, a second larval state with all the limbs present but enveloped in a larval skin; in the fourth, the larval skin is thrown off, the limbs are free, and the animal is in the adult form. In regard to the development of the *Scorpionidea*, &c. (Pedipalpi), pp. 613 & 614, Metschnikoff's "Embryologie des Scorpions," 1870, is in the main followed. The chief events are partial segmentation of the yelk, the embryo developing within the oviduct, and the production of the young in a form exactly like that of the adult—about half an inch long—a dozen or so being produced in the season. In respect to the *Araneidea*, pp. 614 & 615 (following Claparède), the conclusion is that all spiders, so far as known, first undergo, in the egg state, a partial segmentation of the yelk, and, secondly, are hatched in the form of the adult, and undergo no metamorphosis.

PAVESI, PIETRO. Note araneologiche. Atti Soc. Ital. xviii. pp. 113–132, 254–304.

This paper contains, (1) A catalogue of the spiders of Capri, 85 in number, pp. 1–18, with 4 species described as new. (2) An additional list of 23 species from Pavia (cf. *op. cit.* xvi. p. 68). (3) A general catalogue of the spiders of Switzerland, with additions and corrections referring to that of the Canton Ticino, and recording 285 species, of which 3 are recorded as new. (4) A list of 18 species

from Monferrato, as well as a list of 80 others from the Basso-Monferrato, all known species. (5) Notes on the useful mimicry of the coloration and form in spiders, with interesting remarks on the adaptation of colours to the surrounding circumstances of different spiders, and its utility.

Randall, W. S. Notes on *Arachnida*. Ent. viii. pp. 32–36.

Rondani, C. L'acaro del Baco da seta e l'acaro del Gelso. Bull. Ent. Ital. ii. [1870] pp. 166–168, pl. i. figs. 14–18 [*cf.* Zool. Rec. viii. p. 208].

Characterizes a new genus and two new species of *Acaridea*.

Simon, Eugène. Bull. Soc. Ent. Fr. (5) v.

Describes some Algerian spiders of new and known species, pp. lxii. & lxiii., 11 species of French and Spanish *Salticides*, pp. cxii.–cxiv.; and some other new species of French spiders, pp. cxlix. & cl. He also gives a note (pp. cxcvi. & cxcvii.) on spiders of Constantinople; of 22 species, 15 are found near Paris and 7 are common to all the Mediterranean regions; 2 new species of *Phalangidea* are here described. A list is also given, p. ccvi., of Arachnids from the Grotte des Baux (Mouths of the Rhone) belonging to the Araneidea (2 spp.), *Acaridea* (1 sp.), *Pseudo-Scorpiones* (1 sp.), the last being new.

——. Les Arachnides de France. ii. Contenant les Familles des *Urocteidæ*, *Agalenidæ*, *Thomisidæ*, et *Sparassidæ*. Paris: 1875, pp. 1–350, pls. iv.–viii.

This volume continues the work [*cf.* Zool. Rec. xi. pp. 221 & 223], 30 genera (of which 6 are new) are characterized. *Urocteidæ*, 2; *Agelenidæ*, 11; *Thomisidæ*, 14; and *Sparassidæ*, 3. The whole contain 180 species, 59 being described as new to science. A figure (either full or dissectional) is given of one or more species of each of the genera. Analytical tables of species are given, separate for each sex, and similar tables, in most cases, for the genera in the different families.

——, Bedel, L., &. Liste Générale des Articulés Cavernicoles de l'Europe. J. Zool. iv. *Arachnides* par E. Simon, pp. 8–23.

Contains a list of all the Arachnids at present known to inhabit caverns and similar places in Europe; omitting, however, such as ordinarily live in cellars and dark rooms. Simon observes that a complete absence of eyes has only yet been observed in two spiders, *Stalita tanaria*, Schiödte, and *Hadites tegenarioides*, Sch., that the more or less confirmed atrophy of the eyes in other species follows a uniform course, and confirms his opinion concerning the distinct office of the two kinds of eyes (nocturnes et diurnes) with which all the crepuscular, or nocturnal, spiders are provided. The central eyes of the first row, which, in these species, are alone designed for diurnal vision disappear first. In some genera (as *Linyphia*) their gradual disappearance can be followed according as the species are more or less lucifugous, while the darkness has but little influence on the size, position, and number of the other eyes; in types more extensively modified than *Linyphia*, and more essentially cavern-dwellers, the diurnal eyes do not appear at all; and the nocturnal eyes also, at times, undergo a more or less complete arrest

of development. [*Cf.* Thorell, Sv. Ak. Handl. xiii. No. 5, p. 3; and *infrà*, p. 244.] The list contains 15 species of *Aranéidea*, 4 of *Pseudo-Scorpiones*, 14 of *Phalangidea*, 1 of *Trogulides*, and 4 of *Acaridea*.

Stecker, Anton. Ueber zweifelhafte Chernetiden-Arten, welche von A. Menge beschrieben warden. Deutsche E. Z. 1875, pp. 305–314.

Four species only are discussed.

——. Ueber die geographische Verbreitung der europäischen Chernetiden (Pseudo-scorpione). Arch. f. Nat. xli. i. pp. 159–182.

Contains a catalogue of the literature on the *Pseudo-Scorpiones*, of which Europe possesses 52 species, belonging to 9 genera—*Cheliferinæ*, 5 genera and 30 species; *Obisinæ*, 4 genera and 22 species. Full details are given in respect to the actual and comparative distribution of these in Scandinavia, Great Britain, France, the Pyrenees, Switzerland, Hungary, Germany, Italy, Turkey, Greece, and Western Russia, as well as in the five following divisions—North, Middle, South, East, and West Europe.

——. Über neue indische Chernetiden. SB. Ak. Wien, lxxii. pt. i. pp. 512–526, pls. i.–iv.; also in SB. bayer. Ak. lxxii. i. pp. 1–14 (sep. copy), pls. i.–iv.

Characterizes 2 new genera (*Ectocerus* and *Megathis*) and 5 new species.

——. Zur Kenntniss der Chernetiden-fauna Böhmens. SB. böhm. Ges. 1874 (Heft viii.; pp. 1–16, sep. copy).

Gives a systematic view of the *Pseudo-Scorpiones*, proposing the family *Cheliferinæ* for the genera *Chiridium*, *Chernes* (with a new sp.), and *Chelifer* (with a new sp.), and *Obisinæ*, for *Roncus*, *Chthonius*, and *Obisium*. These, with the known Bohemian species, are clearly and concisely characterized. The author remarks that the *Chernetides* form a passage, in a natural system, from the true spiders to the true scorpions.

Thorell, T. Notice of some Spiders from Labrador. P. Bost. Soc. xvii. pp. 490–504.

10 species of various families are recorded, and of these 7 are described as new.

——. On some Spiders from New Caledonia, Madagascar, and Réunion. P. Z. S. 1875, pp. 130–149, pl. xxv.

Describes 11 species belonging to several families; 3 species are new to science.

——. Diagnoses Aranearum Europæarum aliquot novarum. Tijdschr. Ent. xviii. pp. 81–108.

Latin diagnoses of 74 new species of different families are given. 3 of the genera (belonging to the families *Theridiides*, *Dysderides*, and *Theraphosides*) are also characterized as new.

——. Verzeichniss Südrussischer Spinnen. Hor. Ent. Ross. xi. pp. 39–122.

Reviews the various works on Russian Spiders published by Lepechin, 1768, Pallas, 1771 & 1772, Linnæus, 1788, Eichwald, 1830, Krynicki,

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1837, Motschoulsky, 1849, Kessler, 1849, Doblika, 1853, Doleschall, 1852, Belke, 1858–1866, Kolenati, 1857, Keyserling, 1862, Nordmann, 1863, Menge, 1866, L. Koch, 1866–1870, E. Simon, 1871–1873, Ausserer, 1871, and O. P. Cambridge, 1873. The number of species contained in the present work is 303; and of these 66 are described as new; 14 families are represented, the species being distributed as follows:—*Epeirides*, 37; *Theridiides*, 52; *Scytodes*, 4; *Enyoides*, 1; *Agelenides*, 22; *Drassides*, 42; *Dysderides*, 8; *Theraphosides*, 1; *Heteropodides*, 2; *Thomisides*, 43; *Lycosides*, 40; *Oxyopides*, 2; *Eresides*, 2; *Attides*, 47. 16 species from the Crimea represent the South European fauna.

[THORELL, T.] Descriptions of several European and North African Spiders. Sv. Ak. Handl. (n.f.) xiii. No. 5, pp. 3–203.

The descriptions of the greater part of the new genera and species contained in this work have been already published in the two works last above recorded. 24 species are, however, described here as new. A long note is added in reply to criticisms by Eugène Simon in Mém. Liége (2) v. [1873], p. 5, on the author's works, "European Spiders" and "Remarks on Synonyms of European Spiders," showing that Simon had greatly misunderstood these works. In another note, the author doubts the tenability of Simon's theory in respect to the essential difference between nocturnal and diurnal eyes; and, in a subsequent note, also questions his position that the bite of *Latrodectus* is harmless, allowing at the same time, that the stories of the great venom of different species of this genus may be exaggerated. The present work is reviewed by the Recorder in Nature, xiii. pp. 281–283.

UNDERHILL, H. M. J. Spiders' Webs and Spinnerets. Sci.-Goss. 1875, pp. 132–135, 195–198, figs. 87–90, 125–128.

The author gives reasons, based on personal observation, for concluding that each of the different kinds of threads found in spiders' webs is produced by its special pair of spinners; and that the viscid globules found studding the lines of Epeirid webs, as well as the adhesive matter used by all spiders to attach their threads to objects, and in the construction of their cocoons, are due to some special spinning tubes [spinnerets] of a peculiar shape and of a larger size than the rest. With the *Epeiræ*, these tubes are three in number, on the first pair of spinners; in other spiders, they are two, on the third pair.

WETTER, W. A. G. I Småland och Skåne hittils iakttagne Spindlar jemte några ord om deras lefnadssätt. [Inaugural thesis on applying for the Degree of Doctor of Philosophy] Lund: 1874, pp. 1–3[illegible]

An exposition of the order, and Latreillian sub-orders, of spi[illegible]ici[illegible]in[illegible]rst. In[illegible] followed by a list of 237 species, distributed among 62 genera, followed[illegible] following families:—*Epeiroidæ*, 28 species; *Theridioidæ*, 88; darkness[illegible] *noidæ*, 17; *Drassoidæ*, 26; *Dysderoidæ*, 26; *Thomisoidæ*, 28; *Lyc*[illegible]a other 29; *Attoidæ*, 20. [The fam. *Agelenoidæ* includes the fam. *Dicty*[illegible] (Cambr.).]

Captain LANG, Sci. Goss. 1875, pp. 53 & 54, fig. 26, discusses the structure of the web in *Epeira* and *Ciniflo*, figuring the attached viscid globules; and, *l. c.* p. 100, refers to web of *Tegenaria*.

The Recorder, *op. cit.* pp. 109–112, has given some hints as to mode of search and capture of spiders, and their preservation as cabinet objects.

ARANEIDEA.

THERAPHOSIDES.

Mygale. J. Wood-Mason, P. A. S. B. 1875, p. 197, referring to a large species discovered by Mr. E. Peal, of Sibsagar, remarks that it had the power of emitting a loud stridulating sound by means (in both sexes) of a *comb*, composed of a number of highly elastic and indurated chitinous rods, situated on the inner face of the maxillæ, and of a *scraper* formed by an irregular row of sharp spines on the outer surface of the cheliceræ (falces).

Trap-door spiders, at Port Elizabeth, Cape of Good Hope, observed to make their nests in cavities in bark of trees, the door being a portion of bark; H. W. Bidwell, P. E. Soc. 1875, p. xviii.

Atypus blackwalli, Sim., new as British, p. 241, the synonymy of *A. sulzeri*, Bl., discussed, pp. 238–241, and *A. beckii*, sp. n., England, p. 242, pl. viii. fig. 1; O. P. Cambridge, Ann. N. H. (4) xvi.

Eriodon rubro-capitatum, p. 140, pl. v. figs. 1–4, and *E. rugosum*, p. 141, figs. 5 & 6, spp. nn., Australia, A. Ausserer, Verh. z.-b. Wien, xxv.

Pachyloscelis liodon, ♂, sp. n., *id. l. c.* p. 142, pl. v. fig. 7, Uruguay.

Pachylomerus armatus, ♀, sp. n., *id. l. c.* p. 143, locality unknown.

Idiops cambridgii, p. 145, Sta. Fé de Bogota, and *I. neglectus*, p. 146, locality unknown, spp. nn., *id. l. c.*

Cteniza, Latr., divided into *Cteniza*, s. str., and *Eucteniza*, sub-g. n., type, *E. mexicana*, sp. n.; *id. l. c.* p. 149, Mexico.

Cteniza farghanensis, ♀, Kronenberg, in Fedschenko's Turkestan, Arachnida, p. 27, pl. iii. fig. 18, Turkestan.

Bolostromus, g. n., intermediate between *Cyrtauchenius*, Auss., and *Cteniza*; type, *B. venustus*, sp. n., Bogota; Ausserer, *l. c.* p. 150, pl. v. figs. 10–12.

Ummidia, g. n., apparently allied to *Nemesia*; for *U. picea*, ♂, sp. n., Spain. Thorell, Tijdschr. Ent. xviii. p. 102; and Sv. Ak. Handl. xiii. No. 5, p. 121.

Moggridgea, g. n., allied to *Nemesia* and *Cteniza*; type, *M. dyeri*, sp. n., Uitenhage, S. Africa; O. P. Cambridge, Ann. N. H. (4) xvi. p. 317, pl. x.

Nemesia dorthesii, ♂, sp. n., T. Thorell, Tijdschr. Ent. xviii. p. 102, and Sv. Ak. Handl. xiii. No. 5, p. 122, Spain.

Brachythele platypus, sp. n., A. Ausserer, *l. c.* p. 159, New Holland.

Diplura, C. Koch, divided into *Diplura*, s. str., and *Eugrus*, sub-g. n., type, *E. mexicanus*, sp. n., Mexico; *id. l. c.* p. 160, pls. v. & vi. figs. 13–16.

Macrothele, Auss., divided into *Macrothele*, s. str., example, *M. huttoni*, Cambr., New Zealand, and *Ischnothele*, sub-g. n., p. 162, type, *I. caudata*, sp. n., p. 163, Yucatan; *id. l. c.*

Trittame, L. Koch, divided into *Trittame*, s. str., example, *T. gracilis*, L. Koch, Bowen, Australia, and *Strophæus*, sub-g. n., type *Idiops kochi*, Camb.; A. Ausserer, *id. l. c.* p. 166.

Leptopelma africana[*-num*], sp. n., *id. l. c.*, p. 167, Morocco. In this genus, *Mygale* (*Nemesia*) *meridionalis*, Costa, is included; *id. l. c.* p. 168.

Ischnocolus, Auss., divided into *Ischnocolus*, s. str., *Chætopelma*, Auss., and *Hapalopus*, sub-g. n., with type *H. formosus*, sp. n., p. 175, pl. vi. figs. 17 & 18, Sta. Fé de Bogota; *id. l. c.* pp. 168–175.

Ischnocolus sericeus, p. 169, Yucatan, *I. hirsutus*, p. 170, Cuba, *I. obscurus*, p. 171, pl. vi. fig. 19, Sta. Fé de Bogota, *id.* l. c.; *I. algericus*, ♂, T. Thorell, Sv. Ak. Handl. xiii. No. 5, p. 123, Algeria: spp. nn.

Chætopelma longipes, sp. n., Ausserer, *l. c.* p. 174, pl. vi: figs. 20 & 21, Porto Cabello.

Cyrtosternum, g. n., closely allied to *Cyclosternum* and *Crypsidromus*, Auss., for *Cyrt. cursor*, sp. n.; *id. l. c.* p. 176, St. Domingo.

Crypsidromus, Auss., divided into *Crypsidromus*, s. str., with *C. pernix*, p. 178, pl. vi. figs. 22 & 23, *C. macropus*, p. 179, figs. 24 & 25, Orizaba, Mexico, and *C. intermedius*, p. 180, ? S. America, spp. nn.; *Callyntropus*, sub-g. n., type *Crypsidromus convexus*, C. Koch, p. 181; and *Harpaxibius*, Auss.: *id. l. c.* pp. 177 & 181.

Thalerommata, g. n., type *T. gracilis*, sp. n., *id. l. c.* p. 182, pl. vi. figs. 26–29, Sta. Fé de Bogota.

Tapinauchenius latipes, sp. n., *id. l. c.* p. 183, pl. vi. fig. 20, Porto Cabello.

Avicularia rutilans, p. 184, pl. vii. fig. 34, New Granada, and *A. metallica*, p. 185, Surinam, spp. nn., *id. l. c.*

Harpactira tigrina, sp. n., *id. l. c.* p. 185, Algoa Bay.

Selenocosmia lanipes, sp. n., *id. l. c.* p. 187, pl. vii. figs. 32 & 33 (♂ fig. 31), New Guinea.

Euathlus, sub-g. n. of *Acanthoscurria*, Auss., for *E. truculentus*, sp. n., *id. l. c.* p. 188, pl. vii. fig. 35, ? Cape Colony; the other sub-genera are *Acanthoscurria*, s. str., *Mygalarachne*, Auss., and *Acanthopalpus*, Dol.

Eurypelma, C. L. Koch, divided by Ausserer, *l. c.* p. 189, into five sub-genera, viz., *Lasiodora*, C. L. Koch, including *L. robusta*, p. 190, pl. vii. fig. 42, Sta. Fé de Bogota, *L. cauta*, p. 191, locality unknown, *L. nigricolor*, p. 192, fig. 36, New Granada, *L. fortis*, p. 193, Sta. Fé de Bogota, *L. ferox*, New Granada, and *L. immanis* (locality omitted), p. 194, spp. nn.; *Sericopelma*, sub-g. n., type *S. rubro-nitens*, sp. n., p. 195, fig. 37, Panama; *Lasiocnemus*, Auss., *Homœomma*, Auss., and *Eurypelma*, s. str., including *E. vagans*, p. 197, fig. 41, Yucatan and New Granada, *E. mollicomum*, p. 198, Uruguay, *E. steindachneri*, p. 199, figs. 43 & 44, Texas, and *E. rapax*, p. 200, fig. 45, S. America, spp. nn.

Liphistius mamillanus, sp. n., O. P. Cambridge, Ann. N. H. (4) xv. p. 249, ♀, Penang; differs from the type of the genus, *L. desultor*, Schiödte, in having four mamillary organs beneath the fore part of the abdomen, close behind the spiracular openings, whereas Schiödte says, of the type, "mamillis textoriis nullis."

Dysderides.

Dysdera aculeata, ♂, p. 25, pl. iii. fig. 17, and *D. tartarica*, ♂, p. 26, Turkestan, Kronenberg, in Fedchenko's Turkestan, Arachn.; *D. scheuchzeri*, ♂ & ♀, P. Pavesi, Atti Soc. Ital. xviii. p. 274, Switzerland: spp. nn.

Harpactes seidelii, ♂ & ♀, Silesia, and *H. piliger*, ♂, Central Italy, T. Thorell, Tijdschr. Ent. xviii. p. 101; *H. doblikæ*, ♂, *id.* Hor. Ent. Ross. xi. p. 87, Jeny-Sala, S. Russia: spp. nn.

Dasumia, g. n., very nearly allied to *Dysdera* and more so to *Harpactes*, scarcely differing from the latter, except in the number of tarsal claws; for *D. tæniifera*, ♂, sp. n., *id.* Tijdschr. Ent. xviii. p. 101, note, and Sv. Ak. Handl. xiii. No. 5, p. 116, Central Italy.

Drassides.

Micaria pygmæa, ♂, pl. v. fig. 42, and *M. modesta*, pl. ii. fig. 5, Kronenberg, *l. c.* p. 19, Turkestan; *M. rossica*, ♂, T. Thorell, Hor. Ent. Ross. xi. p. 80, and Sv. Ak. Handl. xiii. No. 5, pp. 112 & 113, Odessa, Simferopol: spp. nn.

Gnaphosa taurica, ♂, Jekaterinoslaw, Crimea, Simferopol, Arabat, *G. mœsta*, ♂, Simferopol, *G. nomas*, ♂, Sarepta, p. 84, *G. jucunda*, ♀, Orianda, and *G. trebax*, ♀, Simferopol, p. 85, T. Thorell, Hor. Ent. Ross. xi.; *G. borealis*, ♀, *id.* Sv. Ak. Handl. xiii. No. 5, p. 102, Sweden; *G. plebeia*, ♀, *id.* Tijdschr. Ent. xviii. p. 100, and Sv. Ak. Handl. xiii. No. 5, p. 100, N. Italy; *G. brumalis*, ♀, *id.* P. Bost. Soc. xvii. p. 497, Labrador; *G. rhodopis*, p. 40, pl. iv. fig. 4, *G. pallida*, p. 42, fig. 5, and *G. æthiopica*, p. 44, pl. v. fig. 1, L. Koch, Aegypt. & Abyss. Arachn., Hamaszen, Abyssinia: spp. nn.

Prosthesima cordigera, p. 45, pl. v. fig. 2, *P. setigera*, p. 47, fig. 3, and *P. ravida*, p. 48, fig. 4, L. Koch, *l. c.*, Hamaszen; *P.* (sub *Melanophora*) *latipes*, p. 45, Liguria and Sardinia, and *sarda*, p. 46, Sardinia, G. Canestrini, Atti Soc. Pad. ii. [1873]; *P. vespertina*, ♀, p. 98, Central Italy, *P. hirta*, ♂, North Italy, and *P. nana*, ♂, Galatz, p. 99, *P. villica*, ♀, p. 100, Austria, T. Thorell, Tijdschr. Ent. xviii.; *P. pulchra*, ♀, *id.* Sv. Ak. Handl. xiii. No. 5, p. 111, Algeria; *P. rufipes*, ♀, Sudak, and *P. fusca*, ♂ & ♀, Nikopol, Sudak, and Hadschi-Bei, p. 82, *P. nitida*, ♂, p. 83, Simferopol, *id.* Hor. Ent. Ross. xi.; *P. caprearum*, ♀, P. Pavesi, Atti Soc. Ital. xviii. p. 124, Capri; *P.* (sub *Melanophora*) *jaxartensis*, ♀, p. 23, pl. ii. fig. 1, *P. fuscimana*, ♂, p. 23, fig. 2, *P. hamipalpis*, ♂, fig. 3, and *P. picea*, ♂, p. 24, fig. 4, Kronenberg, *l. c.*, Turkestan: spp. nn.

arium, *ana*, g. n., very nearly allied to *Liocranum*, and most closely re-
Sappey, ng *Drassus*; for *S. rutilans*, ♂ & ♀, sp. n., Holland and S. Tirol:
p. 143, Birell, Tijdschr. Ent. xviii. p. 96, note, and Sv. Ak. Handl. xiii.
Simon, p. 96.

assus affinis, P. Pavesi, Atti Soc. Ital. xviii. p. 124, Capri (renamed *amaryi*, id. *l. c.* p. 303); *D. capnodes*, ♂, Niesky, and *D. fulvus*, ♀, Pyrenees, p. 96, *D. cerdo*, ♂, N. Italy, and *D. pictus*, ♂ & ♀, Spain, p. 97, *D. tenellus*, ♀, and *D. spinulosus*, ♀, North Italy, p. 98, *id.* Tijdschr.

Ent. xviii. (*cf.* Sv. Ak. Handl. xiii. No. 5, pp. 89–96); *D. secretus*, ♀, p. 92, Madeira, and *D. brevipes*, ♀, p. 93, Algeria, *id.* Sv. Ak. Handl. xiii. No. 5; *D. rufescens*, ♀, p. 20, pl. i. fig. 7, *D. breviceps*, ♂, p. 21, pl. v. fig. 43, *D. monticola*, ♀, p. 22, fig. 44, *D. fedtschenkoi*, ♂, p. 22, pl. i. fig. 8, Kronenberg, *l. c.*, Turkestan; *D. criminalis*, ♀, p. 244, pl. viii. fig. 3, and *D. delinquens*, ♀, p. 245, fig. 4, O. P. Cambridge, Ann. N. H. (4) xvi.; *D. coruscus*, p. 50, pl. v. fig. 5, and *D. imbecillus*, p. 52, fig. 6, L. Koch, Aegypt. & Abyss. Arachn., Hamaszen; *D. microps*, p. 380, pl. lxv. fig. 217, *D. putridicola*, p. 382, pl. lxvi. fig. 219, and *D. bidentatus*, p. 386, pl. lxvi. fig. 221, A. Menge, Preuss. Spinn., pt. vii.; Prussia: spp. nn.

Drassus subniger, Cambr., ascertained to be a *Lethia*; Ann. N. H. (4) xvi. p. 246. *D. cinereus*, Kryn., *nec* Panz., ? Hahn, renamed *charcoviæ*, and doubtfully referred to *Drassus*; T. Thorell, Hor. Ent. Ross. xi. p. 82.

Drapeta, g. n., type, *D. æneus*, sp. n., A. Menge, *l. c.* p. 388, pl. lxx. fig. 234 (? = *Drassus cupreus*, Blackw.).

Clubiona frigidula, ♀, T. Thorell, P. Bost. Soc. xvii. p. 496, Labrador, *C. ornata*, ♀, *id.* Tijdschr. Ent. xviii. p. 95, and Sv. Ak. Handl. xiii. No. 5, p. 86, Sweden, *C. maracandica*, ♀, Kronenberg, *l. c.* p. 16, pl. ii. fig. 8, Turkestan: spp. nn.

Chiracanthium elegans, ♂, T. Thorell, Hor. Ent. Ross. xi. p. 78, Jekaterinoslaw or Simferopol; *C. brevidens*, ♂ & ♀, Kronenberg, *l. c.* p. 18, pl. ii. fig. 6, Turkestan; *C. molle*, L. Koch, Aegypt. & Abyss. Arachn. p. 53, pl. v. fig. 7, Anseba (Abyssinia): spp. nn.

Liocranum nigritarse, L. Koch, *l. c.* p. 55, pl. vi. fig. 1, Anseba; and *L. cerioi*, ♂ & ♀, P. Pavesi, Atti Soc. Ital. xviii. p. 122, Capri: spp. nn.

Agræca pullata, sp. n., T. Thorell, Tijdschr. Ent. xviii. p. 97, Central Italy.

Lycosoides, Luc., ? = *Zora*, and a new species from Mtuga, N. Africa, indicated under the name *Z. fritschi*; C. Koch, Ber. senck. Ges. 1872–73, p. 116.

Zora lutea, sp. n., ♂ & ♀, T. Thorell, Hor. Ent. Ross. xi. p. 76, Crimea.

Trachelas maculatus, sp. n., *id. l. c.* p. 77, Crimea.

Phrurolithus pygmæus, ♂, sp. n., *id. l. c.* p. 80, Odessa.

Eresides.

Eresus tristis, ♂, pl. iv. fig. 31, and *E. arenarius*, ♂, fig. 32, spp. nn., Kronenberg, *l. c.* p. 44, Turkestan.

Dictynides.

Dictyna scalaris, G. Canestrini, Atti Soc. Pad. ii. [1873], p. 48, Li[illegible] Texas, *D. mitis*, ♂, and *D. armata*, ♂, Jekaterinoslaw, and *D. pygm*[illegible] Charkow, T. Thorell, Hor. Ent. Soc. Ross. xi. p. 72; *D. sedilloti* xv. p. Simon, Bull. Soc. Ent. Fr. (5) v. p. cl., Castellane, Basses Alpes: sp[illegible]dte,

Agelenides.

Amaurobius torvus, T. Thorell, Tijdschr. Ent. xviii. p. 93, S. Tirol; *A.*

longipalpis, ♂ & ♀, Kronenberg, *l. c.* p. 14, pl. iv. fig. 30, Turkestan; *A. tristis*, p. 31, pl. iii. fig. 3, and *A. crassipes*, p. 32, pl. iv. fig. 2, L. Koch, Aegypt. & Abyss. Arachn., Anseba: spp. nn.

Drassus subniger, Cambr., is now referred to *Letlia*; O. P. Cambridge, Ann. N. H. (4) xvi. p. 246.

Cælotes major, ♀, sp. n., Kronenberg, *l. c.* p. 15, pl. i. fig. 6, Turkestan; *C. pabulator*, p. 34, pl. v. fig. 11, French Alps, *C. pastor*, p. 38, fig. 12, Basses Alpes, *C. poweri*, p. 42, Alpes Maritimes, *C. obesus*, p. 44, Eastern Pyrenees, *C. atramentarius*, p. 46, Ariége, spp. nn., *C. solitarius*, L. Koch, = *C. pickardi*, Cambr., p. 36, *C. mœrens*, Cambr., placed (doubtfully) in the genus *Cryphœca*, Thor., p. 53, E. Simon, Arachn. de France, ii.

Cedicus, g. n., differs from *Cælotes* in the position of the spinners; type, *Cedicus flavipes*, sp. n., *id. l. c.* p. 48, pl. v. fig. 15, Corsica and Syria.

Enyo (*Zodarium*, Kron.) *bactrianum*, ♂ & ♀, sp. n., Kronenberg, *l. c.* p. 12, pl. i. fig. 5, Turkestan.

Agelena livida, E. Simon, *l. c.* p. 112, pl. vi. fig. 10, Spain and Syria; *A. taurica*, ♂ & ♀, T. Thorell, Hor. Ent. Ross. xi. p. 75, Crimea and Sarepta: spp. nn.

Tegenaria urbana, p. 67, and *T. pusilla*, p. 101, Paris, *T. fontium*, p. 79, Digne, *T. duellica*, p. 83, pl. v. fig. 6, Pyrenees, *T. larva*, p. 86, fig. 8, Besançon, Nancy, *T. pallidula*, p. 95, Pyrenees, *T. capra*, p. 97, Alps, Oisano, *T. ericarum*, p. 98, E. Pyrenees, Corsica, &c., *T. perita*, p. 102, E. Pyrenees, Vernet-les-Bains, and *T. debilis*, p. 105, Monaco, E. Simon, Arachn. de France; *T. variata*, ♀, T. Thorell, Hor. Ent. Ross. xi. p. 74, Sebastopol and Jeny Sala; *T. bremii*, ♂, P. Pavesi, Atti Soc. Ital. xviii. p. 269, Switzerland; *T. similis*, C. Giebel, Z. ges. Naturw. (2) xxx. p. 436, Switzerland; *T. parvula*, Central Italy, and *T. rhætica*, S. Tirol (Meran), T. Thorell, Tijdschr. Ent. xviii. p. 94, and Sv. Ak. Handl. xiii. No. 5, pp. 78 & 79; *T. maderiana*, ♀, p. 76, Madeira, and *T. malacensis*, ♂, Spain, p. 80, fig. 2, *id.* Sv. Ak. Handl. xiii. No. 5; *T. mirabilis*, L. Koch, Aegypt. & Abyss. Arachn. p. 34, pl. iii.: spp. nn.

Tegenaria (*Cicurina*, Menge) *pellucida*, Sappey, and *T.* (*C.*) *impudica*, N. Spain, pl. v. fig. 2, spp. nn., E. Simon, Arachn. de France, ii. p. 24.

Textrix pinicola, p. 118, and *T. albo-signata*, p. 127, pl. vi. fig. 5, spp. nn., *id. l. c.* Corsica; *T. lepricuri*, ♂, sp. n., *id.* Bull. Soc. Ent. Fr. (5) v. pp. lxii. & lxiii. Algeria; *T. variegata*, Sim., ♂, described for the first time from Oran, *id.* ibid.; *T. moggridgii*, Cambr., = *T. coarctata*, Léon Dufour, *id. l. c.* p. 125.

Histopona debilis, ♀, sp. n., T. Thorell, Tijdschr. Ent. xviii. p. 95, Nice.

Hahnia petrobia, p. 132, and *H. helveola*, p. 139, Aube, &c., *H. ononidium*, p. 139, Hautes Alpes, *H. propinqua*, p. 138, pl. vi. fig. 4, Alpes, Sappey, &c., *H. bressica*, p. 141, Ain, Forêt de Seillons, *H. candida*, p. 143, Basses Alpes, Digne, and *H. muscicola*, p. 144, Aube, Tirol, E. Simon, Arachn. de France, ii.: spp. nn.

Hersilidiides.

Hersilidia (*Hersiliola*, Kron.) *pallida*, ♀, sp. n., Kronenberg, *l. c.* p. 13, pl. v. fig. 41, Turkestan.

Scytodides.

Scytodes immaculata, p. 27, pl. iii. fig. 2, Cairo, and *S. humilis*, p. 28, pl. iv. fig. 1, Hamaszen, Abyssinia, spp. nn., L. Koch, Aegypt. & Abyss. Arachn.

Pholcides.

Pholcus ponticus, ♂ & ♀, T. Thorell, Hor. Ent. Ross. xi. p. 70, Odessa, Jekaterinoslaw, and Sarepta; *P. reini*, Carl Koch, Ber. senck. Ges. 1873, p. 113, Mtuga, N. Africa: spp. nn.

Theridiides.

Nesticus pallidus, Fountain Cave, Virginia, and *N. carteri*, Kentucky and Indiana, J. H. Emerton, Am. Nat. ix. p. 279, pl. i. figs. 22–27 & 28, spp. nn.

Theridium innocuum, ♂, p. 65, *T. cinereum*, ♂ & ♀, p. 66, T. Thorell, Hor. Ent. Ross. xi., Simferopol; *T. cuneatum*, ♀, p. 94, Sweden, *T. hasselti*, ♂, Holland, and *T. histrionicum*, ♀, p. 92, S. Tirol, *id.* Tijdschr. Ent. xviii., and Sv. Ak. Handl. xiii. No. 5, pp. 50–54; *T. tuberculatum*, ♂, Kronenberg, *l. c.* p. 9, pl. v. fig. 10, Turkestan; *T. bajulans*, L. Koch, Aegypt. & Abyss. Arachn. p. 21, pl. ii. fig. 4, Cairo and Suakim: spp. nn.

Minicia, g. n., remarkable from similarity to *Clubiona* and other Drassids; type, *M. spinosa*, ♀, sp. n., T. Thorell, Tidjschr. Ent. xviii. p. 93, note, Italy.

Steatoda caricis, ♀, sp. n., C. Fickert, Z. e. Ver. Schles. v. p. 28, Silesia; *S. wlandica*, ♀, p. 92, Sweden, and *S. rugosa*, ♀, p. 93, Austria, ? spp. nn., T. Thorell, Tijdschr. Ent. xviii., and Sv. Ak. Handl. xiii. No. 5, pp. 56 & 57; *S. torva*, ♀ (? sp. n.), *id.* Sv. Ak. Handl. xiii. No. 5, p. 58, Austria; *S. albo-vittata*, ♀, sp. n., *id.* Hor. Ent. Ross. xi. p. 67, ? Simferopol.

Lithyphantes nobilis, ♂ & ♀, p. 60, Madeira, *L. ephippiatus*, ♀, p. 63, Egypt, and *L. mœrens*, ♀, p. 64, Algeria, spp. nn., T. Thorell, Sv. Ak. Handl. xiii. No. 5.

Euryopis 5-guttata, ♀, *id.* Hor. Ent. Ross. xi. p. 68, and *l. c.* p. 59, Odessa and Simferopol; *E. tarsalis*, ♀, P. Pavesi, Atti Soc. Ital. xviii. p. 119, Capri: spp. nn.

Erigone quadripunctata, ♂, F. Fickert, Z. e. Ver. Schles. v. p. 27, Silesia; *E. speciosa*, ♀, Holland, *E. macrochæra*, ♀, North Sweden, and *E. herniosa*, ♀, Lapland and Norway, p. 87, *E. leptocarpa*, ♂, Holland, *E. hilaris*, ♂, and *E. nigrimana*, ♂ & ♀, p. 88, North Italy, *E. phaulobia*, ♂, *E. spadix*, ♀, *E. pacifica*, ♂, N. Italy, and *E. barbata*, ♂, S. Sweden, p. 89, *E. tarsalis*, ♂, Holland, *E. veneta*, ♂, North Italy, and *E. orites*, ♂, St. Moritz, Switzerland, p. 90, *E. cæstata*, ♂, and *E. inops*, ♂, Sweden, p. 91, T. Thorell, Tijdschr. Ent. xviii. and Sv. Ak. Handl. xiii. No. 5, pp. 32–48; *E. prospiciens*, ♂, p. 62, and *E. taurica*, ♂, p. 63, Simferopol, *E. criodes*, ♂ & ♀, and *E. pulicaria*, p. 64, Sebastopol, *id.* Hor. Ent. Ross. xi. and *l. c.* pp. 37 et seq.; *E. douglasi*, ♀, p. 247, Castle

Douglas, Scotland, *E. nigriceps*, ♀, p. 248, fig. 5, and *E. subitanea*, ♂, p. 249, fig. 7, England, O. P. Cambridge, Ann. N. H. (4) xvi. pl. viii.; *E. (Neriene) sublimis*, ♂ & ♀, and *E. (Neriene) curtipes*, ♂, p. 314, Scotland, *id.* P. Berw. Club, vii.; *E. retroversa*, ♂, p. 191, pl. xxvii. fig. 1, Paris, *E. consimilis*, ♂, p. 192, fig. 2, Europe, *E. longiuscula*, ♂, p. 192, fig. 3, and *E. truncatifrons*, ♂, p. 193, fig. 4, Corsica, *E. habilis*, ♂ & ♀, p. 195, fig. 5, Col de Natoia, France, *E. dorsuosa*, ♂, p. 196, fig. 6, Glacier de Casset, France, *E. antennata*, ♂, p. 197, fig. 7, Col des Ayes, France, *E. vaporariorum*, ♂ & ♀, p. 198, fig. 8, Col de Natoia, *E. corniculans*, ♂ & ♀, p. 199, fig. 9, Sappey, *E. nigro-limbata*, ♂ & ♀, p. 201, pl. xxviii. fig. 10, Gyé sur Seine, *E. leprieuri*, ♂, p. 202, fig. 11, Algiers, *E. stylifrons*, ♂, p. 203, fig. 12, Corsica, *E. eborodunensis*, ♂, p. 204, fig. 13, Col de Natoia, *E. coccinea*, ♂, p. 205, fig. 14, Morocco, *E. foraminifera*, ♂, p. 207, fig. 15, Col de Natoia, *E. lucasi*, ♂, p. 208, fig. 16, Algiers, *E. inedita*, ♂, p. 209, fig. 17, Paris, *E. heterogaster*, ♂, p. 211, pl. xxix. fig. 19, Morocco, *E. corrugio*, ♂ & ♀, p. 214, fig. 21, Corsica, *E. thoracata*, ♂ & ♀, p. 212, fig. 20, Troyes, *E. biovata*, ♂, p. 215, fig. 22, Rouen, *E. bucephala*, ♂ & ♀, p. 217, fig. 23, Corsica, *E. protuberans*, ♂, p. 218, fig. 24, Pyrenees, *E. castellana*, ♂ & ♀, p. 219, fig. 25, Aranjuez, *E. justa*, ♂, p. 220, fig. 26, Troyes, *E. pabulatrix*, ♂ & ♀, p. 324, pl. xliv. fig. 1, La Grande Chartreuse, *E. serrata*, ♂, p. 325, fig. 2, and *E. nemorivaga*, ♂ & ♀, p. 326, fig. 3, Troyes, *E. corallipes*, ♂ & ♀, p. 328, fig. 4, France, *E. fluctuans*, ♂, p. 329, Paris, *E. viva*, ♂, p. 330, fig. 5, Chaville, France, *E. diluta*, ♂, p. 331, fig. 6, Troyes, *E. grouvellii*, ♂, p. 332, fig. 7, Col de Natoia, *E. pœtula*, ♂ & ♀, p. 333, fig. 8, Monitier (French Alps), *E. persimilis*, ♂, p. 394, pl. lxvi. fig. 1, *E. ornata*, ♂, p. 395, fig. 3, *E. pictilis*, ♂ & ♀, p. 396, fig. 4, *E. provida*, ♀, p. 398, fig. 5, *E. pertinens*, ♂ & ♀, p. 399, fig. 6, *E. persoluta*, ♂ & ♀, p. 400, fig. 7, *E. cornupalpis*, ♂, p. 401, fig. 8, *E. multesima*, ♀, p. 402, fig. 9, *E. florens*, ♂ & ♀, p. 403, fig. 10, Boston, U.S.A., *id.* P. Z. S. 1875: spp. nn.

Erigone capito, Westr., ♂, figured for the first time; *id. l. c.* p. 210, pl. xxviii. fig. 18.

Anthrobia mammouthia, Tellkampf, from Mammoth Cave, &c., Kentucky, J. H. Emerton, Am. Nat. ix. p. 280, pl. i. figs. 1–6. *Anthrobia* has been referred to the *Dysderides* by E. Simon, but later opinion seems to be in favour of placing it next to *Erigone* in the *Theridiides*; A. S. Packard, *ibid.*, note.

Tapinopa unicolor, ♀, sp. n., O. P. Cambridge, P. Berw. Club, vii. p. 319, North of England.

Linyphia furcigera, G. Canestrini, Atti Soc. Pad. ii. [1873] p. 47, Sardinia; *L. emertoni*, ♀, T. Thorell, P. Bost. Soc. xvii. p. 494, Labrador; *L. mughi*, ♂ & ♀, p. 18, fig. 1, *L. pusiola*, ♂, p. 20, fig. 3, and *L. sudetica*, ♂ & ♀, p. 21, figs. 4 & 5, Silesia, C. Fickert, Myriop. und Araneid. vom Kamme des Riesengebirges, &c.; *L. sordellii*, ♂ & ♀, P. Pavesi, Atti Soc. Ital. xviii. p. 263, Switzerland; *L. aeria*, ♂ & ♀, O. P. Cambridge, Ann. N. H. (4) xvi. p. 251, pl. viii. fig. 8, England; *L. pyrenæa*, ♂, p. 82, Pyrenees, *L. obesa*, ♂, and *picta*, ♀, and *L. icterica*, ♂, p. 83, Sweden, *L. fragilis*, ♂ & ♀, St. Moritz, Switzerland, and *L. nitida*, ♂ & ♀, Niesky, p. 84, *L. infirma*, ♀, Sweden, and *L. arida*, ♂ & ♀, S.

Tirol, p. 85, *L. mansueta* and *L. coccinna*, ♂ & ♀, Niesky, and *L. diluta*, ♀, S. Sweden, p. 86, *L. vilis*, ♂ & ♀, p. 87, Holland, T. Thorell, Tijdschr. Ent. xviii., and Sv. Ak. Handl. xiii. No. 5, pp. 17–30; *L. maklini*, ♂ & ♀, p. 60, Jekaterinoslaw, and *L. guttata*, ♀, p. 61, Crimea, *id.* Hor. Ent. Ross. xi. and *l. c.* pp. 16 & 31; *L. maura*, ♀, *id.* Sv. Ak. Handl. xiii. No. 5, p. 18, Algeria; *L. subterranea*, Carter and Wyandotte Caves, Kentucky, pl. i. figs. 29–31, and *L. weyeri*, Weyer's Cave, Virginia, figs. 7–12, p. 279, and *L. incerta*, p. 280, figs. 13–21, Fountain Cave, Virginia, and Bat Cave, Kentucky, J. H. Emerton, Am. Nat. ix.: spp. nn.

Linyphia cristata, Menge, and *L. angulipalpis* and *rufa*, Westr., for the first time recorded as British; O. P. Cambridge, P. Berw. Club. vii. pp. 318 & 319; *L. lepida*, Cambr., Scotland, renamed *expuncta*; id. Ann. N. H. (4) xvi. p. 251.

Epeirides.

Meta dentipalpis, ♂ & ♀, sp. n., Kronenberg, *l. c.* p. 6, pl. i. fig. 2, Turkestan.

Tetragnatha extensa, Linn., from Labrador; T. Thorell, P. Bost. Soc. xvii. p. 493.

Nephila labillardierii, ♀, sp. n., T. Thorell, P. Z. S. 1875, p. 130, pl. xxv. figs. 1 & 2, New Caledonia, hitherto erroneously included under *Aranea edulis*, Labill., 1799. *N. edulis*, Labill., described; *id. l. c.* p. 132.

Argiope fissiloba, sp. n., L. Koch, Aegypt. & Abyss. Arachn. p. 15, pl. ii. fig. 1, Habab (Abyssinia).

Arachnura scorpionoides, Vins., from Île de la Réunion; T. Thorell, P. Z. S. 1875, p. 137. Thorell questions whether the interval between the lateral eyes of this spider, and a difference of proportion in the length of its legs are sufficient to separate it generically from *Epeira feredayi* and *higginsi*, L. Koch (Arachn. Austr.).

Singa ænea, ♀, Kronenberg, *l. c.* p. 5, pl. i. fig. 3, Turkestan; *S. maculata*, ♂ & ♀, T. Thorell, Tijdschr. Ent. xviii. p. 81, and Sv. Ak. Handl. xiii. No. 5, p. 13, Spain: spp. nn.

Zilla alpina, C. Giebel, Z. ges. Naturw. (2) xxx. p. 434, Switzerland; *Z.? mordax*, ♂, T. Thorell, Tijdschr. Ent. xviii. p. 82, and *l. c.* p. 15, Holland; *Z. crucifera*, ♂ & ♀, *id.* Hor. Ent. Ross. xi. p. 57, and *l. c.* p. 14, Nikopol and Sarepta: spp. nn.

Epeira. C. Fickert's Synonymic Alphabetical Catalogue of the European species (Abh. Ges. Görl. xv. 1874, p. 13) has not been seen by the Recorder.

Epeira 5-notata, ♀, T. Thorell, Sv. Ak. Handl. xiii. No. 5, p. 10, North Africa; *E. pallasi*, ♂ & ♀, *id.* Hor. Ent. Ross. xi. p. 54, and *l. c.* p. 12, Jekaterinoslaw and Nikopol; *E. zimmermanni*, ♀, Niesky, and *E. lunaris*, ♂, N. Italy (Liguria), *id.* Tijdschr. Ent. xviii. p. 81, and *l. c.* pp. 6–8; *E. flava*, C. Giebel, Z. ges. Naturw. (2) xxx. p. 429, Switzerland; *E. nautica*, p. 17, pl. xi. fig. 2, and *E. liriope*, p. 19, fig. 3, Suakim, L. Koch, Aegypt. & Abyss. Arachn.; *E. tartarica*, ♀, Kronenberg, *l. c.* p. 2, pl. i. fig. 1, Turkestan; *E. packardi*, ♂, T. Thorell, P. Bost.

Soc. xvii. p. 490, Labrador; *E. cupidinea*, ♀, *id.* P. Z. S. 1875, p. 135, pl. xxv. fig. 3, New Caledonia: spp. nn.

Uloborides.

Cyllopodia cavata, Hentz; "The Triangle Spider." B. G. Wilder, Popular Science Monthly Mag., April, 1875, pp. 1–15, with woodcuts (sep. copy), describes the mode of making its snare, and of using it when made. The mode of entrapping its prey is curious; the spider sits, with the thread, on which the whole of its three-cornered web hangs, drawn tight, and held with the claws of its fore-tarsi, leaving plenty of slack line behind; as soon as a fly gets into the web, the line is suddenly let go with a jerk, which serves to entangle it; this is repeated by again hauling in the slack, tightening the line, and letting it go, until the fly is well entangled.

Thomisides.

Thomisus hilarulus, p. 252, Nice, and *T. citrinellus*, p. 253, Spanish Pyrenees, spp. nn., Eugène Simon, Arachn. de France, ii.

Misumena vinsoni, T. Thorell, P. Z. S. 1875, p. 146, Madagascar; *M. xanthogaster*, L. Koch, Arachn. Austr. p. 597, pl. xlvii. fig. 1, N. S. Wales; *M. bicolor*, E. Simon, Arachn. de France, ii. p. 246, pl. vii. fig. 2, Corsica: spp. nn.

Diæa ornata, ♂, T. Thorell, Hor. Ent. Ross. xi. p. 94, Sarepta; *D. variabilis*, p. 578, pl. xliv. fig. 7, Rockhampton and Port Mackay, *D. insecta*, p. 579, pl. xlv. fig. 1, Rockhampton, *D. rosea*, p. 581, pl. xlv. fig. 2, Sydney, *D. punctipes*, p. 583, fig. 3, Rockhampton, *D. hæmatodactyla*, p. 584, fig. 4, and *D. tenuis*, p. 586, fig. 5, Port Mackay, *D. mollis*, p. 587, fig. 6, Rockhampton, *D. albo-limbata*, p. 588, pl. xlvi. fig. 1, New Zealand, *D. olivacea*, p. 589, fig. 2, King George's Sound, *D. dimidiata*, p. 591, fig. 3, Brisbane, *D. punctata*, p. 592, fig. 4, Rockhampton and Sydney, *D. blanda*, p. 594, fig. 5, Australia, *D. plumbea*, p. 595, fig. 6, Shelley's Flag, near Goulbourn, Australia, L. Koch, Arachn. Austr.: spp. nn.

Synema, g. n., = *Diæa*, Thor., pt., type, *Aranea globosa*, Fabr.; E. Simon, *l. c.* pp. 201 & 202.

Runcinia, g. n., = *Thomisus*, C. Koch, pt., type, *T. lateralis*, C. Koch; *id. l. c.* pp. 254 & 255.

Heriæus, g. n., = *Thomisus*, auctt., pt., and *Pachyptila*, sub-g., E. Sim., type, *T. hirsutus*, Walck.; *id. l. c.* pp. 203–206.

Pistius, g. n., = *Thomisus*, auctt., pt., type, *T. truncatus*, Pallas; *id. l. c.* pp. 257 & 258.

Hedana valida, sp. n., L. Koch, Arachn. Austr. p. 599, pl. xlvii. fig. 2, Sydney.

Tmarus, g. n., = *Monaxtes*, Luc., pt. type, *M. piochardi*, Sim.; E. Simon, *l. c.* pp. 260 & 261; also *T. stellio*, sp. n., *id. l. c.* p. 264, Provence.

Tharpyna munda, p. 600, pl. xlvii. fig. 3, and *T. hirsuta*, p. 602, fig. 4, spp. nn., L. Koch, Arachn. Austr., Sydney.

Xysticus corsicus, p. 157, Corsica, *X. gallicus*, p. 158, Fontainebleau, *X.*

nubilus, p. 166, Corsica, Spain, Sicily, and Algeria, *X. ibex*, p. 175, Hautes Alpes, *X. balteatus*, p. 178, Corsica, Spain, *X. desidiosus*, p. 193, Corsica, *X. arenicola*, p. 194, Arcachon, *X. caperatus*, p. 198, Corsica, *X.* (*Oxyptila*, Sim.) *perplexa*, p. 223, Ariège, Spain, *X.* (*O.*) *nigella*, p. 225, Corsica, *X.* (*O.*) *flava*, Spain, p. 229, *X.* (*O.*) *rauda*, p. 226, pl. vii. fig. 20, Basses Alpes, *X.* (*O.*) *blitea*, p. 236, pl. vii. fig. 25, Corsica, *X.* (*O.*) *caligans*, p. 240, Basses Alpes, *X.* (*O.*) *varica*, Algiers, p. 220, and *X.* (*O.*) *leprieuri*, p. 239, Algeria, E. Simon, *l. c.*; *X. uncatus*, ♂, and *X. gratus*, ♀, Central Italy, *X. tristiculus*, ♂, Island of Pithyusa, p. 103, *X. nigritus*, ♂, p. 104, Niesky (Lausatia) and Denmark, T. Thorell, Tijdschr. Ent. xviii.; *X. bilimbatus*, p. 607, pl. xlviii. fig. 2, Sydney, and *X. autumnalis*, p. 609, fig. 3, Coerwall, Australia, L. Koch, Arachn. Austr.; *X. insulanus*, ♂ & ♀, p. 132, Madeira, *X. hamatus*, ♂ & ♀, p. 133, and *X. callitys*, ♀, p. 139, Algeria, T. Thorell, Sv. Ak. Handl. xiii. No. 5; *X. tuberosus*, ♂ & ♀, p. 88, Crimea and Sarepta, *X. obesus*, ♀, p. 89, ? S. Russia, *X. lestus*, ♂, Sudak, and *X. arenarius*, ♀, Simferopol, p. 91, *X. marmoratus*, ♂ & ♀, p. 92, Jekaterinoslaw and Sarepta, *X. pullatus*, ♂, p. 93, Sarepta, *id.* Hor. Ent. Ross. xi.; *X. jugalis*, p. 63, pl. vi. fig. 4, and *X. athiopicus*, p. 65, fig. 5, Hamaszen, *X. turcos*, p. 67, fig. 6, Abyssinia, L. Koch, Aegypt. & Abyss. Arachn.; *X. cor*, G. Canestrini, Atti Soc. Pad. ii. [1873] p. 49, Monferrato, Genoa, and Sardinia; *X. concinnus*, ♂, p. 34, pl. iii. fig. 22, and *X. lugubris*, ♀, p. 35, fig. 23, Kronenberg, *l. c.* Turkestan: spp. nn.

Xysticus ninii, Thor., = *X. defectus*, Cambr., and *X. jucunda*, E. Sim.; E. Simon, Arachn. de France, ii. p. 180.

Tharrhalea, g. n., allied to *Xysticus*, for *T. albipes*, sp. n., L. Koch, Arachn. Austr. pp. 603 & 604, pl. xlvii. fig. 5, Cape York.

Selenops australiensis, L. Koch, *l. c.* p. 615, pl. xlviii. fig. 6, Bowen (Australia); *S. latreillii*, ♂ & ♀, E. Simon, Arachn. de France, ii. p. 346, Latakia: spp. nn.

Hemiclæa fulva, p. 618, pl. xlix. fig. 1, Australia, *H. flavitarsus*, p. 620, fig. 2, Sydney, *H. lugubris*, p. 621, fig. 3, Bowen and Sydney, *H. diversa*, p. 622, fig. 4, Bowen, Port Denison, *H. major*, p. 624, fig. 5, Sydney, *H. plana*, p. 626, fig. 6, Rockhampton, *H. plumea*, p. 627, pl. xl. fig. 1, Port Mackay, *H. affinis*, p. 632, fig. 4, *H. limbata*, p. 634, fig. 5, Sydney, *H. rogenhoferi*, p. 637, pl. xli. fig. 1, New Zealand, *H. murina*, p. 639, fig. 2, Bowen and Rockhampton, spp. nn., L. Koch, *l. c.*

Voconia dolosa, sp. n., *id. l. c.* p. 648, pl. xlii. fig. 2, New Holland.

Zachria, g. n., p. 649, nearly allied to *Voconia*, L. Koch; for *Z. flavicoma*, p. 650, pl. lii. fig. 3, King George's Sound, Australia, *Z. oblonga*, p. 651, fig. 4, and *Z. hæmorrhoidalis*, p. 653, fig. 5, Sydney, spp. nn.; *id. l. c.*

Prychia, g. n., nearly allied to *Sarotes*, Sund.; *P. gracilis*, sp. n., *id. l. c.* p. 654, Viti Island.

Sarotes longipes, p. 660, pl. liii. fig. 3, Sydney, *S. badius*, p. 662, pl. liv. fig. 1, Böröe, *S. nobilis*, p. 664, fig. 2, *S. suspiciosus*, Upolu and Rockhampton, p. 665, fig. 3, *S. debilis*, p. 671, fig. 3, Upolu, *S. cervinus*, p. 673, fig. 4, Port Mackay, Bowen and Sydney: spp. nn. *Sarotes* (*Ocypete*) *procerus*, L. Koch, Bowen and Brisbane, p. 667, fig. 4, *S.* (*Ocypete*) *sartor*

L. Koch, Sydney, p. 670, pl. lv. fig. 2, *Olios leucosius*, Walck., = *S. regius*, Fabr., Australia (numerous localities), p. 675, pl. lvi. fig. 1 ; *id. l. c.*

Isopeda, g. n., p. 678, nearly allied to *Sarotes*; for *I. barbata*, p. 680, pl. lvi. fig. 3, Port Mackay and Sydney, *I. flavida*, p. 686, pl. lvii. fig. 2, Bowen, Sydney, and Rockhampton, *I. villosa*, p. 687, fig. 3, Australia, *I. conspersa*, p. 689, pl. lviii. fig. 1, Cape York, *I. robusta*, p. 691, fig. 3, New Holland, *I. hirsuta*, p. 693, pl. lix. fig. 1, Bowen, *I. cordata*, p. 694, fig. 2, Sydney, *I. aurea*, p. 696, fig. 3, Port Mackay, and *I. flavibarbis*, p. 698, fig. 4, Sydney, spp. nn., also *Ocypete vasta*, L. Koch, p. 681, pl. lvi. fig. 4, Brisbane, &c., and *Heteropoda pessleri*, Thor., p. 684, pl. lvii. fig. 1, Sydney, &c. ; L. Koch, *l. c.*

Themeropis, g. n., allied to *Isopeda*; for *T. severa*, sp. n., *id. l. c.* p. 699, pl. lx. fig. 1, China.

Palystes, g. n., closely allied to *Sarotes*, Sund. (= *Helicopis*, L. Koch, *l. c.* p. 495), for *P. ignicomus*, p. 701, pl. lv. fig. 2, New Ireland, *P. frenatus*, p. 705, fig. 4, and *P. superciliosus*, p. 706, pl. lxi. fig. 1, South Africa, spp. nn. ; also *P.* (*Olios*) *pinnotherus*, Walck., Australia ?, p. 703, fig. 3; L. Koch, *l. c.* *P.* (*Helicopis*, Thor.) *maderiana*, sp. n., T. Thorell, Sv. Ak. Handl. xiii. No. 5, p. 123, Madeira.

Heteropoda festiva, p. 710, pl. lxi. fig. 2, Sydney, *H. macilenta*, p. 711, fig. 3, Bowen, *H. pallida*, p. 713, fig. 4, Peak Downs, Australia, *H. picta*, p. 714, fig. 5, Australia, *H. regina*, p. 716, fig. 6, Bowen and Peak Downs, *H. conspicua*, p. 717, pl. lxii. figs. 1 & 3, Bowen (Port Denison), *H. nitrellina*, p. 722, fig. 4, Peak Downs, *H. præclara*, p. 723, pl. lxii. fig. 5, and pl. lxiii. fig. 1, Rockhampton and Gayndah, *H. hæmorrhoidalis*, p. 726, pl. lxiii. fig. 2, Sydney, *H. incomta*, p. 727, pl. lxiii. fig. 3, Australia, *H. rutila*, p. 729, fig. 4, Bowen, *H. diana*, p. 730, fig. 5, Australia, *H. badia*, p. 732, pl. lxiv. fig. 1, Böröe, *H. salacia*, p. 737, pl. lxiv. fig. 4, and lxv. fig. 1, Peak Downs, Rockhampton, and Sydney, spp. nn.; *H.* (*Sparassus*, L. K.) *punctata*, L. Koch, Bowen, Port Mackay, Wollongong, Rockhampton, and Sydney, p. 719, fig. 2; *H. calligaster*, Thorell, Peak Downs and Randwich, Australia, p. 734, figs. 2 & 3; L. Koch, *l. c.*

Pandercetes, g. n., p. 739, apparently closely allied to *Heteropoda*, Latr., for *P. gracilis*, sp. n., p. 740, pl. lxv. fig. 2, Australia, L. Koch. *l. c.*

Sparassus validus, T. Thorell, Hor. Ent. Ross. xi. p. 98, and Sv. Ak. Handl. xiii. No. 5, p. 124, Crimea; *S. sericeus*, ♂ & ♀, p. 28, pl. iii. fig. 19, and *S. oculatus*, ♂, p. 29, pl. v. fig. 45, *l. c.* Kronenberg, Turkestan ; *S.* ? (*Ocypete*, Carl Koch) *fritschi*, Carl Koch, Abh. senck. Ges. 1872–73, p. 114, Mtuga and Casa-blanca (North Africa) ; *S. longipes*, C. Giebel, Z. ges. Naturw. (2) xxx. p. 438, Switzerland : spp. nn.

Cr[illegible]tis, g. n., closely allied to *Artanes* and *Philodromus* ; for *O. plana*, [illegible]oslaw L. Koch, Arachn. Austr. p. 611, pl. xlviii. fig. 4, Cape York.

Ent. Ros[illegible]yra, g. n., p. 613, closely allied to *Philodromus* and *Opitis* ; for *G.* [illegible]us, ♂ & [illegible], sp. n., *id. l. c.* p. 614, pl. xlviii. fig. 5, Rockhampton.

berg, *l.* [illegible] *natus gratiosus*, p. 316, France, *T. atratus*, p. 318, Hautes Alpes, 1873] [illegible]*ersus*, p. 319, Basses Alpes, *T. lanceolatus*, ♀, p. 322, and *T. flavidus*, ♀, p. 323, S. Russia, *T. cervini*, p. 327, Valais, Zermatt, *T. rayi*, p. 328, Aube, E. Simon, Arachn. de France, ii. ; *T. testaceus*, ♂ & ♀, Odessa,

and *T. vittatus*, ♂, Sarepta, p. 98, T. Thorell, Hor. Ent. Ross. xi., and Sv. Ak. Handl. xiii. No. 5, pp. 126 & 127; *T. maritimus*, A. Menge, Preuss. Spinn. pt. vii. p. 398, pl. lxvii. fig. 235, Prussia; *T. rubicundus*, L. Koch, Aegypt. & Abyss. Arachn. p. 61, pl. vi. fig. 3, Hamaszen: spp. nn.

Tibellus, g. n., p. 307, = *Thanatus*, C. Koch, and *Philodromus*, Bl., pt., type, *Philodromus oblongus*, Walck., p. 311, also *Tibellus macellus*, p. 308, Digne and Corsica, and *T. propinquus*, p. 309, France, spp. nn.; E. Simon, Arachn. de France, ii.

Artanes (*Artamus*) *beskida*, ♀, sp. n., C. Fickert, Z. c. Ver. Schles. v. p. 30, Silesia.

Philodromus sabulosus, A. Menge, *l. c.* p. 411, pl. lxix. fig. 232, Prussia; *P. pictus*, ♂ & ♀, p. 30, pl. iii. fig. 21, and *P. humilis*, ♀, p. 31, fig. 20, Kronenberg, *l. c.* Turkestan; *P. albo-pictus*, ♀, E. Simon, Bull. Soc. Ent. Fr. (5) v. p. cxlix., Laplaigne, near Condon; *P. dilutus*, ♀, T. Thorell, Hor. Ent. Ross. xi. p. 96, Jekaterinoslaw; *P. laricium*, p. 273, Hautes Alpes, *P. parietalis*, p. 276, E. Pyrenees, *P. maritimus*, p. 282, Provence, Corsica, Spain, and Egypt, *P. lividus*, p. 285, Hautes Alpes, *P. debilis*, p. 292, Corsica, Spain, and Sicily, *P. constellatus*, p. 298, France and Corsica, *P. vagulus*, p. 305, Alps, and *P. pernix*, p. 303, Algiers, E. Simon, Arachn. de France, ii.: spp. nn.

Lycosides.

Ctenus pallidus, sp. n., L. Koch, Aegypt. & Abyss. Arachn. p. 84, pl. vii. fig. 7, Habab.

Dolomedes italicus, ♂, sp. n., T. Thorell, Tijdschr. Ent. xviii. p. 107, Central Italy.

Lycosa galerita, p. 69, pl. vii. fig. 1, and *L. serena*, p. 71, Cairo, *L. nævia*, p. 72, pl. vii. fig. 2, L. Koch, Aegypt. & Abyss. Arachn., Hamaszen; *L. velox*, ♂ & ♀, p. 36, pl. iv. fig. 24, *L. orientalis*, ♂ & ♀, p. 37, fig. 25, *L. concolor*, ♂, p. 38, fig. 26, and *L. aculeata*, p. 38, pl. v. fig. 46, Kronenberg, *l. c.* Turkestan; *L. furcigera*, ♂ & ♀, p. 499, *L. fuscula*, ♀, p. 501, *L. labradorensis*, ♂ & ♀ ?, p. 502, T. Thorell, P. Bost. Soc. xvii., Labrador; *L. pontica*, ♂ & ♀, and *L. tatarica*, ♂, *id.* Hor. Ent. Ross. xi. p. 100, Crimea; *L. plumipes*, ♂, p. 104, Orenburg, *L. elegans*, ♀, Saraisk, Russia, *L. taczanowskii*, ♂ & ♀, Warsaw, and *L. sordidata*, ♀, Germany, p. 105, *L. celeris*, ♀, North Italy, and *L. eiseni*, Lapland and Sweden, *id.* Tijdschr. Ent. xviii.; *L. arenaria*, ♂ & ♀, O. P. Cambridge, Ann. N. H. (4) xvi. p. 253, pl. viii. fig. 9, England (Portland): spp. nn.

Lycosa groenlandica, Thor., from Labrador; T. Thorell, P. Bost. Soc. xviii. p. 498. *L. annulata*, Thor., p. 256, pl. viii. fig. 10, *L. ripa*[illegible] C. Koch, p. 257, fig. 11, and *L. prativaga*, L. Koch, p. 258, fig. 12, [illegible] sp. n., *ia* for the first time as British; O. P. Cambridge, Ann. N. H. (4) x[illegible]

Lycosa ? (*Pardosa*, Gieb.) *obscura*, sp. n., C. Giebel, Z. ges. [illegible], pl. liv. (2) xxx. p. 440.

Tarentula edax, ♂, T. Thorell, Tijdschr. Ent. xviii. p. 107, Wars[illegible]; *T. vivax*, ♀, p. 102, South Russia, *T. cronebergi*, ♀, Sarepta and Derbent, and *T. eichwaldi*, ♂ & ♀, Simferopol and Sarepta, p. 103, *T. krynickii*, ♂,

Crimea and Sarepta, and *T. beckeri*, ♂ & ♀ (locality omitted), p. 104, *T. chiragrica*, ♂, Simferopol, and *T. nordmanni*, ♀, p. 105, Odessa and Sudak, *T. bergsoeii*, ♂, p. 106, Derbent, *id.* Hor. Ent. Ross. xi.; *T. latifasciata*, ♂ & ♀ ?, p. 39, pl. iv. fig. 27, *T. alticeps*, ♂ & ♀, p. 40, fig. 28, and *T. fulviventris*, ♀, p. 41, fig. 29, Kronenberg, *l. c.* Turkestan: spp. nn.

Trochosa pratecta, p. 75, pl. vii. fig. 3, Anseba, *T. annulipes*, p. 77, fig. 4, Cairo, *T. maculata*, p. 78, fig. 5, and *T. lactea*, p. 80, fig. 6, Habab, and *T. albo-pellita*, p. 82, Hamaszen, L. Koch, Aegypt. & Abyss. Arachn.; *T. herii*, ♀, p. 166, Madeira, *T. manicata*, ♂, p. 170, and *T. meinerti*, ♂, p. 176, Algeria, T. Thorell, Sv. Ak. Handl. xiii. No. 5; *T. dimidiata*, ♂ & ♀, Kamischen, and *T. stigmosa*, ♀, Jekaterinoslaw, *id.* Hor. Ent. Ross. xi. p. 107: spp. nn.

Salticides.

Callilethera modica, ♂, La Sainte Baume, and *C. joberti*, ♂, Landes, E. Simon, Bull. Soc. Ent. Fr. (5) v. p. xciv.; *C. alpina*, C. Giebel, Z. ges. Naturw. (2) xxx. p. 441, Switzerland: spp. nn.

Heliophanus atratus, ♂ & ♀, T. Thorell, Tijdschr. Ent. xviii. p. 107, and Sv. Ak. Handl. xiii. No. 5, p. 180, Germany and N. Italy; *H. patagiatus*, ♂ & ♀, p. 112, note, Jekaterinoslaw, Schöne-Wiese, Nikopol, and *H. nigritus*, p. 114, Nikopol, *id.* Hor. Ent. Ross. xi. and *l. c.* p. 180; *H. decoratus*, L. Koch, Aegypt. & Abyss. Arachn. p. 87, pl. vii. fig. 8, Cairo: spp. nn.

Marpessa ornata, ♀, T. Thorell, Sv. Ak. Handl. xiii. No. 5, p. 181, Madeira; *M. obscura*, ♂ & ♀, p. 46, pl. v. fig. 33, and *M. marginata*, p. 47, ♂ & ♀, fig. 34, Kronenberg, *l. c.* Turkestan: spp. nn.

Euophrys plebeia, L. Koch, *l. c.* p. 90, pl. vii. fig. 9, Cairo; *E. ocellata*, ♀, Kronenberg, *l. c.* p. 48, pl. v. fig. 35, Turkestan: spp. nn.

Plexippus stigmatias, sp. n., L. Koch, *l. c.* p. 92, pl. vii. fig. 10, Anseba.

Attus pavesii, ♂, Canton Ticino, *A. histrio*, ♂ & ♀, and *A. penicillatus*, ♂, Basses Alpes, p. xcii., *A. frigidus*, ♂, Hautes Alpes, Lauteret, Monétier, *A. bedeli*, ♂ & ♀, and *A. sedulus*, ♂, Basses Alpes, *A. rufimanus*, ♂, E. Pyrenees, p. xciii., *A. rayi*, ♂ & ♀, Aube, Basses Alpes, p. xciv., E. Simon, Bull. Soc. Ent. Fr. (5) v.; *A. montigena*, ♂, T. Thorell, Tijdschr. Ent. xviii. p. 108, and Sv. Ak. Handl. xiii. No. 5, p. 184, Germany (Riesengebirge); *A. seriatus*, ♂ & ♀, Crimea and Sarepta, *A. campylophorus*, ♀, Simferopol, and *A. tauricus*, ♂, Crimea, p. 116, *A. lestus*, ♂, p. 117, Nikopol, *A. decorus*, ♀, Simferopol, and *A. psammodes*, ♂, Jekaterinoslaw, p. 118, *A. ammophilus*, ♂ & ♀, Jekaterinoslaw and Dorf Schona, and *A. guttatus*, ♂, Crimea, p. 119, *id.* Hor. Ent. Ross. xi., and Sv. Ak. Handl. xiii. No. 5, pp. 184–193; *A. albo-cinctus*, ♂ & ♀, p. 49, pl. v. fig. 36, and *A. elegans*, ♂, p. 50, fig. 37, Kronenberg, *l. c.* Turkestan; *A. longipes*, G. Canestrini, Atti Soc. Pad. ii. [1873], p. 48, Monte Rosa: spp. nn.

Ælurops, Thorell (*nec* Wagler, *nec* Michaëll) renamed *Ictidops*; C. Fickert, Z. e. Ver. Schles. v. p. 31.

Ælurops ater, ♂, p. 50, pl. v. fig. 38, and *Æ. variegatus*, ♂ & ♀, p. 51,

fig. 39, Kronenberg, *l. c.* Turkestan; *E. sapphirinus*, ♂, T. Thorell, Sv. Ak. Handl. xiii. No. 5, p. 194, Algeria: spp. nn.

Yllenus vittatus, ♂ & ♀, T. Thorell, Hor. Ent. Ross. xi. p. 121, and Sv. Ak. Handl. xiii. No. 5, p. 198, Jekaterinoslaw and Sarepta; *Y. plumipes*, ♂, p. 195, *Y. cervinus*, ♂ & ♀, p. 196, and *Y. ranunculus*, p. 200, North Africa (Algeria), *id.* Sv. Ak. Handl. xiii. No. 5: spp. nn.

Leptorchestes ludibundus, ♂, sp. n., E. Simon, Bull. Ent. Soc. Fr. (5) v. p. xciv. Aube.

SCORPIONIDEA.

Scorpiones.

Scorpius canestrinii, sp. n., F. Fanzago, Atti Soc. Pad. i. [1872] p. 78, pl. iii. Sardinia.

Heterometrus bellicosus, sp. n., L. Koch, Aegypt. & Abyss. Arachn. p. 1, pl. i. fig. 1, Cairo.

Buthus minax, sp. n., *id. l. c.* p. 4, fig. 2, Cairo.

Brotheas hirsutus, sp. n., *id. l. c.* p. 8, fig. 3, Habab.

Telyphonus proscorpio, Latr.; observations on habits by C. de Gavere, Tijdschr. Nederl. Ind. (7) iii. [1873] p. 512.

Pseudo-Scorpiones.

On the geographical distribution of the European *Chernetides*, and the species found in Bohemia, see Stecker, *suprà*, p. 243.

A list of the 8 species of *Chiridium*, *Chernes*, *Chelifer*, *Chthonius*, and *Obisium* known to occur in the Netherlands, with bibliographical references and localities; C. Ritsema, Tijdschr. Ent. xviii., Bijlage A, pp. xxxiii. & xxxiv.

Chernes bohemicus, sp. n., A. Stecker, SB. böhm. Ges. 1875 (sep. copy), p. 8, Bohemia; *C. hahni* and *panzeri*, C. Koch, = *cimicoides*, Fabr., varr.; *id.* Deutsche E. Z. 1875, p. 305. *C. brevipalpis*, p. 225, and *C. ninii*, p. 227, spp. nn., G. Canestrini, Atti Soc. Pad. iii. [1873] Italy.

Blothrus cephalotes, sp. n., E. Simon, Bull. Soc. Ent. Fr. (5) v. p. ccvi. Grotte des Baux (mouths of the Rhone).

Chelifer serratus, sp. n., A. Stecker, SB. böhm. Ges. 1875 (sep. copy), and Arch. f. Nat. xli. 1, p. 182, Prague.

A species of *Chelifer*, or some allied genus, found under the elytra of a *Passalus* (*Col.*) from Rio Janeiro; C. O. Waterhouse, P. E. Soc. 1875, p. xii.

Chelifer. E. Metschnikoff's paper on development (Z. wiss. Zool. 1871) has not been seen by the Recorder.

Chthonius trombidioides, Latr., = *maculatus*, Menge, var.; A. Stecker, Deutsche E. Z. 1875, p. 305.

Ectocerus, g. n., *id.* SB. Ak. Wien, lxxii. pt. i. pp. 512–516. *Cheliferina*, Steck.; entirely resembling *Chernes*, but with two very large eyes. *E. helferi*, p. 516, pl. i. figs. 1–5, 7–9, *bidens*, p. 518, pls. i. figs. 10 & 11, ii. figs. 1 & 2, 6 & 7, spp. nn., *id. l. c.* "India."

Megathis, g. n., *id. l. c.* pp. 519–521. *Obisiinæ*, Steck.: extremely like *Chthonius*, but with two large eyes; a parallel form to the preceding, *M. kochi*, p. 521, pls. ii. figs. 9 & 10, 12–14, iii. figs. 1–4 & 6, *desiderata*, p. 522, pl. iv. figs. 1–4 (described from a fragment), spp. nn., *id. l. c.* "India."

Obisium trifidum, sp. n., *id. l. c.* p. 523, pl. iv. figs. 5–8, Malacca.

PHALANGIDEA.

Gibocellus, g. n., allied to *Cyrrhophthalmus*, but, among other distinctive characters, has four, instead of two eyes; considered by the author to form a passage from the Phalangids to the Pseudo-Scorpions. *G. sudeticus*, sp. n., A. Stecker, SB. böhm. Ges. 1875, Bohemia.

Egœnus sinister and *E. clarii*, spp. nn., E. Simon, Bull. Soc. Ent. Fr. (5) v. ccxxii. (*cf.* also pp. ccvi. & ccvii.), Constantinople.

Ischyropsalis adamii, sp. n., G. Canestrini, Atti Soc. Pad. ii. [1873] p. 50, Gulf of Squillace, Italy.

Nemastoma dentigerum, sp. n., *id. l. c.* p. 51, Padua.

Liobunum socialissimum, sp. n., C. Koch, Abh. senck. Ges. 1873, p. 107, Casa Blanca, Morocco.

Liodes larvatus, sp. n., G. Canestrini, Atti Soc. Pad. iii. [1874], p. 163, Calabria.

PYCNOGONIDEA.*

E. J. Miers, in "Descriptions of New Species of Crustacea collected at Kerguelen's Island by the Rev. A. C. Eaton," Ann. N. H. (4) xvi. p. 76, describes *Nymphon gracilipes* and *N. styligerum*, spp. nn. In the latter, the form of the first pair of palpiform appendages is peculiar—a single joint only being developed; this, if constant, would make the species the type of a new genus allied to *Achelia*, Hodge. Also (*l. c.* p. 117) *N. brevicaudatum*, sp. n., from the same locality.

C. Heller, in "Neue Crustaceen und Pycnogoniden gesammelt während der k. k. Öster.-ungar. Nord Pol.-Expedition: vorläufige Mittheilung," Abh. Ak. Berl. lxxxi. pp. 609–612, describes *Nymphon gracilipes* and *N. hiens*, spp. nn.

Nymphon spp. common in dredgings on the French coast in 100–200 metres; Fischer, J. Zool. iv. p. 300, footnote.

ACARIDEA.

On killing and mounting for microscopic examination; W. Saville-Kent, Nature, 1875, p. 406.

Acari observed attached to the anterior wings of *Catocala nupta* (*Lep.*); Phipson, P. E. Soc. 1875, p. xxiii.

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* In deference to a note in Zool. Rec. xi. p. 220, by Prof. von Martens, the Recorder has included in the *Arachnida* (which is, as he also conceives, their natural place) those Pycnogonids which have come under his notice for 1875.—O. P. C.

Trombidiides.

Donnadieu, A. L. Recherches pour servir à l'histoire des Tétranyques. Lyon & Paris: 1875, 8vo, pp. 1–134, 12 pls. Abstracted by the Author, under the title of Recherches sur les Tétranyques, J. Zool. iv. pp. 259–263.

The first stage is tetrapodous or hexapodous, this form having hitherto been considered generically distinct, and referred to *Trombidium*. It exhibits a very evident parthenogenesis, producing by egg a hexapod larva, whence the adult form is developed, and from which latter it differs in being sexless.

Trombidium ? *fucicolum*, sp. n., G. S. Brady, P. Z. S. 1875, p. 303 pl. xli. figs. 1 & 2, North Britain.

Pachygnathus sculptus, sp. n., *id. l. c.* p. 306, pl. xlii. figs. 1–6, North Britain.

Gamasides.

Mégnin, —. Mémoire sur les *Hypopus* (Dugès), Acariens parasites encore nommés *Homopus*, Koch, et *Trichodactylus*, L. Dufour; détermination de leur position zoologique et de leur rôle physiologique. J. de l'Anat. Phys. x. [1874] pp. 225–254, pls. vii.–x.

Describes *Tyroglyphus mycophagus*, Mégn., and its "Hypope," *Ac- spinitarsus*, Herm.; also *T. rostroserratus*, Mégn., and its "Hypo- *Hypopus feroniarum*, L. Duf., and *H. dugesi*, Clap.; and some un- mined stages. Men- ologie con-

——. Sur l'organisation et la classification naturelle des Acariens famille des Gamasides (P. Gerv.). C. R. lxxx. pp. 1335–1338. In- ssus, l-

Extract from a memoir (as yet unpublished) on the anatomy, physiology, and classification of the group, in which it will be proved that its members form a very natural transition between the *Arachnida* and hexapod insects, possessing anatomical details proper to each class (on these characters, *cf.* Mégnin, *op. cit.* lxxxi. p. 1135), and that the parasitism of *Gamasus* and *Uropoda* is peculiar to their earlier stages, the host being the unconscious agent for the preservation and dissemination of its innocuous parasite. The author states that it is impossible to determine a species of *Acaridæ* without knowing its different stages in both sexes. *Gamasus coleopteratorum* is an earlier stage of a species of which *G. crassipes* is the male and *G. testudinarius* the female. *G. tetragonoides* is the male of *G. cellaris*. *G. marginatus* derives its name from a character common to all the females of its genus. *Uropoda vegetans* is an early stage of a species of which the adherent apparatus disappears in the adult. A table is given of *Gamasus*, *Uropoda*, *Dermanyssus*, and *Pteroptes*, with various sections or sub-genera (unnamed). *Argas*, Dugès, is removed to the *Ixodides*, in spite of its cylindrical palpi. *Uropoda scutulata* and *truncata*, *Pteroptes hortorum*, *copromorgus*, *fenilis*, *manus*, and *musci* are included in the table as (probably) new.

Gamasus marinus, sp. n., G. S. Brady, *l. c.* p. 307, pl. xli. figs. 5–7, North Britain.

Cheyletus robertsoni, sp. n., *id. l. c.* p. 308, pl. xli. fig. 4, North Britain.

Tyroglyphus farinæ, Deg. Observations on the supposed connection of this *Acarus* with itch in the human subject by Maestri, quoted by Santo Garovaglio, and reference made to a memoir on the subject in the "Bulletino dell' Agricoltura," Rend. Ist. Lomb. (2) viii. pp. 563 & 564. The suggestion opposed by Cornalia; *l. c.* p. 565.

Tyroglyphus phylloxera, Riley [Zool. Rec. xi. p. 235], fully described, Tr. Ac. St. Louis, iii. p. 215, fig. 8.

Hoplophora arctata, Riley [*l. c.*] fully described; *l. c.* p. 216, fig. 9.

Oribatides.

Halacarus rhodostigma, Gosse, = *H. granulatus* and *oculatus*, Hodge; G. S. Brady, *l. c.* p. 309.

Acarides.

Sarcoptes scabiei. Anatomical details of this species and its numerous varieties. Méghin, C. R. lxxxi. p. 1058.

Trichadenus sericariæ, g. & sp. nn., C. Rondani, Bull. Ent. Ital. ii. [1870] p. 168, pl. i. figs. 14–17, Italy.

Acarus mori, sp. n., *id. ibid.* fig. 18, Parma.

Hydrachnides.

Bradybates, g. n., C. F. Neuman, Œfv. Ak. Förh. 1875, No. 2, p. 104. *Hydrachnoidæ*, between *Hydrodoma*, Koch, and *Limnochares*, Latr., the type of the *Limnocharoidæ*, differing from the former in the entire want of natatorial setæ (so that the animal creeps, dragging the 4th pair of legs), and from the latter in the structure of its rostrum and palpi, which closely resemble those of *Hydrodoma*. For *B. truncatus*, sp. n., *id. ibid.*, Kinner, Gothland.

Nesæa pusilla, p. 100, *punctata*, p. 101, *id. l. c.*, Gothland, spp. nn.

Piona (recharacterized) *fusca*, p. 101, *flavescens*, p. 102, *id. l. c.*, Gothland, spp. nn.

Acercus gothlandicus, sp. n., *id. l. c.* p. 102, Gothland.

Campognatha, g. n., H. Lebert, SB. Ak. Wien, lxix. [1874] pt. 1, p. 645. Type, *C. foreli*, sp. n., *id. l. c.* p. 647, pl. iii. figs. 25–33, Lake of Geneva and Breslau.

P. Kramer, Arch. f. Nat. xli. i. [*suprà*, p. 240], describes the following new genera and species, all from the neighbourhood of Schleusingen, Thuringia:—

Aturus, p. 309, allied to *Nesæa*, integument on the back and abdomen hardened into one plate; for *A. scaber*, ibid. pl. viii. fig. 3.

Axona, p. 310, connects *Nesæa* with *Arrenurus*; the coxæ of each side having their outer lateral margins in a straight line with each other. For *A. viridis*, p. 311, pl. ix. fig. 19.

Atax cæruleus, p. 294, pl. viii. fig. 5, *A. loricatus*, p. 295, fig. 6.

Nesæa communis, p. 298, fig. 8, *N. striata*, p. 299, fig. 9, *N. brachiata*, p. 300, fig. 10, *N. trinotata*, fig. 11, and *tripunctata*, fig. 12, p. 302, *N. dentata*, p. 304, fig. 13, *N. stellaris*, p. 306, pl. ix. fig. 15, *N. mollis*, p. 307, fig. 16, *N. aurea*, p. 308, fig. 17, *N. villosa*, p. 309, fig. 18.

Limnesia undulata, fig. 20, and *L. maculata*, figs. 21, A, B, p. 312.

Arrenurus crassicaudatus, p. 318, fig. 26, *A. reticulatus*, p. 320, fig. 27, A, B, *A. lineatus*, p. 321, fig. 28.

Phytoptides.

Trichoxyreus sp. n., found on mulberry; J. H. Kaltenbach, Die Pflanzenfeinde, &c. (1873), p. 534.

MYRIOPODA.

BY

The Rev. O. P. Cambridge, M.A., C.M.Z.S.

The General Subject.

Fanzago, F. I Chilopodi Italiani. Atti Soc. Pad. iii. [Dec. 1 pp. 17–64; also separately, Padova: 1874, 8vo, pp. 1–47.

Enumerates 45 Italian species, including :—

Dolic[h]odon, g. n., p. 44; near *Lithobius*; differing in the form of the labial teeth, 6 of which are very robust; posterior part of the body almost fusiform. For *D. vinosus*, sp. n., *ibid.*, Padua.

Lithobius ligusticus, p. 33, Genoa, *montellicus*, p. 34, Treviso, *tridentinus*, p. 36, Trentino, and *targionii*, p. 37, Squillace: spp. nn.

——. Miriapodi della Calabria. Atti Soc. Pad. "Ottobre, 1875" [no vol. or fasc. mentioned] pp. 44–76.

Enumerates 14 species of Chilopods—*Scutigera* 2, *Lithobius* 2, *Scolopendra* 1, *Cryptops* 1, *Geophilus* 8; and 17 species of Chilognatha—*Polyxenus* 1, *Glomeris* 1, *Polydesmus* 2, *Strongylosoma* 1, *Craspedosoma* 1, *Pleurodesmus* 1, *Lysiopetalum* 2, *Julus* 7, and a new genus of *Polydesmidæ*, *Dolistenus*, referred to in p. 47 as characterized in a note presented in 1874 to the Congress of Italian naturalists at Arco, and fully described at pp. 62 & 63, with *D. savii*, Fanz., as its type.

The following are new:—*Geophilus cavannæ*, p. 51, *Polydesmus parvulus*, p. 59, and *Pleurodesmus pallidus*, p. 64.

Fanzago, F. Alcune nuove specie di Miriapodi. *L. c.* pp. 149–152.

Describes as new—*Julus margaritatus*, p. 149, Veneto, *quadripunctatus*, Trentino, and *stuxbergi*, no locality given, p. 150, *Platyrhacus terreus*, Veneto, and *Craspedosoma nemas[t]omoides*, Monferrato, p. 151.

Lebert, H. Verzeichniss schlesischer Spinnen, mit Aufzählung der schlesischen Myriapoden. Tübingen: 1875 [not seen by the Recorder].

Metschnikoff, Elias. Embryologie der doppelt-füssigen Myriapoden (Chilognatha). Z. wiss. Zool. xxiv. [1874] p. 253.

——. Embryologisches ueber Geophilus. Z. wiss. Zool. xxv. pp. 313–322, pls. xx. & xxi.

The result of the author's embryological observations is that the development of *Geophilus* accords pretty closely with that of the Chilognaths, referred to in the first of these papers, with the remark that in some points it approaches the *Julidæ*, and in others the *Polydesmidæ*. It is, however, distinguished from all Chilognaths as yet observed, in having the yelk-mass not outside, but inside the intestinal canal. Deductions as to the affinities of various groups of the *Arthropoda* are made.

Packard, Jr., A. S. Life Histories of the *Crustacea* and Insects. Am. Nat. ix. pp. 606–610, figs. 261–264.

Gives a short account of the embryological development of Myriopods, after Metschnikoff. The conclusion is, "that the Centipedes (*Chilopoda*) differ from the thousand-legs (*Chilognatha*) in the mouth-parts being of the same number as in insects; and that the young are born with a pair of feet on each of the three segments behind the head, while the larva is provided with nearly the full number of feet on the rest of the body, there being no metamorphosis. The body, at first cylindrical, afterwards becomes flattened. Thus the Centipedes may be said in some degree to pass through a *Julus* condition, and, at all events, both morphologically and embryologically, the Centipede is a more highly developed creature than the thousand-legs."

Stuxberg, A. Genera et species Lithobioidarum disposuit. Œfv. Ak. Förh. 1875, No. 3, pp. 5–22. Abstr., Ann. N. H. (4) xvi. pp. 188–192.

114 species of *Lithobius*, *Henicops*, and *Lamyctes*, are tabulated, with references to descriptions and localities; and with titles and dates of the 26 principal works or papers on the groups. *Lithobius nudicornis*, Gerv., and *monilicornis*, Luc., = *impressus*, C. Koch; *L. rugosus*, Mein., = *xanti*, Wood; *L. vulgaris* and *lævilabrum*, Leach, *americanus* and *leachi*, Newp., *hortensis* and *coriaceus*, L. Koch, *multidentatus*, Wood (1863, *nec* 1865), *curtirostris*, Eis. & Stuxb., and ? *spinipes*, Say, = *forficatus*, L.; *L. lubricus*, L. Koch, = *calcaratus*, C. Koch, juv.; *L. variegatus*, C. Koch, *nec* Leach, = *mutabilis*, L. Koch; *L. gracilis*, Porath, = *Lamyctes fulvicornis*, Mein.

The following new sub-genera of *Lithobius* are proposed, p. 8:—
Eulithobius, type, *L. punctulatus*, C. Koch.
Neolithobius, type, *L. vorax*, Mein.

Atax cæruleus, p. 294, pl. viii. fig. 5, *A. loricatus*, p. 295, fig. 6.

Nesæa communis, p. 298, fig. 8, *N. striata*, p. 299, fig. 9, *N. brachiata*, p. 300, fig. 10, *N. trinotata*, fig. 11, and *tripunctata*, fig. 12, p. 302, *N. dentata*, p. 304, fig. 13, *N. stellaris*, p. 306, pl. ix. fig. 15, *N. mollis*, p. 307, fig. 16, *N. aurea*, p. 308, fig. 17, *N. villosa*, p. 309, fig. 18.

Limnesia undulata, fig. 20, and *L. maculata*, figs. 21, A, B, p. 312.

Arrenurus crassicaudatus, p. 318, fig. 26, *A. reticulatus*, p. 320, fig. 27, A, B, *A. lineatus*, p. 321, fig. 28.

Phytoptides.

Trichoxyreus sp. n., found on mulberry; J. H. Kaltenbach, Die Pflanzenfeinde, &c. (1873), p. 534.

MYRIOPODA.

BY

THE REV. O. P. CAMBRIDGE, M.A., C.M.Z.S.

The General Subject.

FANZAGO, F. I Chilopodi Italiani. Atti Soc. Pad. iii. [Dec. 1 pp. 17–64; also separately, Padova: 1874, 8vo, pp. 1–47.

Enumerates 45 Italian species, including :—

Dolic[h]odon, g. n., p. 44; near *Lithobius*; differing in the form of the labial teeth, 6 of which are very robust; posterior part of the body almost fusiform. For *D. vinosus*, sp. n., *ibid.*, Padua.

Lithobius ligusticus, p. 33, Genoa, *montellicus*, p. 34, Treviso, *tridentinus*, p. 36, Trentino, and *targionii*, p. 37, Squillace: spp. nn.

——. Miriapodi della Calabria. Atti Soc. Pad. "Ottobre, 1875" [no vol. or fasc. mentioned] pp. 44–76.

Enumerates 14 species of Chilopods—*Scutigera* 2, *Lithobius* 2, *Scolopendra* 1, *Cryptops* 1, *Geophilus* 8; and 17 species of Chilogna— *Polyxenus* 1, *Glomeris* 1, *Polydesmus* 2, *Strongylosoma* 1, *Craspedo* *Platydesmus* 1, *Lysiopetalum* 2, *Julus* 7, and a new genus of *Polyd* *Dolistenus*, referred to in p. 47 as characterized in a note presen 1874 to the Congress of Italian naturalists at Arco, and fully desc at pp. 62 & 63, with *D. savii*, Fanz., as its type.

The following are new:—*Geophilus cavannæ*, p. 51, *Polydesmus parvulus*, p. 59, and *Platydesmus pallidus*, p. 64.

FANZAGO, F. Alcune nuove specie di Miriapodi. *L. c.* pp. 149–152.

Describes as new—*Julus margaritatus*, p. 149, Veneto, *quadripunctatus*, Trentino, and *stuxbergi*, no locality given, p. 150, *Platyrhacus terreus*, Veneto, and *Craspedosoma nemas[t]omoides*, Monferrato, p. 151.

LEBERT, H. Verzeichniss schlesischer Spinnen, mit Aufzählung der schlesischen Myriapoden. Tübingen: 1875 [not seen by the Recorder].

METSCHNIKOFF, ELIAS. Embryologie der doppelt-füssigen Myriapoden (Chilognatha). Z. wiss. Zool. xxiv. [1874] p. 253.

——. Embryologisches ueber Geophilus. Z. wiss. Zool. xxv. pp. 313–322, pls. xx. & xxi.

The result of the author's embryological observations is that the development of *Geophilus* accords pretty closely with that of the Chilognaths, referred to in the first of these papers, with the remark that in some points it approaches the *Julidæ*, and in others the *Polydesmidæ*. It is, however, distinguished from all Chilognaths as yet observed, in having the yelk-mass not outside, but inside the intestinal canal. Deductions as to the affinities of various groups of the *Arthropoda* are made.

PACKARD, JR., A. S. Life Histories of the *Crustacea* and Insects. Am. Nat. ix. pp. 606–610, figs. 261–264.

Gives a short account of the embryological development of Myrio- after Metschnikoff. The conclusion is, "that the Centipedes (*Chi-a*) differ from the thousand-legs (*Chilognatha*) in the mouth-parts being of the same number as in insects; and that the young are born with a pair of feet on each of the three segments behind the head, while the larva is provided with nearly the full number of feet on the rest of the body, there being no metamorphosis. The body, at first cylindrical, afterwards becomes flattened. Thus the Centipedes may be said in some degree to pass through a *Julus* condition, and, at all events, both morphologically and embryologically, the Centipede is a more highly developed creature than the thousand-legs."

STUXBERG, A. Genera et species Lithobioidarum disposuit. Œfv. Ak. Förh. 1875, No. 3, pp. 5–22. Abstr., Ann. N. H. (4) xvi. pp. 188–192.

114 species of *Lithobius*, *Henicops*, and *Lamyctes*, are tabulated, with references to descriptions and localities; and with titles and dates of the 26 principal works or papers on the groups. *Lithobius nudicornis*, Gerv., and *monilicornis*, Luc., = *impressus*, C. Koch; *L. rugosus*, Mein., = *xanti*, Wood; *L. vulgaris* and *lævilabrum*, Leach, *americanus* and *leachi*, Newp., *hortensis* and *coriaceus*, L. Koch, *multidentatus*, Wood (1863, *nec* 1865), *curtirostris*, Eis. & Stuxb., and ? *spinipes*, Say, = *forficatus*, L.; *L. lubricus*, L. Koch, = *calcaratus*, C. Koch, juv.; *L. variegatus*, C. Koch, *nec* Leach, = *mutabilis*, L. Koch; *L. gracilis*, Porath, = *Lamyctes fulvicornis*, Mein.

The following new sub-genera of *Lithobius* are proposed, p. 8:—

Eulithobius, type, *L. punctulatus*, C. Koch.

Neolithobius, type, *L. vorax*, Mein.

Pseudolithobius, for *L. megaloporus*, Stuxb.
Hemilithobius, type, *L. borealis*, Mein.
Archilithobius, type, *L. monticola*, Stuxb.

These are based on the different number of dorsal scuta and their varied angulation, and on the position of the coxal pores.

Stuxberg, A. Lithobioidæ Americæ borealis. Öfversigt af Nord-Amerikas hittills kända Lithobiider. *L. c.* pp. 23–32.

After a review of the literature, 24 N. American species are enumerated, with synonymy, and an analytical table.

The species of the subalpine region of Silesia are discussed by C. Fickert [*anteà*, p. 238].

14 Chilopods and 16 Chilognaths recorded from the Trentino; G. Canestrini, Atti Soc. Pad. iv. [1875] pp. 34 & 35.

Ten species of *Myriopoda* observed at St. Helena; J. C. Melliss, "St. Helena," London: 1875, pp. 201 & 202.

F. V. Rosicky's paper referred to in Zool. Rec. xi. p. 237 (Die in Böhmen beobachteten Myriopoden), SB. böhm. Ges. 1874, pp. 125–129, refers to 25 known species found in Bohemia.

Humbert, MT. schw. ent. Ges. iv. p. 441, dwells on the sexual characters of the Chilognaths, which differ much; the secondary sexual characters are also useful and well marked.

Glomeris mniszechi, sp. n., M. Nowicki, Ann. Soc. Sci. Crac. xli., Tra Mountains; H. Lucas, Bull. Soc. Ent. Fr. (5) v. p. xci.

Lamyctes fulvicornis, Meinert, from California; A. Stuxberg, *tom. cit.* No. 2, p. 72. *L. borealis*, Mein., described from Sweden; *id. l. c.* p. 73.

Lithobius monticola, p. 65, Sierra Nevada, *pusio*, p. 66, *paraloxus* and *obesus*, p. 67, *kochi*, p. 68, *megalòporus*, p. 69, *eucnemis*, p. 70, California, *saussurii*, p. 71, Mexico, *id. l. c.* spp. nn. [These are also described in English by the author, Ann. N. H. (4) xv. pp. 188–192.]

Sphærotherium nebulosum, sp. n., A. G. Butler, Tr. E. Soc. 1875, p. 165, borders of Mongolia.

INSECTA.

THE GENERAL SUBJECT.

By E. C. Rye, F.Z.S., M.E.S.

Altum, Bernard. Forstzoologie. III. Insecten. I. Abth., Allgemeines und Käfer (1874), pp. i.–vii., 1–335, figs. 1–38; II. Abth., Schmetterlinge, Haut-, Zwei-, Gerad-, Netz-, und Halb-flügler (1875), pp. i.–vi., 1–364, figs. 1–35. Berlin, 8vo.

A very valuable treatise on Insects of all Orders injurious to or connected with trees and plants. The figures are in many cases excellent and highly characteristic, expecially when the subject includes the plant injured.

Bedel, L., & Simon, E. Liste générale des Insectes cavernicoles de l'Europe. J. Zool. iv. pp. 110–178 [also separately, as Liste générale des Articulés cavernicoles, &c., Paris: 1875, 8vo, pp. 72].

The second part, by Bedel, refers to 125 species of *Coleoptera*, 3 of *Orthoptera*, and 7 of *Thysanura*. Reviewed, Pet. Nouv. (1875) p. 514, Nouv. et faits, 1875, p. xlix. [also Ent. Monatsbl. i. pp. 26 & 27]. *Cf.* also Bull. Soc. Ent. Fr. (5) v. pp. cxxvi. & cxxvii.

Brandt, A. Zur Kentniss der weiblichen Sexualdrüsen der Insecten. Bull. Pétersb. xxi. pp. 21–24, figs. 1–4. Also in Mél. Biol. ix. pp. 491–496.

Unconnected observations on the development of the ovaries, the morphological value of the egg and epithelium, the yelk-forming cells, egg cells, and blastoderm, and rudimentary hermaphroditism in insect larvæ. Twenty species, of various orders, have been examined by the author.

Costa, A. Relazione di un Viaggio per l'Egitto, la Palestina, e la coste della Turchia Asiatica per ricerche zoologiche. Naples: 1874, 4to, pp. 1–40.

Not seen by the Recorder. This work appears, from a notice in Nouv. et Faits, No. 17, p. lxx., to be extracted from Atti Acc. Nap. vii., and to include among the *Coleoptera* the following new species:—*Bledius* H. *raffa*, *Cedius chrysomelinus*, *Scymnus cognatus* and *zigzag*; cf. also C. H. H. Bull. Soc. Ent. Fr. (5) v. p. clxix., and Pet. Nouv. (1875) p. 526.

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The author refers to many species of all orders (including *Myriopoda*, *Arachnida*, and *Crustacea*), of which several are described as new.

HOUGHTON, W. Sketches of British Insects. A handbook for beginners in the study of Entomology. London: 1875, 6 pls., woodcuts.

Scarcely within the scope of this Record.

KALTENBACH, J. H. Die Pflanzenfeinde aus der Klasse der Insekten. Ein nach Pflanzenfamilien geordnetes Handbuch sämmtlicher auf den einheimischen Pflanzen bisher beobachteten Insekten zum Gebrauch für Entomologen, Insektensammler, Botaniker, Land- und Forstwirthe und Gartenfreunde. Stuttgart: 1874, 8vo, pp. i.–viii., 1–848, woodcuts.

The two separate parts of the 2nd edition of this valuable work (in its original form issued in Verh. Ver. Rheinl. during the years 1856–69) have been noticed in Zool. Rec. ix. & x., but, as the whole work has since been issued with the above title and date, it is here again given, more especially as there are many new species described or indicated in it (mentioned *infrà*) which have hitherto escaped record. It should be observed that, in spite of the date 1874, the descriptions of all such of those species as are contained in pp. 1–288 were published in 1872, and all in pp. 289–848 in 1873.

KATTER, F. Entomologische Nachrichten, herausgegeben von Dr. ... i. (24 pts.) Putbus: 1875, 8vo, pp. 1–200.

The commencement of a new entomological periodical, issued fortnightly, and as yet containing little of importance, consisting mostly of translations, bibliography, and advertisements. Forms Heft 8 of the Deutsche E. Z. 1875; G. Kraatz, Deutsche E. Z. 1875, p. 6. For reviews, see Ent. Mo. Mag. xii. p. 44, and C. H. xiv. p. 149.

PACKARD, JR., A. S. Life histories of the *Crustacea* and Insects. Am. Nat. ix. pp. 582–622.

The Insects (*Tracheata*) are made to include the Myriopods, Arachnids, and *Hexapoda*, all differing from the *Crustacea* in having (except in certain Acarids) a distinct head, separate from the thorax, and in breathing by internal air tubes instead of external gills. The true insects are discussed in pp. 616–622, figs. 271–284, and their embryological development is briefly sketched from sources not accessible to a general reader. The chief literature on the subject is noticed, and the following summary given:—1, Peripheral (partial) segmentation of the yelk is found; in the *Poduræ*, a true *Morula*-stage occurring. 2, the larva is hatched in the form of the adult, but (in *Aphis* and *Miastor* producing young alive) wingless, and undergoing an incomplete or complete metamorphosis. 3, the pupa state is more or less marked (in one *Chironomus*, producing young). 4, the adult, usually winged, sometimes propagates asexually.

RILEY, C. V. Seventh Annual Report on the Noxious, Beneficial, and other Insects of the State of Missouri, made to the State Board of Agriculture, pursuant to an appropriation for this purpose from t...

Legislature of the State. Jefferson City, Mo.: 1875, 8vo, pp. i.–viii., 1–196, map, woodcuts.

Discusses the Colorado potato-beetle, Chinch-bug, Apple-tree borer, Canker-worms, Phylloxera, and Rocky Mountain Locust.

Rudow, F. Uebersicht der Gallenbildungen, welche an *Tilia*, *Salix*, *Populus*, *Artemisia*, vorkommen, nebst Bemerkungen zu einigen andern Gallen. Z. ges. Naturw. (2) xii. pp. 237–287.

Describes the economy of various insects of all orders known to form galls upon plants of the above named genera, including four new species of *Diptera*, and three of *Aphididæ*.

——. Die Pflanzengallen Norddeutschlands und ihre Erzeuger. 8vo, p. 96, 1 pl.

Not seen by the Recorder. A brief notice of the work in Ent. Nachr. i. p. 147, suggests that it is extracted from the publications of some Society. It apparently refers to *Cynipidæ*.

Schöyen, W. M. De for Ager, Eng, og Have skadeligste Insekter og Smaakryb. Kristiania: 1875, 12mo, pp. 1–212, pls. i.–viii.

After a general introduction, the author briefly describes various common insects of all orders, snails, slugs, Myriopods, &c., injurious to fields, pasture land, and gardens in Norway, with notices of their habits. The plates, of rather primitive execution, are for the most part bad copies of those in Curtis's 'Farm Insects.' In discussing *Vibrio tritici*, the author refers to an appearance in the plant called, as he says, in English, "Peberbrand," or "Peberkorn," the figures illustrating it being distinctly those of Curtis. [The Recorder cannot avoid the remark that works on economic entomology of this class are worse than useless; general notes, by an incompetent writer, for the most part adopted from other authors, badly illustrated, and with the species so disguised as to be irrecognizable even by experts, being far more likely to confuse the unskilled agriculturist than to direct his own observations in the proper channel.]

Fossil insects. Preudhomme de Borre discusses the imprints discovered in schistous formations near Mons. J. Zool. iv. pp. 291–297; CR. Ent. Belg. xviii. pp. xxxix.–xlii.

A fossil *Walchia* distinctly perforated by insect larvæ; Pet. Nouv. (1875) p. 551.

Insects in gum copal; Raffray, Bull. Soc. Ent. Fr. (5) v. pp. cxxv. & cxxvi.

The means of attack and defence in insects. A lecture on this subject by Candèze at the annual public meeting of the class of sciences of the R. Belgian Academy, Dec. 16, 1874. Bruxelles: 1875, 8vo, pp. 32.

Digestion in insects. An abstract of F. Plateau's paper in Mém Ac. Belg. xli. [Zool. Rec. xi. p. 242] communicated by the author; Ann. N. H. (4) xvi. p. 152; also in J. Zool. iv. pp. 195–200.

Insect-catching plants. T. Meehan, P. Ac. Philad. 1875, p. 330, refers

to large numbers of 3 species of *Drosera* observed by him in New Jersey, some of which, with insects attached to them, did not differ in health or vigour from those without insect-remains. He apparently doubts whether the plant eats the insects.

Fertilization of flowers by insects; H. Müller, Nature, xii. p. 50 (*Lilium martagon*), figs. 63 & 64; p. 190 (*Hesperis tristis*), figs. 65–70.

On the relations of English wild flowers to insects; Sir J. Lubbock, Proc. R. Institution of Gt. Britain, vii. pp. 351–353. *Cf.* also F. Delpino, Bull. Ent. Ital. vii. p. 69, *et seq.*

Galls. General observations as to breeding gall-making insects; E. A. Fitch, viii. pp. 170–172. *Cf.* also Rudow, *suprà*, p. 267.

Various observations on Entomological subjects in the special part of the Bericht über die 48. Versammlung deutscher Naturforscher und Aertze in Graz (*cf.* Deutsche E. Z. 1875, pp. 423–427).

On the scheme of motion in insects' legs, and the curves described by them; *l. c.* p. 104 (*cf.* Deutsche E. Z. 1875, p. 430).

W. Saunders, Canad. Ent. vii. p. 14, &c., under the heading, "On some of our common Insects," gives figures and particulars of various well known N. American species of all orders, chiefly those injurious to vegetation.

On destroying noxious insects; Nat. Canad. vii. p. 171.

"Methods of subduing insects injurious to Agriculture," by J. Leconte, a paper read before the American Association for the advancement of Science, at Detroit, Aug. 10, 1875, is reproduced in Canad. Ent. vii. pp. 167–172.

The proceedings at the meetings of the Entomological Club of the Association reported, *l. c.* pp. 177–179, 181–185.

Insects attacking *Rosa canina*, *collina*, and *dumetorum*; André, Feuil. Nat. v. pp. 47, 69, 81, pl. iii.

Water insects. Observations on the method of depositing eggs; M. Régimbart, Ann. Soc. Ent. Fr. (5) v. pp. 201–206, pl. iv. No. iii.

Xylophagous insects; G. D'Hangest, Bull. Soc. L. N. Fr. 1875, pp. 191, 213, 228.

Myrmecophilous *Articulata*. H. Lucas, Ann. Soc. Ent. Fr. (5) v. pp. 217–221, corrects various errors in André's list [Zool. Rec. xi. p. 244].

Geographical Distribution.—Nantes. Various economical notes; Pet. Nouv. (1875) pp. 524, 527.

Moravia and Silesia. E. Reitter, Verh. Ver. Brünn, xiii. pp. 45–52, gives a list of species for the Fauna supplemental to that by H. Leder, *op. cit.* x. Some synonymy is given, with indications of new species.

Times of first appearance of insects in Bärn and Frie[illegible]us, Verh. Ver. Brünn, xiii. pp. 163 & 164.

Switzerland. Canton Glaris; C. Blœsch, Pet. Nouv. (1875) p. 503. Statistics of Swiss insects; M. Isenschmid, MT. Ges. Bern, 1874 [1875] SB. p. 35.

Mediterranean: Island of Pantellaria. The results of an entomolo-

gical exploration recorded, including 2 new species of *Coleoptera*, 2 of *Lepidoptera*, and 1 of *Hemiptera*; E. Ragusa, Bull. Ent. Ital. vii. pp. 238–256.

Caucasus. *Lepidoptera* and *Coleoptera* in various localities near Derbend; A. Becker, Bull. Mosc. xlix. pt. 1, pp. 137 & 138.

St. Helena. The insect fauna specifically discussed in J. C. Melliss's "St. Helena: a physical, historical, and topographical description of the Island, including its Fauna, Flora, and Geology", London: 1875, cr. 8vo, pp. 129–200, pl. xxiii. 96 species of *Coleoptera* (quoting Wollaston), 24 *Orthoptera* (Walker), 5 *Neuroptera*, 13 *Hymenoptera*, of which 8 are indigenous (Walker), and 43 *Lepidoptera*, of which 20 are new (Walker), are briefly described. All these have been already recorded. Further notes, briefly describing new forms, and emphasizing the prevalence of a few forms of *Coleoptera* (especially *Cossonides*) from which it is tolerably certain that the list in Melliss's work is far from exhaustive; T. V. Wollaston, Ent. M. M. xii. p. 156.

Kerguelen's Island. Notes on the Entomology, by A. E. Eaton, P. R. Soc. xxiii. pp. 354 & 355, Ent. M. M. xii. pp. 1 & 2, 58–61. Most of the species observed were degraded and incapable of flight. *Cf.* C. O. Waterhouse, Ent. M. M. xii. p. 54.

North America. Results of an entomological excursion to St. Hyacinthe; Nat. Canad. vii. pp. 205 & 232 *et seq.*

Report of the Entomological Society of the Province of Ontario for Toronto: 1875, 8vo, pp. 62.

"The injurious insects of Michigan," by A. J. Cook, 1875, 8vo, pp. woodcuts, according to a notice in Canad. Ent. vii. p. 200, is of the practical American nature.

J. S. Bethune continues his compilation of the insects of the ...ern parts of British America, from Kirby's Fauna Boreali-Americana; Canad. Ent. vii. p. 109 *et seq.*

The present distribution of certain insects in N. America may have been brought about by phenomena attendant on the glacial period. A. R. Grote, Am. J. Sci. (3) x. pp. 335–338.

Collection and preservation (of *Articulata* generally). Directions by A. Gerstäcker in G. Neumayer's "Anleitung zu wissenschaftlichen Beobachtungen auf Reisen", Berlin: 1875, 8vo, pp. 443–460.

On preparation of *Orthoptera*, *Neuroptera*, and *Hemiptera*; F. Rudow, Ent. Nachr. i. pp. 80–83.

Insect-mounting in hot climates. The treatment of minute species with spirits of wine and Canada balsam discussed; S. Green, J. Quek. Club, 1875, p. 29.

Preserving specimens. Empty the abdomen and wash with arsenicated solution; A. Malm, Feuil. Nat. v. p. 38. On preservatives generally, various short notices in Ent. Nachr. i.

Cyanide of potassium. Improved method of using this killing agent; Pet. Nouv. (1875) p. 467. For destroying *Acari* in collections; *l. c.* p. 517.

On the arrangement, &c., of insects in public museums; C. R. Ent. Belg. xviii. pp. v.–xi. & xxiii.

Geoffroy's collection; Pet. Nouv. (1875) p. 488; Perris's, *l. c.* p. 552.

French Provincial Entomological Societies; Pet. Nouv. (1875) p. 476.

Nomenclature. Common use in preference to priority again urged by W. A. Lewis, Tr. E. Soc. 1875 (pt. i. appendix, pp. i.–xlii.). A. Puton, Pet. Nouv. (1875) pp. 480 & 484; O. M. Reuter, *l. c.* p. 501; E. L. Ragonot, *l. c.* p. 507.

On cycles of entomological studies; J. W. Douglas, Ent. M. M. xii. p. 89.

On entomologists' diaries for captures; Kriechbaumer, Ent. Nachr. i. p. 88 (from C. B. Ver. Regensb.); *cf.* also p. 106.

Jacob Sturm's "Insecten-Cabinet" analysed; G. Kraatz, Deutsche E. Z. 1875, pp. 157–160.

The necessity of plates being added in all descriptive works advocated by A. Sallé, Pet. Nouv. (1875) p. 512.

Catalogue of the entomological literature of the Lower Elbe district; J. D. E. Schmeltz, Verh. Ver. Hamb. 1871–1874 [1875], pp. 118 & 119. *Cf.* also p. 121.

Notes on entomological subjects discussed at the 13th meeting of the 'Sociétés savantes des Départements,' held at the Sorbonne in the spring of 1875, by M. Girard, Pet. Nouv. (1875) p. 488.

W. de Fonvielle's "Rapport sur l'Insectologie générale," Paris: 1874, 8vo, has not been seen by the Recorder. viii. pp.

A new publication, "Bulletin d'Insectologie Agricole, Journal ... seul de la Société Centrale d'Agriculture et d'Insectologie, Entomo... of the appliquée," has been commenced by M. Girard (Paris: 1875, 8vo) taining papers on elementary Entomology by H. de la Blanchère, Feuil. sects attaching the vine, by P. C. Joubert; Insect bibliography; *Co.* by G. Robert; hunting injurious insects, by A. Pillain; and misce- M. laneous entomological notes. *Cf.* Girard, Bull. Soc. Ent. Fr. (5) v. p. clxxviii.

The "Berliner Entomologische Zeitschrift," from 1875 inclusive, is to be known as the "Deutsche Entomologische Zeitschrift," and, instead of the usual four parts, two only will be regularly issued per annum. No separate supplements will be published as occasionally heretofore; but these will from time to time be reckoned as further parts of the year's issue. Parts 1 & 2 were accordingly issued in January and December, 1875; part 3, March, 1875, consisted of two works by E. Reitter, on European *Nitidulidæ* and *Cryptophagidæ*; part 4, April, 1875, of a monograph of *Tragosita*, &c., by Reitter, simultaneously published as Verh. Ver. Brünn, xiii. pp. 3–44, 53–79; part 5, May, 1875, of a monograph of *Eurychorides* (*Adelostomides*, Lac.) by Haag-Rutenberg, also appearing in Verh. Ver. Rheinl., 1875, pp. 359–428; part 6, January, 1875, of a Catalogue of the beetles of Thuringia, by A. Kellner, also published as JB. Ac. Erf. (n.f.), viii.; part 7, of further papers on *Tenebrionidæ*, by Haag, 1875; and part 8, of Katter's Entomologische Nachrichten for 1875. No other parts are definitely numbered, but the entomological "Bericht" from Arch. f. Nat. [when published], and Harold's Coleopterologische Hefte, are

also declared to form a portion of this Zeitschrift, to which the publications of the recently founded Ent. Soc. in Leipzig will probably be annexed; the general "Bericht" of the 48th meeting of German naturalists and physicians at Graz is also to be a Heft of the Zeitschrift. The Zool.-bot. Gesellschaft of Vienna appears as yet to have not joined the Association; and the Stettiner Entom. Zeitung is irreconcilable under its present Director. *Cf.* Kraatz, Deutsche E. Z. 1875, pp. 1–7, 13 & 14 [It seems incorrect to quote this vol. as xix.; and the confusion in references and pagination, &c., likely to result from this arrangement, is somewhat terrifying.]

F. M. van der Wulp has published a "Repertorium" of the 2nd series, 1866–1873, of Tijdschr. Ent.; s'Gravenhage: 1875, 8vo, pp. 1–91.

The Verh. z.-b. Wien, xxv. for 1875, having been unusually delayed, was not actually published until April, 1876, but is included by the Recorder in the present record, as representing the issue for the former year.

COLEOPTERA.

BY

E. C. Rye, F.Z.S., M.E.S.

The General Subject.

Bertolini, S. De. Catalogo sinonimico e topographico dei Coleotteri d' Italia. Firenze: 1875, pp, 157–204.

Published with Bull. Ent. Ital. vii. This part includes from the *Anthicidæ* to the *Bruchidæ*.

Brûlerie, C. Piochard de la. Catalogue raisonné des Coléoptères de la Syrie et de l'île de Chypre. Ann. Soc. Ent. Fr. (5) v. pp. 97–160, 395–448.

This first part comprises the *Cicindelidæ* and *Carabidæ*, and was intended to be followed by other groups, treated in like manner, by various specialists. A brief outline, with dates and localities, is given of the author's two voyages. Species occurring in the localities above mentioned, and recorded by prior authors, are included in this work, with some reserve as to certain of them attributed by Baudi to Cyprus. Many new species are described, and very extended and valuable observations are made upon others; the chief feature being an extremely synthetical treatment with respect to those of former authors (*e.g.*, *Dys-*

Chirus æneus has 12 species referred to it; *D. punctatus*, 10; *Cymindis axillaris*, 22; *Platyderus ruficollis*, 23, &c.). The Recorder can only express a hope that this excessive collocation, introduced of late years by Fauvel, may not be a mere mechanical reaction, arising from the over-fecundity of certain species-manufacturers; the author himself, after deposing various recognized species of *Carabus*, does not hesitate to describe a new one, of which the *diagnosis* alone takes 21 lines of small italics, and the description relies upon differential characters modified by such words as "un peu," "à peine," "semblent," "généralement," &c., including a statement that individual variations are so great, "qu'on chercherait vainement à enfermer les différences qui les distinguent dans un formule absolue." Another species is described by him as new, on a single specimen, found dead, and with no head or tarsi. "Quis custodiet custodes?"

Gozis, M. des. Catalogue des Coléoptères de France et de la Faune Gallo-Rhénane. Montluçon: 1875, 12mo, pp. 110.

Reviewed in Feuil. Nat. vi. p. 24. Upwards of 8000 species and varieties are enumerated. The *Staphylinidæ* have been entrusted to Fauvel; and in some families an arrangement different to that habitually employed is adopted without any statement as to reason; the Clavicorns being divided into two parts, whereof the first unites the *Hydrophilidæ* and *Staphylinidæ*, through *Heterocerus* and *Parnus*, and the second is placed between the *Staphylinidæ*, *Scydmænidæ*, and *Scarabæidæ*.

Harold, E. von. Verzeichniss der von Herrn T. Lenz in Japan gesammelten Coleopteren. Abh. Ver. Brem. iv. pp. 283–296.

47 species, including 8 new.

Heyden, L. von. Bericht über die von Hr. Prof. Dr. Freiherrn von Fritsch und Dr. J. J. Rein auf den Canarischen Inseln gesammelten Käfer. JB. senck. Ges. 1874–75, pp. 135–145.

83 species are enumerated from Grand Canary and Teneriffe, and 3 from the latter, and 9 from Lanzarote, in a supplementary part. One new species (*Pimeliides*) is described.

Jekel, H. Coleoptera Jekeliana, &c. [Zool. Rec. x. 1873, p. 227]. Livrn. ii. Paris: 1875, 8vo, pp. 101–196.

Consists chiefly of descriptions of species, &c., of the Curculionideous groups *Microcerides* and *Brachyderides*, this portion of the work being in fact parts iii. & iv. of the "Insecta Saundersiana," of the same author. A new classification of the latter group is proposed, founded on different degrees of application of the elytra to the base of the thorax: two chief divisions are made, I. Exhumerata, containing sub-divisions Obtusangula and Acutangula, with further groups Temnoptera and Coptoptera; II. Humerata (winged species), with sub-divisions Sinuosa and Biproducta, and further groups Colpoptera and Diloboptera. Reproductions of the descriptions by L. Redtenbacher & Kollar in Joseph Russegger's "Voyage en Europe," &c., are continued. For review, see C. H. xiv. p. 151; Pet. Nouv. (1875) p. 534.

KELLNER, A. Verzeichniss der Käfer Thüringens, mit Angabe der nützlichen und der für Forst-, Land- und Garten-wirthschaft schädlichen Arten. JB. Ac. Erf. (n.f.), viii. pp. 1–188. [Also forms Heft vi. of the Deutsche E. Z. 1875 ; *cf.* Kraatz, *tom. cit.* p. 6].

3823 species are contained in this Catalogue, to which 18 have been subsequently added. It is reviewed by Strübing, in Deutsche E. Z. 1875, pp. 238 & 239; and by Kraatz in Ent. Nachr. i. p. 14.

LENTZ, —. Vierte Nachtrag zum neuen Verzeichniss der Preussichen Käfer. Schr. Ges. Königsb. xvi. pp. 107–116.

Enumerates 209 additional species, raising the total to 3216. The author deplores the modern multiplication of species.

MARSEUL, S. A. DE. Répertoire des Coléoptères d' Europe décrits isolément depuis 1863. L'Ab. xii. pp. 1–384.

Comprises nearly the whole of the 3rd (and concluding) part: *Malachiidæ—Anthribidæ.*

MOTSCHOULSKY, VICTOR (FEU). Énumération des nouvelles espèces de Coléoptères rapportés de ses voyages. 15-ième Article. Bull. Mosc. xlix. pt. i. pp. 139–155.

Relates exclusively to *Cerambycidæ.*

ROGER, OTTO. Das Flügelgeäder der Käfer. Zugleich ein fragmentärer Versuch zur Auffassung der Käfer im Sinne der Descendenztheorie. Erlangen : 1875, pp. 1–90.

The result of the author's assumptions and observations upon the structure of the wing-nervures in beetles, apparently based upon insufficient data, is that all other families are derived from the *Malacodermata*, except the *Adephaga*, which are accepted as their oldest kin, separated from the hypothetical "Proteleutheron" before the Malacoderms. The *Cerambycidæ* are dislocated by the association of the *Lucanidæ*, *Dorcadion* and allies standing as terminal types. The work is reviewed by Kraatz, Deutsche E. Z. 1875, pp. 444 & 445, and from his criticisms it would appear that the author has not a sufficient acquaintance with Entomology to justify his undertaking such a task. *Cf.* also Ent. Nachr. i. pp. 35 *et seq.*

SAHLBERG, JOHN. Enumeratio Coleopterorum palpicornium Fenniæ. Not. Fenn. (n.s.) xi. [= xiv. of the whole work] pp. 201–227 [HYDROPHILIDÆ].

——. Enumeratio Coleopterorum Amphibiorum Fenniæ. *Tom. cit.* pp. 229–240.

20 species of *Gyrinidæ*, *Parnidæ*, *Heterocerida*, and *Georyssidæ*, are here associated. Bibliographical references and localities are given, with occasional synonymic remarks, and some descriptions (no new species).

SAULCY, F. DE. Spécies des Paussides, Clavigérides, Psélaphides, et Scydménides de l'Europe et des pays circonvoisins. Metz : 1874, 8vo, pp. 1–132.

An extract from Bull. Soc. Moselle, xiii. No special reasons are given for the association of the first of these groups with the others.

Schneider, J. Sparre. De i Söndre Bergenhus Amt hidtil observerede Coleoptera og Lepidoptera. Forh. Selsk. Chr. 1875, pp. 109–209; also separately, Christiania: 1875, 8vo, pp. 1–103.

After some introductory observations, referring to both orders, the author briefly mentions 357 species of *Coleoptera*, on pp. 122–169, giving dates and localities of capture. The district is South Bergenhus, on the S.W. coast of Norway, about 60° N. lat., and parallel with the Shetland Isles. One new species is described, and the following may be noticed:—*Procrustes coriaceus*, *Dianous cærulescens*, *Melolontha hippocastani*, *Niptus hololeucus*, *Antherophagus silaceus*, *Orobites cyaneus*, *Callichroma moschata*, *Saperda carcharias*, *Cryptocephalus* 6-*punctatus*, *nitidulus*, and *punctiger*. From the paucity of species in some genera (*e.g.*, 7 *Bembidia*, 6 *Amaræ*, 5 *Harpali*, 4 *Hydropori*, 1 *Epuræa*, 1 *Catops*, 3 *Meligethes*, 1 *Homalium*, 1 *Cryptophagus*, 4 *Halticidæ*, &c.), and the entire absence of others (such as *Homalota*), it is evident that this list is very superficial.

Seidlitz, Georg. Fauna Baltica. Die Käfer (Coleoptera) der Ostseeprovinzen Russlands. Dorpat: 1875, 8vo; Lieferung iv. pp. xxi.–xlii., 81–142 (generic table), 341–560.

Completes the work, of which the first 3 parts are stated to have been published by Laakman, of Dorpat, and the 4th part to form vol. v. of the biological series of Arch. Nat. Livl. [The whole volume is issued as vol. v., 1875, of Arch. Nat. Livl.] This part comprises the end of the *Telephoridæ*, the *Lymexylonidæ*, *Cleridæ*, *Anobiidæ*, *Heteromera*, and *Phytophagi* (containing the *Bostrychidæ*, *Brenthidæ*, *Curculionidæ*,—*Trachyphlæus* being placed in the *Brachyderides*,—*Rhinomaceridæ*, *Anthribidæ*, *Bruchidæ*, *Chrysomelidæ*, and *Cerambycidæ*). *Mycterus* is included in the *Pythidæ*, and forms the connection between *Salpingus* and *Platypus*, which heads the *Phytophagi*. *Strangalia* concludes the arrangement. Two new species (*Otiorhynchus* and *Magdalis*) are described.

Siebke, H. Enumeratio Insectorum Norvegicorum. Fasciculus ii. Catalogum Coleopterorum continens. Univ.-Program for første Semester, 1875. Christiania: 1875, 8vo, pp. 65–334.

A catalogue, with localities and brief bibliographical references, of purely local interest. The author is quite incompetent for the work, judging by the very numerous and absurd mistakes in the names employed (e.g., *Odonthophagus* for *Onthophagus*, *Chlonius* for *Chlænius*, *Merobia* for *Necrobia*, &c.); and that these are not printer's errors is evident from their repetition in most cases. The work may be briefly described as Gyllenhal arranged according to Thomson, with many errors added, and nothing new, beyond the indication of some unwarranted varieties (worn *Creophilus maxillosus* being noted as "var. *c mihi*, nigra, nitida, pube cinerea omnino detrita"). The mere terminations are incoherent; of the 103 families employed, 88 have the usual ending of *-idæ*, the rest ending variously as *-etæ*, *-ici*, *-ales*, *-ia*, *-iæ*, *-ini*, *-ii*, *-ides*, *-gi*, *-ariæ*, *-onæ*, and *-ida*. A family *Cionidæ* includes *Cis*, and *Butyridæ*, *Butyrus* [*Byturus* !]; *Platyrhinus* is recorded as frequenting birch, *Anisotoma oralis* as occurring in carroway flowers, &c. 543 genera are num-

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Europe. Various observations on species of different families, not demanding separate record; L. v. Heyden, Deutsche E. Z. 1875, pp. 382–393.

England. G. C. Champion, Ent. M. M. xii. p. 39; H. Moncreaff, *tom. cit.* p. 40; J. J. Walker, *tom. cit.* pp. 62, 108, 109; J. Chappell, *tom. cit.* p. 62. Irish and Welsh species: G. C. Champion, *tom. cit.* p. 82.

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Belgium. J. Miedel, CR. Ent. Belg. xviii. p. cvii.

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bidæ. The larva of *Cardiomera genæi*, Bassi, is described. *Cf.* Nouv. et Faits, 1875, p. xxx.

Ariége and the Pyrenees. A. Lucante, Feuil. Nat. v. pp. 61, 72, 87, 95, *et seq.*

Italy. Species observed during an excursion to Monte Amiata; P. Bargagli, Bull. Ent. Ital. vii. pp. 122–133; Catalogue, pp. 257–265.

Russia in Europe and Asia, and the Caspian Sea. J. Faust. Hor. Ent. Ross. xi. pp. 163–252, describes new species, and elucidates various others, among the *Tenebrionidæ*. S. Solsky, *tom. cit.* p. 253 *et seq.*, commences a series of descriptive observations on the beetle-fauna of the Asiatic provinces of Russia.

Sarepta. Dates of appearance of, and plants fed upon by, various species observed by M. Becker; Nouv. et Faits, 1875, p iii.

Syria. Captures by Peyron, Pet. Nouv. (1875) p. 459; *cf.* also De la Brûlerie, *suprà*, p. 271.

Algeria. E. Olivier, Bull. Soc. Ent. Fr. (5) v. pp. cxvii.–cxix.; Leprieur, G. Allard, & R. Oberthür, *l. c.* p. cxxvii.

Tunis. Species collected by Abdul Kerim between Bizerta and Nafta are described by L. Fairmaire, Ann. Mus. Genov. vii. pp. 475–540. They belong to the Algerian, Spanish, Sicilian, and Algerian-Sahara faunas, with some of more eastern origin, as Tripoli, Egypt, and even Syria. Between Gafsa and Nafta, the fauna is much like that of Biskra.

Species observed in S. Morocco, chiefly at Mogador, and in the Great Atlas, briefly noted, with mention of habits, &c.; a few Canarian forms occurred in the former locality; T. Blackmore, Ent. M. M. xi. pp. 213–217. Some new species are described by H. W. Bates, and T. V. Wollaston, in a supplement.

Liberia. Observations on various species by C. A. Dohrn, S. E. Z. xxxvi. pp. 214–221, 290–296, 448–451; 452–456 (Von Harold).

Lower Guinea. 38 species (some new) collected by Van Woerden in Congo, discussed by C. Ritsema, Tijdschr. Ent. xviii. pp. 121 *et seq.* *Aphodius rufipes* is among them.

E. Coast of Africa. Raffray's collections in Abyssinia and Zanzibar, &c., briefly indicated; Bull. Soc. Ent. Fr. (5) v. pp. lxxxvi.–lxxxviii.

Zanzibar. Pet. Nouv. (1875) p. 468.

Malacca. New genera and species described by T. Kirsch, MT. Mus. Dresd. i. pp. 25–57.

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Japan. 47 species (8 new) from Hiogo, taken by T. Lenz; E. v. Harold, Abh. Ver. Brem. iv. pp. 283–296.

New Zealand. F. P. Pascoe, Ann. N. H. (4) xvi. p. 210 *et seq.*, in light of some descriptions of new genera and species, remarks on the absence or great rarity of large and characteristic Australian genera, though the fauna is most nearly allied to the Australian, to which it is secondary or satellite.

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On the peculiar disposition of the contractile fibres of the dorsal vessel in beetles, and on the function of other parts of the circulatory apparatus; Von Graber, in Tageblatt of the Entomologische Vorträge, 48 Versammlung deutscher Naturforscher und Aertze zu Graz, p. 64 (*cf.* Deutsche E. Z. 1875, p. 427).

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Habitat of different families of *Coleoptera*; Dubois, Bull. Soc. L. N. Fr. 1875, p. 271.

On rearing beetles; Nouv. et Faits, 1875, pp. lxxviii.–lxxx.; Ent. Nachr. i. p. 182.

Cigars destroyed by *Catorama simplex*, *Xyloteres* sp. — ?, and *Calandra oryzæ*; Am. Nat. ix. p. 375.

Collecting. Aquatic species; E. Delaby, Bull. Soc. L. N. Fr. [1874] pp. 47–51. In gardens; E. D. de Larcenne, Feuil. Nat. v. p. 101. In cellars and streets; R. Guilbert, *op. cit.* vi. p. 18.

Cheese used as a beetle-bait; Feuil. Nat. v. p. 150. Bull. Soc. Ent. Fr. (5) v. p. clxiv.

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Criticisms on Marschall's "Nomenclator Zoologicus," as regards *Coleoptera*; E. v. Harold, C. H. xiv. p. 148.

The Coleopterous matter in B. E. Z. viii. 1864, analyzed as far as p. 255; S. A. de Marseul, L'Ab. (3) i. pp. 15–60.

Gemminger and Von Harold's "Catalogus" (of which no part was published in 1875); corrections and additions by Harold, C. H. xiii. pp. 104–108, xiv. pp. 143–145.

CICINDELIDÆ.

Species found in Syria and Cyprus; C. P. de la Brûlerie, Ann. Soc. Ent. Fr. (5) v. pp. 107 & 109.

Dytiscoblychila piccolominii, Rche., ex. typ., = *cylindriformis*, Say; G. H. Horn, Tr. Am. Ent. Soc. v. p. 126.

Omus. Notes on localities and habits of the 8 known species; H. Edwards, Psyche, i. pp. 73–76.

Oxygonia cyanopis, Bates, = *albitænia*, ♀; E. Steinheil, C. H. xiii. p. 183.

Cicindela sylvicola and other species much less lively at a considerable

bidæ. The larva of *Cardiomera genei*, Bassi, is described. *Cf.* Nouv. et Faits, 1875, p. xxx.

Ariége and the Pyrenees. A. Lucante, Feuil. Nat. v. pp. 61, 72, 87, 95, *et seq.*

Italy. Species observed during an excursion to Monte Amiata; P. Bargagli, Bull. Ent. Ital. vii. pp. 122–133; Catalogue, pp. 257–265.

Russia in Europe and Asia, and the Caspian Sea. J. Faust. Hor. Ent. Ross. xi. pp. 163–252, describes new species, and elucidates various others, among the *Tenebrionidæ*. S. Solsky, *tom. cit.* p. 253 *et seq.*, commences a series of descriptive observations on the beetle-fauna of the Asiatic provinces of Russia.

Sarepta. Dates of appearance of, and plants fed upon by, various species observed by M. Becker; Nouv. et Faits, 1875, p iii.

Syria. Captures by Peyron, Pet. Nouv. (1875) p. 459; *cf.* also De la Brûlerie, *suprà*, p. 271.

Algeria. E. Olivier, Bull. Soc. Ent. Fr. (5) v. pp. cxvii.–cxix.; Leprieur, G. Allard, & R. Oberthür, *l. c.* p. cxxvii.

Tunis. Species collected by Abdul Kerim between Bizerta and Nafta are described by L. Fairmaire, Ann. Mus. Genov. vii. pp. 475–540. They belong to the Algerian, Spanish, Sicilian, and Algerian-Sahara faunas, with some of more eastern origin, as Tripoli, Egypt, and even Syria. Between Gafsa and Nafta, the fauna is much like that of Biskra.

Species observed in S. Morocco, chiefly at Mogador, and in the Great Atlas, briefly noted, with mention of habits, &c.; a few Canarian forms occurred in the former locality; T. Blackmore, Ent. M. M. xi. pp. 213–217. Some new species are described by H. W. Bates, and T. V. Wollaston, in a supplement.

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Omus horni, sp. n., *id. l. c.* p. 157, Yosemite, California.

Tetracha cribrata, sp. n., E. Steinheil, C. H. xiii. p. 95, New Granada.

Cicindela wapleri, p. 158, fig., Mississippi, *nevadica*, fig., Nevada, and *politula*, Texas, p. 159, *striga*, p. 160, *hirtilabris*, p. 161, Florida; *maga*, p. 161, Louisiana, Leconte, *l. c.*; *C.* (*Heptadonta*) *tricondyloides*, R. Gestro, Ann. Mus. Genov. vi. p. 304, Sarawak; *C. lacunosa*, J. Putzeys, CR. Ent. Belg. xviii. p. lxviii. Ceylon; *C. nocturna*, E. Steinheil, *l. c.* p. 96, New Granada: spp. nn.

Euryoda corticata, sp. n., J. Putzeys, CR. Ent. Belg. xviii. p. lxix. Ceylon.

Odontochila secedens, sp. n., E. Steinheil, C. H. xiv. p. 140, New Granada.

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Carabidæ.

Species found in Syria and Cyprus described by C. P. de la Brû[illegible]lerie, Ann. Soc. Ent. Fr. (5) v. p. 108 *et seq.* The author adopts the name *Calosomidæ* [*Calosomatidæ*, as the correct *Callisomatoidæ* is sure to be rejected] for the whole group, because *Calosoma* is cosmopolitan as a genus, and has a wide range as regards most of its species, and also because it occurs plentifully, both in species and individuals, as a fossil, from the middle of the tertiary epoch, whereas *Carabus* is stated to be restricted both as a genus and in the range of its species, and is not found as a fossil; the deduction being that *Calosoma* is the original form from which the allied European and exotic genera radiate. In opposition to this view, *cf.* E. v. Harold, C. H. xiv. p. 158, and E. Deyrolle, Pet. Nouv. (1875) p. 517.

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The commencement of a special catalogue for cabinets, by Gehin de Rémiremont, described in Nouv. et Faits, 1875, p. lxxvi.

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Omophron nitens, Chaud., = *labiatum*, Fab., and *O. nitidus*, Chaud., [illegible]

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Diachila arctica, Gyll., on the N. Amur, and *D. polita*, Fald., in Lapland. *Trachypachys zetterstedti*, Gyl., on N. Amur and in St. Petersburg; S. Solsky, Hor. Ent. Ross. xi. pp. 253 & 254.

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Nebria crenato-striata, Bassi, var. n. *femoralis*, from Monte Rosa; R. Gestro, Ann. Mus. Genov. vi. p. 541, note.

Leistus rufipes, Chaud., *puncticeps*, Fairm., *afer*, Coq., and *abdominalis*, Reiche & S., are varr. of *montanus*, Steph., which occurs in Syria and Cyprus; C. P. de la Brûlerie, Ann. Soc. Ent. Fr. (5) v. p. 125.

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observations on the formation of species and varieties; *C. prevosti* Gory, *renardi*, Chaud., *thermarum* and *nigrinus*, Mots., = *calleyi*, Fisch., of which *torosus*, Friv., and *prasinus*, Mén., are varr.; *id. l. c.* pp. 113–120.

Hybernation of *Carabi*; E. Delaby, Bull. Soc. L. N. Fr. 1875, pp. 296, 315 & 327; Cotty, *l. c.* p. 311.

Carabus. Various species found in Siberia, including *cancellatus* and *granulatus*, discussed, with suggestions as to varieties and synonymy; S. Solsky, Hor. Ent. Ross. xi. pp. 256–264.

Carabus auro-nitens, var. *nigripes*, from Switzerland, with notes on colour-varieties of this and other species; L. v. Heyden, Deutsche E. Z. 1875, p. 383.

Haplothorax burchelli, Waterh., and *Calosoma haligena*, Woll., figured; J. C. Melliss, "St. Helena," pl. xxiii. figs. 1 & 2.

Calosoma auro-punctatum. A virgin ♀ pinned on reaching the perfect state and kept alive for 18 months; it fed voraciously, and finally died from an accident. Nouv. et Faits (2) pp. 22–24.

Calosoma sericeum, Baudi, *nec* F., = *indagator*, Fab., = *maderæ*, Fab., of which *sericeum*, Fab., is a var.; C. P. de la Brûlerie, *l. c.* p. 112. *C. latipenne*, Horn, = *subæneum*, Chaud.; G. H. Horn, Tr. Am. Ent. Soc. v. p. 126.

Cathoplius, g. n., Thomson, *l. c.* p. 628. Differs from *Calosoma* in the 2nd antennal joint not being keeled, and scarcely shorter than the 1st; and in the anterior tibiæ having a deep outer furrow, and spinose-deflexed apex. Type, *Carabus cychrocephalus*, L. Fairm., = *Calosoma* [illegible] Dej.

Chætomelas, subg. n. of *Procrustes*; id. *l. c.* p. 635. Antennæ [illegible]lerie, setigerous puncture to the 1st joint, which is not longer than the 2nme posterior femora short, stout, with a deep and wide furrow; posterior tibiæ with a roughened wide dorsal furrow. Type, *Carabus ehrenbergi*, Kl.

Hadrocarabus, subg. n. of *Carabus*; id. *l. c.* p. 646. Mentum with a sharp middle tooth, shorter than the lateral lobes, the excavation extending to the middle. *Carabus latus*, Dej., *C. lusitanicus*, Dej., = *hellwigi*, Schm. (of which *C. castilianus*, Dej., is queried as a var.), *C. antiquus*, Dej., = *lusitanicus*, F., *C. macrocephalus*, Dej., and *H. leptopus*, sp. n., p. 648, Spain.

Chætocarabus, subg. n. of *Carabus*; id. *l. c.* p. 654. Vertex of head not tumid behind; last joint of palpi flattened, with a longitudinal impressed line, penultimate joint pilose at apex. Type, *C. intricatus*, L.

Tribax, subg. n. of *Carabus*; id. *l. c.* p. 670. Thorax smooth, with no lateral setæ; labrum not dilated towards the apex, with parallel sides; a stout median tooth to the mentum; elytra not catenulate, asperate punctate behind. Type, *C. calleyi*, Fisch.

Lamprocarabus, subg. n. of *Carabus*; id. *l. c.* p. 673. Tibiæ angulate-truncate at apex; eyes transversely ovate; thorax with many setæ; body metallic. Type, *C. humboldti*, F.

Melancarabus [better *Melanocarabus*], subg. n. of *Carabus*; id. *l. c.* p. 674. Body black, thorax with no lateral setæ. Type, *C. hungaricus*, [illegible]ed

Mesocarabus, subg. n. of *Carabus*; id. *l. c.* p. 678. Sides only of body metallic; elytra catenulate. Type, *C. catenulatus*, Scop.; also *M. polychæta*, sp. n., *id. l. c.* p. 681, Caucasus.

Hygrocarabus, subg. n. of *Carabus*; id. *l. c.* p. 682. Elytra subsinuate at the apex, deeply fossulated. Type, *C. nodulosus*, Creutz.

Ctenocarabus, subg. n. of *Carabus*; id. *l. c.* p. 683. Elytra with narrow setæ. Type, *C. gallæcianus*, Gory.

Sphodristus, subg. n. of *Carabus*; id. *l. c.* p. 684. 4th joint of antennæ pubescent at apex or to the middle; tooth of mentum compressed. Type, *C. varians*, Fisch.

Chrysocarabus, subg. n. of *Carabus*; id. *l. c.* p. 692. Abdomen with no ventral strigæ, or merely lateral indications of them; squama of the maxilla exceeding the lobes of the mentum. Type, *Car. auro-nitens*, F.

Carabus (subg. *Megadontus*, Sol.) *obliquus*, p. 668, S. Europe (*azurescens*, Dej., = *germari*, Stm., and *neesi*, Hope, being referred to it as varr.), *C.* (s. str.) *putzeysi*, p. 715, Swiss Alps (? = *maritimus*, Schm.), *milleri*, p. 716, Carpathian and Styrian Alps (= *glacialis*, Mill., preoccupied), *fairmairii*, p. 717, Pyrenees, *kæmpferi*, p. 729 [? ? = *jaconinus*, Bates], Thomson, *l. c.*, spp. nn.

Nebria coreica, sp. n., S. Solsky, Hor. Ent. Ross. xi. p. 254, Vladivostok.

Leistus hermonis, sp. n., C. P. de la Brûlerie, *l. c.* p. 126, Syria.

Carabus vanvolxemi, p. xlvi., N. Nipon, *opaculus*, p. xlviii. Jesso, J. Putzeys, CR. Ent. Belg. xviii.; *C. saulcyi*, C. P. de la Brûlerie, *l. c.* p. 118, = *manon* [*cf. anteà*, p. 272]: spp. nn.

Rche. *losoma himalayanum*, sp. n., R. Gestro, Ann. Mus. Genov. vii. p. 851, Laos.

Cychrides.

Cychrus. Observations on the Italian species; *C. costæ*, Emery, = *meridionalis*, Chaud., *cylindricollis*, Pini, and *C. angulicollis*, being specially described; R. Gestro, Ann. Mus. Genov. vi. pp. 537–544. Note on *C. cylindricollis*; Pet. Nouv. (1875) p. 505.

Odontacanthides.

Casnonia micans, W. McL., and *C. obscura*, Cast., differentiated; R. Gestro, Ann. Mus. Genov. vii. p. 851.

Casnonia amplipennis, p. 853, Swan River, *celebensis*, p. 854, Bangkok, *tokkia*, p. 856, S. E. Celebes, spp. nn., *id. l. c.*

Odontocantha puziloi, sp. n., S. Solsky, Hor. Ent. Ross. xi. p. 264, pl. i. fig. 5, Lake Khanka and Vladivostok.

Galeritides.

Galerita janus. Larva fully described, from Michigan; H. G. Hubbard, Psyche, i. pp. 49–52.

Drypta sulcicollis and *fumigata*, J. Putzeys, Ann. Mus. Genov. vii. p. 720, Andai, New Guinea; *D. fœa*, R. Gestro, *op. cit.* p. 857, Ternate: spp. nn.

Calophæna latifasciata, sp. n., E. Steinheil, C. H. xiii. p. 96, Columbia.

Morionides.

Morio colchicus, Chaud., = *olympicus*, Redt.; Brûlerie, *l. c.* p. 136.

Morio longipennis, sp. n., J. Putzeys, Ann. Mus. Genov. vii. p. 727, New Guinea, Aru.

Scaritides.

Scarites costulatus, Fairm., = *saxicola*, Bon.; *S. compressus*, Coq., = *arenarius*, Bon., deformed, and *S. subcylindricus*, Chaud., is a var. of the same species; *S. persicus*, Chaud., *punctato-striatus*, Redt., = *planus*, Bon.; *Clivina scripta*, Putz., = *hypsilon*, Dej., var.; *C. lernæa*, Schaum, = *lævifrons*, Chaud.; *Dyschirius fossifrons*, Putz., = *thoracicus*, Rossi, of which *obscurus*, Gyll., *numidicus*, Putz., *rugicollis*, Fairm., and *humeratus*, Chaud., are varr.; *D. protensus*, Putz., = *macroderus*, Chaud.; *D. bacillus*, Schm., *peyroni*, *clypeatus*, and *nanus*, Putz., = *pusillus*, Dej.; *D. frigidus*, Mann., *melancholicus*, Putz., *daimiellus*, Bates, *dentipes* and *integer*, Lec., = *æneus*, Dej., of which *D. remote-punctatus*, *apicalis*, *chalybeus*, *euphraticus*, *hispanus*, and *dentipes*, Putz., and *subæneus*, Woll., are varr.; *D. minutus*, *impressus*, *longipennis*, *attenuatus*, *angusticollis*, *frontalis*, *acutus*, *morio*, and *crenulatus*, Putz., and *cariniceps*, Baudi, are varr. of one species; *D. lafertæi* and *syriacus*, Putz., and *dimidiatus*, Chaud., = *semistriatus*, Dej.; *D. immarginatus*, Putz., = *importunus*, Schm.: C. P. de la Brûlerie, *l. c.* pp. 127–134. [The author defends all these collocations categorically, stating that he does not consider Putzeys a bad worker, but that he simply looks at the question of species and variety from a different point of view—quite independently, it may be added, of geographical evidence.]

Obadius ["Obadiah," latinè *Obadias*!], g. n., H. Burmeister, Tr. E. Soc. 1875, p. 339 [named in honour of Professor Westwood, one of whose Christian names is adopted: supposing the author had adopted the other of them, it would have been *Joannes*!] Facies of *Clivina*; belongs to Putzeys' section with arcuate and acuminate mandibles, near *Lachenus* and *Cryptomma*, but distinguished by the 3 equal acute teeth of the mentum, and from the latter by its prominent eyes; the thorax is finely transversely striate. *O. insignis*, sp. n., *id. l. c.* p. 341, fig. of head and thorax, p. 342, La Concordia, Uruguay.

Tæniolobus chaudoiri, sp. n., E. Steinheil, C. H. xiv. p. 141, New Granada.

Scarites zambo, id. *l. c.* p. 142, New Granada; *S.* (*Hoplotrachelus*) *polypleurus* and *latesulcatus*, p. 177, Caffraria, *punctuliger*, p. 178, Graham's Town, *S.* (*H.* ?) *atropis*, ibid., Caffraria, *S.* (*Glyptogrus*) *insculptus*, p. 179, Bahia, H. W. Bates, Ent. M. M. xi.: spp. nn.

Dyschirius salivagans, J. L. Leconte, Tr. Am. Ent. Soc. v. p. 169, Gt. Salt Lake, Utah; *D. sacra*, Putzeys, Ann. Soc. Ent. Fr. (5) v. p. nn., Jordan: spp. nn.

Chlæniides.

Chlænius palæstinus, Reiche & S., = *dimidiatus*, Chaud.; *C. laticollis*, and *karelini*, Chaud., = *azureus*, Duft.; *C. agilis*, Peyr., = *cruralis*, Fisch.; C. P. de la Brûlerie, *l. c.* p. 160.

Anisodactylides.

Anisodactylus haplomus, Chaud., = *rusticus*, Dej.; *A.* (*Gynandrotarsus*) *elongatus*, Chaud., = *opaculus*, Lec.; *A. puncticollis*, Chaud., = *similis*, Lec., = *semipunctatus*, Lec., the type form; *A. brevicollis*, Lec., = *consobrinus*, Lec.; *A. confusus*, Lec., = *californicus*, Dej., ♂; G. H. Horn, Tr. Am. Ent. Soc. v. pp. 126 & 130.

Diachromus exquisitus, Muls. & R., = *germanus*, L., var.; *Dichirotrichus dorsalis*, *chloroticus*, and *pallidus*, Dej., *ustulatus*, Gebl., *desertus*, Mots., *lacustris*, Redt., and *cordicollis*, Fairm., = *obsoletus*, Dej.; C. P. de la Brûlerie, Ann. Soc. Ent. (5) v. p. 406.

Orthogonius thoracicus, sp. n., R. Gestro, Ann. Mus. Genov. vii. p. 890, N. Abyssinia.

Harpalides.

Ophonus rotundicollis, Fairm., = *diffinis*, Dej., from which *quadricollis*, Dej., is distinct; *O. cæruleipennis* and *ruficrus*, Mén., *agnatus* and *atrocyaneus*, Chaud., *minimus*, Motsch., = *azureus*, F., of which *cribricollis*, Dej., *crassiusculus*, Fairm., and *fauveli*, Mathan, are varr.; *O. annulatus*, Chaud., = *convexicollis*, Mén., which is distinct from *azureus*; *O. cribrellus*, Reiche & S., *cribratus*, Peyr., = *puncticollis*, Payk., varr.; *O. hispanus*, Ramb., *laviceps*, Mén., *suturalis*, Chaud., = *planicollis*, Dej.; *Harpalus polyglyptus*, Schaum, and *caiphus*, Reiche & S., = *seriatus*, Chaud.; *H. bosphoranus*, Reiche., = *saxicola*, Dej., = *distinguendus*, Duft., var.; *H. euchlorus*, Mén., = *cupreus*, Dej., var.; *H. intermedius*, Desbr., = *attenuatus*, Steph.; *H. femoralis*, Chaud., *chaudoiri*, Mots., = *tenebrosus*, Dej.; *Stenolophus abdominalis*, Géné, *persicus*, Mann., *skrimshiranus*, Steph., = *teutonus*, Schr., varr.; *Acupalpus cantabricus*, Brûl., *vittatus*, Heyd., = *dorsalis*, F., varr.; C. P. de la Brûlerie, *l. c.* pp. 407–415.

Harpalus occidentalis, Chaud., = *fraternus*, Lec.; *Trechicus umbripennis* and *pallipennis*, Lec., = *Bembidium nigriceps*, Dej., variously referred to *Perigona*, *Mastigus*, and *Pentoplogenius* (Morawitz, = *Somoplatus*); G. H. Horn, Tr. Am. Ent. Soc. v. p. 126.

Ophonus libanigena, p. 408, Lebanon, *israelita*, Nazareth, *judæus*, Jerusalem, p. 410, spp. nn., C. P. de la Brûlerie, *l. c.*

Platymetopus cavernosus, sp. n., J. Putzeys, Ann. Mus. Genov. vii. p. 737, Macassar.

Amblystomus vittatus, sp. n., R. Gestro, *tom. cit.* p. 885, Bogos County, N. Abyssinia.

Feroniides.

Chaudoir, Ann. Mus. Genov. vi. pp. 569–601, in a Supplement to his "Essai sur les Féronies de l'Australie" (Bull. Mosc. 1865, ii. p. 56), proposes various Australian species described almost simultaneously by himself, Motschoulsky, and Castelnau, and of many of which he has been enabled to establish the synonymy by an inspection of the types of the latter author. These species are here referred to the groups or subgenera employed by Chaudoir. *F.* (*Homalosoma*) *episcopalis*, Cast., = *cyanea*, Cast.; *F.* (*H.*) *cunninghami*, Cast., = *cordata*, Chaud.; *F.* (*H.*) *nitidicollis*, Cast., *nec* Chaud., *nec* Mots., is renamed *septemcostata*; *F.*

(*Trichosternus*) *hercules*, Cast., = *renardi*, Chaud.; *F.* (*T.*) *atlas* and *obesa*, and ? *solandersi*, Cast., = *brevis*, Mots. (*atlas* being adopted); *Secatophus*, Cast., = *Prionophorus*; *F.* (*Prionophorus*) *hopii*, Cast., = *australis*, Hope, Cast., *nec* Dej., = *crenatipes*, Chaud.; *Teropha*, Cast., = *Morphnos*, Schauf.; *F.* (*M.*) *antipodus*, Schauf., = *sturti*, White, = *flindersi*, White; *Tibarisus*, Cast., = *Pachidius*, Chaud., = *Cratogaster*, Blanch.; *F.* (*C.*) *melas*, Cast., = *sulcata*, Blanch.; *F.* (*Notonomus*) *lapeyrousii*, Cast., = *æneomicans*, Chaud.; *F.* (*N.*) *ducalis*, Cast., = *triplogenioides*, Chaud.; *F.* (*N.*) *comes*, Cast., = *variicollis*, Chaud.; *F.* (*N.*) *impressicollis*, Cast., = *nitidicollis*, Chaud.; *F.* (*N.*) *satrapa*, Cast., ? = *gippsiensis*, Cast., var.; *F.* (*N.*) *gippslandica*, Cast., = *auricollis* = *opulenta*, Cast., var.; *F.* (*N.*) *tasmanica*, Cast., = *politula*, Chaud.; *F.* (*N.*) *mitcheli*, Cast., = *australasiæ*, Dej., Chaud., *nec* Cast.; *F.* (*N.*) *hunteriensis*, Cast., = *discodera*, Chaud., = *marginata*, Cast.; *F.* (*N.*) *mastersi* and *impressicollis*, Cast., = *nitidicollis*, Chaud., of which *viridimarginata*, Cast., = *viridilimbata*, Cast., is possibly a var.; *F.* (*N.*) *impressipennis*, Cast., is a var. of *purpureolimbata*, Cast., = *purpuripennis*, Mots., = *opacicollis*, Chaud.; *F.* (*N.*) *subvilis*, *semiviolacea*, and *victoriæ*, Cast., = *dyscoloides*, Mots., which is distinct from *sphodroides*, Dej.; *F.* (*N.*) *crœsus* and *plutus*, Cast., = *peroni*, Cast., var.; *F.* (*N.*) *punctata* and *occidentalis*, Cast., = *mediosulcata*, Chaud.; *F.* (*N.*) *lacustris*, Cast., = *obsoleta*, Mots., = *molesta*, Chaud.; *F.* (*N.*) *bipunctata*, Cast., = *chalybea*, Dej., Chaud.; *F.* (*N.*) *montana*, Cast., = *gravis*, Chaud.; *Argutor foveipennis*, *nitidipennis*, and *oodiformis*, W. McL., belong to the group *Simodontus*; *F.* (*Rhabdotus*) *diemenensis*, Cast., = *reflexa*, Chaud., which occurs in Tasmania, not New Zealand; *F.* (*Loxodactylus*) *yarræ*, Cast., is a var. of *dingo*, Cast., = *carinulata*, Chaud.; *F.* (*Sarticus*) *cyaneocincta*, Chaud., *nec* Boisd., = *saphyreomarginata*, Cast., of which *azureomarginata*, Cast., is probably a var.; *F.* (*S.*) *germari* and *bonvouloiri*, Cast., = *ovicollis*, Mots., = *discopunctata*, Chaud.; *F.* (*S.*) *saphyripennis*, *esmeraldipennis*, *olivieri*, and *rockhamptonensis*, Cast., = *orbicollis*, Mots., = *obesula*, Chaud.; *F.* (*S.*) *waterhousii*, *mastersi*, and *blagravii*, Cast., = *cyclodera*, Chaud.; *Pterostichus aubryi*, Cast., is a *Sarticus*; *Amastus*, Mots., = *Rhyti*[*do*]*sternus*, Chaud.; *F.* (*R.*) *australasiæ*, Cast., *nec* Dej., = *nigricolor*, Mots., = *liopleura*, Chaud.; *F.* (*R.*) *centralis*, Cast., = *lævilatera*, Chaud.; *F.* (*R.*) *lachlandiensis*, Cast., = *cyathodera*, Chaud.; *F.* (*R.*) *clarenciensis*, Cast., = *puella*, Chaud.; *F.* (*R.*) *subcarbonaria*, Cast., = *misera*, Chaud.; *F. mastersi*, W. McL., belongs to *Rhytidosternus*, and, if distinct from those above-named, requires renaming; *F.* (*Ceneus*) *vilis*, Cast., = *coracinus*, Er., for which *chalybeipennis*, Chaud., stands; *F.* (*Chlænioidius*) *planipennis*, W. McL., if distinct, requires renaming; *F.* (*C.*) *resplendens*, Cast., = *herbacea*, Chaud.; *Zeodera*, Cast., is admitted and recharacterized.

Drimostoma 4-*pustulatum*, Peyr., is an *Abacetus*; *Feronia* (*Orthomus*) *longula*, *berytensis*, and *prælonga*, Reiche & S., *trapezicollis*, Chaud., *planidorsis*, Fairm., and *balearica*, Brûl., = *barbara*, Dej., varr.; *F.* (*Tapinopterus*) *laticornis*, Fairm., *rhodia*, Mill., = *duponcheli*, Dej.; *F.* (*Lyperus*) *tingitana*, Luc., = *elongata*, Duft.; *F.* (*Omaseus*) *fuscicornis*, Reiche & S., stands for *confusus*, Chaud., *nec* Dej.; *Zabrus striaticollis*,

Des Cottes, = *damascenus*, Reiche & S., of which *helopioides*, R. & S., is a var.; *Amara* (*Liocnemis*) *cottyi*, Coq., *œnescens*, *perezi*, and *tingitana*, Putz., = *affinis*, Dej., varr.; *A.* (*L.*) *euphratica*, Putz., *putzeysi*, Fairm., = *simplex*, Dej.; *A.* (*Celia*) *dichroa*, Putz., = *dalmatina*, Dej.; *A.* (*C.*) *henoni*, Fairm., = *fervida*, Coq.; *A.* (*C.*) *syriaca* and *palæstina*, Putz., = *aberrans*, Baudi; *A.* (*Triana*) *damascena*, Reiche., = *erythrocnemis*, Zimm.; *Platyderus varians*, Schauf., *portalegræ* and *saezi*, Vuill., = *lusitanicus*, Dej.; *P. notatus*, Coq., *angulosus*, Reiche., = *calathoides*, Dej.; *P. dilatatus*, *nemoralis*, *subpunctatus*, *suberenatus*, *quadricollis*, *rotundatus*, and *canaliculatus*, Chaud., *rufus*, Duft., *montanellus*, Graells, *troglodytes*, Schauf., *emblema*, Mars., *depressus*, Ramb., *algesiranus*, Dieck, *alacer*, Coq., *brevicollis*, *cirtanus*, *neapolitanus*, *græcus*, *minutus*, and *punctiger*, Reiche., *sicanus*, Fairm., = *ruficollis*, Msh. [!]; C. P. de la Brûlerie, Ann. Soc. Ent. Fr. (5) v. pp. 415–428.

Mecynognathus dameli, W. McL., figured, and referred to this group, with the more normal forms of which it is connected by *Trichosternus dilaticeps*, Chaud.; R. Gestro, Ann. Mus. Genov. vii. pp. 891–894.

Feronia sp. (? *cantalica*, Chaud.); E. Olivier, Bull. Soc. Ent. Fr. (5) v. p. clxxix.

Molops. Good specific characters are to be found in the outer interstices, and the relative breadth of the 7th and 6th interstices; with observations on *M. dalmatinus*, *longipennis*, *dilatatus*, Friv. (distinct from *simplex*, Chaud.), and *spartanus*, Schaum (distinct from *longipennis*, but ? = *bicephalus*, var.); G. Kraatz, Deutsche E. Z. 1875, pp. 369–375. Observations on the European species; L. v. Heyden, *tom. cit.* pp. 379 & 380; and on the German species by G. Kraatz, *tom. cit.* pp. 413–415.

Haptoderus. *Feronia* (*H.*) *infima* and *rudimentalis*, Chaud.; observations on their characters and specific value; G. Kraatz, *l. c.* pp. 375 & 376. Observations on various European species; L. v. Heyden, *l. c.* p. 381. On *H. cognatus*, Dej., *placidus*, Ros., and *schmidti*, Chaud.; G. Kraatz, *l. c.* p. 414.

Oribazus, Chaud.; desultory observations, chiefly with the idea that the name should be *Oribas* or *Oribasus*, by C. A. Dohrn, S. E. Z. xxxvi. p. 212.

Zabrus gibbus very injurious to crops; A. Makowsky, Verh. Ver. Brünn, xiii. (SB.) p. 40.

Evarthrus ovulum, Chaud., = *acutus*, Lec.; *Amara reflexa*, Putz., = *lacustris*, Lec., = *rufimana*, Kby.; *A. obtusa*, Lec., = *hyperborea*, Dej.; *A. inepta*, Lec., = *Celia erratica*, Sturm, ♀; *A. convexa*, Lec., = *polita*, Lec., ♀; *A. furtiva*, Lec., = *exarata*, Dej.; *A. oregona*, Lec., = *levistriata*, Putz., = *hyperborea*, Lec., *nec* Dej., = *latior*, Kby.; *A. septentrionalis*, Lec., recharacterized, and various N. American species tabulated: G. H. Horn, Tr. Am. Ent. Soc. v. pp. 126–129.

Amara (*Triæna*) *impunctata*, Reiche., maintained as a good species, and renamed *damascena*; L. Reiche, Bull. Soc. Ent. Fr. (5) v. p. clxxx.

Amara continua, Thoms., from England; E. C. Rye, Ent. M. M. xi. p. 207.

Leptopodus, subg. n. of *Feronia*; Chaudoir, *l. c.* p. 600. For *Pœcilus*

iridipennis, Cast., *Pterostichus sollicitus*, Er., = *Feronia gagatina*, Cast., and *F. holomelana*, Germ.

New species :—

Euchroa obscura, J. Putzeys, Ann. Mus. Genov. vii. p. 735, Montevideo.

Holciophorus serripes, J. L. Leconte, Tr. Am. Ent. Soc. v. p. 169, California.

Pœcilus prolixus, J. Putzeys, CR. Ent. Belg. xviii. p. lxvii. Jesso.

Pterostichus incultus and *ignitus*, p. 417, Balkan, *olympicus*, p. 418, Mt. Olympus, G. Kraatz, *l. c.*

Feronia atlantica, L. Fairmaire, Pet. Nouv. (1875) p. 543, Mogador; *F. marovighii*, id. Bull. Soc. Ent. Fr. (5) v. p. ccxx. Constantinople; *F.* (*Notonomus*) *incrassata*, p. 583, ? N. S. Wales, *depressipennis*, p. 585, Cape York, *subopacus*, Clarence River, *simulans*, S. Australia, p. 586, *F.* (*Rhytidosternus*) *plebeia*, p. 598, N. S. Wales, Chaudoir, *l. c.*; *F.* (*Lagarus*) *ehrharti*, Nowicki, Beschreibung neuer Käfer (Krakau; 1873), p. 3, Calabria (= *inquinatus*, Sturm, *teste* Kraatz, Deutsche E. Z. 1875, p. 419).

Molops croaticus, p. 371, Croatia, *parnassicola*, p. 372, Parnassus, *parreyssi*, p. 373, Balkan, Montenegro, Dalmatia, *heydeni*, p. 374, Balkan, *sturmi*, p. 375, Banat, Wallachia, G. Kraatz, *l. c.*; *M. promissus*, L. v. Heyden, *tom. cit.* p. 380, Dalmatia.

Platyderus cyprius, p. 427, Cyprus, *grandiceps*, p. 430, Lebanon, C. P. de la Brûlerie, *l. c.*

Zabrus pumilio, id. *l. c.* p. 418, Lebanon.

Amara zimmermanni [Heer, 1837], p. li., *striatella*, p. lii., J. Putzeys, CR. Ent. Belg. xviii. Japan; *A. insularis*, p. 128, San Clemente, Californian coast, *putzeysi*, p. 129, Newfoundland, G. H. Horn, *l. c.*; *A.* (*Triæna*) *refulgens*, L. Reiche, Bull. Soc. Ent. Fr. (5) v. p. clxxix. Sicily.

Cyrtonotus macronotus, S. Solsky, Hor. Ent. Ross. xi. p. 265, E. Siberia.

Liocnemis rotundicollis, id. *l. c.* p. 267, Amur and Baikal.

Anchomenides.

Pristonychus ausonius, Schauf., = *mauritanicus*, Dej.; *Calathus punctipennis*, Germ., *distinguendus*, Chaud., *numidicus*, Cottes, and *thessalus*, Putz., = *cisteloides*, Ill.; *C. acuticollis* and *libanensis*, Putz., ? = *reflexus*, Schaum; *C. atticus*, Cottes, *encaustus*, Fairm., = *mollis*, Msh.; *C. melanotus* and *leptodactylus*, Putz., *ruficollis* and *erythroderus*, Cottes, = *melanocephalus*, L.; *Olisthopus puncticollis*, Luc., = *glabricollis*, Germ.; *O. interstitialis*, Coq., = *fuscatus*, Dej.; C. P. de la Brûlerie, Ann. Soc. Ent. Fr. (5) v. pp. 422–432.

Calathus deplanatus, Chaud., = *metallicus*, Dej., black var.; L. v. Heyden, Deutsche E. Z. 1875, p. 384.

Cardiomera genei, Bassi. Larva described by Pellet, in 1st part of "Histoire naturelle du département des Pyrénées-Orientales," extr. from Bull. Soc. Pyrén., referred to in Pet. Nouv. (1875) p. 510.

Sphodrus prolixus, L. Fairmaire, Pet. Nouv. (1875) p. 495, Algeria;

S. (Antisphodrus) libanensis, C. P. de la Brûlerie, *l. c.* p. 421, Lebanon : spp. nn.

Agonum inæquale, sp. n., J. Putzeys, Ann. Mus. Genov. vii. p. 736, Montevideo.

Anchomenus subovatus, sp. n., *id.* CR. Ent. Belg. xviii. p. l. N. Nipon.

Pogonidæ.

Patrobus fossifrons and *foveicollis*, Esch., *longiventris*, Mann., *tenuis* and *rufipes*, Lec., = the European *septentrionis*, Dej., which also occurs in Arctic America ; *P. angicollis*, Rand., is a misprint for *rugicollis* ; *P. fulcratus*, Lec., = *aterrimus*, Esch. ; *P. trochantericus*, Lec., and ? *fulvus* and *angusticollis*, Mann., = *californicus*, Mots. ; G. H. Horn, Tr. Am. Ent. Soc. v. p. 130.

Pogonus (Syrdenus) dilutus, Fairm., occurs in Portugal and Algeria, and connects *P. grayi*, Woll., and *P. fulvus*, Baudi ; L. Fairmaire, Ann. Mus. Genov. vii. p. 480. *P. extensus*, Chaud., and *dilutus*, Fairm. (= *fulvus*, Baudi), = *grayi*, Woll. ; *P. parallelus*, Chaud., = *gilvipes*, Dej. ; C. P. de la Brûlerie, Ann. Soc. Ent. Fr. (5) v. p. 432.

Pogonus japonicus, sp. n., J. Putzeys, CR. Ent. Belg. xviii. p. lii. S. Nipon.

Trechides.

Trechus rubens, F., occurs in N. Europe and Nova Scotia ; *T. fulvus* and *micans*, Lec., *californicus*, Mots., = *chalybæus*, Mann. ; *T. lævigatus*, Lec., = *ovipennis*, Mots. ; G. H. Horn, Tr. Am. Ent. Soc. v. p. 131. *T. obtusus*, Er., = *minutus*, F., var. ; C. P. de la Brûlerie, *l. c.* p. 432.

Trechus corpulentus, Weise, Deutsche E. Z. 1875, p. 356, Hungary ; *T. libanensis*, p. 433, Lebanon, *olympicus*, Cyprus, *crucifer*, Syria, p. 434, C. P. de la Brûlerie, *l. c.* : spp. nn.

Anophthalmus mayeti, sp. n., E. Abeille de Perrin, Ann. Soc. Ent. Fr. (5) v. p. 213, Cave of St. Martin, Vallon, Ardèche.

Bembidiides.

Tachys globosus, Chaud., = *Elaphropus caraboides*, Mots., = *T. focki*, Hümm. ; *T. globosus*, Baudi, = *globulus*, Dej., var. ; *T. socius*, Schaum, = *hæmorrhoidalis*, Dej., var. ; *T. 4-nævus*, Reitter, = *parvulus*, Dej., var. ; *T. decoloratus*, Chaud., *apristoides*, Rottenb., and *bisbimaculatus*, Chevr., = *diabrachys*, Kol., which, with 4-*signatus*, Dej., = 6-*striatus*, Duft., varr. ; *T. pullus*, Duv., = *grandicollis*, Chaud. ; *T. triangularis*, Nietn., occurs in Syria and Egypt ; *T. rubicundus*, Chaud., = *fulvicollis*, Dej. ; *T. algiricus*, Duv., = *cardioderus*, Chaud. ; *T. nigrifrons*, Fauv., = *bistriatus*, Duft. ; *T. bipartitus*, Duv., *vittatus* and *dimidiatus*, Mots., = *scutellaris*, Germ., varr. ; *Bembidium subtile*, Schaum, = 5-*striatum*, Gyll. ; *B. rectangulum*, Duv., = *obtusum*, Sturm, var. ; *B. inoptatum*, Schaum, = *biguttatum*, F., var. ; *B. monticulum*, Sturm, *siculum* and *præustum*, Dej., *milleri* and *cordicolle*, Duv., = *nitidulum*, Marsh., varr. ; *B. lividipenne* and *testaceipenne*, Mén., = *combustum*, Mén. ; *B. maritimum*, Küst., = *hypocrita*, Dej. ; *B. nordmanni*, Chaud., = *elongatum*, Dej., var. ; *B. tetragrammum*, Chaud., = 4-*guttatum*, F., var. *speculare*,

Küst.; *B. versicolor*, Duv., = *menetriesi*, Kol., var.; *B. æreum* and *agile*, Duv., *substriatum* and *armeniacum*, Chaud., *seriatum* and *caucasicum*, Mots., *angusticolle*, Mén., = *grapii*, Gyll., ex. typ.; *B. leucoscelis*, Chaud., = *lampros*, Hbst.; *B. rugiceps*, Reiche & S., *curtulum*, Duv., = *ambiguum*, Dej., var.; *B. hispanicum*, Ramb., = *4-fossulatum*, Schm., *rugiceps*, Chaud., *binotatum* and *glabricolle*, Mots., = *bipunctatum*, L.: C. P. de la Brûlerie, Ann. Soc. Ent. Fr. (5) v. pp. 438–448.

Tachys emarginatus, *sulcatus*, *acaroides*, *politus*, *umbrosus*, *impressipennis*, *flaviculus*, and *suturalis*, Mots., additionally characterized from types; J. Putzeys, Ann. Mus. Genov. vii. pp. 737 & 738.

Bembidium wingatii, Bland, = *oblongulum*, Mann., which is an *Amerizus*; *Tachys oopterus*, Chaud., = *ventricosus*, Lec.; *T. rivularis*, Mann., = *nanus*, Gyll.; *T. occultus*, Lec., = *granarius*, Dej.; G. H. Horn, Tr. Am. Ent. Soc. v. pp. 131 & 132.

Bembidium inustum, Duv., taken in Paris and Montreux, in the streets; C. Brisout de Barneville and C. P. de la Brûlerie, Bull. Soc. Ent. Fr. (5) v. pp. cii. & cxi.

Notaphus niloticus, H. W. Bates, *nec* Dej., is renamed *batesi*; J. Putzeys, CR. Ent. Belg. xviii. p. lii.

Tachys coracinus, p. 739, Borneo, *subfasciatus*, ibid., *unistriatus*, p. 740, *interpunctatus*, p. 741, *sulcato-punctatus*, p. 742, Celebes, *acuticollis*, p. 740, Aru, *anceps*, p. 742, E. India, *sulculatus*, p. 743, Hong Kong, *bi-oculatus*, ibid., *arcuatus*, p. 744, Ceylon, *æneus*, p. 744, *plagiatus*, *pictipennis*, p. 745, Macassar, *cinctus*, p. 746, Amboina, *cruciger* and *ephippiatus*, p. 747, Macassar, J. Putzeys, l. c.; *T. crux*, id. Deutsche E. Z. 1875, p. 363, Hungary; *T. insularis*, E. Ragusa, Bull. Ent. Ital. vii. p. 252, Isle of Pantellaria: spp. nn.

Limnastus (script. *-tes* wrongly by Motschoulsky; recharacterized) *galilæus*, sp. n., C. P. de la Brûlerie, *l. c.* p. 436, R. Jordan.

Bembidium cardionotum, J. Putzeys, *l. c.* p. 363, Hungary; *B.* (*Peryphus*) *culminicola*, p. 442, Lebanon, *jordanense*, p. 443, R. Jordan, C. P. de la Brûlerie, *l. c.*: spp. nn.

Cillenum albertisi, sp. n., J. Putzeys, *l. c.* p. 748, New Guinea.

Dytiscidæ.

Cnemidotus rotundatus in North France; Bull. Soc. Ent. Fr. (5) v. p. ccix.

Dytiscus marginalis. Renewed experiments prove that the nervous centre governing the wings and swimming legs is the instigator of respiration; and Baudelot's experience (from larva of *Libellula*), that the separation of the metathorax from the abdominal ganglions did not affect respiration, is not considered to affect the question: E. Faivre, C. R. lxxx. pp. 739–741. A further account of experiments on rotatory movements in this insect, and the bearing upon them of the encephalic nervous centres; *id. l. c.* p. 1149. Also on the functions of the frontal ganglion; *id. l. c.* pp. 1332. On the peculiar disposition of the contractile fibres of the dorsal vessel, and the function of other parts of the circulatory apparatus, *cf.* Von Graber [*anteâ*, p. 277]. Observations on

the acts of ovipositing in this and allied species: the eggs are laid in incisions in the stems of water-plants, made by a sharp, auger-like process exserted from the apex of the abdomen of the parent, and projecting beyond the oviduct; the anatomy of the genital segments is described and figured. M. Régimbart, Ann. Soc. Ent. Fr. (5) v. pp. 201–206, pl. iv. No. iii. figs. 1–4.

Dytiscus ibericus, Rosenh., = *pisanus*, Cast., var.; G. Kraatz (quoting S. de Uhagon), Deutsche E. Z. 1875, p. 232.

Acilius sulcatus producing a humming sound; Brischke, Schr. Ges. Danz. 1874; Ent. Nachr. i. p. 160.

Hydaticus japonicus, Shp., = *adamsi*, Clk.: *H. adamsi*, Shp., = *bowringi*, Clk.; D. Sharp, P. E. Soc. 1875, p. vi.

Haliplus multipunctatus, N. Germany, *heydeni*, Harburg, spp. nn., E. Wehncke, Deutsche E. Z. 1875, p. 122.

Hydroporus caspius, Astracan, *brucki*, Salonica, spp. nn., *id. l. c.* p. 234.

Trogus (*Cybister*) *irritans*, sp. n., C. A. Dohrn, S. E. Z. xxxvi. p. 290, Elmina, Gold Coast.

Dytiscus sharpi, sp. n., E. Wehncke, S. E. Z. xxxvi. p. 500, Japan.

HYDROPHILIDÆ.

SAHLBERG, J. Enumeratio Coleopterorum palpicornium Fenniæ. Not. Fenn. (n.s.) xi. [= xiv. of the whole work] pp. 201–227.

73 species are enumerated, with bibliographical references and localities.

Hydrophilus pistaceus differs from *piceus*, not only in wanting the sutural spine and in the more sharply dilated 5th tarsal joint in the ♂, but in having a deep bowl-like furrow in the prosternal keel; Duverger, Bull. Soc. Ent. Fr. (5) v. p. vi.

Philhydrus and *Helochares*. Observations on the European species; *P. suturalis*, Shp., = *coarctatus*, Gredler. L. v. Heyden, Deutsche E. Z. 1875, pp. 394–397.

Philhydrus nigricans, Zett., = *frontalis*, Er.; *P. affinis*, Sahlb., = *marginellus*, Er.; *P. marginatus*, Seidl., = *ovalis*, Th.; *P. punctulatus*, Sharp, = *Hydrophilus griseus*, Sahlb., = *Helochares lividus*, Forst.; J. Sahlberg, *l. c.* pp. 217 & 218.

Anacæna. The German species described, with synonymy. *A. variabilis*, Shp., = *carinata*, Thoms., = *globulus*, Ill., Gyll., Muls., Seidl., = *minuta*, Hbst., Msh., = *limbata*, Fab., Er.; H. v. Kiesenwetter, Deutsche E. Z. 1875, pp. 228–232.

Sepidulum, Lec. [Zool. Rec. xi. p. 263], recharacterized, and its affinities stated to be greater with *Spercheus* than any known genus; D. Sharp, Ent. M. M. xi. p. 247.

Helophorus borealis, Thoms., *nec* F. Sahlb., = *fennicus*, Sahlb., *nec* Payk., var., and is renamed *gyllenhali* (p. 210); *H. pallidipennis*, Th., = *borealis*, F. Sahlb.; *H. griseus*, Thoms., = *dorsalis*, Er., *nec* Marsh., = *crichsoni*, Bach; *H. granularis*, Sahlb., = *æneipennis*, Th.; *H. brevicollis*,

Th., = *granularis*, L.; *H. granularis*, Th., = *griseus*, Hbst.; *H. nivalis*, Th., = *glacialis*, Villa; J. Sahlberg, *l. c.* pp. 211 & 212.

Hydrobius seriato-punctatus, sp. n., É. Perris, L'Ab. (3) i. p. 2, Corsica.

Philhydrus rectus, sp. n., J. Sahlberg, *l. c.* p. 216, Finland.

Anacæna nigro-ænea, sp. n., *id. l. c.* p. 219 (? = *Hydrobius æneus*, Muls., *nec* Germ.), Finland.

Globaria muelleri, sp. n., T. Kirsch, MT. Mus. Dresd. i. p. 25, Malacca.

Sepidulum trogoides, S. America, ? Mexico, *bullatum*, India, spp. nn., D. Sharp, *l. c.* p. 249.

Spercheus priscus, sp. n., *id. l. c.* p. 250, Queensland.

Ochthebius evanescens, sp. n., J. Sahlberg, *l. c.* p. 208, Russian Karelia.

Cercyon rhomboidale[*-lis*], sp. n., É. Perris, *l. c.* p. 3, Corsica.

Paussidæ.

Paussus olcesii, Fairm., = *klugi*, Westw.; F. de Saulcy, Bull. Soc. Moselle, xiii. (1874) extr., p. 17.

Paussus macleayi, Donov. The true species of this name is different from that usually so called in collections; C. A. Dohrn, S. E. Z. xxxvi. p. 213.

Paussus piochardi, De Saulcy, *l. c.* p. 15, Jericho; *P. waerdeni*, C. Ritzema, Tijdschr. Ent. xviii. p. 124, Congo: spp. nn.

Staphylinidæ.

The 6th livraison of vol. iii. of A. Fauvel's "Faune Gallo-Rh[illegible] [Zool. Rec. xi. p. 264] has been published, dated December, 18[illegible] ceived in the summer of 1876], and containing, pp. 545–738, "Cata[illegible] systématique des Staphylinides de la Faune Gallo-rhénane, avec l'adc synonymique des espèces Européennes, Sibériennes, Caucasiques Méditerranéennes, et descriptions nouvelles," pp. i.–xxxviii., and Sup[illegible] ment iii. pp. 47–82. It contains from *Bolitobius* to *Homalota*, pt. (verted classification), and the Supplement, as before, covers all t parts hitherto published. The Catalogue, on the same scheme, reac *Dinopsis*. Many new species are described in all three portions, a much synonymy is given (as before, usually on very slight grounds, of mere guesses), which cannot be here recapitulated in full. Refer are made to pls. vi. and vii., not accompanying the part now publ pl. v. being also not yet published. The author continues his re Rey's "Brévipennes," with his accustomed pertinacity. On the own prolixity, &c., *cf.* Pet. Nouv. (1875) p. 497.

S. Solsky, Hor. Ent. Ross. xi. pp. 1–26, describes new species f Jelsky in Peru, in continuation of former articles by him.

Observations on German species (some new to the fauna); Eppelshei Deutsche E. Z. 1875, pp. 401–409.

Aleocharides.

E. Mulsant & C. Rey [Mulsant's name alone appears in the ind no name whatever being on the title or at the end of the paper, and

new genera being attributed to Mulsant & Rey in the methodical table], Ann. Soc. Agric. Lyon (4) vi. 1873 [1874 on title], pp. 33–727, pls. i.–v., commence a discussion of the 7th "Branche," Myrmédoniaires, of the "Famille des Aléocharieus, Tribe des Brévipennes," describing in their usual voluminous manner the Loméchusates, Myrmédoniates, Myrméciates, and Homalotates (the first 4 "rameaux" of that "branche"), and reaching the end of the 2nd section of the "Homalotates vrais." The simultaneous publication of various parts of this work in three different periodicals at Lyons (of which the scope of the one now being noticed is strangely unsuited to its subject) is sufficiently perplexing; and the difficulty is not diminished by the authors re-issuing the work separately in parts, or by their issue of Opusc. Ent. in fasciculi. The plates in this and the following instalments of these authors' work consist of outlines of small portions of external anatomy, chiefly the terminal segments of the abdomen. It is impossible here to give any diagnostic characters for the exceedingly trivial groups erected as genera, &c. Thomson's genera, made at the expense of *Homalota*, and not usually accepted by naturalists, are now themselves split into many so-called genera and subgenera.

The 3rd "rameau," Myrméciates, is based upon a new genus (for well-known species), connecting the Myrmédoniates and Homalotates, having the apex of the mesosternal plate rather pointed, as in the latter, and the widened antennæ, legs, and general facies of the former.

The following new genera, &c., are proposed :—

Myrmelia, p. 86, subg. of *Myrmedonia*, for *M. excepta*, Muls. & R.

Myrmœcia, p. 130, for *Myrmedonia hippocrepis*, Saulcy, ? = *tuberiventris*, Fairm., &c.

Earota, p. 154, for *Homalota reyi*, Kies.

Heterota, p. 194, for *Homalota plumbea*, Waterh.

Colpodota, p. 207, with type, *Homalota pygmæa*, Grav., &c., and *C. picco-rufa*, p. 240, Lyons, *subgrisescens*, p. 243, Beaujolais, *lacertosa*, p. 247, Cluny, also *C.* (*Acrotona*, Thoms., sunk as a subg.) *negligens*, p. 263, Lyons, *læticornis*, p. 266, France generally, *navicula*, p. 270, Lyons and Beaujolais.

Hemitropia, p. 211, subg. of *Colpodota*, for *Hom. melanaria*, Mann.

Solenia, p. 287, subg. of *Colpodota*, for *Hom. vernacula*, Er., &c., and *C.* (*S.*) *simulans*, p. 288, Dieppe.

Chætida, p. 304, for *Hom. longicornis*, Grav.

Badura, p. 311, for *Hom. parva*, Sahlb., and *B. nudicornis*, p. 317, Lyons.

Microdota, p. 327, with type, *H. divisa*, Mærk., &c., and *M. parvicornis*, p. 365, and *asperana*, p. 372, Lyons (see Fauvel, *infrà*).

Hilara, p. 330, subg. of *Microdota*, for *Hom. palleola*, Er., and *M.* (*H.*) *fulva*, p. 331, Grande Chartreuse.

Philhygra, p. 340, subg. of *Microdota*, for *H. palustris*, Kies. (with varr. nn. *germanica* and *neutra*), and *M.* (*P.*) *perdubia*, p. 345, and *obscura*, p. 347, Lyons (see Fauvel, *infrà*).

Datomicra, p. 387, subg. of *Microdota*, for *Hom. celata*, Er., &c., and *M.* (*D.*) *montana*, p. 397, Grande Chartreuse.

Pycnota, p. 409, subg. of *Microdota*, for *Hom. paradoxa*, Muls. & R.

Ceritaxa, p. 413, for *Hom. testaceipes*, Heer, and *dilaticornis*, Ktz., *cum. C. spissata*, p. 419, S. France.

Xenota, p. 429, subg. of *Homalota*, for *H. myrmecobia*, Ktz.

Dimetrota, p. 433, subg. of *Homalota*, for *H. marcida*, Er., &c., and (*D.*) *latipes*, p. 462, Provence, *tristicula*, p. 486, Beaujolais.

Tetropla, p. 524, subg. of *Homalota*, for *H. nigritula*, Grav., &c.

Mycota, p. 534, subg. of *Homalota*, for *H. humeralis*, Ktz.

Peburga, p. 609, for *H. luridipennis*, Mann.

Megista, p. 623, subg. of *Liogluta*, s. str., *ibid.*, itself a subg. of *Liogluta*, Thoms., p. 616 [!], for *H. graminicola*, Grav.

Hypnota, p. 623, a 2nd subg. of *Liogluta* as above; for *Hom. pagana* Er., *eremita*, Rye, &c.

Phryogora, p. 657, for *H. hygrotopora*, Ktz.

Traumœcia, p. 663, for *H. excavata*, Gyll, &c.

Polyota, p. 677, subg. of *Dinarœa*, Thoms., for *H. angustula*, Gyll.

Aglypha, ibid., subg of *Dinarœa*, for *H. linearis*, Er., and *D.* (*A.*) *melanocornis*, p. 689, Lyons.

Glaphya, p. 678, subg. of *Dinarœa*, for *D.* (*G.*) *pubes*, p. 692, Normandy.

Thamiarœa [*Homalota*] *australis*, p. 190, Provence [? = *hospita*, var.].

Homalota (*Alaobia*) *nutans*, p. 518, *tædula*, p. 522, Lyons district; *H.* (*Atheta*) *decepta*, p. 549, S. France, *fulvipennis*, p. 557, near London, one ♀; *H.* (s. str.) *ebenina*, p. 568, Grande Chartreuse, *interrupta*, p. 747, Lyons.

Platarœa geniculata, p. 711, Lyons district.

The same authors, *op. cit.* vii. [for 1874, published in 1875] pp. 27–499, pls. vi.–ix., discuss the 3rd and 4th sections of the 4th "Rameau" (Homalotates) of the Myrmédoniaires, and also the Pronoméates, Tachyusates, and Falagriates, respectively forming the 5th, 6th, and 7th "Rameaux."

The following new genera and species are described:—

Zoosetha, p. 29, for *Homalota inconspicua*, Er., and ? *H. cribrata*, Ktz.

Anopleta, p. 46, for *H. lepida*, Ktz.

Heteronoma, p. 59, for *H. luctuosa*, Muls. & R., and *H. minuta*, Bris.

Ouralia, p. 66, for *O. picicornis*, M. & R., *Homalota splendens*, Ktz., &c.

Apimela, p. 74, for *Homalota macella*, Er., &c.

Pachnida, p. 84, for *H. nigella*, Er., &c.

Meotica, p. 96, for *H. exilis*, Er., &c.; with subg. *Cryptusa*, p. 11, for *M. capitalis*, M. & R.

Liota, p. 148, for *H. gracilenta*, Er., &c.

Metaxya, p. 173, for *H. meridionalis*, M. & R., &c., and *M. convexiuscula*, p. 205, Corsica.

Ducrila, subg. of *Dilacra*, Thoms., p. 212, for *H. fallax*, Ktz.

Dralica, subg. of *Dilacra*, Thoms., p. 212, for *H. vilis*, Er., &c.

Thinœcia, p. 260, for *H. gracilicornis*, Er., &c., and *T.* (*Hydrosmecta*) *impressa*, p. 485, Vannes.

new graecia, p. 305, for *H. debilis*, Er., *Hyg. parca*, M. & R. (? = *Hom. Ann.*, Ktz.), &c.

comm icera, p. 315, for *H. deplanata*, Grav., &c.

F. scerota, p. 340, for *H. torrentum*, Kies.

Brachyusa, p. 377, for *Tachyusa concolor*, Er.

Cathusya, subg. of *Tachyusa*, p. 409, for *T. scitula*, Er., &c.

Caliusa, subg. of *Tachyusa*, p. 409, for *T. balteata*, Er., *T.* (*C.*) *bicolor*, p. 433 (= *ferialis*, Fairm., *nec* Er.), &c.

Xenusa, p. 436, for *T. uvida*, Er., and *sulcata*, Kies.

Ilyusa, p. 445, for *T. læsa*, Er., &c.

Cardiola, p. 478, for *Falagria obscura*, Grav.

Disopora tenerrima, p. 242, Corsica.

Tachyusa nitidula, p. 422, Corsica.

Echidnoglossa corsica (Fauvel), p. 457, Corsica.

Falagria picicornis, p. 464, Corsica.

The same authors, Ann. Soc. L. Lyon (n.s.), xxi. (for 1874; 1875 also on title) pp. 1–403, pls. i.–v., under the general heading, "Tribu des Brévipennes," continue the descriptions of their "Famille des Aléochariens" [see Zool. Rec. x. pp. 250 & 251], commencing with the completion of the 6th "branche" Aléocharaires, headed by the remaining portion of the 2nd "rameau," Aléocharates. This is also issued separately

Ent. Histoire naturelle des Coléoptères de France; Brévipennes, Aléocharides, suite; Paris: 1875, 8vo, 5 pls.

The following new genera and species are characterized:—

Rheochara, p. 1, for *Ocalea spadicea*, Er.

Podoxya, subg. of *Oxypoda*, of which it is an anagram; type, *O. lugubris*, Ktz., also *lentula*, Er., *neglecta*, Bris., = *induta*, M. & R., &c., and *subnitida*, p. 152, Béziers, *castanea*, p. 164, Lyons.

Platyola, p. 249, for *Homalota fusicornis*, M. & R.

Mniusa, p. 257, subg. of *Ocyusa*, for *Leptusa nigra*, Bris., = *rupestris*, Fauvel, = *Oxypoda aterrima*, Waterh., = *Homalota incrassata*, M. & R.

Consya [!], p. 258, subg. of *Ocyusa*, of which it is an anagram, for *Homalota procidua*, Er., *Calodera nigrata*, Fairm., and *O.* (*C.*) *defecta*, p. 265, Corsica.

Mniobates, subg. of *Ilyobates*, p. 326, for *I. forticornis*, Lac., *cribrinennis* (Fauvel), p. 340, Corsica, *I. bonnairii*, Fauv., = *glabriventris*, Rye [the authors rightly observe on the difficulty of placing this species in *Ilyobates* at all], and *Calodera unicarinata*, Fairm.

Derocala, p. 356, anagram of *Calodera*, for *Oxypoda rugatipennis*, Ktz.

Polystoma taxicornis, p. 26, Rhenish Provinces.

Oxypoda distincta, p. 86, Montpellier, *O.* (*Bæoglena*) *fusina*, p. 133, *breviuscula*, p. 134, Corsica, *O.* (*Demosoma*) *juvenilis*, p. 182, Beaujolais, *nigrescens*, p. 185, N. France, *picta*, p. 191, Corsica, *nigro-cincta*, p. 192, S. France.

Thiasophila canaliculata, p. 228, Rhine, Lyons.

Ocyusa postica, p. 272, Corsica.

Phlæopora transita, p. 279, Lyonnais, *producta*, p. 285, all France.

Ocalea puncticollis, p. 306, Corsica.
Chilopora subnitida, p. 349, Corsica.

Myllæna valida, Muls. & Rey, = *dubia*, Grav.; *M. kraatzi*, Shp. (*elongata*, Ktz., *nec* Matth.), = *gracilicornis*, Fairm. & Bris.; *M. glauca*, Aubé, = *elongata*, Matth.; *M. rubescens*, M. & R., = *brevicornis*, Matth.; *M. minima*, Ktz., = *infuscata*, Ktz.; *Gyrophæna diversa*, M. & R., = *affinis*, Sahlb.; *G. carpini*, M. & R., = *fasciata*, Msh.; *G. ruficornis* and *despecta*, M. & R., *congrua*, Redt., *carpini*, Baudi, = *bihamata*, Thoms.; *G. polita*, M. & R., = *strictula*, Er.; *Homalota hirta* and *importuna*, Er., *H. crassiuscula*, Ktz., and *Myrmedonia tumidula*, Er., are referred to *Brachida*, M. & R., of which *H. notha*, Er., is the type; *Enalodroma fucicola*, Thoms., = *Liogluta vicina*, Thoms.; *Oligota xanthopyga*, Ktz., *abdominalis*, Scriba, *analis*, Woll., = *apicata*, Er., which is almost cosmopolitan; *O. picescens*, M. & R., = *granaria*, Er.; *O. picipennis* and *subsericans*, M. & R., = *subtilis*, Er., = *inflata*, Mann., ex. typ.; *O. aliena*, M. & R., *contempta*, Woll., *pygmæa*, Ktz., = *parva*, Ktz., which is almost cosmopolitan; *O. pilosa*, M. & R., = *ruficornis*, Sharp, = *punctulata*, Heer; *O. fuscipes*, *parva*, and *misella*, M. & R., *obscuricornis*, Mots., = *atomaria*, Er.; *O. picta*, Mots., = *pusillima*, Grav.; *O. convexa* and *australis*, M. & R., *pedalis*, Lec., *pusillima*, Fauv., = *pumilio*, Kies.; *Cyphea carbonaria*, Hampe, = *curtula*, Er., and is allied to *Placusa*, the larva being described (p. 663); *Placusa similata* and *subdepressa*, M. & R., = *pumilio*, Gr.; *P. denticulata*, Shp., = *infuscata*, p. 747, *P. coronata*, Solsky, *nitidula*, Thoms., = *atrata*, Sahlb.; *Homalotacorum*, Ch. Bris., = *pilosiventris*, Thoms., = *parva*, Sahlb. (ex. typ.), *nec* Kr.; *H. affinis*, Fuss, = *fimorum*, Bris., = *fuscipes*, Heer; *H. melanaria*, Mann., = *tenera*, Sahlb., ex. typ.; *H. sharpi*, Rye, = *pulchra*, Ktz., "*veresim.*" [*H. sharpi* is scarcely one line long, and has the abdomen strongly punctured; *H. pulchra* is 1½ lines, and has the abdomen finely punctured]; *H. obfuscata*, Thoms., = *pygmæa*, Grav.; *H. sinuaticollis*, Bris., = *fusca*, Sharp, *nec* Sahlb., = *laticollis*, Steph.; *H. clientula* and *orbata*, Er., *dubia*, Shp., and 7 other species, = *fungi*, Grav., which is almost cosmopolitan; *H. nudicornis*, M. & R., = *macrocera*, Thoms.; *H. germana*, Shp., *arenicola* and *dadopora*, Thoms., *montana*, M. & R., = *celata*, Er.; *H. hodierna*, Shp., *nigra* and *vicina*, Ktz., = *zosteræ*, Thoms.; *H. immunda*, Bris., *nudiuscula* and *cinnamoptera*, Thoms., *subrugosa*, Kies., = *picipennis*, Mann.; *H. nigripes*, Thoms., *impressifrons* and *borealis*, Sahlb., = *atramentaria*, Gyll.; *H. setigera*, Shp., and *æneipennis*, Thoms., = *lævana*, Muls.; *H. atricolor*, Shp., = *mortuorum*, Thoms.; *H. atomaria*, Thoms., ? = *perexigua*, Shp.; *H. exilis*, Perr., *minuta*, Bris., = *cæsula*, Er.; *H. clavigera*, Scriba, ? = *testaceipes*, Heer; *H. spissata*, Muls., = *dilaticornis*, Ktz.; *H. lacustris*, C. Bris., *foveola*, Muls., = *autumnalis*, Er.; *H. autumnalis*, Shp., = *basicornis*, Muls.; *H. funebris*, Thoms., ? = *atrata*, Ktz., = *clancula*, Er.; *H. diversa*, Shp., ? = *trinotata*, Ktz.; *H. ignobilis*, Shp., = *nitidicollis*, Fairm.; *H. aridula*, Thoms., = *divisa*, Märk.; *Phlæhygra* and *Microdota*, M. & R., are founded on the sexes of *H. palustris*; *H. indiscreta*, Shp., = *subtilis*, Scriba; *H. nana*, Muls., *difficilis*, Bris.,

pumila, Ktz., = *laticeps*, Thoms.; *H. nigriventris*, Thoms., *nigrifrons*, Er., = *melanocephala*, Heer; *H. æneicollis*, Shp., *waterhousii*, Woll., = *pertii*, Heer; *H. foliorum*, Muls., *subænea*, Shp., = *aquatica*, Thoms.; *H. xanthoptera*, Steph., = *castanoptera*, Mann.; *H. breviceps*, Thoms., = *aubæi*, C. Bris.; *H. apricans*, Muls., *littorea*, Shp., *cyrtonota*, Thoms., = *meridionalis*, Muls.; *H. forcipata*, Muls., = *soror*, Ktz.: A. Fauvel, Faune Gallo-Rhénane, iii. pp. 625–738. *H. glabricula*, Thoms., ? = *atomaria*, Kr., and *H. laticornis*, Mots., = *autumnalis*, Er.; *id. l. c.* Suppl. p. 82.

Bolitochara elongata, Muls. & Rey, *nec* Heer, renamed *mulsanti*; *B. flavicollis*, M. & R., = *elongata*, Heer, = *lunulata*, Er.; *B. lunulata*, M. & R., *nec* Er., = *bella*, Märk.: D. Sharp, Ent. M. M. xii. pp. 132 & 133.

Aleochara (*Baryodma*) *succicola*, Thoms., ex. typ., = *lygæa*, Ktz.; G. Kraatz, Deutsche E. Z. 1875, p. 129.

Myrmedonia canaliculata probably formicivorous; A. Lucante, Feuil. Nat. v. p. 102.

Homalota procedens, Epp., ex. typ., = *alpestris*, Heer; G. Kraatz, Deutsche E. Z. 1875, p. 403, note. *H. assimilis*, Epp., = *putrida*, Ktz.; Eppelsheim, *tom. cit.* p. 407.

Mayetia, g. n., Mulsant & Rey, Opusc. Ent. xvi. p. 87. Near *Borboropora*; for *M. spharifer*, sp. n., *iid. l. c.* p. 88, E. Pyrenees (has nothing to do with the *Aleocharides*, but should be placed in the *Stenides*, near *Leptotyphlus*; A. Fauvel, Faune, &c., suppl., p. 60).

Hoplandria angulosa, p. 4, pl. i. fig. 1, *lividula*, p. 6, S. Solsky, Hor. Ent. Ross. xi. spp. nn., Peru.

Orphnebius (?) *pungitius*, sp. n., *id. l. c.* p. 8, pl. i. fig. 2, Peru.

Ocalea baicalensis, sp. n., *id. l. c.* p. 268, Lake Baikal.

Leptusa orientalis, sp. n., *id. l. c.* p. 269, Irkoutsk.

Sipalia impressa, p. 192, Var, Lorgues, and *subconvexa*, p. 199, Hautes-Pyrénées, Mulsant & Rey, Opusc. Ent. xvi., spp. nn.

Bolitochara reyi, sp. n., D. Sharp, *l. c.* p. 133, France.

Phytosus atriceps, sp. n., C. O. Waterhouse, Ent. M. M. xii. p. 54, Kerguelen's Island.

Aleuonota hypogæa, sp. n., Mulsant & Rey, Opusc. Ent. xvi. p. 175, Massane.

Homalota truncata, p. 362, Bohemia, *heterogastra*, p. 363, Oran, *consanguinea*, p. 365, Styria, E. Eppelsheim, S. E. Z. xxxvi.; *H. spatula*, p. 701, Pyrenees, *depressicollis*, p. 712, pl. vii. fig. 7, Pyrenees and Austria, *patellata*, p. 713, pl. vii. fig. 9, Pyrenees, Lithuania, Styria, *orcina*, p. 720, pl. vii. fig. 13, and *antennaria*, p. 726, Pyrenees, *cava*, p. 738, France, Spain, Sicily, Algeria, Fauvel, *l. c.*; *H. postica*, Mulsant & Rey, Brévipennes, 1874, p. 434, *H. abbreviata*, iid. Opusc. Ent. xvi. p. 181, *H. nana*, iid., *l. c.* p. 183, France [the 1st = *minor*, Aubé, the 2nd *nigerrima*, Aubé, and the last *laticeps*, Thoms.; A. Fauvel, Faune, &c., suppl., pp. 81 & 82], and *H. cælifrons*, iid. *l.c.* p. 184, Montpellier: spp. nn.

Encephalus kraatzi, sp. n., S. Solsky, *l. c.* p. 270, Lake Baikal.

Tachyporides.

Bolitobius angularis, Stephens (1832), is admitted to be identical with, and to have priority over, *exoletus*, Er., but is not maintained, as there

is another *B. angularis*, of Sachse (1852),—twenty years later in date!; *Megacronus cedrorum*, Saulcy, *barnevillii* and *aubei*, Pand., = *inclinans*, Gray.; *Lordithon piceus*, Thoms., = *cernuus*, Grav.; *L. punctipennis*, Th., = *M. rufus*, Er.; *L. mæklini*, J. Sahlb., = *M. rugipennis*, Pand.; *Mycetoporus longicornis*, auctt., and *biplagiatus*, Fairm., = *splendidus*, Gr.; *N. tenuis*, Muls., = *nanus*, Er.; *M. heydeni*, Scriba, *ruficornis*, Ktz., *longulus*, Mann., *lepidus*, Grav., and various other species, = *brunneus*, Marsham (the author being particularly severe upon a remark made by the Recorder six years ago, referring to British exponents only); *Tachinus frigidus*, Er., Ktz., = *pallipes*, Gr.; *Tachyporus erichsonis*, Pand., = *ruficeps*, Ktz.; *Tachyporus* "*scutellaris*, Rye," *pallidus*, Sharp, Cat., = *solutus*, Er. [Fauvel quotes this species as described by the Recorder in Ent. Ann. 1871, p. 32: in that place, referring to the distinctive characters between the insect and *T. tersus*, which it had up to that time represented in most English collections, the only mention of the specific name quoted is as follows:—"M. Fauvel, indeed, some time ago informed me of his intention to publish a description of it, under the name *scutellaris*." Comment upon this is superfluous]; *T. maculicollis*, Lec., = *chrysomelinus*, L.; *T. signifer* and *4-scopulatus*, Pand., = *humerosus*, Er., varr.; *Conurus fusculus*, Er., = *immaculatus*, Steph., a race of *pubescens*, Payk., with which *cavicola*, Scriba, is synonymous; *C. lethierrii*, Pand., = *monticola*, Woll.: A. Fauvel, Faune, &c. iii. p. 551 *et seq.* *Mycetoporus glaber*, Sperk, = *splendens*, Msh.; *id. l. c.* suppl. p. 79.

Amblyopinus, g. n., S. Solsky, Hor. Ent. Ross. xi. p. 10. Type of a separate group, near *Tachinus*, of which it has the facies, but with almost obsolete eyes, and the labium bispinose. *A. jelskii*, p. 11, pl. i. fig. 3, and *mniszechi*, p. 13, pl. i. fig. 4, spp. nn., *id. l. c.* Peru; the former parasitic on two species of *Mus*, fixed on the skin like an *Acarus*, the latter associated with a species of *Cavia*, and known to the natives as "czekchu."

Mycetoporus forticornis, A. Fauvel, *l. c.* p. 572, Paris, Germany (= *pronus*, var. *a*, Ktz., *excl. syn.*); *M. baudueri*, Mulsant & Rey, Opusc. Ent. xvi. p. 200, France [= *nanus*, Er.; A. Fauvel, Faune, &c., suppl. p. 79]: spp. nn.

Quediides.

Quedius robustus, Woll., = *fageti*, Thoms., var., = *maurus*, Sahlb.; *Q. puncticollis*, Thoms., = *ochripennis*, Mén., of which a race *nigro-cæruleus* from France and Portugal is described (p. 76); *Q. depauperatus*, Woll., = *4-punctatus*, Thoms., var., = *fulgidus*, F.; *Q. præcox*, Fauv., = *ruficollis*, Steph., *nec* Gr., = *nigriceps*, Ktz.; *Q. ernestini*, Fauv., = *præcox*, Gr.; A. Fauvel, Faune, &c., suppl. pp. 76–78.

Quedius coloratus and *inflatus*, Syria, *semiruber*, Poland, p. xxxiii. note, *parsutus*, p. xxxiv. note, Siberia, *id.* Cat. Syst. Staph.; *Q. transsylvanicus*, Weise, Deutsche E. Z. 1875, p. 356, Hungary: spp. nn.

Sh.

clane[illegible]*hylinides.*

= *nit*[illegible]*naxillosus*, from the Azores and Sandwich Isles; var. *ciliaris*, *hygra*[illegible]assonne, and an allied form from Illinois; A. Fauvel, Faune, &c., *H. indi*[illegible]. *Staphylinus rhaticus*, Eppelsh., = *baudii*, Fauv.; *id. l. c.* p. 71.

Creophilus coquereli, Fauv. (Bourbon), = *incanus*, Kl. (Madagascar); *C. itinerarius*, Er., *villosus*, Gr., and *maxillosus*, L. (with its synonyms *arctius*, Er., *bicinctus*, Mann., *orientalis*, Mots., and *medialis* and *subfasciatus*, Shp.), are referred to *ciliaris*, Steph. (*fulvago*, Mots., *imbecillus*, Shp.), as the original type of the species; *maxillosus*, far from being the type, being the most aberrant form. *Id.* Tijdschr. Ent. xviii. pp. 53–60.

Brachydirus picticornis, Solsky. Varr. from Peru; S. Solsky, Hor. Ent. Ross. xi. p. 18.

Erichsonius, Fauv. (1874), *nec* Westw. (1849), renamed *Actobius* [*Actobia*, Agassiz, 1848, amending *Actebia*, Steph., *Lepidoptera*, 1829]; A. Fauvel, Faune, &c., suppl. p. 72.

Trigonopsephalus exornatus, p. 15, *cælestus*, p. 17, spp. nn., S. Solsky, Hor. Ent. Ross. xi. Peru.

Ocypus solskii, sp. n., A. Fauvel, Cat. Syst. Staph. p. xxviii. note, Sarepta.

Philonthus piochardi, Syria, *insignitus*, Siberia, p. xxix. note, *viridipennis* and *asperulus*, Syria, *ustulatus*, Siberia, *cinctipennis*, Egypt, p. xxx. note, *picipes* and *laxatus*, p. xxxi. note, Caucasus, *id. l. c.* spp. nn.

Xantholinides.

Xantholinus (*Typhlodes*, Shp.) *baicalensis* and *sublævis*, A. Fauvel, Cat. Syst. Staph. p. xxv. note, Siberia; *X. xanthogaster*, p. 19, Peru, *X. peliopterus*, p. 272, Asiatic Russia, S. Solsky, Hor. Ent. Ross. xi.: spp. nn.

Pæderides.

Noumea, Fauv., from Numea, must be written *Numea*; E. v. Harold, C. H. xiii. p. 123, note.

Sunius martinezi, Uhag., = *latus*, Rosenh.; *Lithocharis procera*, Perez, = *castanea*, Grav.; *Scimbalium trapezicolle*, Uhag., = *testaceum*, Er.; A. Fauvel, Faune, &c., suppl. pp. 65–69.

Latona calcarata, sp. n., S. Solsky, Hor. Ent. Ross. xi. p. 21, Peru.

Sunius microthorax, sp. n., A. Fauvel, Cat. Syst. Staph. p. xviii. note, Algeria.

Domene lithocharina, sp. n., *id. l. c.* p. xix. note, Algeria.

Lithocharis semiobscura, id. *l. c.* p. xx. note, Syria; *L. kellneri*, G. Kraatz, Deutsche E. Z. 1875, p. 123, Thuringia; *L. plasoni*, E. Eppelsheim, S. E. Z. xxxvi. p. 366, Smyrna (= *aveyronensis*, Math.; Fauvel, Faune, &c. p. 68): spp. nn.

Dolicaon densiventris, p. xx. note, Tunis, Algeria, Tangiers, *obesus*, p. xxi. note, Lebanon, *semirufus*, ibid., Syria, Fauvel, Cat., spp. nn.

Lathrobium sibiricum, ibid., Siberia, *quadricolle*, p. xxii. note, Caramania, Syria, *id. l. c.* spp. nn.

Scimbalium scabrosum, sp. n., *id. l. c.* p. xxiii. note, Tangiers.

Achenium rugipenne, Spain, *picinum*, Tarsus, *id. ibid.*, spp. nn.

Pinophilides.

Pinophilus siculus, Ktz., ? = *ægyptius*, Er.; L. v. Heyden, Deutsche E. Z. 1875, p. 383.

Tetnodema hemichlora, sp. n., S. Solsky, Hor. Ent. Ross. xi. p. 23, Peru.

Stenides.

Mayetia, Muls & Ray [*suprà*, p. 299].

Stenus ripicola, J. Sahlb., = *proditor*, Er.; A. Fauvel, Faune, &c., Suppl. p. 62.

Octavius crenicollis, sp. n., *id. l. c.* p. 59, E. Pyrenees.

Stenus reitteri, p. 357, Hungary (? = *scaber*, Fauv.; A. Fauvel, *l. c.* p. 64), *maculiger* (? = *lævigatus*, Muls. & R.; Fauvel, *l. c.* p. 62), and *lepidus* (? = *nigritulus*, Gyll., var.; Fauvel, *l. c.* p. 63), p. 367, Greece, J. Weise, Deutsche E. Z. 1875; *S. rugosulus*, p. xvi. note, and *aureolus* p. xvii. note, A. Fauvel, Cat. Syst. Staph., Lake Baikal; *S. perpulcher*, S. Solsky, *l. c.* p. 24, Peru: spp. nn.

Oxytelides.

Bledius baudii, Fauv., = *agricultor*, Ktz., var.; *agricultor*, Heer, = *pusillus*, Er.; L. v. Heyden, Deutsche E. Z. 1875, p. 387.

Coprophilus striatulus in Canada; J. L. Leconte, Tr. Am. Ent. Soc. v. p. 170.

Osorius syriacus [!], sp. n., A. Fauvel, Bull. Soc. Ent. Fr. (5) v. p. viii. *Port Said*; stated to live without doubt under the bark of dead trees, which it perforates with galleries like the *Xylophaga*, and suggested to have been before found in Syria by Peyron. Peyron's insect is quite different from this, which was not found under bark, but in some quantity concealed beneath beams and large stones in the centre of the square of Port Said; E. A. de Perrin, *tom. cit.* p. xxxii.

Cylindrogaster exilis, sp. n., Mulsant & Rey, Opusc. Ent. xvi. p. 131, E. Pyrenees (= *Leptotyphlus sublævis*, Fauvel; A. Fauvel, Faune, &c. Suppl. p. 61).

Bledius capra, Egypt, *carinicollis*, Biskra, p. xii. note, *atratus*, p. xiii. note, Sardinia, Fauvel, Cat. Syst. Staph., spp. nn.

Ancyrophorus filum, sp. n., *id. l. c.* p. ix. note, Portugal.

Oxytelus sulcifrons, sp. n., *id. l. c.* p. xi. note, Syria.

Platystethus oxytelinus, Algeria (? = *Oxytelus excavatus*, Mots.), *strigosulus*, p. xii. note, Syria, *id.* l. c.; *P. macropterus*, J. Weise, Deutsche E. Z. 1875, p. 368, Malaga; *P. longipennis*, E. Eppelsheim, S. E. Z. xxxvi. p. 367, Oran: spp. nn.

Trigonurus rugosus, p. 204, *edwardsi* and *lecontus* [*lecontii*], p. 205, spp. nn., D. Sharp, Ent. M. M. xi. California.

Zalobius serricollis, sp. n., J. L. Leconte, Tr. Am. Ent. Soc. v. p. 170, California.

Homaliides.

Tanyrhinus singularis, Mann., placed by its author near *Rhinosimus*, is apparently to be referred to this group, possibly near *Trigonodemus*, Lec.; G. H. Horn, Tr. Am. Ent. Soc. v. p. 132.

Lesteva punctata, Ktz., is not *punctata*, Duv., which = *heeri*, Fauv., and the latter is recharacterized; G. Kraatz, Deutsche E. Z. 1875, p. 433.

Anthophagus puncticollis, sp. n., J. Weise, Deutsche E. Z. 1875, p. 364, Hungary.

Homalium saulcii, A. Fauvel, Cat. Syst. Staph. p. v. note, Syria; *H. zambeui*, id. Faune, &c., Suppl. p. 50, Mt. Genèvre: spp. nn.

Arpedium libanicum, sp. n., *id.* Cat. p. vi. note, Lebanon.

Olophrum caucasicum, sp. n., *id. l. c.* p. vii. note, Caucasus.

Anthobium obtusicolle, p. 48, France, Spain, *sparsum*, p. 49, France, Italy (= *longipenne*, Fauv., *nec* Er.), *id.* Faune, &c. Suppl., spp. nn.

Phlœocharides.

Phlœocharis longipennis, id. Cat. Syst. Staph. p. ii. note, Bethlehem; *P. subclavata*, Mulsant & Rey, Opusc. Ent. xvi. p. 207, Massanne: spp. nn.

Piestides.

Siagonium vittatum, sp. n., Fauvel, *l. c.* p. i. note, Vladivostok.

PSELAPHIDÆ.

Articerus and *Claviger* separated as a distinct family, *Clavigeridæ*; *Arcticerus syriacus*, Saulcy, does not belong to *Fustiger*, as Leconte supposes; *Claviger testaceus*, Preyssler, is unmistakably the insect known as *C. foveolatus*, Müll., which cannot stand; F. de Saulcy, Bull. Soc. Moselle, xiii. [1874] extr. pp. 20–27. *Claviger* sp. n., from Spain, briefly characterized; *id.* Pet. Nouv. (1875) p. 539.

A table of the European genera (with the exception of *Articerus* and *Claviger*), p. 40 bis; *Ctenistes integricollis*, Fairm., ex. typ., = *Tmesiphorus ghilianii*, Aubé, p. 53; *Enoptostomus*, Schaum, is adopted for *Ctenistes* with non-penicillate 2nd joint to the maxillary palpi; *Ctenistes glandicornis*, Mots., = *Enopt. ponticus*, Baudi; *C. barbipalpis*, Fairm., = *E. aubœi*, Rosenh.; *Camaldus*, Fairm., = *Centrophthalmus*, Schmidt; *Batrisus schwabii*, Reitter, = *puncticollis*, Tourn., = *delaportii*, Aubé; *B. piceus*, Muls., = *venustus*, Reichenb.; there are not two little spines to the intermediate femora in *Amaurops aubœi*, Fairm., J. du Val; *id.* Bull. Soc. Moselle, xiii.

Centrotoma lucifuga, Heyd., associated with *Tetramorium cæspitum*, near Pirna; T. Kirsch, Deutsche E. Z. 1875, p. 400.

Tyropsis, g. n., F. de Saulcy, *l. c.* p. 80. Differs from *Tyrus* in the antennæ being distant at the base, and from *Hamotus* in the rather large and non-triangular 3rd joint of its maxillary palpi. *Tyropsis chevrolati*, sp. n., *id. l. c.* p. 82, ? ? S. France, ? ? Syria.

Heteronyx [Guérin, *Coleoptera*, 1830], g. n., *id. l. c.* p. 128. Differs from *Trichonyx* in the antennæ being not alike in the two sexes, and the thorax laterally spined [= *Trogaster*, Sharp; Zool. Rec. xi. p. 271]. *H. heterocerus*, p. 129, *aberrans*, p. 131, spp. nn., *id. l. c.* Corsica.

Chennium kiesenwetteri, p. 44, Salonica, and *judæum*, p. 45, Jerusalem, with *Tetramorium cæspitum*, or an allied species, *id. l. c.*; *C. prometheus*, id. Pet. Nouv. (1875), p. 539, Tiflis: spp. nn.

Enoptostomus leprieuri, sp. n., *id. ibid.* Kabylia, Blidah.

Centrotoma brucki, sp. n., *id.* Bull. Soc. Moselle, xiii. p. 50, Salonica.

Tmesiphorus darius, sp. n., *id. l. c.* p. 54, Persia.

Ctenistes brevicornis, sp. n., *id. l. c.* p. 61, Oran.

Tyrus peyroni, sp. n., *id. l. c.* p. 79, Taurus, near Tarsus.

Faronus brucki, p. 87, Tuscany, *nicæensis*, p. 89, Nice, N. Corsica, *id. l. c.* spp. nn.

Batrisus pogonatus, sp. n., F. de Saulcy, *l. c.* p. 98, Taygetus.

Amaurops sardous, p. 112, Sardinia, *diecki*, p. 113, Tuscan Apennines, *corsicus*, p. 114, Corsica, *pirazzolii*, p. 117, Domo d'Ossola, *id. l. c.* [*cf.* Zool. Rec. xi. p. 272, as to subsequent publication of these species by Baudi di Selve; and also note by A. Bellevoye, Pet. Nouv. 1875, p. 480, in which priority is claimed for De Saulcy, and bad faith imputed to Baudi in the matter. Baudi, *tom. cit.* p. 483, repudiates this, and admits De Saulcy's priority.]; *A. abeillii*, Marseilles, *revelierii*, S. Corsica, *koziorowiczi*, Calvi, F. de Saulcy, Pet. Nouv. (1875) p. 539: spp. nn.

Trichonyx kraatzi, p. 125, Cordova, *ephratæ*, p. 127, Bethlehem, *id.* Bull. Soc. Moselle, xiii. spp. nn.

Bythinus reitteri, *carpathicus*, and *weisii*, spp. nn., *id.* Deutsche E. Z. 1875, p. 358, Hungary.

Trimium carpathicum, sp. n., *id. ibid.* Hungary.

Claviger brucki, p. 27, Vernet, E. Pyrenees, Gascony, &c. (with *Lasius flavus*), *C. piochardi*, p. 28, Brañuelas, Léon, *C. lusitanicus*, p. 29, Serra do Gerez, Portugal, and *C. revelierii*, p. 34, Corsica (with *L. niger*), *id.* Bull. Soc. Moselle, xiii.: spp. nn.

Scydmænidæ.

Aulacothorax exilis, Boh.: the reference to "C. O. Waterhouse," in Zool. Rec. xi. p. 273, is in error for "D. Sharp."

Scydmanus (*Eumicrus*) *punctipennis*, L. Fairmaire, Ann. Mus. Genov. vii. p. 502, Tunis; *S. similis*, J. Weise, Deutsche E. Z. 1875, p. 124, Steiermark; *S. subparallelus*, F. de Saulcy, Deutsche E. Z. 1875, p. 359, Hungary: spp. nn.

Silphidæ.

Adelops kerimii, Fairm., = *tarsalis*, Kies.; R. Gestro, Ann. Mus. Genov. vi. p. 541, note.

Anisotoma oblonga, Er., ♂ described, from S. England, p. 149; *A. curta*, Fairm., recorded from England, p. 150; *A. litura*, Steph., var. n. *maculicollis*, from Algeria, and localities given for various species, p. 152. E. C. Rye, Ent. M. M. xii.

Colenis bonnairii, Duv., with *C. dentipes* and *Anisotoma cinnamomea*, occurs in truffles; *A. macropus*, Rye, recorded from France, and *A. lucens*, Fairm., from Hungary. C. Brisout de Barneville, Bull. Soc. Ent. Fr. (5) v. p. xiv.

Pholeuon caudatum, E. Abeille de Perrin, Ann. Soc. Ent. Fr. (5) v. p. 214, Cave of St. Martin, Vallon, Ardèche; *P.* (?) *dapsoides*, id. Bull. Soc. Ent. Fr. *tom. cit.* p. clxxx., Cave at sources of the River Brédoux, Lantes (Drôme): spp. nn.

Silpha cælestis, sp. n., C. A. Dohrn, S. E. Z. xxxvi. p. 81, Philippine Islands.

Necrodes nigricornis, sp. n., E. v. Harold, Abh. Ver. Brem. iv. p. 286, Hiogo.

Choleva norvegica, sp. n., J. Sparre Schneider, Forh. Selsk. Chr. 1875, p. 36, South Bergenhus district, Norway [? = *spadicea*, Stm.; the speci-

men is unique, and the author has no other *Choleva*, and only one *Catops* in his Catalogue].

Adelops chardonis, Narbonne, *linderi* and *mayeti*, St. Martin d'Ardèche, p. 215, *corsicus*, Corsica, *peyronis*, Lebanon, p. 216, E. Abeille de Perrin, Ann. Soc. Ent. Fr. (5) v.; *A. simonis*, id. Bull. *tom. cit.* p. cxcix. Cantal: spp. nn.

Anisotoma clavicornis, p. 150, Scotland, *baicalensis*, Lake Baikal, S. E. Siberia, and *algirica*, Algiers, p. 151, E. C. Rye, *l. c.* spp. nn.

Trichopterygidæ.

A. Matthews, Cist. Ent. ii. pp. 1–10, replies to C. A. Dohrn's criticisms touching his work "Trichopterygia illustrata."

Scaphidiidæ.

Scaphidium 4-*punctatum*, Say, *obliteratum*, Lec., and *piceum*, Mels., = 4-*guttatum*, Say, or else two more species must be indicated, of the *piceum* type; G. H. Horn, Tr. Am. Ent. Soc. v. p. 132.

Histeridæ.

Hololepta. Observations on species described by G. v. Koch in Abh. Ges. Nürnb. iv. 1868, pp. 92 & 93; G. Kraatz, Deutsche E. Z. 1875, p. 435.

Platysoma simeani [*simœani*], sp. n., E. Mulsant & A. Godart, Ann. Soc. L. Lyon (n.s.) xxi. p. 419, Beyrouth.

Saprinus tunisius, S. A. de Marseul, Bull. Soc. Ent. Fr. (5) v. p. ciii. and Nouv. et Faits, 1875, p. xxxv. Tunis, also L. Fairmaire, Ann. Mus. Genov. vii. p. 503, Tozer, Tunis; *S. novellus*, Marseul, Bull. &c. p. civ. and Nouv. &c. p. xxxv. Algiers; *S. rubiginosus*, id. Bull. p. civ., and Nouv. xxxvi., also Fairmaire, *l. c.* Tunis: spp. nn. [apparently a race for priority in three different publications].

Trypanæus (*Trypeticus*) *albertisi*, p. 994, *andaiensis*, p. 995, Andai, New Guinea, *ferrarii*, p. 996, note, Java, R. Gestro, Ann. Mus. Genov. vii. spp. nn.

Nitidulidæ.

Reitter, E. Die europäischen Nitidularien, mit kurzer Charakteristik der Gattungen, und Bemerkungen über schwierige Arten, verzeichnet. Deutsche E. Z. 1875, part of Heft iii. pp. 1–30.

The title sufficiently explains this work. *Cercus ochraceus*, Murray, = *bipustulatus*, Payk., var.; and, far from associating this with *C. pediculorius*, L., two forms of the latter are dubiously referred to as specifically distinct. *Heterhelus*, Duv., = *Amartus*, Lec., and to it are referred *Brachypterus rubiginosus*, Er., and *C. affinis*, Heer (which on p. 3 are referred to one and the same species, but on p. 87 are considered distinct, some specimens from Australia, Italy, and Thuringia having

been subsequently seen by Reitter, agreeing well with Heer's description), also *Cercus pennatus*, Murr., *C. abdominalis*, Er., *C. sambuci*, Stm., = *scutellaris*, Heer, = *solani*, Heer, and ? *C. politus*, Reitt.; *Brachypterus rotundicollis*, Murr., = *velatus*, Woll.; *B. antirrhini*, Murr., ? = *laticollis*, Küst.; *Carpophilus pictus*, Heer, = *hemipterus*, L.; *Epurœa immunda*, Stm., *infuscata*, Mäkl., = *terminalis*, Mann., ex. typ.; *E. bipunctata*, Reitter, 1874, = *bisignata*, Stm., var.; *E. rubro-marginata*, Reitt., = *pygmœa*, Gyll.; *E. rubiginosa*, Heer, is probably an *Omosita*; *Meligethes marmothani*, Bris., = *lederi*, Reitt.; *M. dives*, Rt., = *brachialis*, Er.; *M. saulcii*, Rt., = *picipes*, Stm.; *M. liguricus*, Rt., = *angustatus*, Küst.; *M. bouvouloiri*, Bris., and *M. californicus*, Rt., = *dauricus*, Mots., = *brassicæ*, Scop. (*æneus*, F.), varr.: *M. ryei*, Woll., is stated to be a needless renaming of *varicollis*, Woll., whereas it is a species described as distinct from the latter; *M. subtilis*, Bris., *solitarius*, Rt., = *hypocrita*, Bris.; *M. ruficornis*, Heer, ? = *planiusculus*, Heer (*seniculus*, Er.), var.; *M. brucki*, Rt., = *punctatus*, Bris.; the Recorder's inability to agree with the collocation of *M. difficilis* and *kunzii* is considered, in general terms, to be founded on insufficient differences, which, however, exist as far as British specimens are evidence. *Ips lævior*, Ab., is scarcely distinct from *I. ferrugineus*.

The same author, Verh. Ver. Brünn, xiii. pp. 53–64 (also issued as part of Heft iv. of Deutsche E. Z. 1875), pl. i., distinguishes generically various forms for the most part hitherto associated with *Epurœa*, which is restricted to species with the thoracic sides evidently marginato-reflected, the tibiæ unarmed, and the pygidium of the ♂ truncate at the apex, with an additional dorsal anal segment (various portions figured, figs. 13, 14, 23–27).

Colastus agavensis and *yuccæ*, Crotch, belong to *Carpophilus*; J. L. Leconte, Tr. Am. Ent. Soc. v. p. 170.

Cychrocephalus, Reitt. [Zool. Rec. x. p. 262], renamed *Cychropiestus*; E. Reitter, C. H. xiii. p. 185.

Ipidia integra, Wank., = *lata*, Aubé, = *Nitidula 6-guttata*, Sahlb., which is a *Stelidota*, and occurs in Europe certainly; *id. op. cit.* xiv. p. 211.

Meligethes. Economy and destructive habits described by M. Bach, in "Studien und Lesefrüchte aus dem Buch der Natur," iv. (not seen by the Recorder).

Chilocorus opponens, Walk., = *Tritoma bifacies*, Walk., and is a *Camptodes*; E. v. Harold, C. H. xiv. p. 211.

Ips and *Pityophagus* considered generically distinct, and the N. American species tabulated; *I. 6-pustulatus*, Reitt., *bipustulatus*, Mels., *4-signatus*, Say, = *fasciatus*, Ol.; *I. rubro-maculatus*, Reitt., = *sanguinolentus*, Ol.; *Rhizophagus cylindricus*, Lec., and *Ips cylindricus*, Lec., are wrongly confused by Reitter; *Carpophilus rufus*, Murray, = *melanopterus*, Er.; G. H. Horn, Tr. Am. Ent. Soc. v. pp. 133–135.

New genera and species :—

Cercometes, E. Reitter, Verh. Ver. Brünn, xiii. p. 99. Near *Cercus*;

type, *Cercus politus*, Reitt., and *Cercometes deyrollii*, id. *l. c.* p. 100, Brazil.

Microctilodes, id. C. H. xiii. p. 27. *Carpophilinæ* : near *Ctilodes*, tarsi 4-jointed, joints 1 & 2 simple, 3 bilobed, claws minute, simple. *M. ragusæ*, id. *l. c.* p. 30, Sicily.

Perilopsis, id. Verh. Ver. Brünn, xiii. p. 55, pl. i. figs. 1 & 2. Labrum entire ; claws strongly toothed. For *Perilopa flava*, Reitt.

Omosiphora, id. *l. c.* p. 56, pl. i. figs. 3 & 4. Facies of *Omosita* ; differs from *Epuræa* in its widely distant posterior coxæ, and simple hind tarsi. For *Epuræa limbata*, F., *helvola*, Er., and *rufa*, Say ; also *O. skalitzkii*, id. *l. c.* p. 57, Prague (? ? = *limbata*, F., var.).

Micruria, id. *l. c.* p. 58, pl. i. figs. 13–21. Differs from *Epuræa* in the spinose 4 hinder tibiæ, dentate claws, scarcely margined thoracic sides, and rotundate ♂ pygidium, of which the additional anal segment is very minute and subdorsal. For *E. melanocephala*, Marsh., *japonica*, *mandibularis*, *nitida*, and *macrophthalma*, Reitt.

Epuræopsis, id. *l. c.* p. 59, pl. i. figs. 5–8. Facies of *Perilopsis* ; apical joint of labial palpi elongate, elytra covering the pygidium and forming rounded apex, 4 hinder tibiæ widened, emarginate, and setose at apex. For *Epuræa maculipennis*, Sol.

Catonura, id. *l. c.* p. 60, pl. i. fig. 22. Differs from *Epuræa* in the wider thorax, spinulose hind tibiæ, and scarcely perceptible subventral additional segment in the ♂. Facies of *Propetes*. For *E. ruficollis*, Reitt.

Tenetoneura, id. *l. c.* p. 61, pl. i. figs. 9–12, 32. Labrum large, prominent, *rufiven*ng the mandibles ; labial palpi with last joint very incrassate, cup*heili*, p.; additional anal segment in ♂ large, triangular. For *E. reflexi-ruficollis* ots., *ocularis*, Fairm., *luteola*, Er., and *minuta*, *mellitula*, *thiemii*, p. 68, *lirata*, Reitt.

æneipennis, id. *l. c.* p. 62, pl. i. figs. 28–31. Mandibles entirely free, palpi p. 69, ♀. For *E. nigripennis*, Redt.

patruelyrops, id. *l. c.* p. 106. Allied to *Lasiodactylus*, but with mandi*tulata* mple at apex ; also allied closely to *Apsectochilus*. For *Lord. dey*-Cath; id. *l. c.* p. 107, Brazil.

notdæthina, id. *l. c.* p. 107. Between *Lasiodactylus* and *Æthina* ; for *I. yrollii*, id. *l. c.* p. 108, Australia.

Æthinopa, id. *l. c.* p. 109. Between *Macrura* and *Æthina* ; for *Æthinopa fulvo-vestita*, id. *l. c.* p. 110, Guinea.

Strongylomorphus [Motschoulsky, *Lampyrides*, 1852], *id. l. c.* p. 115. Between *Strongylus* and *Apallodes* ; for *Strongylomorphus deyrollii*, id. *l. c.* p. 116, Brazil.

Glischrochilus, subg. of *Ips* ; G. H. Horn, *l. c.* p. 133. Sides of thorax distinctly sinuate in front of hind angles ; for *Ips confluentus*, Say, *I. sepulchralis*, Rand., = *vittatus*, Say, and *I. cylindricus*, Lec. [*Glischrochilus*, Murray, characterized, for *Ips* 4-*pustulatus*, L. ; E. Reitter, Deutsche E. Z. 1875, Heft iii. p. 30].

Brachypterus strigosus and *rugosus*, E. Reitter, Verh. Ver. Brünn, xiii. p. 100, Chili.

Colastus elongatus, id. *l. c.* p. 101, New Friburg.

Carpophilus (*Microxanthus*) *excellens*, E. Reitter, *l. c.* p. 101, Australia.

Epurœa parallela, p. 6, Bohemia, *fussi*, p. 7, Bohemia, Transsylvania, *id.* Deutsche E. Z. 1875, Heft iii.

Perilopa subtuberculata, id. Verh. Ver. Brünn, xiii. p. 102, Brazil.

Nitidulora glabrata, id. *ibid.* Brazil.

Soronia [script. *Ser-*] *rectangula*, id. *ibid.* Teapa.

Ipidia binotata, id. Deutsche E. Z. 1875, Heft iii. p. 88, Hungary (suggested as a variety of *I. 4-notata*, but considered worthy a name under any circumstances).

Lobiopa elongata, id. Verh. Ver. Brünn, xiii. p. 103, Brazil.

Stelidota procera, ibid. Celebes, *didyma*, p. 104, Madagascar, *id. l. c.*

Meligethes prioides, id. Deutsche E. Z. 1875, p. 393, Sicily; *M. epuræoides*, p. 10, Austria, *frivaldszkii*, p. 88, Hungary, *id. tom. cit.* Heft iii.; *M. subglobosus*, id. Verh. Ver. Brünn, xiii. p. 111, Cape of Good Hope; *M. gresseri*, M. Bach, *l. c.* p. 72, Würtemberg (= *bidentatus*, Bris.; L. v. Heyden, Deutsche E. Z. 1875, p. 433); *M. œnescens*, L. Fairmaire, Ann. Mus. Genov. vii. p. 504, Tunis, Nafta.

Psilotus atratus, Reitter, Verh. Ver. Brünn, xiii. p. 105, Mexico.

Platychora ornata, id. *ibid.* Fernando Island.

Ischæna longiceps, id. *ibid.* Morty.

Lasiodactylus pardalis, id. *ibid.* E. India.

Æthina brunnea, p. 108, Teapa, *elongata*, p. 109, E. India, *id. l. c.*

Macrura brunnescens, Australia, *densita*, Ceylon and Australia, *id. l. c.* p. 110.

Camptodes marginatus, p. 111, Brazil, *multipunctatus*, Rio J[illegible]eflected, *atriceps*, Mexico, p. 112, *limbicollis*, Mexico, *rubripes*, Sta. C[illegible]he apex, *czwalinai*, Cayenne, p. 113, *id. l. c.* [illegible]d, figs. 13,

Strongylus erichsoni and *basalis*, id. *l. c.* p. 114, Brazil.

Cychramus alutaceus, id. Deutsche E. Z. 1875, p. 359, Hungary; J. L. *Xenostrongglus* (?) *ovulum*, Fairmaire, *l. c.* p. 504, Tunis, Tozer.

Cybocephalus subæneus, p. 55, *chilensis*, p. 56, Chili, *deyrollii*, [illegible]*piestus*; *tricaudatus*, p. 56, Brazil, *heydeni*, p. 56, Hyères, E. Reitter, Ver. Brünn, xiii. Sahlb., [illegible]. xiv.

Apallodes ocellatus, id. *l. c.* p. 116, Brazil.

Pallodes pallidus, ibid. Brazil, *marginicollis*, p. 117, Rio Janei. *id. l. c.* [illegible]ich,

Oxycnemus nigritus [*-ta*], id. *l. c.* p. 117, S. America. [illegible]by

Cryptarcha pygidialis, ibid. Mexico, *hæmorrhoidalis* and *æneicollis*, p. 118, *deyrollii*, p. 119, Brazil, *grandicollis*, p. 118, Venezuela, *wallacii*, [illegible]p. 119, Batchian, *lævigata*, p. 120, Moreton Bay, *flavipennis* and *flavoguttata*, ibid., *ocularis*, p. 121, E. India, *nigro-varia*, p. 121, Bolivia[illegible]e-*id. l. c.* [illegible]*sig-*[illegible]*ts*, [illegible]ly

Trogositidæ.

E. Reitter, Verh. Ver. Brünn, xiii. pp. 3-44 (also issued as part of Heft iv. of Deutsche E. Z. 1875), revises the genus *Temnochila*, Westw., for which he adopts *Trogosita* (*cf.* Erichson, Lacordaire, & Crotch), founded by Olivier, in 1790, on *T. cærulea*. — *T. mauri-*

tanica, L., being the *complanata* of Piller and Mitterpacher, who in 1783 characterized their genus *Tenebrioides* upon the latter species. 52 species are described. *T. tristis*, Muls., ? = *cærulea*, Ol., var.; *T. barbata*, Lec., = *ebenina*, Blanch.; *T. splendens*, Gray, ? = *festiva*, Serv.

The following species are described as new:—

Trogosita gigantea, p. 9, *lucens*, p. 15, *punctatissima*, p. 22, *aurora*, p. 36, *punicea*, p. 40, Brazil, *sculpturata* (? = *ærea*, Lec.), p. 10, *olivacea*, p. 26, Columbia, Bogota, *insignis*, p. 11, Columbia, Mexico, Antilles, *chevrolati*, Mexico, Brazil, *steinheili*, Columbia, p. 12, *lævicollis*, p 14, ? Cayenne, *quadricollis*, p. 15, *obsoleta*, p. 28, *dryadis*, p. 30, *mexicana* (? = *acuta*, Lec.), p. 32, *corynthia*, p. 33, *aureola*, p. 38, *laticollis*, p. 39, *iris* p. 42, Mexico, *cribricollis*, p. 16, Columbia, Brazil, *lebasi*, p. 17, *gloriosa*, p. 34, *mirabilis*, p. 41, *jekeli*, p. 43, Columbia, *obscura*, p. 18, *cyanea*, p. 28, N. America, *chrysosterna*, Cayenne, *rogenhoferi*, E. India, p. 19, *japonica*, p. 20, Japan, *kirschi*, p. 24, Bogota, *foveicollis*, Cayenne, and var. from Para, p. 26, *borrii*, p. 37, Antilles, Columbia, *suturata*, p. 39, Mexico, Brazil, *obtusicollis*, p. 43, Venezuela.

The same author, *l. c.* pp. 65–79, diagnostically describes the South- and Central- American species of *Trogosita*, auctt., = *Tenebrioides*, Pill. & Mitt. *T. elongata*, Duv. (from Chevrolat), = *soror*, Duv.; *T. nitida*, Horn, = *mauritanica*, L., var.

The following species are described as new:—

Tenebrioides impressifrons, p. 66, New Granada, Antilles, Brazil, *rufiventris*, p. 67, *cucujoides*, p. 68, *murina*, p. 71, *explanata*, p. 73, *steinheili*, p. 75, *ænea*, p. 77, *pulchella* and *albo-maculata*, p. 78, Columbia, *ruficollis*, p. 67, *reflexa*, p. 74, *antennalis*, p. 76, Bogota, *quadriguttata*, p. 68, *litigiosa*, p. 71, *breviuscula*, p. 72, *rubra*, p. 73, *sculpturata*, p. 75, *æneipennis*, p. 76, *metallescens*, p. 77, *rubro-marginata*, p. 78, Brazil, *opaca*, p. 69, Columbia and N. America, *subplana*, p. 70, *chevrolati*, p. 72, Mexico, *patruelis*, p. 70, Brazil and N. Carolina, *schaufussi*, p. 71, Caraccas, *punctulata*, p. 74, Cuba, Portorico, and S. Australia, *marseuli*, p. 75, Sta. Catharina, *subænea*, p. 77, N. America, *flavi-clavis*, p. 78, Cuba, *albonotata*, p. 79, Cayenne.

Colydiidæ.

Bothrideres massanæ, sp. n., Marquet, Pet. Nouv. (1875) p. 511, Massanne, Eastern Pyrenees.

Cerylon atratulum, sp. n., E. Reitter, Deutsche E. Z. 1875, p. 360, Hungary.

Rhysodidæ.

J. L. Leconte, Tr. Am. Ent. Soc. v. p. 162 *et seq.*, in "Notes on the *Rhysodidæ* of the United States," enters at some length upon the question of the affinities of this family, agreeing with Latreille's original association of it with *Cupes*, and, after a comparison of its points of resemblance to and difference from the *Cupesidæ*, suggesting that these two are fragments, widely separated, of a series of *Coleoptera* existing

Carpophilus (*Microxanthus*) *excellens*, E. Reitter, *l. c.* p. 101, Australia.

Epurea parallela, p. 6, Bohemia, *fussi*, p. 7, Bohemia, Transsylvania, *id.* Deutsche E. Z. 1875, Heft iii.

Perilopa subtuberculata, id. Verh. Ver. Brünn, xiii. p. 102, Brazil.

Nitidulora glabrata, id. *ibid.* Brazil.

Soronia [script. *Ser-*] *rectangula*, id. *ibid.* Teapa.

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Meligethes prioides, id. Deutsche E. Z. 1875, p. 393, Sicily; *M. epuræoides*, p. 10, Austria, *frivaldszkii*, p. 88, Hungary, *id. tom. cit.* Heft iii.; *M. subglobosus*, id. Verh. Ver. Brünn, xiii. p. 111, Cape of Good Hope; *M. gresseri*, M. Bach, *l. c.* p. 72, Würtemberg (= *bidentatus*, Bris.; L. v. Heyden, Deutsche E. Z. 1875, p. 433); *M. æneseens*, L. Fairmaire, Ann. Mus. Genov. vii. p. 504, Tunis, Nafta.

Psilotus atratus, Reitter, Verh. Ver. Brünn, xiii. p. 105, Mexico.

Platychora ornata, id. *ibid.* Fernando Island.

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Æthina brunnea, p. 108, Teapa, *elongata*, p. 109, E. India, *id. l. c.*

Macrura brunnescens, Australia, *densita*, Ceylon and Australia, *id. l. c.* p. 110.

Camptodes marginatus, p. 111, Brazil, *multipunctatus*, Rio J[illegible]reflected, *atriceps*, Mexico, p. 112, *limbicollis*, Mexico, *rubripes*, Sta. Ca[illegible]the apex, *czwalinai*, Cayenne, p. 113, *id. l. c.* [illegible]d, figs. 13,

Strongylus erichsoni and *basalis*, id. *l. c.* p. 114, Brazil.

Cychramus alutaceus, id. Deutsche E. Z. 1875, p. 359, Hungary; J. L. [illegible]*us*;

Xenostrongylus (?) *ovulum*, Fairmaire, *l. c.* p. 504, Tunis, Tozer.

Cybocephalus subæneus, p. 55, *chilensis*, p. 56, Chili, *deyrollii*, [illegible]*opiestus*; *tricaudatus*, p. 56, Brazil, *heydeni*, p. 56, Hyères, E. Reitter, Ver. Brünn, xiii. Sahlb.,

Apallodes ocellatus, id. *l. c.* p. 116, Brazil. [illegible]*it.* xiv.

Pallodes pallidus, ibid. Brazil, *marginicollis*, p. 117, Rio Janei, [illegible]ach, *id. l. c.* by

Oxycnemus nigritus [*-ta*], id. *l. c.* p. 117, S. America.

Cryptarcha pygidialis, ibid. Mexico, *hæmorrhoidalis* and *æneicollis*, p. 118, *deyrollii*, p. 119, Brazil, *grandicollis*, p. 118, Venezuela, *wallacii*, p. 119, Batchian, *lævigata*, p. 120, Moreton Bay, *flavipennis* and *flavoguttata*, ibid., *ocularis*, p. 121, E. India, *nigro-varia*, p. 121, Bolivia, *id. l. c.* [illegible]*-sig-tus*, [illegible]rly

Trogositidæ.

E. Reitter, Verh. Ver. Brünn, xiii. pp. 3–44 (also issued as part of Heft iv. of Deutsche E. Z. 1875), revises the genus *Temnochila*, Westw., for which he adopts *Trogosita* (*cf.* Erichson, Lacordaire, & Crotch), founded by Olivier, in 1790, on *T. cærulea*, — *T. mauri-*

tanica, L., being the *complanata* of Piller and Mitterpacher, who in 1783 characterized their genus *Tenebrioides* upon the latter species. 52 species are described. *T. tristis*, Muls., ? = *cærulea*, Ol., var.; *T. barbata*, Lec., = *ebenina*, Blanch.; *T. splendens*, Gray, ? = *festiva*, Serv.

The following species are described as new:—

Trogosita gigantea, p. 9, *lucens*, p. 15, *punctatissima*, p. 22, *aurora*, p. 36, *punicea*, p. 40, Brazil, *sculpturata* (? = *ærea*, Lec.), p. 10, *olivacea*, p. 26, Columbia, Bogota, *insignis*, p. 11, Columbia, Mexico, Antilles, *chevrolati*, Mexico, Brazil, *steinheili*, Columbia, p. 12, *lævicollis*, p 14, ? Cayenne, *quadricollis*, p. 15, *obsoleta*, p. 28, *dryadis*, p. 30, *mexicana* (? = *acuta*, Lec.), p. 32, *corynthia*, p. 33, *aureola*, p. 38, *laticollis*, p. 39, *iris* p. 42, Mexico, *cribricollis*, p. 16, Columbia, Brazil, *lebasi*, p. 17, *gloriosa*, p. 34, *mirabilis*, p. 41, *jekeli*, p. 43, Columbia, *obscura*, p. 18, *cyanea*, p. 28, N. America, *chrysosterna*, Cayenne, *rogenhoferi*, E. India, p. 19, *japonica*, p. 20, Japan, *kirschi*, p. 24, Bogota, *foveicollis*, Cayenne, and var. from Para, p. 26, *borrii*, p. 37, Antilles, Columbia, *suturata*, p. 39, Mexico, Brazil, *obtusicollis*, p. 43, Venezuela.

The same author, *l. c.* pp. 65–79, diagnostically describes the South- and Central- American species of *Trogosita*, auctt., = *Tenebrioides*, Pill. & Mitt. *T. elongata*, Duv. (from Chevrolat), = *soror*, Duv.; *T. nitida*, Horn, = *mauritanica*, L., var.

The following species are described as new:—

Tenebrioides impressifrons, p. 66, New Granada, Antilles, Brazil, *iris*, p. 67, *cucujoides*, p. 68, *murina*, p. 71, *explanata*, p. 73, *steinheili*, p. 75, *ænea*, p. 77, *pulchella* and *albo-maculata*, p. 78, Columbia, *Pharaxis*, p. 67, *reflexa*, p. 74, *antennalis*, p. 76, Bogota, *quadriguttata*, *leucophigiosa*, p. 71, *breviuscula*, p. 72, *rubra*, p. 73, *sculpturata*, p. 75, *iris*, p. 76, *metallescens*, p. 77, *rubro-marginata*, p. 78, Brazil, *opaca*, Columbia and N. America, *subplana*, p. 70, *chevrolati*, p. 72, Mexico, *iris*, p. 70, Brazil and N. Carolina, *schaufussi*, p. 71, Caracas, *punctæneipenn*, p. 74, Cuba, Portorico, and S. Australia, *marseuli*, p. 75, Sta. Carina, *subænea*, p. 77, N. America, *flavi-clavis*, p. 78, Cuba, *albopatruelis*, p. 79, Cayenne.

COLYDIIDÆ.

Bothrideres massanæ, sp. n., Marquet, Pet. Nouv. (1875) p. 511, Massanne, Eastern Pyrenees.

Cerylon atratulum, sp. n., E. Reitter, Deutsche E. Z. 1875, p. 360, Hungary.

RHYSODIDÆ.

J. L. LECONTE, Tr. Am. Ent. Soc. v. p. 162 *et seq.*, in "Notes on the *Rhysodidæ* of the United States," enters at some length upon the question of the affinities of this family, agreeing with Latreille's original association of it with *Cupes*, and, after a comparison of its points of resemblance to and difference from the *Cupesidæ*, suggesting that these two are fragments, widely separated, of a series of *Coleoptera* existing

in former times, of an undifferentiated nature, and the original stem of the "now existing great complex of normal *Coleoptera*," the Adephaga, Clavicornia, Lamellicornia, and Serricornia,—an attempt to intercalate them among which groups "would be like finding a place for *Archæopteryx* in our classification of living birds." [The budget of "ancestral undifferentiated types," seems on the increase, and apparently, like the *Colydiidæ* of old, receives all the difficulties.] The author points out and illustrates sexual differences in the anterior femora and hind tibiæ. *R. americanus*, Lap., has priority over *aratus*, Newm., if *exaratus*, Serv., *nec* Dalm., be dropped; but Dalman's species = *Cucujus sulcatus*, F. *R. conjungens*, Germ., = *sculptilis*, Newm., which is a *Clinidium*.

Rhysodina [script. *Rhyz-*] *mniszechi* (Westw., M.S.), Chevr. [Zool. Rec. xi. p. 266], redescribed and figured. The genus characterized at full length, and referred to the *Heteromera*, being dubiously placed in the *Mylabrides*; the pronotum and elytra are costate, as in *Adelostoma*, and the antennæ resemble those of *Sarrotrium* and some *Mylabrides*; the tarsi are heteromerous. J. O. Westwood, Tr. E. Soc. 1875, pp. 225 & 226, pl. vi. fig. 4.

Rhysodes montrouzieri, p. clxxxii. New Caledonia, *luscus*, New Zealand, and *philipp[in]ensis*, Philippine Isles, p. clxxxiii. A. Chevrolat, Bull. Soc. Ent. Fr. (5) v.; *R. hamatus*, J. L. Leconte, *l. c.* p. 163, California: spp. nn.

Clinidium calcaratum, sp. n., Leconte, *l. c.* p. 164, Vancouver Island, Oregon.

flected,
e apex,
figs. 13,

Cucujidæ.

Ino dimidiatus, sp. n., C. O. Waterhouse, Tr. E. Soc. 1875, p. 1
Bowen, Australia.
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91, Port

Cryptophagidæ.

Reitter, E. Revision der europäischen Cryptophagiden. Deut
E. Z. 1875, part of Heft iii. pp. 1–86.

Contrary to the author's earlier views, *Telmatophilus* is now separa
from the true *Cryptophagidæ*, and he agrees with Seidlitz that the
genus, with *Psamaecus* [*Psammæcus*], *Diplocælus*, and *Diphyllus* shou
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latus, Heer, ? = *fuscicornis*, Stm.; *C. signatus*, Bris., = *fasciatus*,
C. parallelus, Bris., = *cylindrus*, Kies.; *C. hexagonalis*, Tourn., =
dorsalis, Sahlb.; *C. pubescens*, Stm., = *lapponicus*, Gyl.; *C. hespericus*,
Woll., is a *Micrambe*; *C. barnevillii*, Tourn., ? = *integer*, Heer, and both
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Cryptophagus populi living in company with *Colletes daviesana*, in large numbers; G. C. Champion, Ent. M. M. xii. p. 107.

Atomaria alternans, Woll., is an *Ephistemus*, which genus is readily to be known by its narrow linear mesosternum, &c.; E. Reitter, Deutsche E. Z. 1875, p. 434.

Telmatophilus. A table of 11 known species (5 new); *id. l. c.* pp. 225 & 226.

Lobosternum, g. n., *id.* C. H. xiii. p. 80. Allied to *Loberus*, Lec. (*Glisonotha*, Mots.), but with thicker antennæ, shorter tarsi, and the prosternum wide, produced behind the coxæ, and bilobed at the apex. For *L. clavicorne*, sp. n., *id. ibid.*, Chili.

Stengita, g. n., *id. l. c.* p. 81. Facies of *Calobius notabilis*, Ros.; no differential characters given. *S. nodifera*, sp. n., *id. ibid.*, Chili.

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Cnecosophagus, g. n., *id. l. c.* p. 42. Allied to *Antherophagus* and *Loberus*, but with a wide prosternum, dilated behind the coxæ, and truncate at the apex. *C. jekeli*, sp. n., *id. l. c.* p. 43, Dept. of the Moselle.

Pharoxonotha [*cf. tom. cit.* p. 86], g. n., *id. l. c.* p. 44. Allied to *Antherophagus*. *P. kirschi*, sp. n., *id. ibid.*, Silesia (but received from Mexico, in drugs.

Sternodea, g. n., *id. l. c.* p. 78. Facies of a large *Ephistemus*; antennæ stout, joints 1 and 2 not enlarged, club bi-articulate. *S. baudii*, id. *l. c.* p. 79, Vallombrosa, and *S. weisii*, id. Deutsche E. Z. 1875, p. 361, Hungary, spp. nn.

Taphropiestes, g. n., *id.* C. H. xiii. p. 83. Differs from *Paramecosoma* in its thick antennæ, bifossulate frons, membranacco-reticulate surface, and structure of prothorax and prosternum. *T. fusca*, sp. n., *id. l. c.* p. 84, Chili.

Antherophagus flavidus, sp. n., *id. l. c.* p. 73, Brazil.

Henoticus mexicanus, sp. n., *id. ibid.*, Mexico.

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Cryptophagus gracilis, p. 17, Southern Alps, *skalitzkii*, Prague, *mascarensis*, Oran, p. 19, *milleri*, p. 20, Moravia, Silesia, *brucki*, p. 26, Jerusalem, *brisouti*, p. 27, E. Pyrenees, *axillaris*, p. 28, Transsylvania, *thomsoni*, p. 32, Germany, France, Greece, *kraatzi*, p. 34, N. Europe, Russia, *heydeni*, p. 36, Germany [= *waterhousii*, Rye, *certe*, = *acutangulus*, monstr.; *cf. tom. cit.* p. 23], spp. nn., *id.* Deutsche E. Z. 1875, Heft iii.

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Anthr

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Paramecosoma chilensis [-*se*], sp. n., E. Reitter, C. H. xiii. p. 84, Chili.

Tomarus (recharacterized) *cruciatus*, Mexico, *acutus*, N. America, spp. nn., *id. l. c.* p. 86.

Cænoscelis cryptophaga, sp. n., *id. l. c.* p. 87, N. America.

Atomaria carpathica, id. Deutsche E. Z. 1875, p. 360, Hungary; *pilosella*, p. 51, Bohemia, *planiuscula*, p. 54, Moravia, Austria, Servia, *herminea*, p. 55, Germany, Hungary, *bella*, Sweden, Saxony, *atrata*, Bohemia, Croatia, &c., p. 56, *pumila*, p. 59, Silesia, *plicata*, p. 60, Silesia, Austria, *formosa*, p. 62, Hungary, *amplipennis*, p. 63, Moravia, *barbara*, p. 70, Oran, *rubida*, Austria, Italy, *viennensis*, Austria, Servia, p. 74, *morula*, p. 75, Tyrol, *parvula*, Illyria, Italy, *thoractoides*, Tuscany, p. 77, *id. op. cit.* Heft iii.: spp. nn.

Telmatophilus longicollis, p. 226, Germany, *integricollis*, Cape of Good Hope, *rufus*, France, *ferrugineus*, Mexico, p. 227, *pumilus*, p. 228, Silesia, spp. nn., *id.* Deutsche, E. Z. 1875.

Lathridiidæ.

Reitter, E. Revision der europäischen *Lathridiidæ*. S. E. Z. xxxvi. pp. 297–340, 410–445.

The author adopts the following arrangement:—Merophysini, for *Coluocera*, *Reitteria*, *Merophysia*, *Holoparamecus*, and *Anommatus*; Lathridiini, for *Langelandia*, *Metophthalmus*, *Lathridius*, *Coninomus*, *Enicmus*, *Cartodere*, and *Revelieria*; Corticariini, for *Dasycerus*, *Corticaria*, *Melanophthalma*, and *Migneauxia*. *Lyreus*, *Myrmecoxeni* reflected, *Mycetomychus* are rejected; the first belonging to the *Colydiidæ*, ? apex, last being the same as *Derodontus*, Lec., representing a new figs. 13, between the *Cryptophagidæ* and *Lathridiidæ*. *Coluocera formi* Ros., and *attæ*, Ktz., = *formicaria*, Mots.; *Merophysia minor*; and *carmelitana*, Saulcy, are not specifically distinct; *Holop* *obtusicornis*, Mots., = *caularum*, Aubé; *H. longipennis* and *popul* = *singularis*, Beck; *Anommatus planicollis*, Fairm., ? = *pusillus*, Sch Port *Lathridius pini*, *dilaticollis*, and *subbrevis*, Mots., = *lardarius*, Deg, *undulatus*, Mots., *angusticollis*, Thoms., = *angulatus*, Mann.; *L. trem* Thoms., *pandellæi*, Bris., = *angusticollis*, Humm.; *Corticaria stigmosa* and *pharaonis*, Mots., *hirtella*, Thoms., = *fulva*, Com.; *C. longicollis*, Mann., is renamed *mannerheimi*, p. 427, and very many of Mannerheim's species are sunk as synonyms.

Merophysia procera, sp. n., *id. l. c.* p. 304, Palestine.

Holoparamecus ragusæ, sp. n., *id. l. c.* p. 309, Sicily.

Anommatus diecki, sp. n., *id. l. c.* p. 312, Corsica.

Metophthalmus ragusæ, sp. n., *id. l. c.* p. 315, Sicily.

Enicmus lederi, id. *l. c.* p. 327, Oran; *E.* (*Conithassa*) *carpathic* e Deutsche E. Z. 1875, p. 361, Hungary: spp. nn.

Cartodere pilifera, sp. n., *id.* S. E. Z. xxxvi. p. 334, Sicily.

Revelieria heydeni, sp. n., *id. l. c.* p. 339, Sierra Nevada.

Dasycerus elongatus, sp. n., *id. l. c.* p. 410, Algeciras.

Corticaria olympiaca, p. 417, Greece, *diecki*, p. 418, Tangiers, *rufescens*, p. 420, Madrid, *eppelsheimi*, p. 423, Styria, *amplipennis*, p. 424, Moravia,

Austria, *weisii*, p. 426, Bohemia, *id.* l. c.; *C. cardiodera* and *subparallela*, p. 505, *ooptera*, p. 506, L. Fairmaire, Ann. Mus. Genov. vii. Tunis: spp. nn.

Melanophthalma albipilis, Austria, Corsica, *moraviaca*, Moravia, p. 435, *ovalis*, p. 441, Engadine, *meridionalis*, p. 442, S. Europe, spp. nn., Reitter, *l. c.*

Migneauxia lederi, sp. n., *id. l. c.* p. 444, Oran.

Mycetophagidæ.

Triphyllus elongatus, sp. n., J. L. Leconte, Tr. Am. Ent. Soc. v. p. 171, Alaska to California.

Thorictidæ.

Thorictodes, g. n., E. Reitter, C. H. xiv. p. 45. Differs from *Thorictus* in its small narrow build, the shape of the thorax, the simple metasternum, and scarcely spinose tibiæ. *Thorictodes heydeni*, sp. n., *id. l. c.* p. 46, N. Africa, France.

Thorictus lethierrii, sp. n., L. Fairmaire, Pet. Nouv. (1875) p. 495, Biskra.

Dermestidæ.

Anthrenus museorum, L., is quite distinct from *A. verbasci*, which is from *genus* 3-*fasciatus* [*cf.* Zool. Rec. xi. p. 277]; E. v. Harold, C. H. Harold, 121. On the confusion in nomenclature of these species, see G. *Chœr.*, Deutsche E. Z. 1875, p. 127, who supports Reiche's reference of not pu*tum* to *verbasci*, and suggests the adoption of *fuscus*, Ol., for the *phagus* ; found in museums. *Cf.* also E. v. Harold, Bull. Soc. Ent. Fr. Melsh., p. ix.

L., whic*negatoma*, g. n., G. H. Horn, Tr. Am. Ent. Soc. v. p. 135. With *Canthidi*l fossæ; otherwise agreeing with *Megatoma*. For *Megatoma* xiii. p. 61. nn., = *cylindrica*, Kby., *Trogoderma belfragii*, Lec., and *Pinotus scalpe*. Tejon and Sta. Barbara, and *variegatum* [*-ta*], San p. 104, and Deutse, *id. l. c.* p. 136, spp. nn.

distinct from *P. ro*

Synapsis. Obser

Cat., from Java, be

Byrrhidæ.

Belg. xviii. pp. iv., F. P. Pascoe, Ann. N. H. (4) xvi. p. 212. "Seems to C. H. xiii. p. 45. *chus* in the 6-jointed very narrow club of the antennæ."

Onthophagus s., *id. l. c.* p. 213, Otago.

of the same sp*bmaculosus*, sp. n., L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. *gus.* xciii. Constantinople.

v. *Morychus coruscans*, sp. n., Pascoe, *l. c.* p. 212, Wellington, New Zealand.

Lucanidæ.

Parry, F. J. S. Catalogus Coleopterorum Lucanoidum. Editio tertia. London: 1875, 8vo, pp. 1–29.

[Adversely criticized by Kraatz, Ent. Monatsbl. i. p. 74.] Enumerates 409 species, 59 having been added, and 7 sunk, since the 2nd edn. in 1870. The following observations occur:—*Eurytrachelus candezii*, Parry, = *curycephalus*, Burm.; *E. niponensis*, Voll., = *macrodoceus rectus*, Mots.; *Nigidius forcipatus*, Burm., = *laevicollis*, Westw.; *Figulus nigritus*[-*ta*], Westw., = *sublævis*, Pal. de Beauv.; *F. modestus*, Parry, = *fissicollis*, Fairm.

Lucanus cervus. Rivalry between large and small males for the possession of the female; D. H. R. von Schlechtendal, JB. Ver. Zwickau, 1874; Ent. Nachr. i. p. 158.

Lucanus lentus, Cast., = *placidus*, Say, which is not *elaphus*, F., ♀, as Parry supposes; *Platycerus carulescens*, Lec., = *oregonensis*, Westw.; G. H. Horn, Tr. Am. Ent. Soc. v. p. 137 (*cf.* also E. v. Harold, C. H. xiii. p. 104).

Cladognathus quadridens, Hope (? = *antilopus*, Swed.). Extreme varieties from Liberia; C. A. Dohrn, S. E. Z. xxxvi. pp. 291–294.

Cantharolethrus luxeri, Buq., ♀ described from Bogota; C. O. Waterhouse, Cist. Ent. i. p. 365. *Cf.* also F. J. S. Parry, *op. cit.* ii. p. 51, who notes its probable identity with *Pholidotus reichii*, Hope, following J. Thomson.

Alcimus dilatatus, Fairm., ♂ and var. minor, from the Samoa Isles, described by C. O. Waterhouse, Tr. E. Soc. 1875, p. 163.

Lissotes obtusatus, Westw.; on supposed var. from Tasmania, J. O. Westwood, Tr. E. Soc. 1875, p. 244.

Neolamprima, g. n., R. Gestro, Ann. Mus. Genov. vii. p. 997. Digs. 13, from *Lamprima* in the very long, upcurved, apically 3-dentate internally 12-dentate mandibles of its ♂ [founded only on a ♂; character]. Type, *N. adolphinæ*, sp. n., *id. ibid.*, ♂, fig., Mt. Arfak Guinea.

Psalidoremus inflexus, sp. n., E. v. Harold, Abh. Ver. Brem. iv. Hiogo: = *P. inclinatus*, Mots., undeveloped; *id.* C. H. xiii. p.

Prosopocælus wimberleyi, sp. n., F. J. S. Parry, Tr. E. Soc no locality mentioned.

Cantharolethrus steinheili, sp. n., *id.* Cist. Ent. ii. p.; *C. longicollis*, and p. 52, ♀ var. max., Columbia, Central Cordilleras.

Scortizus pulverosus, sp. n., J. O. Westwood, Tr. E pl. ix. fig. 2, Eastern Cordilleras.

Aceraius incidens, sp. n., T. Kirsch, MT. Mus. Dresd.

Scarabæidæ.

The Lamellicorn *Coleoptera* at present known to occur in described by C. O. Waterhouse, Tr. E. Soc. 1875, pp. 71–116, pl. These are as follows:—*Coprides*, 15 spp., *Aphodiides*, 33, *Geotrypides*, 5, *Trogides*, 3, *Melolonthides*, 21, *Rutelides*, 21, *Dynastides*, 2, and *Cetoniides*, 14; in all, 93 spp., including many new, and one new genus.

55 species (4 new) of Coprophagous Lamellicorns, taken by Teuscher in Cantagallo, north of Rio Janeiro, are briefly discussed by E. von Harold, C. H. xiii. pp. 57–72.

Coprides.

Lansberge's classification of the *Ateuchides* (Ann. Ent. Belg. xvii.) reproduced and favourably criticized, objection being taken to the use of that name for the group, since *Ateuchus* is deposed for *Scarabæus*, and to the proposed genus *Octodon*, pre-occupied in *Mammalia* [on both points, *cf.* Zool. Rec. xi. pp. 280 & 553]; C. A. Dohrn, S. E. Z. xxxvi. pp. 157–187.

The group *Onitides* monographed by G. van Lansberge, Ann. Ent. Belg. xviii. pp. 5–148. The whole tribe is divided into *Onthophagides* and *Coprides*, the former composed of *Onitides* (sub-divided as *Drepanocerides* and *Onitides*) and *Onthophagides*. The absence of a terminal spur from the anterior tibiæ of the male is relied upon as a distinguishing character of the *Onitides* proper, which only are discussed by the author. *Tragiscus*, Klug, is dubiously referred to *Oniticellus*. The ♂ of *Onitis lophus*, F., and *schreibersi*, Dahl, = *irroratus*, var. (as does *O. furcifer*, Charp., ♀; *teste* Harold, C. H. xiv. p. 167); *O. tridens*, Cast., is described from Senegal, p. 56; *O. fodiens*, Boh., = *uncinatus*, Klug, var.; *O. perplexus*, Boh., = *fabricii*, Roth, var. minor; *O. lycophron*, Klug, = *illigeri*, Roth, = *abyssinicus*, Rche.; *O. inuus*, Hbst., = *aygulus*, F.; *O. alexis*, Klug, = *sphinx*, F., var.; *O. shoensis*, Boh., *nec* Rche., is renamed *vicinus*, p. 95; *O. cupreus*, Har., = *æruginosus*, Klug, ♂; *O. cupreus*, Har., ♀, = *klugi*, Har., = *pales*, Klug, = *fulgidus*, Klug; *O. chevrolati*, Lucas, = *humerosus*, Pall.; *O. falcatus*, Wulf., is erroneously described from Africa, and comes from India and China. (For review, *cf.* E. v. Harold, C. H. xiv. p. 165.)

Chæridium lecontii, Harold, differentiated from *histeroides*, Web. [it is not put as a synonym, but as a var., in Crotch's Check List]; *Onthophagus scabricollis*, Kby., *striatulus* and *subæneus*, Beauv., *protensus*, Melsh., *canadensis*, F., = *janus*, Pz.; *O. rhinoceros*, Melsh., = *nuchicornis*, L., which is not American; G. H. Horn, Tr. Am. Ent. Soc. v. pp. 137–141.

Canthidium politum, Har., = *trinodosum*, Boh.; E. v. Harold, C. H. xiii. p. 61.

Pinotus scalpellum, Tasch., = *cotopaxi*, Guér., from Ecuador; *id. l. c.* p. 104, and Deutsche E. Z. 1875, p. 211, note. *P. rotundatus*, Burm., is distinct from *P. rotundatus*, Blanch.; *id.*, C. H. xiii. p. 181.

Synapsis. Observations on the existing species; *Copris thoas*, Dej. Cat., from Java, being also referred to this genus: D. Sharp, CR. Ent. Belg. xviii. pp. iv. & v. *S. ritsemæ*, Lansb., ? = *brahminus*, Hope; *id.* C. H. xiii. p. 45. *Cf.* also C. Ritsema, C. H. xiv. p. 211.

Onthophagus sagittarius and *oryx*, from Java, are respectively ♂ & ♀ of the same species, the former name standing; *O. saiga*, Ball., = *pygargus*, Mots.; *O. divaricatus*, W. MacLeay, *ex. typ.*, = *nodulifer*, Har.; E. v. Harold, C. H. xiv. pp. 210 & 211.

Caccophilus, and even *Caccobius*, not accepted as generically distinct from *Onthophagus*; D. Sharp, C. H. xiii. p. 52.

New genera and species:—

Tapeinopterus [*Tapin-*], Lansberge, *l. c.* p. 15. Affords a passage to *Drepanocerus* and *Eurysternus*; elytra quite flat, 3rd joint of labial palpi

scarcely distinct, intermediate and posterior tarsi excessively elongate. (Very near *Tragiscus*, Klug; E. v. Harold, C. H. xiv. p. 166.) Type, *T. ateuchoides*, id. *l. c.* p. 16, S.W. Africa.

Pleuronitis, id. *l. c.* p. 17. No basal thoracic foveola; posterior legs very elongate and attenuate; elytra distinctly sinuate behind the shoulders. Type, *Onitis fulgidus*, Casteln.

Cheironitis [*Chir-*], id. *l. c.* p. 19. Scutellum large, anterior tibiæ of the female provided with tarsi. For *Onitis pugil*, Costa, = *furcifer*, Rossi, *O. osiridis*, Rche., *O. sophax*, Fisch., = *mœris*, Pall., ♂, *O. sterculius*, Ballion, *O. sulcicollis*, Har., *O. schreibersi*, Dahl, = *calcaratus*, Ol., = *lophus*, F., = *irroratus*, Rossi, of which *inversus*, Costa, is a var., *O. melibœus*, Muls., = *amyntas*, Stev., = *clinias*, F., = *hungaricus*, Hbst., *O. cumenes*, Mots., = *pamphylus*, Mén., *O. hoplosternus*, Har., *O. apelles*, F., = *scabrosus*, F, and *C. luctuosus*, p. 22 (? = *O. haroldi*, Ball.), Caucasus, *candezii*, p. 31, Mesopotamia, *ponticus*, p. 36, Turkey in Asia, Syria, Caucasus, and *indicus*, p. 45, Cis-Gangetic India, Arabia.

Cassolus, D. Sharp, C. H. xiii. p. 40. Allied to *Epilissus*, but with different anterior tibiæ, and the 2nd joint of the posterior tarsi shorter. *C. nudus*, id. *ibid.*, Cambodia.

Cyobius, id. *l. c.* p. 48. Allied to *Caccobius*; tarsi two-jointed, the basal joint rather large, the 2nd minute and clawless. *C. wallacii*, id. *l. c.* p. 49, Sarawak.

Anoctus, id. *l. c.* p. 49. Also allied to *Caccobius*, but with abruptly inflexed elytral epipleuræ, and the four hind legs different. *A. lævis*, id. *ibid.*, Singapore.

Pinacotarsus, E. v. Harold, S. E. Z. xxxvi. p. 454. Having very much the facies of the S. American *Dendropemon*, but with free perfoliate antennal club, non-dilated labial palpi, and front tibiæ straightly truncate. To be placed near the *Onthophagides*, but with the first joint of the hind tarsi very large, flat, dilated, and with long external ciliation, joints 3–5 being very short. *P. dohrni*, id. *l. c.* p. 455, Monrovia.

Homodesmius planus, D. Sharp, R. Z. (3) iii. p. 37, Eclipse Island.

Catharsius æthiops, Philippine Isles, *granulatus*, E. India, p. 41, *platypus*, p. 42, E. India, *id. l. c.*

Sisyphus thoracicus, id. *l. c.* p. 39, Singapore.

Gymnopleurus striatus, Singapore, p. 33, *æthiops*, Rangoon, *maurus*, Borneo, p. 34, *planus*, Penang, *stipes*, Philippine Isles, p. 35, *calcar*, Celebes, *dubius*, Menado, p. 36, *celebicus*, Celebes, *rudis*, Lombok, p. 37, *sparsus*, Borneo, *productus*, Laos, p. 38, *abax*, p. 39, Cambodia, D. Sharp, C. H. xiii.; *G. hildebrandti*, E. v. Harold, Deutsche E. Z. 1875, p. 218, N. Abyssinia; *G. æneus*, id. S. E. Z. xxxvi. p. 453, Monrovia.

Deltochilum pretiosum, id. Deutsche E. Z. 1875, p. 209, Bogota.

Coptorhina parva, D. Sharp, R. Z. (3) iii. p. 47, N. India.

Charidium granigerum, E. v. Harold, C. H. xiii. p. 63, Cantagallo.

Canthidium kirschi, id. Deutsche E. Z. 1875, p. 209, Pozuou.

Copris ritsemæ, id. C. H. xiv. p. 137, Basuto-land; *C. tripartita*, C. O. Waterhouse, Tr. E. Soc. 1875, p. 74, Japan; *C. iris*, p. 45, Laos, *calvus*, p. 46, Menado, *agnus*, p. 47, Malacca, Singapore, D. Sharp, R. Z. (3) iii.

Phanæus rhadamanthus, p. 66, Cantagallo, *amithaon*, p. 88, Mexico, E. v. Harold, C. H xiii.; *P. steinheili*, id. Deutsche E. Z. 1875, p. 213, New Granada.

Synapsis batesi, p. 43, N. India, *thoas*, p. 44, ? Java, *simplex*, p. 45, Laos, D. Sharp, *l. c.*

Ontherus crosus, E. v. Harold, C. H. xiii. p. 64, Cantagallo.

Pinotus monstrosus, p. 210, New Granada, *diabolicus*, p. 211, *adrastus*, p. 212, Peru, *id.* Deutsche E. Z. 1875.

Onitis bohemanni, p. 58, *orthopus*, p. 79, *cribratus*, p. 92, N'Gami, *laticollis*, p. 61, *senegalensis*, p. 82, *æneus*, p. 83, *violaceus*, p. 84, Senegal, *mniszechi*, p. 62, Damara Land, *nubiensis*, p. 63, Nubia, Mozambique, *curvipes*, p. 64, Cape of Good Hope, *setosus*, p. 74, Benguela, *inversidens*, p. 80 (*inversus*, in table, p. 51), S.W. Africa, *chalceus*, p. 86, *politus*, p. 102, *thalassinus*, p. 110, Abyssinia, *reichii*, Sierra Leone, Old Calabar, *pecuarius*, p. 99, Caffraria, *rothi*, p. 101, Caffraria and Abyssinia, *minutus*, p. 112, S. Africa, *lama*, p. 123, Himalayas, *ludekingi*, p. 124, Sumatra, *phartopus*, p. 128, Philippine Isles, *niger*, p. 130, Java, *virens*, p. 135, Hindostan, Ceylon, Siam, *amplectens*, p. 136, Siam, Assam, Bengal, *distinctus*, p. 138, Indian continent, *singhalensis*, p. 140, Ceylon, *brahma*, p. 142, N. India, G. van Lansberge, Ann. Ent. Belg. xviii.; *O. syphax*, L. Fairmaire, Ann. Mus. Genov. vii. p. 506, Tozer, Tunis (is a *Chironitis*, teste Van Lansberge, CR. Ent. Belg. xviii. p. lxvii.); *O. lansbergii*, p. 47, Lombok, *crassus*, p. 48, India, D. Sharp, C. H. xiv.

Eurysternus peruanus, E. v. Harold, C. H. xiv. p. 137, presumably from Peru.

Onthophagus discedens, p. 49, *dux*, p. 50, Sarawak, *crassus*, p. 51, Laos and Cambodia (= *tricornis*, Wied.; E. v. Harold, *tom. cit.* p. 66), *amplexus*, p. 53, India, China, *victor*, Java, *iris*, Waigiou, p. 54, *quæstus*, p. 55, E. India (type of undescribed genus, *Oniticelloides*, Rche., MS.), *pedator*, p. 57, Singapore, *rudis*, p. 58, Siam, *aper*, p. 59, *simulans*, p. 60, *imbutus*, p. 61, *fulvus*, p. 62, Menado, *ovilis*, p. 59, Celebes (? = *wallacii*, Har.; E. v. Harold, *l. c.* p. 60, note), *rutilans*, p. 62, Tringano, Singapore, D. Sharp, C. H. xiv.; *O. velutinus*, G. H. Horn, Tr. Am. Ent. Soc. v. p. 140, California, Arizona; *O. japonicus*, *lenzi*, p. 290, *viduus*, p. 291, E. v. Harold, Abh. Ver. Brem. iv., Hiogo; *O. janthinus*, p. 68, Rio de Janeiro, *beccarii*, Bogos, *mouhoti*, Laos, p. 88, *proletarius*, p. 89, Hong Kong, *id.* C. H. xiii.; *O. badeni*, Himalayas, *smeei*, E. India, p. 137, *batillifer*, Malacca, *sharpi*, no locality mentioned, *smaragdinus*, S. W. Abyssinia, p. 138, *id. op. cit.* xiv.; *O. carcharias*, p. 214, Abyssinia, *hæmatopus*, p. 215, Para, *heydeni*, Euphrates, *minutulus*, Kuruman, S. Africa, p. 217, *japonicus*, Deutsche E. Z. 1875; *O. fodiens*, p. 75, *ater*, p. 76, *atripennis*, p. 77, Ent. *sus*, p. 78, *ocellato-punctatus*, p. 79, C. O. Waterhouse, Tr. E. Soc. [illegible], Japan; *O. euthymi*, E. Mulsant & A. Godart, Ann. Soc. L. Lyon (n.s.) xxi. p. 409, Beyrouth.

Caccobius brevis, C. O. Waterhouse, Tr. E. Soc. 1875, p. 73, Hiogo; *C. pulicarius*, E. v. Harold, Deutsche E. Z. 1875, p. 214, Syria.

Caccophilus tortus, Bengal and ? Java, *ultor*, N. India, p. 50, *mutans*, p. 51, N. India, *gemma*, p. 52, Pondichery, D. Sharp, C. H. xiii.

Oniticellus falsus, p. 52, Laos, *exsul*, p. 53, Siam, spp. nn., *id. l. c.*

Aphodiides.

Aphodius arcticus, Harold, = *congregatus*, Mann.; *A. steinheili*, Har., = *serval*, Say; *Atænius attenuator*, Har., and ? *texanus*, Har., = *abditus*, Hald.; *At. lecontii*, Har., = *ovatulus*, Horn, = *cylindrus*, Horn, type form, from which *horni*, Har., is not specifically distinct; *At. socialis*, Har., = *socialis*, Horn; G. H. Horn, Tr. Am. Ent. Soc. v. pp. 141 & 142.

Aphodius obliteratus and *contaminatus*. Des Gozis adheres to his collocation of these [perfectly distinct] species, in answer to Kraatz and Abeille de Perrin; Bull. Soc. Ent. Fr. (5) v. p. ix.

Psammodius, Gyll., = *Ægialia*, Latr., and *Psammobius*, Heer, must be used for *sulcicollis*, &c.; E. v. Harold, C. H. xiii. p. 105. *Aphodius geminatus*, W. MacLeay, is a *Pedaria*; id. *op. cit.* xiv. p. 211.

Aphodius magicus, L. Fairmaire, Ann. Mus. Genov. vii. p. 507, Tozer, Tunis; *A. arabicus*, E. v. Harold, C. H. xiii. p. 89, Egypt, Arabia; *A. major*, p. 80, *lividipennis*, p. 81, *diversus* (also in China), p. 82, *castanicipennis* and *nigerrimus*, p. 83, *uniplagiatus* and *uniformis*, p. 84, *impunctatus* and *pallidicinctus* (also China), p. 85, *obsolete-guttatus*, p. 86, *pallidiligonis* and *punctatus*, p. 87, *obsoletus* (also China), p. 88, *ovalis* and *rufangulus*, p. 89, *variabilis*, p. 90, *atratus*, p. 91, *rugoso-striatus* and *lewisi*, p. 92, C. O. Waterhouse, Tr. E. Soc. 1875, Japan: spp. nn.

Ammœcius nitidulus, sp. n., *id. l. c.* p. 93, Nagasaki.

Saprosites japonicus, sp. n., *id. ibid.* Nagasaki.

Rhyssemus asperulus, id. *l. c.* p. 94, Nagasaki; *R. orientalis*, E. Mulsant & A. Godart, Ann. Soc. L. Lyon (n.s.) xxi. p. 411, Beyrouth: spp. nn.

Atænius australis, sp. n., E. v. Harold, *l. c.* p. 89, S. Australia.

Psammodius allœonis, L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. cxciii. Constantinople; *P. convexus*, C. O. Waterhouse, *l. c.* p. 94, Kobe: spp. nn.

Ægialia nitida, sp. n., *id. l. c.* p. 95, Hakodadi.

Hybosorides.

Araeotanypus, g. n., C. O. Waterhouse, Ann. N. H. (4) xv. p. 404. Antennæ with ? 11 joints, but provisionally placed near *Hapalonychus*, which has only 10 joints: many characters suggest an affinity to *Serica*. Type, *A. boops*, sp. n., *id. l. c.* p. 405, N'Gami, S. Africa.

Geotrypides.

Athyreus soveicollis, G. v. Koch (Abh. Ges. Nürnb. iv. 1868, p. 94), should be written *fovicollis*, and = *tridentatus*, Macl.; observations on another species described by this author; G. Kraatz, Deutsche E. Z. 1875, p. 435.

Bolboceras gallicum. On its habits near Marseilles; L. v. Heyden, Deutsche E. Z. 1875, p. 376.

Ochodæus maculatus, sp. n., C. O. Waterhouse, Tr. E. Soc. 1875, p. 95, pl. iii. fig. 1, Japan.

Bolboceras nigro-plagiatum, sp. n., *id. l. c.* p. 96, Japan and Corea.

Geotrypes (*Phelotrypes*) *purpurascens*, sp. n., *id. l. c.* p. 97, Japan and Celebes.

ides.

staff, Schauf.: D. Sharp, Ent. M. M. xi. p. 206, protests nte's renaming this species *edwardsi* [Zool. Rec. xi. p. 283], hat "*staff*", though neither Latin nor classical, should be retained; and being of opinion that purity can be obtained by latinizing it, if required, as "*staffa*": *adjuvans*, Crotch, is, moreover, available for the insect. [This last name should surely be adopted: "*staffa*" would be as little Latin as "*lecontus*", a specific name proposed by Dr. Sharp himself, *l. c.*, for a *Trigonurus*, in honour of Dr. Leconte. *Cf.* also E. v. Harold, C. H. xiii. p. 183.

Trogides.

Trox setifer, Japan, *obscurus*, Hong Kong and Japan, spp. nn., C. O. Waterhouse, Tr. E. Soc. 1875, p. 98.

Clœotus sulcipennis, sp. n., E. v. Harold, Deutsche E. Z. 1875, p. 217, Peru.

Liparochrus ciliboides, sp. n., *id.* C. H. xiv. p. 138, N. S. Wales.

Synarmostes puncticollis, p. 63, Java, *haroldi*, p. 64, *latus*, p. 65, Singapore, *brevis*, Mysol, *picinus*, Philippine Islands, p. 64, *crux*, p. 65, Sarawak, *amphicyllis*, p. 66, New Guinea, D. Sharp, C. H. xiv. spp. nn.

Glaphyrides.

Pachymerus variegatus, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 290, Peru.

Melolonthides.

Hymenoplia. Observations on the European species; *H. hungarica*, Blanch., ? = *strigosa*, Ill., and Blanchard confused Galæcia in N. Spain with Galicia in Hungary, where no *Hymenoplia* occurs. *H. sicula*, Blanch., in all collections, = *Triodonta pumila*, Burm.; no *Hymenoplia* was found by Rottenberg in Sicily, only *T. cinctipennis*, Luc., = *proboscidea*, F.; L. v. Heyden, Deutsche E. Z. 1875, pp. 377 & 378.

Serica brunnea in Japan; *S. grisea*, Mots., ? = *polita*, Gebl., var.; C. O. Waterhouse, Tr. E. Soc. 1875, pp. 101 & 102.

Mœchidius, McL., is divisible into sect. 1, type, *M. spurius*, Kby., with simple claws, and sect. 2, type *M. atratus*, Burm., having a basal appendage to the claw, which is also found in *Pyronota*. *M. macleayanus*, Westw., is distinct from *M. sordidus*, Boisd. *Id. l. c.* pp. 193 & 198.

Phytalus glaberrimus of Crotch's Check List is incorrect, but there are two undetermined N. American species; *Lachnosterna sororia*, Lec., = *rufiola*, Lec.; *L. robusta*, Lec., = *crassissima*, Bl.; G. H. Horn, Tr. Am. Ent. Soc. v. pp. 142 & 143.

Melolontha. Colouring matter from cockchafers; Proc. E. Soc. 1875, i.

Melolontha vulgaris leaving the earth and flying in the middle of January at Jarnac, Charente; H. Delamain, Bull. Soc. Ent. Fr. (5) v. p. xli.

Melolontha argus, Burm., var. n. *rugulosa* from Malacca; T. Kirsch, MT. Mus. Dresd. i. p. 29.

New genera and species :—

Pollaplonyx, C. O. Waterhouse, Tr. E. Soc. 1875, p. 105. Allied to *Atys*. For *P. flavidus*, id. *ibid.* pl. iii. fig. 6, Japan.

Epholcis, id. *l. c.* p. 192. Facies of *Mœchidius*, with the head of *Diphycephala*; lateral borders of excavation of underside of thorax entirely curved. *E. divergens*, id. *ibid.* Cape York, N. Australia.

Lepidoderma, id. *l. c.* p. 201. True *Melolonthidæ* of Lacordaire, but with the antennæ having joints 3 & 4 elongate and equal, 5 very transverse, 6–10 forming a short club, and 6 not quite so long as 4 following joints. *L. albo-hirtum*, id. *l. c.* p. 202, Pt. Bowen.

Eucyclophylla, id. Ann. N. H. (4) xv. p. 406. *Macrophyllinæ*; closely allied to *Macrophylla*, but with 10-jointed antennæ and bidentate anterior tibiæ, &c. *E. lata*, id. *ibid.* Cape of Good Hope.

Paraclitopa, id. *l. c.* p. 407. Very close to *Clytopa*, but clypeus strongly separated from frons, antennæ 10-jointed, anterior tibiæ tridentate, &c. *P. lanuginosa*, id. *ibid.* N'Gami, S. Africa.

Œdanomerus, id. *ibid.* *Pachypodinæ*, next *Pachypus*; no differential characters given. *Œ. hirsutus*, id. *l. c.* p. 408, N'Gami.

Trichinopus, id. *l. c.* p. 408. Dubiously placed next *Pachycolus*. *T. flavipennis*, id. *l. c.* p. 409, N'Gami.

Perissosoma, id. *ibid.* Form somewhat of *Pachycolus*; provisionally placed next the preceding. *P. anescens*, id. *l. c.* p. 410, Seychelles.

Ectinohoplia variolosa, id. Tr. E. Soc. 1875, p. 99, pl. iii. fig 2, Nagasaki.

Hoplia communis and *mœrens*, id. *l. c.* p. 100, Japan.

Serica boops, id. *l. c.* p. 101, pl. iii. fig. 3, Japan.

Apogonia major, id. *l. c.* p. 103, Nagasaki.

Holotrichia picea (and var. *rufo-picea*), p. 103, *morosa* and *castanea*, p. 104, *id. l. c.* Japan.

Hymenoplia ramburi, Heyden, *l. c.* p. 379, S. Spain.

Mœchidius latus, p. 193, Melbourne, *longitarsis*, p. 194, S. Australia, *ater*, Sydney, *brevis*, Rockhampton, p. 195, *acutangulus*, p. 196, *excisus*, p. 187, Port Bowen (sect. 1), *M. emarginatus*, p. 198, Australia, *sexdentatus*, p. 199, Adelaide, *corrosus*, Van Diemen's Land, *gracilis*, Sydney, p. 200 (sect. 2), C. O. Waterhouse, Tr. E. Soc. 1875.

Lepidiota squammulata, id. *l. c.* p. 201, Swan River; *L. (Leucopholis) lepida*, J. Kirsch, MT. Mus. Dresd. i. p. 28, Malacca.

Phytalus malaccensis, J. Kirsch, *l. c.* p. 29, Malacca.

Pachydema doriæ, L. Fairmaire, Ann. Mus. Genov. vii. p. 508, Gassa, Tozer (Tunis).

Anoxia detrita, id. *l. c.* p. 509, Kéruan and Algerian Sahara; unites *Anoxia* and *Polyphylla*.

Hoplosternus japonicus, E. v. Harold, Abh. Ver. Brem. iv. p. 291, Hiogo.

Cyclomera hirticollis, C. O. Waterhouse, Ann. N. H. (4) xv. p. 406, N'Gami.

Rutelides.

J. O. Westwood, Tr. E. Soc. 1875, pp 233–239, pl. viii. describes

and figures various species in detail, with some general preliminary observations. *Rutelarcha 4-maculata*, C. O. Waterh., is generically and specifically recharacterized and figured (figs. 1–1 *k*), as also is *Cyphelytra ochracea*, C. O. W. (figs. 3–3 *h*).

Anomala frischi very injurious to vines; A. Makowsky, Verh. Ver. Brünn, xiii. (SB.) p. 45.

Phyllopertha horticola, L., at Japan; C. O. Waterhouse, Tr. E. Soc. 1875, p. 106. *P. octo-costata*, Burm., has nothing to do with *costata*, Hope; *id. l. c.* p. 108.

Rhombonyx lucidulus, Mots., = *Anomala rufo-cuprea*, Mots., var.; *id. l. c.* p. 109.

Trigonostomum mucoreum, Burm., var. from Madagascar; C. A. Dohrn, S. E. Z. xxxvi. p. 82.

Lutera [anagram of *Rutela*], g. n., J. O. Westwood, *l. c.* p. 236. Oblong-ovate, convex, glabrous, sparingly punctured; no affinities suggested. For *L. luteola*, sp. n., *id. ibid.* pl. viii. fig. 2, Sarawak.

Urleta [also anagram of *Rutela* !], g. n., *id. l. c.* p. 237. Facies of *Ometis*, with the sternal process of *Macraspis* and bicoronate head of *Dicerus*. For *U. ometoides*, sp. n., *id. l. c.* p. 238, pl. viii. fig. 4, Sumatra.

Cyphelytra, g. n., C. O. Waterhouse, Cist. Ent. i. p. 367. Closely allied to *Parastasia*, differing in the form of the head and structure of the antennæ and anterior tarsi. For *C. ochracea*, sp. n., *id. ibid.* Allahabad, Darjeeling.

Phyllopertha diversa, p. 106, fig. 5, *irregularis*, p. 107, fig. 4, *orientalis*, p. 108, spp. nn., *id.* Tr. E. Soc. 1875, Nagasaki, &c., Japan.

Anomala flavilabris, p. 110, *difficilis* and *pubicollis*, p. 111, *id. l. c.* Japan; *A. hopii* and *decorata*, T. Kirsch, MT. Mus. Dresd. i. p. 30, Malacca: spp. nn.

Adoretus tenuimaculatus, sp. n., C. O. Waterhouse, *l. c.* p. 112, Japan.

Dynastides.

Cyclocephala elegans, Horn, = *dimidiata*, Burm.; *Ligyrus morio*, Lec., and *juvencus*, Ol., = *gibbosus*, Deg.; the 5 N. American species of *Strategus* differentiated at some length, and thoracic outlines figured; G. H. Horn, Tr. Am. Ent. Soc. v. pp. 143–146.

Mellissius adumbratus, Woll., figured; J. O. Melliss, "St. Helena," pl. xxiii. fig. 3.

Nephrodopus, Sharp. The oral organs described; D. Sharp, R. Z. (3) iii. p. 47.

Novapus, g. n., *id. l. c.* p. 38. *Pentodontides*: proves the impossibility of separating this group from the *Phileurides*. For *N. crassus*, p. 39, S.W. Australia, *simplex*, p. 40, W. Australia, *id. l. c.* spp. nn.

Neocnemis, g. n., *id. l. c.* p. 41. *Pimelopides*: allied to *Callicnemis*. For *N. punctata*, sp. n., *id. l. c.* p. 42, Australia.

Cavonus, g. n., *id. l. c.* p. 43. *Oryctomorphides*: near *Corynophyllus*, but with the thoracic armature of *Strategus*. For *Cav. armatus*, sp. n., *id. l. c.* p. 44, Australia.

Corynophyllus haroldi, sp. n., *id. l. c.* p. 42, Australia.

Pseudoryctes dispar, sp. n., Sharp, *l. c.* p. 45 (*muellerianus*, Sharp, 1873, *nec* White, 1859).

Horonotus duplex, p. 48, *optatus*, p. 49, spp. nn., *id. l. c.* Australia.

Phileurus liberianus, sp. n., C. A. Dohrn, S. E. Z. xxxvi. p. 294, Liberia.

Cetoniides.

R. Gestro, Ann. Mus. Genov. vi. pp. 487–517, discusses 31 species collected in the Malasian Archipelago and Papuasia by Doria, Beccari, and D'Albertis, followed by tables of the geographical distribution of all the species known from those regions. *Lomaptera albertisi* and *xanthopyga*, Gestro, are fully described, and the mesosternal processes of both, and pygidium of the latter (compared with *L. xanthopus*) figured. *L. bivittata*, Gory, and *fasciata*, Burm., are not specifically separable.

Schizorrhina palmata, Schaum. A ♀ from Sydney.; Schaum's description of the tarsi only refers to the ♂. C. A. Dohrn, S. E. Z. xxxvi. p. 212.

Cetonia aurata on the wing at the end of October; W. A. Forbes, Ent. M. M. xi. p. 208.

Gnorimus variabilis. Observations on the larva; A. Lajoye, Nouv. et Faits, 1875, p. lix.

Trichius fasciatus, L., in Japan; *T. 17-guttatus*, Snellen, figured, pl. iii. fig. 8, and varr. described, the red coloration not being sexual; C. O. Waterhouse, Tr. E. Soc. 1875, p. 115.

Ischiopsopha, g. n., Gestro, *l. c.* p. 494. Founded to compri[illegible] stridulating species of *Lomaptera* [Zool. Rec. xi. p. 285], of wh[illegible] *bifasciata*, Q. & G., is taken as the type, and which are of a [illegible] colour, and more elongate, parallel, and flattened build, with a sm[illegible] elongate scutellum, depressed, flat, horizontal mesosternal proc[illegible] Portions of the upper- and under-sides are figured. *astan*

Rhomborrhina polita, sp. n., C. O. Waterhouse, *l. c.* p. 1[illegible] 4, hama.

Gymnetis anceps, p. 373, fig. 3, Cayenne, *chontalensis*, p. 37[illegible] fig. 5, Nicaragua, spp. nn., O. E. Janson, Cist. Ent. i. pl. ix.

Euphoria (*Erirrhipis*) *candezii*, sp. n., *id. l. c.* p. 375, pl. [illegible] *st*[illegible]rnal Central America. *3y*

Lomaptera beccarii, p. 501, *macrophylla*, p. 506, Gestro, *l. c.* (mes[illegible] processes figured), Andai, near Dorey, spp. nn. *lu*

Schizorrhina cælata, sp. n., *id. l. c.* p. 510, Andai.

Glycyphana mohnikii, sp. n., *id. l. c.* p. 514, Andai.

Valgus angusticollis, sp. n., C. O. Waterhouse, *l. c.* p. 115, Japan.

Buprestidæ.

Chalcotænia 4-signata, Saund., ♀; C. O. Waterhouse, Tr. E. Soc. 18[illegible] H. 203.

Capnodis tenebrionis, L., destructive to various fruit trees in the [illegible]astern Pyrenees, and larva briefly described; H. Lucas, Bull. Soc. Ent. [illegible](5) v. p. cci.

J. C[illegible]*mpra rutilans* in the larval state destroying limes; Dillon, Bu[illegible]

Soc. Ent. Fr. (5) v. p. clxxiii. *L. decipiens* injuring elms; P. Mabille, *ibid.*

Conognatha hæmorrhoidalis, Ol.; observations on its synonymy, and on the little importance of colour difference in it and allied species; C. A. Dohrn, S. E. Z. xxxvi. p. 86.

Chrysobothris femorata, F. On its habits and parasites; C. V. Riley, Rep. Ins. Mo. vii. pp. 71–79, fig. 12. Crotch's reference of *C. alabamæ*, Gory, and 7 other species to it as synonyms, corroborated.

Coræbus bifasciatus, destructive to *Quercus ilex*, is attacked by two large Ichneumons, *Echthrus lancifer*, Gr., and an *Ephialtes*; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. ccxii.

Julodis kerimi, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 510, Tunis.

Gyascutus californicus, sp. n., G. H. Horn, Tr. Am. Ent. Soc. v. p. 147, California.

Chalcophora fulleri, sp. n., *id. ibid.*, Texas.

Chalcotænia elongata and *cuprascens*, p. 203, Pt. Bowen, *quadriimpressa*, p. 204, N. Australia, *occidentalis*, p. 205, W. Australia, spp. nn., C. O. Waterhouse, *l. c.*

Buprestis (*Ancylochira*) *connexa*, sp. n., G. H. Horn, *l. c.* p. 148, Oregon and California.

Sphenoptera impressifrons and *coræbiformis*, spp. nn., Fairmaire, *id. l. c.* p. 511, Tameghza (Tunis).

EUCNEMIDÆ.

Bonvouloir, Ann. Soc. Ent. Fr. (4) x. suppl. (4me. Cah., pp. Japan ;", pls. xxxvii.–xlii.; 28 April, 1875) [Zool. Rec. viii. p. 272, ix., p. 270], completes his monograph. He figures (and the figures are, if possible, better than any in the preceding parts), in addition to such as are described as new, the following species:—*Xylobius alni*, fig. 1, *Hylochares cruentatus*, Gyl., fig. 2, *H. nigricornis*, Say, fig. 3, *Otho sphondyloides*, Germ., fig. 4, pl. xxxvii.; *Mesogenus austrocaledonicus*, Perroud, fig. 5, *Dendrocharis bombycina*, Guér., fig. 6, *D. flavicornis*, Guér., fig. 7, *D. cæcolor*, Redt., fig. 8, pl. xxxviii.; *Galba marmorata*, Guér., fig. 3, *G. affinis*, Chevr., fig. 4, *G. sericata*, Chevr., fig. 5, and var. *albiventris*, Chevr., fig. 6, *G. chrysocoma*, Hope, fig. 7, *G. wallacii*, Perroud, fig. 9, pl. xxxix.; *G. wallacii*, var., fig. 1, *G. tomentosa*, Montr., fig. 2, *Pterotarsus tuberculosus*, Dalm., fig. 4, pl. xl.; *P. eschscholtzi*, Cast., fig. 1, *P. rugosus*, Blanch., fig. 2, *P. histrio*, Guér., fig. 3, *P. bimaculatus*, Saund., fig. 4, *P. 3-punctatus*, Guér., fig. 5, and *Thylacosternus walckenaeri*, Guér., fig. 7, pl. xli.

The following observations occur:—*Microrrhagus peregrinus*, Bonv. [Zool. Rec. ix. p. 272], is from New Granada; *Rhacopus*, Hampe, is not separable from *Microrrhagus*, and *R. cinnamomeus*, H., = *M. sahlbergi*, Mann.; *Sphærocephalus*, Esch., and *Hypocælus*, Redt., are included in *Nematodes*, Lat , which also includes all species of *Emathion* with the 4th tarsal joint more or less emarginate above; a var. n. *litigiosus* of *N. mexicanus*, Cast., from Cayenne, is described. p. 650; *Hypocælus mus-*

culus, Rosenh., = *procerulus*, Mann., var., of which a var. with toothed apical segment of abdomen is described, p. 697; *Anelastidius inditus*, Duv., = *feisthameli*, Graells; *Epiphanis cristatus*, Lec., = *cornutus*, Esch.; *Phyllocerus fulvipennis*, Germ., = *flavipennis*, Guér., ♀; *Cryptostoma signaticorne*, Buq., *rufithorax*, Perty, *denticorne*, Guér., = *spinicorne*, F., of which many other varr. are noted; *C. flavum*, Bonv., p. 758, pl. xxxvi. fig. 7, = *nigricorne*, Westw., var.; *Hypocœlus sibiricus*, Mots., ex. typ., = *Otho sphondyloides*, Germ., var.; *Galba tuberculata*, Redt., = *funebris*, Chevr.; *G. albiventris*, Chevr., = *sericata*, Chevr., var.; *Hylochares melasinus*, Latr., is apparently non-existent; *Melasis picea*, Pal. Beauv., is a *Zenoa* (*Rhipicerides*); *Eucnemis gigas*, Mann., is an *Œmidius* (*Elateridæ*); *E. sericatus*, Mann., also probably belongs to the *Elateridæ*; *E. granulipennis*, Boh., = *Porthmidius modicus*; *E. contractus*, Boh., = *Heteroderes curtus*; *Dirrhagus minutus*, Cast., = *Elater minutus*, Cast., = *Limonius minutus*, F.; *Analastes femoralis*, Lucas, is a *Physodactylus*; *Harminius castaneus*, Fairm., belongs to the *Elateridæ*, as does *Deromecus parallelus*, Sol.; *Galbella violacea*, Westw., and *Onchomœa cærulea*, Saund., belong to a genus of *Buprestidæ*, among the *Trachydes*; *Fornax orchesioides*, Lec., = *bicolor*, Melsh. Some supplementary corrections and additions to the whole work are given.

The following new genera and species are described :—

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Arrhipis (Dej. Cat.), p. 627. Easily distinguished from *Farsus* by the lower marginal carina of the pronotum being visible only in front. For *Eucnemis senegalensis*, Cast., = *Hylochares subacutus*, Guér., *H. jacquelini*, Chevr., = *lasnieri*, Chevr., = *A. lanieri*, Guér., and *A. inimica*, p. 632, pl. xxx. fig. 9, Kaioa, north of Batchian.

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Vitellius, p. 788. Distinct from *Diapodius* in the propleural triangles being as wide as long, the deeper furrows of the propectus, the shorter tarsi, &c. *V. lafertæi*, p. 789, pl. xxxviii. fig. 3, New Granada, *gautardi*, p. 790, Brazil.

Heterotaxis, p. 791. Differs from *Vitellius* in its much more elongate propleural triangle, its epistoma much more contracted between the eyes, its antennæ distinctly attenuated and not dentate, &c. *H. myrmidon*, p. 792, pl. xxxviii. fig. 4, Mysol.

Mesogenus, p. 793. Connects the preceding genera with *Agastocerus*; prosternal sutures conspicuously arched, metathoracic episterna almost entirely concealed. For *Fornax australocaledonicus*, Perroud, and *M. mellii*, p. 795, Java.

Agastocerus, p. 797. Posterior tarsi much shorter than the tibia, tarsi lamellated. *A. signaticollis*, p. 798, pl. xxxix. fig. 1, Sarawak.

Soleniscus, p. 827. Differs from *Galba* and allies in the strongly and deeply excavated prosternal furrows. *S. mutabilis*, p. 828, pl. xl. fig. 3, Malasia.

Lissothyreus, p. 847, subg. of *Pterotarsus*, for *P. tuberculatus*, Luc., = *histrio*, Guér. (of which *brasiliensis*, Cast., is a var., other varr. being described), and other known species.

Thylacosternus, p. 855. Different in facies from, but with many affinities to *Pterotarsus*; never tuberculate, epistoma rather wider, and with the reflected margin of the elytra gradually attenuated behind. For *P. walckenaeri*, Guér., 4-*vittatus*, Redt., and *T. subcostatus*, p. 857, pl. xli. fig. 6, Columbia, *pulchellus*, p. 861, fig. 8, Cayenne, Amazons, *rubricollis*, p. 863, Cordova, *nigrinus*, p. 864, pl. xlii. fig. 2, Mexico, *bivittatus*, p. 867, fig. 3, *longicollis*, p. 869, fig. 1, Ega, *bifasciatus*, p. 869, Plaga Vicente, *pulcher*, p. 871, fig. 4, and var. fig. 5, Cayenne, *lætus*, [illegible], fig. 6, *afflictus*, p. 874, fig. 7, Brazil. Gua fig.

Microrrhagus arduus, Rio Janeiro, *goudoti*, pl. xxvii. fig. 1, New Granada, p. 561, *brucki*, p. 563, *inconsultus*, p. 564, fig. 2 Ceylon, *lateralis*, p. 567, fig. 3, Makian, *rugosipennis*, p. 569, fig. 4, *basalis*, p. 570, fig. 6, *picturatus*, p. 572, fig. 7, Mysol, &c., *unicus*, p. 575, fig. 8, Teapa, *asiaticus*, p. 576, fig. 9, Singapore, *longicornis*, p. 577, pl. xxxviii. fig. 1, Carpathian Mts., *striolatus*, p. 579, fig. 2, Brazil, *egregius*, p. 580, Rio Janeiro, *flabellatus*, p. 582, fig. 3, Aru, New Guinea, *angustulus*, p. 583, fig. 4, Batchian, *rarus*, p. 584, fig. 5, Xulla, *odiosus*, p. 586, fig. 6, Sarawak, *dilutus*, p. 587, fig. 7, Ega, *terminatus*, p. 588, fig. 8, New Friburg, *crassus*, p. 590, fig. 9, Sarawak, Singapore, *suturalis*, p. 591, pl. xxix. fig. 1, Victoria, *mucidus*, p. 593, Louisiana, *subparallelus*, p. 594, fig. 2, New Guinea, *minimus*, p. 596, fig. 3, Sarawak, *impressicollis*, p. 599, fig. 5, Texas, New Orleans, *lansbergi*, p. 601, pl. xxvii. fig. 5, Caraccas, *advena*, p. 602, Rio Janeiro, *meticulosus*, p. [illegible], pl. xxix. fig. 6, N. America, Cordova, *interpositus*, p. 605, fig. 7, Bra[illegible]gu[illegible]ogota.

Farsus exoticus, p. 623, pl. xxx. fig. 5, E. Indies, *obscurus*, p. 624, fig. 6, Mexico, *elevatus*, p. 626, fig. 7, Ega.

Emathion fovicollis, p. 638, pl. xxxi. fig. 2, Brazil, New Friburg, *anxius*, p. 640, Cayenne, Mexico, *steinheili*, p. 893, Columbia.

Nematodes mannerheimi, p. 651, pl. xxxi. fig. 4, Mexico, *infuscatus*, p. 653, fig. 5, New Granada, *conjunctus*, p. 658, fig. 7, Caraccas, *micros*, p. 660, New Friburg, *collaris*, p. 663, fig. 9, ? Louisiana, Brazil, *sumatrensis*, p. 664, pl. xxxii. fig. 1, Sumatra, *major*, p. 668, fig. 3, Vic-

toria, *biarti*, p. 669, fig. 4, Orizaba, *clausseni*, p. 672, fig. 5, Minas-Geraes, New Friburg, *incertus*, p. 674, fig. 6, locality unknown, *liliputanus*, p. 675, Columbia, *suspectus*, p. 680, Cayenne.

Hypocœlus crenulatus, p. 699, pl. xxxiii. fig. 9, East Indies, *asperatus*, p. 4[illegible]1, pl. xxxiv. fig. 1, Aru.

Cephalodendrum mozambicanum, p. 740, Mozambique, *indigaceum*, p. 741, [illegible]xxvi. fig. 1, *virescens*, p. 743, Madagascar.

Cryptostoma deplanatum, p. 759, pl. xxxvi. fig. 8, locality unknown.

Calyptocerus gilvipes, p. 776, pl. xxxvii. fig. 6, Brazil.

Dendrocharis alternans, p. 805, pl. xxxviii. fig. 9, Sarawak.

Galba niveo-picta, p. 809, pl. xxxix. fig. 2, New Guinea, Molucca, &c., *auricolor*, p. 821, fig. 8, New Guinea.

Pterotarsus egaensis, p. 836, pl. xl. fig. 5, Ega, *humilis*, p. 837, fig. 6, Cayenne, Nicaragua, *obconicus*, p. 838, fig. 7, *albo-fasciatus*, p. 841, fig. 9, Cayenne, *subfasciatus*, p. 840, fig. 8, Columbia.

Pœcilochrus cruciatus, p. 886, Columbia, *quadri-impressus*, p. 887, Pozuzu (Peruvian Andes).

Dromœolus californicus, p. 890, California.

Fornax horni, p. 891, California.

Entomophthalmus pallens, Bonv., = *rufiolus*, Lec.; H. de Bonvouloir, Eucn. (pt. 4) p. 385, and G. H. Horn, Tr. Am. Ent. Soc. v. p. 149.

Observations on species from New Granada; E. Steinheil, C. H. xiv. pp. [illegible]07–110.

For[illegible]nax bonvouloiri (resembles a *Bombus* on the wing) p. 108, *proximus*, p. 109, [illegible] spp. nn., *id. l. c.* New Granada.

ELATERIDÆ.

E. CANDÈZE, CR. Ent. Belg. xviii. p. cxviii. *et seq.*, raises the number of species [illegible] Semper's collection from the Philippine Isles to 66, by describing 37 new, from H. Burmeister, S. E. Z. xxxvi. pp. 265–273, makes various observations on 36 species from the Argentine States, chiefly with reference to Candèze's monograph and the localities therein given. *Dilobitarsus bigatus* [illegible] another placed in *Adelocera*; *Monocrepidius fusco-fasciatus* and *lignarius* identical; *M.* [illegible] species; *M. insignis* and *M. dimidiatus* are queried as are also [illegible] *oblongo-punctatus*, Blanch., = *scalaris*, var. Observations on species described by Strobel, of which *Heteroderes patagonus* is [illegible] *pictus* = *M.* [illegible] considered not separable from *H. rufangulus*, *Drasterius* Cand. [illegible] *Monocrepidius bellus*, and *Cosmesus obtusipennis* = *bonariensis*, *Semiotus* [illegible]

Semiotus affinis, Guér., and *S. candezii*, Kirsch, considered as local varieties of *S. intermedius*, Hbst.; *S. illigeri*, Guér., var. from New Granada. C. A. Dohrn, S. E. Z. xxxvi. pp. 83–86.

Meristhus texanus, Horn, = *scrobinula*, Cand.; *Corymbites præses*, Horn (*Drasterius*, Cand.), = *conjungens*, Lec.; *Monocrepidius texanus*, Cand., ? = *vespertinus*, F.; *Agriotes inversus*, Cand., is a *Sericosomus*, and ? = *S. flaripennis*, Mots.; *Limonius nitidicollis*, Lec., = *consimilis*,

Walk.; *Asaphes verna*, Cand., = *morio*, Lec., ♂; *A. coracinus*, Cand., = *carbonatus*, Lec.; other so-called species of *Asaphes* are probably merely sexes. G. H. Horn, Tr. Am. Ent. Soc. v. pp. 148 & 149.

Pyrophorus. Individuals from Magdalena, connecting *P. pellu*[illegible] Esch., and *clarus*, Germ., with observations on the intensity of the [illegible]*erus*; of the latter; E. Steinheil, C. H. xiv. p. 132. [illegible]most

Luminous larvæ of three different forms (one referred dubiously [illegible]d *M. Asaphes memnonius*), from Massachusetts, described by B. P. Ma[illegible] Psyche, i. pp. 89–93. [illegible]ia,

New genera and species :—

Stibadoderus, H. Burmeister, *l. c.* p. 271. Next to *Deromecus* and *Pomachilius*, but with no prosternal antennal furrows, and simple tarsi, with no trace of appendage to the 4th joint. For *S. murinus*, id. *l. c.* p. 272, S. Patagonia.

Isidus, E. Mulsant & C. Rey, Ann. Soc. L. Lyon (n.s.), p. 405. Near *Athous*, with 2nd joint of antennæ very short, and joints 6–10 subparallel. *I. moreli*, iid. *l. c.* p. 406, Island of Rondinara and Cette.

Adelocera luzonica, E. Candèze, *l. c.* p. cxix. Luzon.

Lacon molitor, Mindanao, *dorcinus*, Bojol, *id. l. c.* p. cxix.

Alaus superbus and *semperi*, Mindanao, *brevipennis*, Luzon, &c., *id. l. c.* p. cxx.; *A. doriæ*, p. 1000, *arfakianus*, p. 1003, R. Gestro, Ann. Mus. Genov. vii. Mount Arfak, New Guinea.

Semiotus badeni, p. 111, *quadrivittis*, p. 113, E. Steinheil, C. H[illegible] xiv. W. Columbia.

Heterocrepidius columbicus, id. *l. c.* p. 114, Medellin, New Gran[illegible]ada.

Psephus philippensis, Candèze, *l. c.* p. cxxi. Bojol.

Physorrhinus 6-*notatus*, Steinheil, *l. c.* p. 126, New Granada. [illegible] *l. c.* New

Anchastus candezii, p. 126, *niger*, and 3-*signatus*, p. 127, *id.* Granada; *A. rufangulus*, Candèze, *l. c.* p. cxxi. Mindanao. [illegible]*tus*, p. 115,

Anoplischius larochii, p. 114, *compressicornis* and *attenua*[illegible], *l. c.* New *ebeninus* and *athooides*, p. 116, *parallelus*, p. 117, Steinhei[illegible] Granada.

[illegible]*rufo-limbatus*,

Ischiodontus piceus, p. 117, *scutellaris*, *bi-emarginatus*, and[illegible]w Granada. p. 118, *nocturnus*, *vulpes*, and *brevicollis*, p. 119, *id. l. c.* Ne[illegible] Malacca.

Elius serraticornis, T. Kirsch, MT. Mus. Dresd. i. p. 31[illegible]*s* and *varians*,

Monocrepidius candezii, id. *ibid.* Malacca; *M. angulat*[illegible]123, Steinheil, p. 121, *baleni* and *aoloides*, p. 122, *piceus* and *variegatus*, p. [illegible] Paraná. *l. c.* New Granada; *M. decorus*, H. Burmeister, *l. c.* p. 267, *velieri* [?], E.

Athous amicus, É. Perris, L'Ab. (3) i. p. 4, Corsica; *A.* [illegible]ica. Mulsant & C. Rey, Ann. Soc. L. Lyon (n.s.) xxi. p. 416, [illegible] *Æ.*

Æolus elegantulus, H. Burmeister, *l. c.* p. 268, Buenos Aires; [illegible]*us* 3-*fasciatus*, *bicinctus*, and *cruciger*, p. 124, *minarum*, *garzoni*, and *fuscat*[illegible] p. 125, *feretrum*, p. 126, Steinheil, *l. c.* New Granada.

Drasterius insularis, Candèze, *l. c.* p. cxxi. Bojol.

Megapenthes thoracicus, Kirsch, *l. c.* p. 32, Malacca; *M. diploconoides*, *opacipennis*, *inflatus*, *angulosus*, p. cxxii., *nigricornis*, p. cxxiii., Candèze, *l. c.* Philippines.

Melanoxanthus bipartitus, *exclamationis*, *approximatus*, *rhomboidalis*,

p. cxxiii., *terminatus*, *decemguttatus*, *sextus*, *infimus*, p. cxxiv., Candèze, *l. c.* Philippines.

Cardiophorus fasciatus, *unicolor*, p. cxxiv., *inconditus*, *spernendus*, p. cxxv. *id. l. c.* Philippines.

Diploconus separandus, Kirsch, *l. c.* p. 32, Malacca; *D. cervinus*, *umbilicatus*, p. cxxv. *angusticollis*, *politus*, p. cxxvi., Candèze, *l. c.* Philippines.

Penia laticornis, Kirsch, *l. c.* p. 33, Malacca.

Ludius aberrans, id. *ibid.* Malacca; *L. hirsutus*, Candèze, *l. c.* p. cxxvi. Philippines.

Agonischius fusiformis, *brevicollis*, *basalis*, *marginatus*, id. *l. c.* p. cxxvii. Philippines; *A. æneipennis*, Kirsch, *l. c.* p. 33, Malacca.

Pomachilius atriceps, p. 128, *nigrifrons* and *alticola*, p. 129, *longicollis* and *semicolon*, p. 130, Steinheil, *l. c.* New Granada.

Monadicus 4-notatus, p. 130, *humeralis*, p. 131, *id. l. c.* New Granada.

Probothrium rufo-pubescens, id. *l. c.* p. 133, New Granada.

Agelasinus limbatipennis, p. 133, *suturalis* and *metallescens*, p. 134, *id. l. c.* New Granada.

Cosmesus ater, p. 134, *suturalis* and *depressus*, p. 135, *id. l. c.* New Granada.

Agriotes olivieri, Desbrochers des Loges, Bull. Soc. Ent. Fr. (5) v. p. cxxxviii. Algeria (named and diagnosed, not described formally).

Glyphonyx suturellus and *niger*, Steinheil, *l. c.* p. 136, New Granada; *G. posticus*, Mindanao, *erraticus*, Luzon and Mindanao, Candèze, *l. c.* p. cxxvii.

Cebrionidæ.

Cebrio gigas. Observations on the larva, found deep in the ground, at the roots of a tree; H. Lucas, Bull. Soc. Ent. Fr. (5) v. p. ccx.

Rhipidoceridæ.

Rhipidocera mystacina, F. On various forms of this species from Australia; C. O. Waterhouse, Tr. E. Soc. 1875, p. 202.

Dascillidæ.

Helodes subterraneus, sp. n., E. Mulsant & C. Rey, Opusc. Ent. xvi. p. 173, Massanne.

Cyphon robustus, sp. n., J. L. Leconte, Tr. Am. Ent. Soc. v. p. 171, New York.

Eucinetus strigosus, p. 171, Pennsylvania, *punctulatus*, p. 172, Michigan, spp. nn., *id. l. c.*.

Telephoridæ.

Lycides.

Eros. The species tabulated; S. A. de Marseul, Nouv. et Faits, 1875, p. xliii.

Eros minutus. Observations on habits, and description of malformation; E. C. Rye, Ent. M. M. xii. p. 107.

Lycus bicittatus, sp. n., T. Kirsch, MT. Mus. Dresd. i. p. 34, Malacca.

Dictyoptera rubripennis, Colorado, *dimidiata*, California, *ruficollis*, Colorado and Oregon, J. L. Leconte, Tr. Am. Ent. Soc. v. p. 172; *Dictyopterus nigricauda*, p. 34, *lineatus*, p. 35, T. Kirsch, *l. c.* Malacca: spp. nn.

Metriorrhynchus cyaniventris, sp. n., T. Kirsch, *l. c.* p. 35, Malacca.

Calopterum signicolle, sp. n., *id. l. c.* p. 36, Malacca.

Cania ind[*ic*]*a*, sp. n., *id. l. c.* p. 36, Malacca.

Eros decipiens, S. A. de Marseul, *l. c.* p. xlii., Central Spain; *E. æneicollis*, T. Kirsch, *l. c.* p. 36, Malacca: spp. nn.

Lampyrides.

Lampyroidea, g. n., A. Costa, Bull. Soc. Ent. Fr. (5) v. p. clxix. Having the essential characters of *Luciola*, but with rudimentary elytra and no membranous wings. For *Lamp. syriaca*, sp. n., *id. ibid.* Ramich, Syria, and *Luc. græca*, Fairm.

Lampyris attenuata, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 512, Kéruan (Tunis).

Lamprorrhiza morio, sp. n., F. Baudi, Bull. Ent. Ital. vii. p. 37, Etruria.

Luciola affinis, sp. n., C. Ritsema, Tijdschr. Ent. xviii. p. 129, Congo.

Drilides.

Anadrilus, g. n., T. Kirsch, MT. Mus. Dresd. i. p. 37. Allied to *Selasia*, Cast., and *Eugeusis*, Westw., differing from the former in its simple falcate mandibles, and from the latter in its maxillary palpi, which are shorter than the head, with the last joint larger than the rest together, broad ovate. For *A. indus*, sp. n., *id. ibid.* Malacca.

Telephorides.

Podistrina, g. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 514. Much smaller than *Podistra*, Mots., which it resembles in form and in its want of wings, but differing in the very short ovate head, the 2nd antennal joint being equal to the 4th, and the elongate compressed basal joint and bilobed 4th joint of its tarsi, of which the claws are short, arched, and simple. Last abdominal segments suggestive of *Biurus* and *Ichthyurus*. Type, *P. doriæ*, sp. n., *id. ibid.* Tunis.

Rhagonycha convexicollis, sp. n., *id. l. c.* p. 513, Tunis.

Malthodes tunisius, sp. n., *id. ibid.* Tunis.

Melyrides.

Anthocomus fenestratus, Linder, is not *regalis*, Charp., which is a var. of *fasciatus*; a corresponding var. of *equestris* from Austria is named *dealbatus*. G. Kraatz, Deutsche E. Z. 1875, p. 420.

Melyrosoma blackmorii, sp. n., T. V. Wollaston, Ent. M. M. xi. p. 218, Mogador.

Prionocerus (*Idgia*) *suturalis*, p. 38, *P.* (*Deromma*) *redtenbacheri*, p. 38, and *P.* (*D.*) *setifrons*, p. 39, spp. nn., T. Kirsch, MT. Mus. Dresd. i. Malacca.

CLERIDÆ.

Thanasimus melanocephalus, Chevr., = *nubilus*, Kby., var.; *Hydnocera funebris*, Chevr., = *scabra*, Lec.; *Peloniam pennsylvanicum*, Chevr., ? = *Orthopleura damicornis*, F., var.; *P. militare*, Chevr., = *Enoplium humerale*, Horn; *P. lineaticolle*, Chevr., = *Lebasiella maculicollis*, Lec., and ? = *P. filiolus*, Chevr.; G. H. Horn, Tr. Am. Ent. Soc. v. p. 149.

Tarsostenus biguttatus, Montr., ex. typ., = *univittatus*, Rossi; A. Fauvel, Bull. Soc. Ent. Fr. (5) v. p. lxxxviii.

Allochotes [*-cota*, Motschoulsky, *Coleoptera*, 1859; *-cotus*, Mayr, 1864, *-ton*, 1874, *Hemiptera*; Loew, *Diptera*, 1864], g. n., J. O. Westwood, *ran.* E. Soc. 1875, p. 241. Semiglobose, Coccinelliform, very glabrous, *Zoo*; differs from *Chorecine*, Pasc., in its antennæ being incrassate at *Zoo*ex, its wider thorax, and smooth elytra. *A. bicolor*, ibid. pl. ix. Per., Macassar (and var.? *mortica*, p. 242, Morty), *apicalis*, New Guinea, *jsomelina*, Dorey, *eubrioides*, Sumatra, *coccinella*, Ceram, *fulvescens*, atchian, *scymnoides*, Singapore, p. 242, spp. nn. [descriptions of those species averaging a little over 10 words each !], *id. l. c.*

LYMEXYLIDÆ.

Hylecœtus americanus, Harris, ♀, = *lugubris*, Say; G. H. Horn, Tr. Am. Ent. Soc. v. p. 149.

Atractocerus bifasciatus, p. 544, Aru, *bruijni* and *celebensis*, p. 545, S. E. Celebes, spp. nn., R. Gestro, Ann. Mus. Genov. vi.

PTINIDÆ.

Niptus holosericeus in tea, &c., with general observations; Ent. viii. pp. 43–45.

Mezium hirtipenne, Reiche, = *affine*, Boield., abraded; Desbrochers des Loges, Bull. Soc. Ent. Fr. (5) v. p. cxxxix.

Ectrephes, Pasc., is to be placed in the *Eumorphides* (*Endomychidæ*), after *Trichodeus*, according to Sallé & Chevrolat, Bull. Soc. Ent. Fr. (5) v. p. clxxxviii.

Dryophilus. A synopsis of the species of the Mediterranean basin by E. Abeille de Perrin, Ann. Soc. Ent. Fr. (5) v. pp. 207–212. Mulsant's genus *Priobium* is admitted with some hesitation, most of the characters failing. In *Dryophilus* proper, two sections are made, one with eyes, antennæ, and general form alike in both sexes, the other in which the ♂ has enormous eyes, long antennæ, &c.

Homophthalmus, subg. n. of *Dryophilus*, id. *l. c.* p. 209. Eyes, antennæ, and form alike in both sexes. For *D. rugicollis*, Muls. & R., and ? *Ptinoides raphaelensis*, Muls. & R., = *Hedobia succincta*, Chevr. (on the latter synonymy, *cf.* Desbrochers des Loges, *l. c.* p. cxxxviii.)

Dryophilus forticornis, sp. n., Perrin, *l. c.* p. 212, Syria.

Gastrallus pubens, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 515, Nafta (Tunis).

Cioidæ.

Perrin, E. Abeille de. Essai monographique sur les Cisides européens et circa- méditerranéens. Marseilles: 1874, 8vo.

51 species are enumerated, included in 5 genera (Thomson's genera not being adopted). *Cis causacicus*, Mén., = *rugulosus*, Marsh., var., the latter not being separable from *boleti*; *C. sublaminatus*, Wanck., = *fissicornis*, Mell.; *Xylographus punctiger*, Waltl, ? = *Ennearthrum perforatum*, Gyl.; *Cis laricinus*, Mell., and *C. filum*, Perrin [Zool. Rec. xi. p. 299], are referred to *Ennearthrum*; a var. n. *submicans* of *C. villosulus*, Msh., is described, p. 28; the latter insect and *C. pygmæus*, Msh., although older in date, sunk in favour of *C. setiger*, Mell., and *C. oblor* Mell., respectively [see Harold, C. H. xiv. p. 151, as to the wrong done; *Cis boleti* of Scopoli being adopted by Perrin, though that having description would fit any of the 51 species recorded !]; *Cis punc* and no Luc. (*nec* Gyl.), is renamed *lucasi*. vria,

Cis nitidicollis, p. 32, Vervins, Belgium, *libanicus*, p. 58, Leban *peyronis*, p. 65, Algiers, Abeille de Perrin, l. c.; *C. quadridentulus*, ♀, Perris, L'Ab. (3) i. p. 5 [? Mt. de Marsan: already described by Abeill *cf.* Zool. Rec. xi. p. 299]: spp. nn.

Ennearthrum reichii, spp. nn., Abeille de Perrin, *l. c.* p. 89, Egypt.

Tenebrionidæ.

F. Baudi, Ann. Mus. Genov. vi. pp. 88–115, vii. pp. 684–703 [respectively dated 1874 and 1875 on titles, but not published until 1875 and 1876, and not arriving in this country until the latter year], gives a catalogue of the species of the European and circum-Mediterranean fauna existing in the collections of the Civic Museum of Genoa, describing many as new.

The same author, Bull. Ent. Ital. vii. pp. 3–36, 91–106, 137–165, 209–237, continues his enumeration and revision of species existing in Italian collections. Some new species are indicated and described sufficiently for identification, though referred to Deutsche E. Z. 1875. The species of many genera are tabulated.

The same author, Deutsche E. Z. 1875, pp. 17–119, commences a critical examination of the species of the European and circum-Mediterranean fauna contained in the 3rd edition of Dejean's Catalogue, the types representing which are now in the Royal Museum at Turin, with references to modern authors, and descriptions of new species (*Zophosides—Asidides*). It would be impossible here to reproduce the synonymy given, which refers to specimens more than species. An immense number of observations, indications of new species and varieties, new localities, &c., are contained in this paper.

Haag-Rutenberg, G. Beiträge zur näheren Kenntniss einiger Gruppen aus der Familie der Tenebrioniden. Berlin: 1875, 8vo, pp. 1–56; forms Heft vii. of Deutsche E. Z. 1875.

Refers to *Adesmiides*, *Megageniides*, *Tentyriides*, and *Pimeliides*. A new genus and several new species are described.

Burmeister, H. Melanosoma Argentina. S. E. Z. xxxvi. pp. 457–500.

Discusses 76 species from La Plata (*Tentyriides—Pedinides*). The author objects to the union of the *Melanosomata* and *Tenebrionidæ*, chiefly on account of the want of wings in the former.

J. Faust, Hor. Ent. Ross. xi. pp. 162–252, in his Contributions to a knowledge of the Beetles of European and Asiatic Russia, including the coasts of the Caspian, redescribes, compares, and criticizes various little-known species of *Zophosis*, *Arthrodeis*, *Capnisa*, *Dælognatha*, *Colposcelis*, *Alcinoe*, *Calyptopsis*, *Psammocryptus*, *Oogaster*, *Dichillus*, *Lachnogya*, *Sternodes*, *Trigonoscelis*, *Lasiostola*, *Ocnera*, *Pachyscelis*, *Pimelia*, *Blaps*, *Prosodes*, *Dila*, *Crypticus*, *Heterophylus*, *Penthicus*, *Amarantha*, *Platydema*, and *Alphitophagus*. Some new species are described.

Zophosides.

Zophosis puncticeps, sp. n., F. Baudi, Ann. Mus. Genov. vi. p. 90, Persia.

Erodiides.

Leptonychus convexiventris, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 517, note, Algerian Sahara.

Piestognathus asperipennis, sp. n., *id. l. c.* p. 516, Nafta (?= *P. douei*, Luc.; the genus is certainly not distinct from *Leptonychus*).

Erodius externus, sp. n., *id.* Pet. Nouv. (1875) p. 543, Mogador.

Arthrodeis erodioides, sp. n., *id. ibid.*, Mogador.

Adesmiides.

General observations, especially on South African species. *Adesmia eburnea*, Pasc., is a *Stenocara*; *Metriopus nassatus*, Er., is an *Adesmia*. *A. reticularis*, Gemm. (*reticulata*, Gerst.), ♀, from Mozambique, is specifically distinct from the ♂, and is named *gerstæckeri*, p. 20; *A. convergens*, Walker, ? = *monilis*, Klg. (*dubia*, Sol.), var.; *A. concisa*, Walk., ? = *longipes*, F.; *A. audouini*, Sol., ex. typ., = *lacunosa*, Klug; *A. olivieri*, Rche., = *ulcerosa*, Klg.; *A. parallela*, Mill., ? ? = *montana*, Klug, var.; *A. spinifera*, Perch., = *Stenocara longipes*, Ol.; *A. procera*, Mill., = *anthracina*, Klug; *A. insignis*, Mill., = *dilatata*, Klug; *A. perplexa*, Schaum, = *reticulata*, Sol., *nec* Klug (Klug's insect being a small form of *anthracina*, Klg.); *Pimelia aranеipes* Ol., ? = *Stenocara conifera*, Sol., which, with *S. lævicollis* and *fabricii*, Sol., and *Pimelia spinifera*, Perch., = *St. longipes*, Ol. (Gemminger's name *herbsti* being rejected, as *Pimelia longipes*, F., is a true *Pimelia*); *S. miliaris*, Er., = *gracilipes*, Sol., which is from Angola; *S. winthemi* and *bonellii*, Sol., = *morbillosa*, F., varr., and a var. n. *dubia* is described from the Cape of Good Hope, p. 29; *Pimelia 6-lineata*, Hbst., = *S. dentata*, F., ♀; *S. cavifrons*, Sol., = *serrata*, F.; *Metriopus* seems of doubtful generic value. Haag-Rutenberg, Beiträge z. Kennt. der Tenebr., pp. 3–41.

Adesmia pulcherrima, Sol., var. n. *polita*, and *A. metallica*, Kl., var. n. *syriaca*, from Syria; F. Baudi, Ann. Mus. Genov. vi. p. 95 (and Deutsche E. Z. 1875, p. 30, note).

Adesmia bicolor, p. 7, Congo, *unguicularis*, p. 7, *paiva* and varr. *con-*

fluens and *conjuncta*, p. 8, *cribripes*, p. 12, *lurida*, p. 14, S. Africa, *rugatipennis*, p. 10, N'Gami, *multistriata*, p. 10, *globosa*, p. 11, *tuberculipennis*, p. 12 (? = *cribripes*, var.), *scrobipennis*, p. 13, *fettingi*, p. 15, Damara-land, *foveipennis*, p. 13, Cape of Good Hope, *mouffleti*, p. 14, Benguela, *orientalis*, E. India, *punctipennis*, Sennaar, p. 18, Haag-Rutenberg, l. c. ; *A. fagergreeni*, Baudi, *l. c.* p. 92, S. Persia : spp. nn.

Stenocara vittata, p. 27, N'Gami, *cursoria*, p. 28, *gibbipennis*, p. 39, Cape of Good Hope, *depressa* and *arescens*, p. 34, *globulum*, p. 38, Damara-land, *batesi*, p. 35, Angola and Benguela, spp. nn., Haag-Rutenberg, *l. c.*

Megageniides.

Pedionomus, g. n., Haag-Rutenberg, Beiträge, &c., p. 42. Differs from *Megagenius* in its clypeus being strongly incrassate in front and impressed with grooves, and its parapleuræ having distinct antennal furrows : metathoracic epimera more as in *Adesmia*. Probably connects the *Megageniides* and *Adesmiides*. For *Metriopus favosus*, Er., and *P. cavifrons*, p. 43, Angola, and *brevipes*, p. 44, N'Gami, spp. nn.

Tentyriides.

Tentyria frivaldskii. On its habits in the sandy plains of the Banat, Hungary ; Szmolay de Temesvar, Nouv. et Faits, 1875, p. lvii.

Tentyria puncticeps, Mill., var. n. *persica*, p. 98, and *T. grossa*, Bess., var. n. *punctiventris*, p. 100, N. Persia, F. Baudi, Ann. Mus. Genov. vi.

Tentyria grossa, Besser. Notes showing it to be carnivorous or insectivorous : L. v. Bandi, Bull. Ent. Ital. vii. pp. 202–204.

Mesostena and *Eulipus* differentiated, and observations on various species of *Talpophila* ; Haag-Rutenberg, C. R. xiv. pp. 82 & 89.

New genera and species :—

Rhammatodes, Haag-Rutenberg, C. R. xiv. p. 83. Allied to *Mesostenopa* and *Mesosterna* ; but distinguishable by its very long filiform antennæ. Type, *R. longicornis*, id. *l. c.* p. 84, N'Gami.

Euleantus, id. *l. c.* p. 85. Allied to the preceding. *E. humeralis*, id. *ibid.* N'Gami.

Microderopsis, id. *l. c.* p. 86. Allied to the preceding, having also the basal keel of the elytra produced into a tooth ; thorax and elytra cordiform. *M. benguelensis*, id. *l. c.* p. 87, Benguela.

Tagenodes, id. *l. c.*, p. 87. Facies of *Stenosis*, but with strongly porrected clypeus, different antennæ, and small feeble legs. *T. mouffleti*, id. *l. c.* p. 88, Angola, Benguela.

Gnathosia pumila, F. Baudi, Deutsche E. Z. 1875, p. 31, note, Armenia.

Calyptopsis amaroides and *harpaloides* (with varr. ? *punctiventris* and *armeniaca*), id. Ann. Mus. Genov. vi. p. 96, and Deutsche E. Z. 1875, pp. 32 & 33, note, N. Persia ; *C. deplanata*, p. 177, R. Rubas, and Krasnowodsk, *clypeata*, Schahrud, Persia, *incerta*, Krasnowodsk, p. 179, J. Faust, Hor. Ent. Ross. xi.

Pachychila humerosa, p. 518, Tameghza (Tunis), *angulicollis*, p. 543,

Mogador, L. Fairmaire, Ann. Mus. Genov, vii.; *P. cossyrensis*, E. Ragusa, Bull. Ent. Ital. vii. p. 252, I. of Pantellaria; *P. intermedia* and *fritschi*, p. 45, *cognata*, p. 46, *breviuscula*, p. 47, *externe-costata*, p. 48, *reini* and *fairmairii*, p. 49, *maroccana* and *plasoni*, p. 50, *doriæ*, p. 51, Haag-Rutenberg, Beiträge, &c., N. Africa (chiefly Morocco).

Microdera marginata, Baudi, Ann. Mus. Genov. vi. p. 97 (D. E. Z. 1875, p. 53), S. Persia; *M. scyta*, id. Deutsche E. Z. 1875, p. 55, Bokhara.

Tentyria oblongipennis, p. 518, *cribricollis*, p. 519, L. Fairmaire, Ann. Mus. Genov. vii. Tunis; *T. mauritanica*, Baudi, Deutsche E. Z. 1875, p. 46, Egypt; *T. parallela*, p. 98 (D. E. Z. 1875, p. 49), N. Persia, and *T. sommieri*, p. 99 (D. E. Z. 1875, p. 47), Island Linosa, *id.* Ann. Mus. Genov. vi.

Rhytidonota morio, Baudi, Deutsche E. Z. 1875, p. 52, Nubia (= *subfossulata*, Sol., and probably came from E. India; G. Haag, *tom. cit.* p. 120).

Stegastopsis persica and *crassicornis*, Baudi, Ann. Mus. Genov. vi. p. 101 (D. E. Z. 1875, pp. 59 & 60), Persia.

Mesostenopa major, p. 101, *dentrix*, p. 102 (D. E. Z. 1875, pp. 56 & 57), *id.* Ann. Mus. Genov. vi. Persia.

Micipsa persica, id. *ibid.* (D. E. Z. 1875, p. 58), Bender Abbas; *M. kerimi* and *angustipennis*, p. 520, Tunis, *gracilis*, p. 522, *poripennis*, p. 523, Algerian Sahara, Fairmaire, l. c.; *M. rubescens*, p. 90, *similis*, p. 91, Persia, *batesi*, p. 92, Syria, Haag-Rutenberg, *l. c.*

Asp[illegible]altesthes carinatus, Haag, C. R. xiv. p. 88, Angola.

Talpo[illegible] weinfurthi, id. *l. c.* p. 90, Djur.

Melan[illegible]sutaceus, L. Fairmaire, Pet. Nouv. (1875) p. 495, Biskra.

Hyper[illegible]doriæ, Baudi, Ann. Mus. Genov. vi. p. 102 (D. E. Z. 1875, p. 61), S. [illegible]sia.

Epitragides.

Himatismus forticornis, F. Baudi, Ann. Mus. Genov. vi. p. 103 (D. E. Z. 1875, p. 64), S. Persia; *H. natalensis*, Caffraria, and *vestitus*, Cape of Good Hope, *id.* Deutsche E. Z. 1875, p. 63, note, spp. nn. (*H. forticornis* = *villosus*, Haag. var.; G. Haag, Deutsche E. Z. 1875, p. 120.)

Adelostomides.

HAAG-RUTENBERG, G. Monographie der Eurychoriden (*Adelostomides*, Lacord.). Verh. Ver. Rheinl. 1875, pp. 359–428; also separately, Berlin, 1875, 8vo, pp. 1–70; also forms Heft v. of Deutsche E. Z. 1875.

The group is named after *Eurychora*, which is the most typical, richest in species, and oldest in date; the fact of the one European repr[illegible]ative being an *Adelostoma* being properly not allowed to have ap[illegible]ht: Lacordaire also is wrong in making a division between the *[illegible]ostomides* and *Eurychorides*, as recent discoveries merge the t[illegible]D. E. [illegible]sions. *Dacoderus*, Lec., with 11 antennal joints, is probably one o[illegible]Deut[illegible]*Stenosides*, no Eurychorid occurring in the New World. The known genera (15, whereof 7 new) and species are tabulated and characterized. *Eurychora modesta*, Hbst., = *ciliata*, F., of which *major*, Sol., is a var.;

Ann. Mus. Genov. vi. p. 97 (D. E. Z. 1875, p. 53), S. Persia; *M. scyta*, id. Deutsche E. Z. 1875, p. 55, Bokhara. *Blaps lævigata*

E. cinerea, Sol., *pusilla*, Hbst., = *barbata*, Ol., whereof varr. nn. *hirta*, *nitida*, and *granulosipennis*, from Caffraria are described, p. 17; *E. crenata*, Fåhr., *nec* Sol., is renamed *fahræi*, p. 22; *E. terrestris*, Fåhr., = *crenata*, Sol.; the eyes in *Steira* are not dorsal, but as in the other genera, being merely difficult to see underneath; *Eurychora squalida*, Baudi, = *Hidrosis crenato-striata*, Redt.; *Zygas*, Pasc., = *Lycanthropa*, J. Thoms.; *Adelostoma carinatum* and *cordatum*, Sol., *cristatum*, Esch., = *sulcatum*, Dup., varr., of which varr. nn. *nitidum*, *parallelum*, and *deplanatum* are described, pp. 61–64.

New genera and species:—

Peristeptus, Haag, *l. c.* p. 24. Allied to *Pogonobasis*; elytra and epipleura separated by a sharp margin. For *Pog. lævigata* and *cribrata*, and *Eurychora platessa*, Gerst., *E. ovata*, Fåhr., and *Per. gestroi*, Haag, *l. c.* p. 27, Abyssinia.

Geophanus, id. *l. c.* p. 46. *Psaryphis*, Lac., *nec* Er., with thinner antennæ and deep antennal grooves. For *P. confusa*, Fåhr., and *G. tristis*, p. 49, Cape of Good Hope, and *sepulchralis*, p. 50, N'Gami, Haag, *l. c.*

Smiliotus, id. *l. c.* p. 52. Follows *Psaryphis*: elytra closely applied t thorax, antennæ with bristly, broad, cyathiform joints. *S. steiroides*, id. *l. c.* p. 53, Caffraria.

Platysemus, id. *l. c.* p. 55. Allied to the preceding in the antennæ, which resemble those of *Psaryphis*, but have a deep furrow. *P. benguelensis*, id. *ibid.* Benguela.

Acestus, id. *l. c.* p. 56. Allied to *Smiliotus*, but with en different antennal structure. *A. elongatus*, Cape of Good Hope on *uginosus*, Svakop, *id. l. c.* p. 57.

Eutichus, id. *l. c.* p. 59. No differential comparison possible. For *E. wahlbergi*, id. *l. c.* p. 60, S. Africa.

Herpsis, id. *l. c.* p. 66. Next after *Adelostoma*; epipleura with no sharply defining margin. For *A. rugosum*, Gory, of which *A. parvum*, Sol., is a var.

Hidrosis, id. Deutsche E. Z. 1875, p. 120. Differs from *Eurychora* in the short antennæ, which are otherwise constructed, and from *Steira*, to which it is most closely allied, in the deep antennal furrows, narrower elytra, crenulated margin, and want of the characteristic mesosternal and segmental characters. For *Eurychora squalida*, Baudi (*infrà*), = *Steira ægyptiaca*, Kirsch, = *S. crenato-costata*, Redt., and *E. levaillanti*, Luc. Also *H. incostata*, sp. n., Haag, Monogr. der Eurychor. p. 67, Cape Verde.

Eurychora alata, L. Fairmaire, Ann. Mus. Genov. vii. p. 523, Tozer (Tunis); *E. squalida*, F. Baudi, Deutsche E. Z. 1875, p. 65, E ; *E. batesi*, p. 8, *terrulenta* and *suturalis*, p. 10, *tumidula*, *luctuosa*, an *tris* an p. 14, *convexiuscula*, p. 19, *murina*, p. 20, *similis*, p. 24, Sou Z. 1875, *angolensis*, p. 9, Angola, *punctipennis*, p. 21, Benguela, *villos* Kras. Damara-land, Haag, Monogr. Eurych.

Pogonobasis opaca, p. 30, Arabia, *raffrayi*, p. 32, Abyssinia, Bog Haag, *l. c.*

Steira dohrni, p. 35, *stali*, p. 36, *id. l. c.* S. Africa.

Lycánthropa denticollis, p. 42, *depressa*, p. 43, *plicata*, p. 44, *plana*, p. 45, *id. l. c.* Cape of Good Hope.

Adelostoma abyssinicum, p. 64, Abyssinia, *abbreviatum*, Benguela, and *pygmæum*, locality unknown, p. 65, *batesi*, p. 68, Yemen, *id. l. c.*

Stenosides.

Stenosis tenuicornis, sp. n., F. Baudi, Ann. Mus. Genov. vi. p. 104 (D. E. Z. 1875, p. 69), S. Persia.

Dichillus ? *rugatus*, id. *l. c.* p. 105 (D. E. Z. 1875, p. 70, note), N. Persia, and *D.* ? *bicarinatus*, id. Deutsche E. Z. 1875, p. 70, Algeria: spp. nn.

Microtelus persis, sp. n., *id. l. c.* p. 106 (D. E. Z. 1875, p. 73), S. Persia.

Oogaster doriæ, sp. n., *id. ibid.* Tauris.

Akidides.

Akis (*Cyphogenia*) *gibba*, Fisch., var. n. *persica*; Baudi, *l. c.* p. 108, Persia. *Cf.* also Bull. Ent. Ital. vii. p. 8, and Deutsche E. Z. 1875, p. 78, note.

Morica planata, F., var. n. *tingitana*, id. Deutsche E. Z. 1875, p. 75, note, Tangiers.

Scaurides.

Gedeon persicatus, Guér., = *crispatus*, Germ.; H. Burmeister, S. E. Zeits. 1875, p. 464.

Scaurophila [illegible] *licornis*, p. 524, Kéruan, *parvicollis*, Algerian Sahara, *maroccanus* [illegible] *asperulus*, Mogador, p. 525, note, *ovipennis*, p. 526, Gafsa, Tunis, *quadr*[illegible]*collis*, Cabylia, *amplicollis*, Lambessa, *ibid.* note, L. Fairmaire, Ann. Mus. Genov. vii.; *S. interruptus*, p. 11 (D. E. Z. 1875, p. 83; = *barbarus*, Sol., var., *teste* G. Haag, *l. c.* p. 434), Tunis, *latipennis*, p. 13 (D. E. Z. 1875, p. 82), Barbary, F. Baudi, Bull. Ent. Ital. vii.: spp. nn.

Scotobius perlatus, sp. n., H. Burmeister, *l. c.* p. 464, Patagonia.

Emallodera perlifera, sp. n., *id. l. c.* p. 467, Mendoza, Catamarca (? = *Scotobius cacicus*, Lac.).

Blaptides.

Blaps cordicollis, Sol., and *judæorum*, Mill., differentiated as good species; G. Haag, Deutsche E. Z. 1875, p. 434.

Blaps eaten by Tunisian women to increase fatness, according to Letourneux; Pet. Nouv. (1875), p. 537.

Blaps producta, Dej., var. (?) n. *kordofana*, F. Baudi, Deutsche E. Z. 1875, p. 92, Kordofan; *B.* (*Platyblaps*) *deplanata*, Mén., var. n. *curvipes*, id. Ann. Mus. Genov. vi. p. 111, S. Persia.

Blaps strigicollis, id. Bull. Ent. Ital. vii. p. 20, Armenia; *B.* (*Prosodes*) *lævigata* (sp. n. ?), p. 109 (D. E. Z. 1875, p. 101), and *cribrella*, p. 110 (D. E. Z. 1875, p. 104), Schahkuh, Persia; *B. scabiosa*, p. 111 (and Deutsche E. Z. 1875, p. 93), Taschkend, *id.* Ann. Mus. Genov. vi.; *B. dehaani* (sp. n. ?), *id.* Deutsche E. Z. 1875, p. 100, W. Persia; *B. divergens*, L. Fairmaire, Ann. Mus. Genov. vii. p. 527, Tunis; *B. scabiosa*,

J. Faust, Hor. Ent. Ross. xi. p. 229 (Sept. 25, 1875), "Tasch," Persia [see Baudi, *suprà*] : spp. nn.

Prosodes dilaticollis, p. 234, Songarei, *persica*, p. 236, *pustulata*, p. 237, Schahrud, Persia, *solskii*, p. 239, Krasnowodsk, *gracilis*, p. 241, Turkestan, J. Faust, *l. c.* spp. nn.

Dila angustata, sp. n. ?, F. Baudi, Deutsche E. Z. 1875, p. 102, Persia, and var. ? *laticollis* (Kol. MS.), *id. l. c.* p. 103.

Asidides.

Asida porcata, Dej., var. n. *massiliensis*, F. Baudi, Deutsche E. Z. 1875, p. 115, Marseilles ; *A. bajardi*, Sol., var. n. *ligurica*, id. Bull. Ent. Ital. vii. p. 27, E. Liguria.

Asida vage-costata, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 528, Tunis ; *A. atrata*, sp. n. ?, F. Baudi, Deutsche E. Z. 1875, p. 107, Cadiz ; *A. dufouri*, sp, n., *id. l. c.* p. 110, Spain (= *servillii*, Sol., ♀ ; G. Kraatz, *l. c.* note).

Cardiogenius subcostatus, *cicatricosus*, and *hirsutus*, spp. nn., H. Burmeister, S. E. Z. xxxvi. p. 469, Montevideo.

Nycteliides.

H. Burmeister, *l. c.* pp. 469 & 470, in discussing the Argentine species of this group, which is the most characteristic for the country, makes some highly interesting observations upon the antennæ, furrow, &c. *Nycteliides* are highly localized, only extending on the north and west to Chili and Bolivia in a very slight degree. One species only occurs in the east, scarcely reaching beyond Uruguay ; none are found in Entrerios or Tucuman. The limit eastwards travels in a north-west direction from the mouth of the La Plata by Cordova, Catamarca, and the Despoblado plateau to Bolivia. These northern species almost entirely differ from the Argentine, only one species representing the group being common to Bolivia and La Plata. The Chilian species also are almost universally distinguishable from the Argentine, and extend southwards on the west side to the Atlantic. The author's experience bears out Darwin's statement as to the same species occurring at the Rio Negro and also at Mendoza, at the base of the Cordilleras. This distribution is also found in the mammals and birds ; and Burmeister's deduction is that the entire Patagonian steppes are of tertiary formation, older than the quarternary or diluvial central Argentine plains, the species peculiar to the more ancient land extending along it towards the south.

Pilobalia, g. n., *id. l. c.* p. 487. Forms the 4th genus of the 2nd group ; with no hooked lateral appendages to the thorax ; elytra as in *Entomoderes* ; maxillary palpi as in *Aulacodera*. Type, *Nyctelia decorata*, Er., also *P. picta* (Klug MS., Dej. Cat.), sp. n., *id. l. c.* p. 488, Catamarca, and 5 known species of *Nyctelia*.

Psectrascelis ursina, sp. n., *id. l. c.* p. 475, Catamarca, Cordova, (? = *pilosa*, Sol.).

Epipedonota abnormis, p. 476, mouth of the River Sta. Cruz, *microdera*,

W. Pampas, *angusta*, Catamarca, *tricostata*, Patagonia, p. 479, spp. nn., *id. l. c.*

Entomoderes infernalis, p. 483, Catamarca, *subauratus* and *lobatus*, p. 486, Argentine Republic, spp. nn., *id. l. c.*

Pimeliides.

Ocnera hispida, Forsk., varr. nn. *major*, Syria, Algeria, and *depressa*, S. Persia, pp. 684 & 685, *O. philistina*, Reiche, var. n. *ovalipennis*, p. 686, S. Persia; F. Baudi, Ann. Mus. Genov. vii.

Pimelia tuberculata, Mén., var. n. *torquata*, id. *l. c.* p. 692; *P. boyeri*, Sol., var. n. *asphaltina*, id. Bull. Ent. Ital. vii. p. 100, Algeria.

Ocnera perlata, p. 685, N. Persia, *parvicollis*, p. 686, *persea*, p. 687, S. Persia, *longicornis*, p. 687, Ispahan, F. Baudi, Ann. Mus. Genov. vii.; *O. cristophi*, p. 208, *robusta*, p. 213, Schahrud, Persia, *pilosa*, p. 210, Turkestan (named and described, though stated not to be so), *triangularis*, p. 212, Ogurtschinsk Island, and E. coast of Caspian, *darwini*, p. 214, Persia, J. Faust, Hor. Ent. Ross. xi.: spp. nn.

Thriptera grisescens, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 528, Tunis and Algerian Sahara.

Pachyscelis minor, S. Persia, *kraatzi* (= *chrysomeloides*, Ktz., *nec* Ol.), N. Persia, Baudi, *l. c.* p. 689, spp. nn.

Leucolaphus ? zophosioides, sp. n., *id. l. c.* p. 691, N. Persia.

Gedeon persicus, sp. n., *id. l. c.* p. 694, S. Persia.

Pimelia malleata, T. V. Wollaston, Ent. M. M. xi. p. 219, Atlas; *P. atarnites*, Baudi, *l. c.* p. 692, N. Persia; *P. spectabilis* and *gracilenta*, p. 52, *curticollis*, p. 53, *tumidipennis* and *tristis*, p. 54, *monilis*, p. 55, Haag-Rutenberg, Beiträge &c. Tenebr., Morocco; *P. maroccana*, p. 543, *externe-serrata*, *platynota*, *echidna*, and *discicollis*, p. 544, L. Fairmaire, Pet. Nouv. (1875) Mogador; *P. fritschi*, L. v. Heyden, JB. senck. Ges. 1874–75, Canary Isles: spp. nn.

Molyrides.

Molyris (*Phanerotoma*) *rowleiana*, Westw., redescribed and figured, and referred to the "*Blapsidæ*"; J. O. Westwood, Tr. E. Soc. 1875, p. 223, pl. vi. fig. 1.

Oncoosoma haroldi, sp. n., Haag-Rutenberg, C. H. xiv. p. 67, Abyssinia.

Molyris (*Phanerotoma*) *gravida*, p. 223, fig. 2, Damara-land, *procrustes*, p. 224, fig. 3, Delagoa Bay, spp. nn. J. O. Westwood, *l. c.* pl. vi.

Amiantus scrobipennis, p. 68, *undatus*, p. 69, Natal, *castanopterus*, p. 69, Ribé, E. Africa, Haag-Rutenberg, *l. c.* spp. nn.

Psammodes rufo-striatus, p. 70, *pilosellus*, p. 71, S. Africa, *sellatus*, Calabar, *raucus*, Damara-land, p. 72, *mœschleri*, p. 73, Cape of Good Hope, *regalis*, p. 74, Zambesi, *molestus*, p. 75, Natal, *clarus*, p. 76, Algoa Bay, *fettingeri*, p. 77, Basuto-land, *zanzibaricus*, p. 78, Zanzibar, *brevicornis*, p. 79, W. coast of Africa, *fraternus*, p. 80, Damara-land, *transvaalensis*, p. 81, Transvaal Republic, *id. l. c.* spp. nn.

Trachynotus regalis, sp. n., *id. l. c.* p. 82, Damara-land.

Sepidium laghoatense, sp. n., F. Baudi, Ann. Mus. Genov. vii. p. 695, Algeria.

J. Faust, Hor. Ent. Ross. xi. p. 229 (Sept. 25, 1875), "Tasch," Persia [see Baudi, *suprà*] : spp. nn.

Prosodes dilaticollis, p. 234, Songarei, *persica*, p. 236, *pustulata*, p. 237, Schahrud, Persia, *solskii*, p. 239, Krasnowodsk, *gracilis*, p. 241, Turkestan, J. Faust, *l. c.* spp. nn.

Dila angustata, sp. n. ?, F. Baudi, Deutsche E. Z. 1875, p. 102, Persia, and var. ? *laticollis* (Kol. MS.), *id. l. c.* p. 103.

Asidides.

Asida porcata, Dej., var. n. *massiliensis*, F. Baudi, Deutsche E. Z. 1875, p. 115, Marseilles ; *A. bajardi*, Sol., var. n. *ligurica*, id. Bull. Ent. Ital. vii. p. 27, E. Liguria.

Asida vage-costata, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 528, Tunis ; *A. atrata*, sp. n. ?, F. Baudi, Deutsche E. Z. 1875, p. 107, Cadiz ; *A. dufouri*, sp, n., *id. l. c.* p. 110, Spain (= *servillii*, Sol., ♀ ; G. Kraatz, *l. c.* note).

Cardiogenius subcostatus, *cicatricosus*, and *hirsutus*, spp. nn., H. Burmeister, S. E. Z. xxxvi. p. 469, Montevideo.

Nycteliides.

H. Burmeister, *l. c.* pp. 469 & 470, in discussing the Argentine species of this group, which is the most characteristic for the country, makes some highly interesting observations upon the [illegible] species with regard to neighbouring countries. The [illegible] *Nycteliides* are highly localized, only extending on the north and west to Chili and Bolivia in a very slight degree. One species only occurs in the east, scarcely reaching beyond Uruguay ; none are found in Entrerios or Tucuman. The limit eastwards travels in a north-west direction from the mouth of the La Plata by Cordova, Catamarca, and the Despoblado plateau to Bolivia. These northern species almost entirely differ from the Argentine, only one species representing the group being common to Bolivia and La Plata. The Chilian species also are almost universally distinguishable from the Argentine, and extend southwards on the west side to the Atlantic. The author's experience bears out Darwin's statement as to the same species occurring at the Rio Negro and also at Mendoza, at the base of the Cordilleras. This distribution is also found in the mammals and birds ; and Burmeister's deduction is that the entire Patagonian steppes are of tertiary formation, older than the quarternary or diluvial central Argentine plains, the species peculiar to the more ancient land extending along it towards the south.

Pilobalia, g. n., *id. l. c.* p. 487. Forms the 4th genus of the 2nd group ; with no hooked lateral appendages to the thorax ; elytra as in *Entomoderes* ; maxillary palpi as in *Aulacodera*. Type, *Nyctelia decorata*, Er., also *P. picta* (Klug MS., Dej. Cat.), sp. n., *id. l. c.* p. 488, Catamarca, and 5 known species of *Nyctelia*.

Psectrascelis ursina, sp. n., *id. l. c.* p. 475, Catamarca, Cordova, (? = *pilosa*, Sol.).

Epipedonota abnormis, p. 476, mouth of the River Sta. Cruz, *microdera*,

W. Pampas, *angusta*, Catamarca, *tricostata*, Patagonia, p. 479, spp. nn., *id. l. c.*

Entomoderes infernalis, p. 483, Catamarca, *subauratus* and *lobatus*, p. 486, Argentine Republic, spp. nn., *id. l. c.*

Pimeliides.

Ocnera hispida, Forsk., varr. nn. *major*, Syria, Algeria, and *depressa*, S. Persia, pp. 684 & 685, *O. philistina*, Reiche, var. n. *ovalipennis*, p. 686, S. Persia; F. Baudi, Ann. Mus. Genov. vii.

Pimelia tuberculata, Mén., var. n. *torquata*, id. *l. c.* p. 692; *P. boyeri*, Sol., var. n. *asphaltina*, id. Bull. Ent. Ital. vii. p. 100, Algeria.

Ocnera perlata, p. 685, N. Persia, *parvicollis*, p. 686, *persea*, p. 687, S. Persia, *longicornis*, p. 687, Ispahan, F. Baudi, Ann. Mus. Genov. vii.; *O. cristophi*, p. 208, *robusta*, p. 213, Schahrud, Persia, *pilosa*, p. 210, Turkestan (named and described, though stated not to be so), *triangularis*, p. 212, Ogurtschinsk Island, and E. coast of Caspian, *darwini*, p. 214, Persia, J. Faust, Hor. Ent. Ross. xi.: spp. nn.

Thriptera grisescens, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 528, Tunis and Algerian Sahara.

Pachyscelis minor, S. Persia, *kraatzi* (= *chrysomeloides*, Ktz., *nec* Ol.), N. Persia, Baudi, *l. c.* p. 689, spp. nn.

Leucolæphus ? zophosioides, sp. n., *id. l. c.* p. 691, N. Persia.

Gedeon persicus, sp. n., *id. l. c.* p. 694, S. Persia.

Pimelia maculata, T. V. Wollaston, Ent. M. M. xi. p. 219, Atlas; *P. atarnites*, Baudi, *l. c.* p. 692, N. Persia; *P. spectabilis* and *gracilenta*, p. 52, *curticollis*, p. 53, *tumidipennis* and *tristis*, p. 54, *monilis*, p. 55, Haag-Rutenberg, Beiträge &c. Tenebr., Morocco; *P. maroccana*, p. 543, *externe-serrata*, *platynota*, *echidna*, and *discicollis*, p. 544, L. Fairmaire, Pet. Nouv. (1875) Mogador; *P. fritschi*, L. v. Heyden, JB. senck. Ges. 1874–75, Canary Isles: spp. nn.

Molyrides.

Molyris (*Phanerotoma*) *rowleiana*, Westw., redescribed and figured, and referred to the "*Blapsidæ*"; J. O. Westwood, Tr. E. Soc. 1875, p. 223, pl. vi. fig. 1.

Oncoosoma haroldi, sp. n., Haag-Rutenberg, C. H. xiv. p. 67, Abyssinia.

Molyris (*Phanerotoma*) *gravida*, p. 223, fig. 2, Damara-land, *procrustes*, p. 224, fig. 3, Delagoa Bay, spp. nn. J. O. Westwood, *l. c.* pl. vi.

Amiantus scrobipennis, p. 68, *undatus*, p. 69, Natal, *castanopterus*, p. 69, Ribé, E. Africa, Haag-Rutenberg, *l. c.* spp. nn.

Psammodes rufo-striatus, p. 70, *pilosellus*, p. 71, S. Africa, *sellatus*, Calabar, *raucus*, Damara-land, p. 72, *mœschleri*, p. 73, Cape of Good Hope, *regalis*, p. 74, Zambesi, *molestus*, p. 75, Natal, *clarus*, p. 76, Algoa Bay, *fettingeri*, p. 77, Basuto-land, *zanzibaricus*, p. 78, Zanzibar, *brevicornis*, p. 79, W. coast of Africa, *fraternus*, p. 80, Damara-land, *transvaalensis*, p. 81, Transvaal Republic, *id. l. c.* spp. nn.

Trachynotus regalis, sp. n., *id. l. c.* p. 82, Damara-land.

Sepidium laghoatense, sp. n., F. Baudi, Ann. Mus. Genov. vii. p. 695, Algeria.

Physogastrides.

Pimel[i]osomus, g. n., H. Burmeister, S. E. Z. xxxvi. p. 489. Closely allied to *Physogaster*, but with front tibiæ sharply edged outwardly, and a long, thick, curved spur. *P. sphæricus*, sp. n., *id. ibid.*, Argentine Republic, South of Mendoza.

Praocides.

Platyholmus seminulum, Mendoza and Catamarca, *murinus* (? = *Praocis gravida*, Lac.), Cordova, spp. nn., Burmeister, *l. c.* p. 493.

Praocis bicarinata, p. 495, *fimbriata*, p. 496, *inermis*, p. 497, Patagonia, *pentachorda* and *concinna*, p. 496, Cordova, spp. nn., *id. l. c.*

Pedinides.

Pandarus tenuicornis, Mill., = *piceus*, Ol.; G. Kraatz, Deutsche E. Z. 1875, p. 435.

Dendarus (*Pandarinus*) *pauper*, Muls., var. n. *libanicus*, F. Baudi, Ann. Mus. Genov. vii. p. 697, Lebanon.

Heliopathes avarus, Muls., varr. *ambiguus* and *neptunius*, from Sicily; *id.* Bull. Ent. Ital. vii. p. 164.

Opatrinus angustus, Sta. Fé, *validus*, Tucuman, spp. nn., H. Burmeister, S. E. Z. xxxvi. p. 499.

Pandarinus corsicus, sp. n., É. Perris, L'Ab. (3) i. p. 5, Bonifacio.

Pedinus ragusæ, "sp. n. (*P. ragusæ*, Kiesw., in litt., Ragusa, Bull. Soc. Ent. Italiana, 1873, p. 265)," F. Baudi, Bull. Ent. Ital. vii. p. 151, Palermo.

Colpotus cribricollis, sp. n., *id. l. c.* p. 156, Cyprus.

Cabirus persis, sp. n., *id.* Ann. Mus. Genov. vii. p. 697, S. Persia.

Heliopathes (*Olocrates*) *nivalis*, p. 161, Spain, *H. strigicollis*, p. 163, Morocco, *id.* Bull. Ent. Ital. vii. spp. nn.

Opatrides.

Syrphetodes, g. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 215. Epipleuræ of elytra entire behind, thus agreeing with Lacordaire's *Phylacides*. Allied to *Opatrum tuberculicostatum*, White, "the type of a new genus." *S. marginatus*, sp. n., *id. l. c.* p. 216, pl. v. fig. 10, New Zealand.

Pachypterus pusillus, sp. n., F. Baudi, Bull. Ent. Ital. vii. p. 219, Spain, Morocco.

Opatroides angulatus, sp. n., *id.* Ann. Mus. Genov. vii. p. 699, and Bull. Ent. Ital. vii. p. 215, S. Persia.

Scleron carinatum, sp. n., *id. l. c.* p. 700, Persia.

Opatrum sericeum, p. 701, *hirtulum*, p. 703, *id. l. c.* Persia; *O. hookeri*, T. V. Wollaston, Ent. M. M. xi. p. 219, Atlas [Harold, C. H. xiii. p. 106, refers to Wollaston's adoption of the erroneous reading *Hopatrum* from the Munich Catalogue, an alteration apparently made by Gemminger]. *O. libani*, p. 222, Mount Lebanon, *O.* (*Gonocephalum*) *murinum*, p. 227, Egypt, *sericeum*, p. 228, Egypt, N. and S. Persia, *O. scleroide*, p. 234, Candia, F. Baudi, Bull. Ent. Ital. vii.: spp. nn.

Phylax brevicollis and *sardous*, spp. nn., F. Baudi, Bull. Ent. Ital. vii. p. 214, Sardinia.

Trachyscelides.

Phycosecis, g. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 213. Agrees with *Hyocis* in the rounded base of the prothorax, but with a globose 2-jointed club, the last joint being very small. *P. discoidea*, ibid. pl. v. fig. 6, New Zealand, *atomaria*, Gt. Barrier Island, *algarum*, Melbourne, *litoralis*, King George's Sound, p. 214, spp. nn., *id. l. c.*

Actizeta, g. n., *id. l. c.* p. 214. Recorded here, as the author mentions a superficial resemblance in one of the species to *Ammobius*. All the tibiæ are armed at the inner apical angle with two long spines. *A. ammobioides* and *albata*, pl. v. fig. 5, spp. nn., *id. l. c.* p. 215, New Zealand.

Anemia sculpturata, sp. n., C. Ritsema, Tijdschr. Ent. xviii. p. 131, Congo.

Phaleria batesi, sp. n., L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. xxxiii. Madagascar.

Bolitophagides.

Bolitophagus angulifer, Blanch., = *Dermestes scaber*, Fab., *ex. typ.*, which is a *Pristoderus* (*Colydiidæ*); *Opatrum serricolle*, Walk., belongs to *Bradymerus*. C. O. Waterhouse, Cist. Ent. ii. pp. 55 & 56.

Diaperides.

Amarantha, Motsch., redescribed; its place is between *Hoplocephala* and *Platydema*. J. Faust, Hor. Ent. Ross. xi. pp. 249 & 250.

Alphitophagus 4-pustulatus, Steph., ♂ described, from Derbent; the head structure is allied to *Diphyrrhynchus*, Fairm.; *id. l. c.* pp. 251 & 252.

Ceropria madagascariensis, Dej. MS., ? = *coquereli*, Fairm.; C. O. Waterhouse, Cist. Ent. ii. p. 53.

Platydema scriptipennis[*-ne*], sp. n., L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. xxxiii. Madagascar.

Ulomides.

Hypophlœus bivittatus, sp. n., E. Reitter, Deutsche E. Z. 1875, p. 362, Hungary.

Halonomus oblongiusculus, sp. n., L. Fairmaire, Pet. Nouv. (1875) p. 495, Biskra.

Cœlometopides.

Scotobænus, Lec., = *Centronopus*, Sol., and the name *Scotobates* is proposed for the two species, *calcaratus*, F., and *opacus*, Lec., hitherto referred to *Centronopus*; G. H. Horn, Tr. Am. Ent. Soc. v. p. 151.

Dysceladus, g. n., C. O. Waterhouse, Ann. N. H. (4) xv. p. 411. Closely allied to *Cœlocnemis*, but quite unlike any known Heteromerous insect in appearance. *D. tuberculatus*, sp. n., *id. l. c.* p. 412, Round Island, Mauritius.

Tenebrionides.

Tenebrio quadrihamatus, sp. n., L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. xxxiii. Madagascar.

Dolichoderus longicornis, sp. n., *id. l. c.* Madagascar.

Nycteropus abbreviatus, sp. n., *id. ibid.* Madagascar.

Cnodalonides.

Camaria alternata and *undaticollis*, spp. nn., Fairmaire, *l. c.* p. xxxiii. Madagascar.

Helopides.

C. O. Waterhouse, Tr. E. Soc. 1875, pp. 331–337, describes apterous species mostly found by Charles Darwin at Tierra del Fuego, under stones covered to some depth at high water. These species were many years ago described by G. R. Waterhouse, but were never published, as the MS. was lost.

Rygmodus pedinoides, Blanchard (*nec* White, which belongs to the *Hydrophilidæ*), apparently belongs to this group; *Tanychilus metallicus*, White, according to Blanchard, is an *Amarosoma*, but the latter author's insect is probably quite different from White's: C. O. Waterhouse, Cist. Ent. ii. p. 56.

Heliophygus. 12 species described from Chili; L. Fairmaire, Ann. Soc. Ent. Fr. (5) v. pp. 191–199.

Deridea, g. n., J. O. Westwood, Tr. E. Soc. 1875, p. 226. Dubiously referred to the *Helopides*; with the facies of *Nemognatha*, but simple claws to the tarsi. *D. curculionides*, sp. n., *id. l. c.* p. 227, pl. vii. fig. 4, Angola.

Styrax, g. n., *id. l. c.* p. 227. Near *Stenochia* and *Cyphonotus*, with the exact facies of *Colliuris* and *Tricondyla* (*Cicindelidæ*). *S. tricondyloides*, sp. n., *id. ibid.* pl. vii. fig. 1, Penang, Singapore.

Chitoniscus, g. n. (G. R. W., MS.), C. O. Waterhouse, *l. c.* p. 331. Approaching *Helops*, but no differential characters given; joints loosely set, as in *Blatta*. *C. brevipennis*, sp. n., *id. l. c.* p. 332, Tierra del Fuego.

Hydromedion, g. n., *id. l. c.* p. 333. Allied to *Chitoniscus*, but no differential characters given. *H. elongatum*, sp. n., and var., *id. ibid.* Tierra del Fuego, with var. ? from Straits of Magellan, p. 336, and *H. variegatum*, sp. n., *id. ibid.* Straits of Magellan.

Parahelops, g. n., *id. l. c.* p. 333. Allied to *Chitoniscus*; sterna much as in *Helops striatus*, but the mesosternum is shelving in front, and not concave; apical joint of palpi not securiform. *P. pubescens* and *darwini*, p. 334, Tierra del Fuego, the latter also from Valparaiso, *quadricollis*, p. 335, *haversi*, p. 336, Falkland Isles, spp. nn., *id. l. c.*

Atryphodes quadridentatus, sp. n., *id. l. c.* p. 205, Port Bowen.

Heliophygus sulcipennis, p. 195, *punctato-sulcatus*, p. 197, Chili, *cribriceps*, p. 196, Valdivia, *brevipennis*, p. 197, Santiago, spp. nn., L. Fairmaire, *l. c.*

Amarygmides.

Plesiophthalmus spectabilis, sp. n., E. v. Harold, Abh. Ver. Brem. iv. p. 293, Hiogo.

Strongyliides.

Nesogena batesi and *varians*, p. 190, *rufiventris*, *episcopalis*, *intermedia*, and *parvicollis*, p. 191, spp. nn., L. Fairmaire, S. E. Z. xxxvi. Madagascar.

Cistelidæ.

Allecula rhenana, Bach, redescribed fully, ♂ & ♀; L. v. Heyden, Deutsche E. Z. 1875, p. 389.

Bratyna, g. n., J. O. Westwood, Tr. E. Soc. 1875, p. 228. Antennæ very long, palpi with the apical joint securiform, and posterior tibiæ much inflated. *B. apicalis*, sp. n., *id. ibid.* pl. vii. fig. 2, Old Calabar.

Stenerula, g. n., L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. xli. Near *Allecula*, but with the last joint of palpi triangular, eyes contiguous in front, first joint of posterior tarsi very long, &c. For *S. subopaca*, sp. n., *id. ibid.*, Madagascar.

Heliotaurus tunisius, p. 529, Gafsa (Tunis), *anthracinus*, p. 530, note, Batna, spp. nn., *id.* Ann. Mus. Genov. vii.

Eucaliga pallidicollis, sp. n., *id.* Ann. Soc. Ent. Fr. (5) v. p. 200, Valdivia.

Allecula (Dictopis) æthiopica, C. Ritsema, Tijdschr. Ent. xviii. p. 132, Congo; *A. promiscua* and *punctatissima*, p. 514, *funesta*, p. 515, *annulata*, p. 517, *vilis*, p. 518, Java, *fuliginosa*, p. 516, *melanaria*, p. 519, Japan, F. W. Mäklin, Act. Fenn. x.: spp. nn.

Cistela theveneti and *variabilis*, G. H. Horn, Tr. Am. Ent. Soc. v. p. 156, California; *C. (Plæsia) convexiuscula* and *brevior*, L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. xli. Madagascar: spp. nn.

Xystropus pilosus, p. 526, Cayenne, *fallax*, p. 527, *lebasi*, p. 529, *fulvicollis*, p. 530, New Granada, *breviusculus*, p. 528, *laniger*, p. 530, Brazil, spp. nn., F. W. Mäklin, *l. c.*

Lystronychus guerini, Bolivia, *scalaris*, New Granada, p. 520, *6-signatus*, p. 521, ? Venezuela, *metallicus*, p. 522, *hirtellus*, p. 523, *hirsutus*, p. 524, *latipennis*, p. 525, Brazil, *denticollis*, p. 525, New Granada, spp. nn., *id. l. c.*

Cteisa pedinoides, sp. n., *id. l. c.* p. 531, New Granada.

Monommidæ.

Hyporrhagus lævipunctatus, Thoms., ex. typ., = *lecontii*, Thoms., ♀, and is from Columbia; G. H. Horn, Tr. Am. Ent. Soc. v. p. 151.

Othniidæ.

Othnius mexicanus, Chev., 1874, = *mexicanus*, Horn, 1868; *id. ibid.*

Pythidæ.

Pytho. Generic and larval characters given, and *P. depressus*, L., and larva, *P. abieticola*, sp. n., p. 222, and larva, from *Pinus abies*, Sükaneva, Finland (62° N. Lat.), and larva, and *P. kolvensis*, C. Sahlb., and ? described; J. Sahlberg, Deutsche E. Z. 1875, pp. 219–224.

Melandryidæ.

Eucinetomorphus, g. n., É. Perris, L'Ab. (3) i. p. 7. Facies of *Eucinetus*, but closely allied to *Orchesia*, differing in the subrotundate apical joint of

its maxillary palpi, non-emarginate eyes, inconspicuous post-episterna, and very widely triangulate posterior coxæ. *E. leprieuri*, sp. n., *id. l. c.* p. 8, Bône.

Lagriidæ.

Disema, g. n., F. W. Mäklin, Act. Fenn. x. p. 496. Allied to *Statira*; with deeply serrated antennæ, very large and convex eyes, contiguous or only separated by a very narrow line both above and below, &c. For *Statira thoracica*, Mäkl., and *D. bimaculata*, p. 497, *collaris*, p. 498, *crassicornis*, p. 499, *longicornis* and *impressicollis*, p. 500, *serraticornis*, p. 501, and (*D.* ?) *ambigua*, p. 502, spp. nn., *id. l. c.* Brazil.

Acropachia, g. n., *id. l. c.* p. 506. Of the build of the wider species of *Lagria*, but with small eyes, and shorter antennæ, which are differently formed. *A. bifovcolata*, sp. n., *id. l. c.* p. 507, Brazil.

Storthephora, g. n., *id. l. c.* p. 508. Size and facies of *Cryptophagus*: from the build of its antennæ possibly near *Acropachia*. *S. denticollis*, ibid., Venezuela, Caraccas, and *aurita*, p. 509, Brazil, spp. nn., *id. l. c.*

Lagria heylaertsi, C. Ritsema, Tijdschr. Ent. xviii. p. 134, Congo (? = *violacea*, Dej.); *L. senilis* and *longipilis*, L. Fairmaire, S. E. Z. xxxvi. p. 191, Madagascar: spp. nn.

Eutrapela unicolor, p. 503, *bicolor*, p. 504, *verticalis* and *gracilis*, p. 505, Mäklin, *l. c.* S. Africa.

Statira armata, p. 486, *tuberculata* and *laticollis*, p. 487, *fuscitarsis*, p. 486, *subænea*, p. 489, *apicalis*, p. 490, *annulata*, p. 493, *fasciata*, [illegible], *obscura*, p. 495, *gracilis*, p. 496, Brazil, *tristis*, p. 489, *nigripennis*, p. 491, *humeralis* and *affinis*, p. 492, Mexico, spp. nn., *id. l. c.*

Pedilidæ.

Xylophilus impressus and *ater*, Texas, *nebulosus*, Pennsylvania and Louisiana, p. 175, *subfasciatus*, M. S. and W. States, *brunnipennis*, S. Carolina, Illinois, Texas, *ventricosus*, Southern States, spp. nn., J. L. Leconte, Tr. Am. Ent. Soc. v.

Anthicidæ.

Anthicus varus, Edough, *tortiscelis*, Algiers, S. A. de Marseul, Nouv. et Faits, 1875, p. xxxviii; *A. scaurus*, p. 495, *valgus*, p. 496, L. Fairmaire, Pet. Nouv. 1875, Algeria: spp. nn.

Tanarthrus salicola, sp. n., J. L. Leconte, Tr. Am. Ent. Soc. v. p. 174, Gt. Salt Lake, Utah.

Mecynotarsus candidus, Columbia, *elegans*, Florida, spp. nn., [illegible] *l. c.* p. 175.

Pyrochroidæ.

Anthicoxenus paulseni, sp. n., L. Fairmaire, Ann. Soc. Ent. Fr. (5) v. p. 200, Chili.

Mordellidæ.

Mordella elegans, p. 415, Cape of Good Hope, *fahræi* (= *hieroglyphica*, Fähr., 1870, *nec* Fairm. & Germ., 1863), Caffraria, and *albo-notata*, Brazil, p. 416, *albiventris*, p. 417, *fuliginosa*, p. 418, *stimulea* and *brasiliana*, p. 419, *subnotata*, p. 420, *tenella* and *subfasciata*, p. 422, *scita*, p. 423, *rufi-cauda*, p. 424, *tristicula*, p. 425, *pauper* and *consobrina*, p. 426, *punctulata*, p. 427, *fulvo-notata*, p. 428, 4-*pustulata*, p. 429, *decorata* and *amœna*, p. 430, Brazil, *confusa*, p. 421, Cape of Good Hope, spp. nn., F. W. Mäklin, Act. Fenn. x.

Mordellistena amabilis, p. 431, *semirufa*, p. 432, *pilosula*, p. 433, *pube-rula* and *gibbula*, p. 434, *cognata*, p. 435, *misella*, p. 436, *notabilis*, p. 437, *nigro-signata*, p. 438, *bifurcata* and *marginicollis*, p. 440, *amphicometa*, p. 441, *simplex*, p. 442, *rusticula* and *imbecilla*, p. 443, *bivittata*, p. 444, Brazil, *diffinis*, p. 436 (and *M. basalis*, Dej. Cat., *ibid.* note, ? = *Mordella testacea*, F.), Cape of Good Hope, *orizabensis*, p. 439, Mexico, spp. nn., *id. l. c.*

Stenalia atra, sp. n., É. Perris, L'Ab. (3) i. p. 8, Algeria.

Rhipidophoridæ.

G. H. Horn, Tr. Am. Ent. Soc. v. pp. 121–125, discusses the species occurring in the United States. The prolongation of the maxillary lobes is not of generic value, but the separation of the anterior coxæ is of specific importance. Some synonymy is given, from type specimens out of Dejean's collection. *R. pectinatus*, Fab., is very variable, including 5 other Fabrician so-called species, 1 of Germar, 8 of Melsheimer, and *vari-color*, Gerst.

Evaniocera striolata, sp. n., Nowicki, Beschreibung neuer Käfer (Krakau: 1873), p. 5, Calabria; ex. typ. = *dufouri*, Latr., *teste* G. Kraatz, Deutsche E. Z. 1875, p. 435.

Rhipidophorus bifoveatus, sp. n., Horn, *l. c.* p. 123, Illinois.

Myodites niger, Guatemala, *rugosus*, Columbia, p. 369, *apicalis*, p. 370, Bombay, spp. nn., C. O. Waterhouse, Cist. Ent. i.

Rhipidius thoracicus, sp. n., *id. l. c.* p. 370, Java.

Stylopidæ.

Stylops. Observations on captures of 59 examples of both sexes in spring, in *Andrena atriceps*, *afzeliella*, *convexiuscula*, and *labialis* (chiefly th[illegible] of these species); F. Smith, Ent. M. M. xii. pp. 36–38.

[illegible]l-Fin[illegible]chthrus rubi*, &c.; observations by Sir S. S. Saunders, Proc. E. larva, de[illegible]875, p. xvii.

[illegible]e pupa in *Stylopidæ* approaches that of *Sitaris*; J. Lichtenstein, [illegible]ull. Soc. Ent. Fr. (5) v. p. cv. The young larvæ of *Xenus* run about on the abdomen of *Odynerus* just as those of the *Cantharidæ* do on the thorax, and, with the exception of the want of antennæ, they very much recall larvæ of the first form of the *Meloides*: id. *l. c.* p. clviii.

CANTHARIDÆ.

MÄKLIN, F. W. Anmärkningar beträffande några förut beskrifna Cantharider. Œfv. Fin. Soc. xvii. pp. 77–83.

The author fully redescribes *Cantharis* (*Epicauta*) *fuliginosa*, Ol., p. 78, from Columbia, and *C.* (*E.*) *violacea*, Brandt & Ratz., p. 81, omitted by Gemminger and Von Harold from their "Catalogus." *C.* (*E.*) *capitata*, Cast. (1840), = *philæmata*, Klug (1825), *C. sulcifrons*, Chevr., = *excavata*, Klug, p. 82 (those species being given as distinct by Gemm. & v. H.); *Lytta* (*Cantharis*) *bicolor*, Fähr., *nec* Fisch., *nec* Schön., is renamed *bohemani*, p. 83.

The same author, Act. Fenn. x. pp. 449 *et seq.*, in describing various new species, whilst considering that the dark blue African forms may well be referred to *Lytta*, and that the yellow or brown forms from the same region cannot satisfactorily be placed in *Macrobasis* or any other group, retains *Cantharis* for the whole, on account of the difficulty of defining the distinguishing characters. *Cantharis gigas*, Ol., ♀, is described as *C. sulcata*, p. 451, following Dejean's Catalogue-name *Epicauta sulcata*, as *C. gigas*, Ol., ♂, ex. typ., = *Epicauta janthina*, Dej. Cat., and *Lytta gigas*, Fab., is dubious, and *E. gigas*, Dej., = *Lytta actæon*, Casteln. The species described in this and other papers by the author are mostly those of Dejean's Cat., in many instances verified by examination of types.

Meloe cicatricosus. Habits in captivity noticed; a "triungulin" larva hatched from egg laid by ♀, passed on to a wasp egg on some honey in a tube, was observed to eat the egg, and then undergo its first moult, immediately plunging into the honey as a larva of the 2nd stage: J. Lichtenstein, CR. Ent. Belg. xviii. pp. lxxi. & lxxii. Coupling observed; the ♀, 15 days after, digs a hole in the ground, lays from 1200 to 1500 eggs in it, and re-covers the opening; *id.* Bull. Soc. Ent. Fr. (5) v. pp. civ. & cv. Differences of the larva from that of *M. proscarabæus*; id. *l. c.* p. cxxviii (a third species of larva found on *Scolia hirta*; id. *ibid.*). The larva that comes from the triungulin is not like that described by Newport & Fabre, but resembles the minute larva that devoured the egg of the Hymenopteron; it is supposed that after moulting it assumes the form described by Newport.

Pseudomeloe = *Megetra*, Lec., which is distinct from *Cysteodesmus*, Lec.; *Goetymes* is the ♂, and *Sitarida* the ♀, of the same insect; E. v. Harold (quoting Horn), C. H. xiii. p. 105.

Mylabris ledebouri, Gebl., = *festiva*, Ol., *nec* Pall.; *M. festiva*, Pall., = *sericea*, Pall.; *M. festiva*, Pall., var., = *speciosa*, Pall.; E. Olivier, Bull. Soc. Ent. Fr. (5) v. p. clv. This view incorrect; *M. festiva*, Ol., *nec* Pall., = *ledebouri*, Gebl., which stands; L. Bedel, *l. c.* p. clxiii.

Cantharis vesicatoria. Two forms of the larva obtained, in a somewhat similar way to that above recorded with reference to *Meloe cicatricosus*; J. Lichtenstein, CR. Ent. Belg. xviii. p. xc. The second one is soft, white, and of the form of the triungulin, except in wanting the

ly plates and caudal setæ; the triungulin from which it proceeded fed on the horny bag of *Apis mellifica*. Another one assumed the 2nd form, fed on a paste of honey and young larvæ of *Polistes*. The third form also briefly noticed; this is hexapod, and blind, or at all events has no manifest eyes. *Id.* Bull. Soc. Ent. Fr. (5) v. pp. clxiii. & clxiv. This third form again referred to, especially as to burying itself in order to change to pupa; *id. l. c.* p. cci.

Cantharis. On injuries to plants by various species near Rome; A. T. Tozzeti, Bull. Ent. Ital. vii. p. 135.

Epicauta convolvuli, Melsh., = (*Meloe*) *trichrus*, Pall., and the N. American species of *Zonitis* tabulated; G. H. Horn, Tr. Am. Ent. Soc. pp. 153 & 155.

Zonitis æneiventris, Redt., = *tricolor*, Le Guillon (1844), var.; C. O. Waterhouse, Cist. Ent. ii. pp. 55.

Zonitis mutica bred from nest of *Anthidium strigatum*; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. cxxviii.

Decatoma scabrata; vars. mentioned by S. A. de Marseul, Nouv. et Faits, 1875, p. xxiv.

Sitaris colletis, Mayet [Zool. Rec. x. p. 295]. A full account of its habits and metamorphoses, also of the habits of *Colletes succinctus*, on which it is parasitic, and of *Epeolus tristis*, Smith, also parasitic on the *Colletes*; V. Mayet, Ann. Soc. Hérault (2) vii. pp. 191–208. Not satisfied with this publication, the author repeats it in Rev. Montp. iv. pp. 169–209, pl. iii., and *again* in Ann. Soc. Ent. Fr. (5) v. pp. 65–92, pls. iii. & iv. No. ii. The economy is much the same as that of *S. humeralis*, as described by Fabre. Kraatz, Deutsche E. Z. 1875, p. 321, fails to detect good specific distinctions between *S. colletis* and *S. analis*, Schaum.

Sitaris muralis bred from nest of *Anthidium strigatum*; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. xxxv.

Cordylospasta, g. n., G. H. Horn, *l. c.* p. 152. *Meloides*: terminal joint of antennæ with a slight tendency to segmentation at its base, almost seeming 9-jointed; approaches the *Mylabrides*, differing only in the claws and single tibial spurs; forms a group "intermediate between the *Mylabrini* and *Lyttini*." For *C. fulleri*, sp. n., *id. ibid.*, Nevada (unique).

Gnathospasta, g. n., *id. l. c.* p. 154. Affinity to *Macrobasis* suggested; labrum very deeply emarginate, mandibles prominent, pincer-like; compared with *Epicauta*. *G. mimetica*, sp. n., *id. ibid.* fig., Texas (unique).

Meloe compressipes, sp. n., C. O. Waterhouse, Cist. Ent. ii. p. 53, Madagascar.

Diaphorocera kerimi, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 530, Gafsa (Tunis).

Mylabris quadrizonata, p. 530, Tunis, Batna, *puncto-fasciata*, p. 531, Tunis, spp. nn., *id. l. c.*

Cantharis amethystina, p. 452, *buqueti*, p. 453, *rugipennis*, p. 454, *deyrollii*, p. 455, *maculifrons*, p. 458, *spinifera*, p. 461, *pilipes*, p. 463, *flavicornis*, p. 464, *mouffleti*, p. 465, *leprieuri*, p. 466, *leucophæa*, p. 467, *cineracea*, p. 468, *nigro-marginata*, p. 476, *tomentosa*, p. 477, Senegal, *subrugulosa*, p. 456, *subcoriacea*, p. 457, Lake N'Gami, *saphirina*, p. 459,

Senegal and Island of St. Vincent, *baulnii*, p. 460, *castaneipennis*, p. 461, Guinea, *westermanni*, p. 471, *ægyptiaca*, p. 462, Sennaar, *bisignata*, p. 470, Cape of Good Hope, *flavilabris*, p. 469, Galam, Africa, *fulviceps*, p. 472, Persia, *mannerheimi*, p. 473, Himalayas, *sulcicollis*, Brazil, *melanota*, New Granada, p. 474, *albo-marginata*, p. 475, *tristis*, p. 480, *bella*, p. 481, Bolivia, *cervina*, p. 478, *lævicollis*, p. 479, Brazil, *nigrans*, p. 479, Peru, *hemigramma*, p. 482, Montevideo, F. W. Mäklin, Act. Fenn. x.; *C.* (*Lytta*) *mutilata*, G. H. Horn, *l. c.* p. 155, Arizona; *C. semivittata*, L. Fairmaire, Ann. Soc. Ent. Fr. (5) v. p. 200, Chili : spp. nn.

Epicauta batesi, Guatemala and Florida, *oregona*, Oregon, G. H. Horn, *l. c.* p. 153; *E. sharpi*, S. A. de Marseul, Nouv. et Faits, 1875, p. xxvii. Arabia : spp. nn.

Zonitis nigripes, Madagascar, *purpureipennis*, Victoria, p. 54, *violaceipennis*, ibid., and *flaviceps*, p. 55, Swan River, C. O. Waterhouse, Cist. Ent. ii.; *Z. vittipennis*, G. H. Horn, *l. c.* p. 155, Arizona; *Z. maculicollis*, Fairmaire, *l. c.* p. 532, Tunis : spp. nn.

Coryna rubricollis, sp. n., S. A. de Marseul, *l. c.* p. xxiv. Arabia.

Œdemeridæ.

Œdemera cuprata, Rche., = *basalis*, Küst.; L. v. Heyden, Deutsche E. Z. 1875, p. 384.

Danerces [anagram of *Nacerdes*], g. n., J. O. Westwood, Tr. E. Soc. 1875, p. 228. Near *Nacerdes* and *Pseudolycus*, Guér., but with the apical joint of the maxillary palpi bifid for some length in the ♂, and the 3rd to 6th joints of the antennæ dilated. For *D. luteicornis*, p. 229, *bipartita*, pl. vii. fig. 3, *fraterna*, *fulvicollis*, *picea*, *nigra* [described in 3 words !], p. 230, *apicalis*, *basalis*, and *fulva*, p. 231, Dorey, *suturalis*, p. 231, Dorey and Mysol, *biguttulus*, p. 231, and *nasalis*, p. 232, Batchian, *laticornis*, p. 232, Aru, spp. nn.

Xanthochroa waterhousii, sp. n., E. v. Harold, C. H. xiv. p. 93, Hiogo.

Nacerdes brevipennis, sp. n., L. Fairmaire, Ann. Soc. Ent. Fr. (5) v. p. 200, Chili.

Ananca phthisica, sp. n., C. Ritsema, Tidjschr. Ent. xviii. p. 136, Congo.

Curculionidæ.

J. L. Leconte, Am. Nat. ix. pp. 112 & 113, in a paper on "an additional character for the definition of Rhynchophorous *Coleoptera*," read before the National Academy of Sciences at Philadelphia, Nov. 5, 1874, remarks that in the separated head of a *Curculio*, the cranium is globose and always presents a distinct trace of a median suture on the underside, corresponding with the gular sutures of other beetles, which diverge either before or behind; this character is relied on as corroborating the value of the *Rhynchophora* as a separate group, equal to all the other beetles, as in none but them do the lateral elements of the head coalesce beneath in a straight longitudinal suture, extending to the posterior limit of the chitinous part of the head.

W. Roelofs, Ann. Ent. Belg. xviii. pp. 149–194, pls. i.–iii., publishes a

supplemental part of his description of species found in Japan by G. Lewis [Zool. Rec. xi. p. 307]. The same author, CR. Ent. Belg. xviii. p. cxxviii. *et seq.*, describes species collected by J. van Volxem in Japan and China, including a new species of *Cossonus* from the former country.

The same author, CR. Ent. Belg. xviii. pp. xxv. & xxvi., refers to species found by Purves in Antigua, and for which that island has not been before cited.

Microcerides.

Lagenisus, g. n., H. Jekel, Coleoptera Jekeliana, ii. p. 105. Near *Episus*; type, *E. cyathiformis*, Gyl., also *L. cœnosus*, p. 107, Senegal, and *waklbergi* (= *Episus hieroglyphicus*, Fåhr.; Zool. Rec. viii. p. 296). p. 109, Svacop, *id. l. c.* spp. nn.

Episus t-album, p. 111, *brevicollis*, p. 117, Damara-land, *obliquus*, p. 113, *quadrulifer*, p. 115, *stricticollis*, p. 119, Cape of Good Hope, *id. l. c.* spp. nn.

Microcerus fahræi, p. 121, N'Gami, *tutanus*, p. 127, Cape of Good Hope, *id. l. c.* spp. nn.

Brachyderides.

For proposed new Classification, *cf.* Jekel [*suprà*, p. 272]. *Celebia azureipes*, Thoms., = *Geonemus arrogans*, Boisd.; *Blosyrus spongifer* = *inæqualis*, var.; *Proscephaladeres obesus* = *punctifrons*, ♀; *id. l. c.*

Blosyrinus, subg. n. of *Blosyrus*, Schön.; *id. l. c.* p. 149, for *Blosyrus inæqualis*.

Blosyrodes, g. n., *id. l. c.* p. 157. Between *Blosyrus* and *Dactylotus*, Schön.; for *Blosyrodes 4-nodosus*, p. 159, and *interruptus*, p. 161, E. India, *id. l. c.* spp. nn.

Cratoblosis, g. n., *id. l. c.* p. 171; type, *C. dohrni*, sp. n., *id. l. c.* p. 173, E. Africa (= *Gyponychus porosus*, Pascoe, 1870, described in the *Leptopides*).

Anomalops, g. n., *id. l. c.* p. 175. Near *Siderodactylus*, Schön.; for *A. aurosus*, sp. n., *id. l. c.* p. 177, White Nile.

Eucrines, g. n., *id. l. c.* p. 179. Near *Cychrotonus*, Pasc.; for *E. mouffleti*, p. 181, Benguela, *navicularis*, p. 183, Cape of Good Hope, *id. l. c.* spp. nn.

Odontobothrys, g. n., *id. l. c.* p. 185; type, *O. tabinosus*, sp. n., *id. l. c.* p. 187, W. Africa (= *Œnassus sellifer*, Pasc., 1870).

Canonopsis, g. n., C. O. Waterhouse, Ent. M. M. xii. p. 54. Allied to *Brachyderes*. *C. sericeus*, sp. n., *id. l. c.* p. 55, Kerguelen's Island.

Agonostra, g. n., *id. l. c.* p. 55. Also allied to *Brachyderes*. *A. longi-* *ensus pi* *ngusticollis*, and *gracilipes*, p. 56, *brevis*, p. 57, spp. nn., *id. l. c.* K.s. n's Island.

Lixus *us*, *laireus*, g. n., for *Cneorrhinus prodigus*, F., and allied species, and dinia- *Cis*, g. n., for *Polydrosus bardus*, Gyl., and allied species; referred lari- Zet. Nouv. (1875) p. 469, as contained in an anonymous pamphlet re- ved from, and presumably by, Desbrochers des Loges, entitled "Diagnoses de Curculionides inédits."

Cneorrhinus 5-carinatus, sp. n., Desbrochers des Loges, *l. c.* p. 1, Spain.

Barynotus caucasicus, sp. n., *id. l. c.* p. 2, Caucasus.

Strophomorphus bruleriei, Lebanon, *ursus*, R. Jordan, p. 2, *sejugatus*, Cyprus, *brevipilis*, *ctenotus*, and *sublævigatus*, Syria, *libanicus*, Lebanon, p. 3, spp. nn., *id. l. c.*

Pholicodes conicollis, sp. n., *id. l. c.* p. 4, Syria.

Foucartia lethierrii, sp. n., *id. l. c.* p. 4, Algeria.

Polydrosus luctuosus, Syria, *tibiellus*, Greece, p. 4, *nanus*, Morocco, *subpilosus*, Tyrol, p. 5, spp. nn., *id. l. c.*

Conocetus grandiceps, sp. n., *id. l. c.* p. 5, Syria.

Psalidium separatum, *simile*, and *minitum*, spp. nn., *id. l. c.* p. 6, Syria.

Blosyrus dorsalis, p. 151, Gaboon, *philippinensis*, p. 153, Philippine Isles, *fasciculatus*, p. 155, White Nile, H. Jekel, *l. c.* spp. nn.

Proscephaladeres globipennis, sp. n., *id. l. c.* p. 165, S. Africa.

Dactylotus popovii, p. 167, Kiachta, *sedakoffi*, p. 169, Dauria, *id. l. c.* spp. nn.

Diaprepes purvesi, sp. n., W. Roelofs, CR. Ent. Belg. xviii. p. xxvi. Antigua.

Eupholus amaliæ, p. 1004, *beccarii*, p. 1005, fig., N.W. New Guinea, *bruijni*, p. 1007, Mt. Arfak, spp. nn., R. Gestro, Ann. Mus. Genov. vii.

Pachyrrhynchus quadripustulatus, sp. n., *id. l. c.* p. 1008, Geelvink Bay, N. Guinea.

Otiorrhynchides.

A heliciform case from Mombas, E. Africa, found to contain remains of a *Curculio* allied to *Otiorrhynchus*; R. M'Lachlan, Ent. M. M. xi. p. 239.

Otiorrhynchus monticola, Germ., in Ireland; G. C. Champion, Ent. M. M. xii. p. 82. The specimens are extreme forms of *O. blandus*; id. *l. c.* p. 134. Discrepancies between the descriptions of both species by various authors pointed out by the Recorder, ibid. *O. sulcatus* injuring vine roots; H. H. Bolton, Ent. M. M. xii. p. 83. *O. ligustici* swarming; K. Letzner, JB. schles. Ges. liii. pp. 178 & 180.

Sciobius subnodosus, Woll., figured; J. C. Melliss, 'St. Helena," pl. xxiii. fig. 4.

Parascytropus, subg. n. of *Phyllobius*, Desbrochers des Loges, "Diagnoses de Curculionides inédits," p. 6; for *Phyll. apollinis*, Mill., and allies, and *Par. mirandus*, sp. n., *id. l. c.* Lebanon (Pet. Nouv. 1875, pp. 469 & 478).

Heydeneonymus, g. n., *id. l. c.* p. 8, with no mention of analogies, for *H. seidlitzi*, sp. n., *id. ibid.* Portugal (Pet. Nouv. *l. c.*).

Otiorrhynchus calcaratus, p. 337, locality unknown, *depress*[illegible]es, wi[illegible] 338, Caucasus, *gemellatus* [Beck.], p. 339, *modestus*, p. 343[illegible] as co[illegible], *branksiki*, p. 340, Hungary, *decorus*, p. 341, Spain, *tournier*[illegible]p, equal[illegible], Schwarzwald, *procerus*, p. 344, S. France, *beckeri*, p. 34[illegible]ents of[illegible], hestan, *subrotundatus*, p. 346, Caucasus, S. Russia, Mt. Olymp[illegible]ing to *O. ledereri* redescribed, p. 348), *O.* (*Eurychirus*) *breviusculus*, p. [illegible]49, Daghestan, *judaicus*, Syria, *minutus*, Orenburg, p. 350, *O.* (*Tournieria*)

auripes, p. 351, W. Persia, *fausti*, p. 352, Daghestan, G. Stierlin, Deutsche E. Z. 1875 [N.B. the above pagination is correct; that given *l. c.* between pp. 336 & 353 is wrong, though not noticed in errata]; *O. livonicus*, G. Seidlitz, Fauna Baltica, p. 400, Livland: spp. nn.

Troglorrhynchus baldensis, sp. n., G. Czwalina, Deutsche E. Z. 1875, p. 121, Monte Baldo.

Phyllobius armatus, W. Roelofs, CR. Ent. Belg. xviii. p. cxxviii. Japan; *P. obliquus*, Desbrochers, *l. c.* p. 7, Syria: spp. nn.

Leptopides.

Entimus plebeius, sp. n., W. Roelofs, *l. c.* p. xxxviii. ? New Granada.

Brachycerides.

Brachycerus pradieri feeds as a larva in bulbs of *Allium sphærocephalum*; Nouv. et Faits, 1875, p. xliv. *Cf.* also Ann. Soc. Ent. Fr. (5) v. p. 96, note, and Baron, Bull. *l. c.* pp. clv. & clxii.

Brachycerus undatus. The larva feeds on *Narcissus*-bulbs at Antibes, destroying large quantities of them; A. Laboulbène, quoting Picart, Ann. Soc. Ent. Fr. (5) v. p. 95.

Brachycerus algirus, F., occurs in Illyria; and depreciatory observations are made with reference to Desbrochers' descriptions and multiplication of species in this genus: G. Kraatz, Deutsche E. Z. 1875, p. 233. Observations on characters, &c., of various allied species; *O. sinuatus*, Ol., and *ægyptiacus*, Ol., are specifically distinct from *junix*, Licht.; *B. tauricus*, Desbr., = *junix*, Licht.: *id. l. c.* pp. 421 & 422.

Byrsopides.

Gronops seminiger, All., = *lunatus*, ♀, var.; J. Weise, Deutsche E. Z. 1875, p. 128.

Amycterides.

Alexirrhea singularis, sp. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 55, Swan River, Australia.

Rhyparosomides.

Stenotarsus, Schön., *nec* Perty (1832, *Endomychidæ*), renamed *Ithyphallus*; E. v. Harold, C. H. xi. p. 143.

Phrynixus, g. n., F. P. Pascoe, *l. c.* p. 221. Scrobes foveiform, eyes small, remote from prothorax; penultimate tarsal joint entire, otherwise most nearly allied to *Dichotrachelus*, in which it is more or less bilobed (Lacordaire's description being wrong). *P. terreus*, sp. n., *id. ibid.* pl. v. fig. 2, New Zealand.

Cecyropa, g. n., *id. ibid.* Dubiously placed here, on account of the cavo. c xxvorbels of its posterior tibiæ; with some analogy at least to *Dronius*, ?icticol at any rate to be placed in Sect. A of Lacordaire's Phanis- mérides. *C. tychioides*, sp. n., *id. l. c.* p. 222, pl. v. fig. 3, Li? ?cilis, ellington.

?? P. 342 55. S hinides.

?? Eny n., Pascoe, *l. c.* p. 55. With the long scape and rostrum of this group, and elongate metasternum of the *Hylobiides*. Placed in the

former group by the author (in a group "*Cylindrocosyninæ*" in table). *L. bispinosa*, sp. n., *id. l. c.* p. 56, pl. i. fig. 9, Albany, Australia.

Inophlœus, g. n., *id. l. c.* p. 219. Club well limited; differs from *Cylindrorrhinus* chiefly in having scales. *I. traversi*, pl. v. fig. 4, Chatham Islands, *inuus*, Queenstown, p. 219, *villaris*, Christchurch, *rhesus* and *vitiosus*, Lake Guyon, New Zealand, spp. nn., *id. l. c.*

Molytides.

Anisorrhynchus monographed; generic and sexual characters recapitulated, and a synoptical table of the 12 known species given; *A. curtus*, Perris, = *bajulus*, Ol.; *A. barbarus*, Boh., and ? *carinicollis*, Fairm., = *sturmi*, Boh.; *A. siculus*, Boh., = *monachus*, Boh., var., and a var. n. *alternans* is described from S. Russia, p. 188; *Trysibius*, Sch., ? = *Anisorrhynchus*, Sch., and *T. intermedius*, Boh., and *olivieri*, Boh., are dubiously referred as varr. to *T. tenebrioides*, Pall.: J. Desbrochers des Loges, Ann. Soc. Ent. Fr. (5) v. pp. 161–190.

Syagrius, g. n., F. P. Pascoe, *l. c.* p. 56. Very similar to certain spp. of *Anchonus*, but doubtless allied to *Steremnius*, from which it differs in its rounded, not transverse, posterior coxæ, and elytra not broader than prothorax. *S. fulvitarsis*, sp. n., *id. l. c.* p. 57, Richmond River, Australia.

Anisorrhynchus punctato-sulcatus, p. 170, Portugal, Spain, *fallax*, p. 173, Spain, *hespericus*, p. 174, with many varr., of which *sculptilis*, *occidentalis*, *erosus*, *arduus*, and *scabratus*, p. 176, and *sulcatulus* and *elongatus*, p. 177, are named, Spain and Portugal, *gallicus*, p. 177, S. France, *marpeccanus*, p. 184, Morocco, spp. nn., J. Desbrochers des Loges, *l. c.*

Aparopion corsicum, sp. n., É. Perris, L'Ab. (3) i. p. 9, Corsica.

Hyperides.

Phytonomus rumicis (transformations noted), and *P. tigrinus* frequenting umbels of wild carrot; M. Régimbart, Feuil. Nat. v. p. 100.

Hypera vittulata, L. Fairmaire, Ann. Mus. Genov. vii. p. 532, Tunis; *H. proxima*, G. Capiomont (per C. E. Leprieur), Bull. Soc. Ent. Fr. (5) v. p. liii., and Ann. p. 467, Portugal: spp. nn.

"Rhadinosomides."

F. P. Pascoe, Ann. N. H. (4) xvi. p. 58, is "inclined to consider that *Rhadinosomus* and the two genera" recorded *infrà* "constitute a distinct and isolated sub-family, which will be found, like *Methypora* (another anomalous genus), to have a place near Aterpinæ." "Lacordaire has referred *Rhadinosomus* to his tribe Brachydérides—an unsatisfactory position—as it is not adelognathous, and there is nothing resembling it in any of the adelognathous groups to which the Brachydérides belong."

Euthyphasis, g. n., *id. l. c.* p. 57. Resembles *Rhadinus*, *depress*[illegible]les, w[illegible]. sp. n., *id. ibid.* pl. i. fig. 3, Swan River, Australia. p. 343[illegible]as co[illegible]

Acalonoma, g. n., *id. ibid.* "There is a considerable g*tournier*[illegible]p. equal genus and the preceding," of which it is regarded as an[illegible], p. 34[illegible]nents o[illegible]s ferential characters given. *A. reducta*, sp. n., *id. l. c.* p.t. Olym[illegible]ing t[illegible]g. 2, Swan River.

Cleonides.

Capiomont's monograph of *Lixus* is completed under the supervision of C. E. Leprieur, Ann. Soc. Ent. Fr. (5) v. pp. 41–64, 257–288, 449–456 [Zool. Rec. xi. p. 312]. Leprieur, *l. c.* pp. 457–466, makes some concluding observations, in lieu of preface, on the positions attributed to this genus with *Larinus* and *Rhinocyllus* by Schönherr and Lacordaire, and points out the little value of so-called natural systems, as exemplified by *Cœlostethus*, which is *Rhinocyllus* with a pectoral furrow. An analytical table of the allied genera, a synonymic list of Capiomont's species, and another of those not known to him (contributed by De Marseul), complete the work. The following observations occur:—*Lixus inquinatus*, Boh., = *subtilis*, Boh.; *L. palpebratus*, *superciliosus*, and *ruficornis*, Boh., and ? *acicularis*, Germ., = *acutus*, Dej.; *L. sanguineus*, Schön., *nec* Rossi, is renamed *aruginosus*, p. 52; *L. ochraceus* and *albo-marginatus*, Boh., *sicanus*, Cap., *wagneri*, Luc., = *ascanii*, Linn.; *L. fallax*, Boh., = *spartii*, Ol.; *L. diloris*, Germ., *escholtzi*, *pistrinarius*, and *punctirostris*, Boh., *lepidii*, Mots., = *myagri*, Ol.; *L. ferrugatus*, Fab. (*nec* Ol.), *pulvereus*, Ol., *lefebvrii* and *varicolor*, Boh., and ? *kolenatii*, Hoch., = *algirus*, Linn., of which two other varr. are described but not named; *L. guttiventris* and *cribricollis*, Boh., = *ferrugatus*, Ol. (*nec* Fab.); *L. abdominalis* and *angusticollis*, Boh., *bimaculatus*, Luc., = *punctiventris*, Boh., and Goureau's history of the evolution of *L. bicolor* probably refers to this species; *L. tristis* and *irresectus* Boh., ? = *bardanæ*, Fab., varr.; a var. *scrobirostris* of *L. rufitarsis*, Boh., from Algeria, p. 268; *L. nigritarsis* and *consenescens*, Sch., *vilis*, Rossi, = *bicolor*, Ol. [no mention is made of its occurrence somewhat commonly so far north as England, or of the bright red varr. found in this country]; *L. ascanoides*, Com., and *conicollis*, Boh., = *juncii*, Boh., of which *chawneri*, Woll., is an insular var.; *L. barbarus* and *sardiniensis*, Boh., *cynaræ*, Graells, = *scolopax*, Boh., of which *sulphuratus*, Boh., is probably a var., wrongly attributed to Sicily; a var. *cynarophilus* (Graells) of *L. cardui*, Ol., p. 281; *L. constrictus*, Boh., = *filiformis*, Fab.; *L. aberratus*, *virens*, and *favens*, Boh., = *flavescens*, Boh.; *L. nubilosus*, "Sch. in Mus.," is for no assigned reason adopted for *L. nebulosus*, Boh.; *Cleonus ornatus*, Reiche, = *L. pulvisculosus*, Boh.

Lixus sanguineus, Rossi. Economy and transformations described; it feeds in root-stems of *Apargia autumnalis*. J. Weise, Verh. Ver. Brünn, xiii. pp. 125 & 126.

Stephanocleonus (*Gonocleonus*) *munieri*, sp. n., L. Bedel, Bull. Soc. Ent. Fr. (5) v. p. cii. Oran.

Leucosomus insignis, sp. n., Desbrochers des Loges, Bull. Soc. Ent. Fr. (5) v. p. cxxxviii. Algeria (named and characterized, not fully described).

Cleonus picticollis, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 533, Tunis.

Lixus difficilis, p. 42, *euphorbiæ*, p. 260, Hungary, *curvirostris*, p. 47, Sardinia, *saintpierrii*, p. 48, Oran, *trivittatus*, p. 49, S. France and Oran, *insularis*, p. 55, Sicily, *lutescens*, p. 277, Sicily, Cyprus, Caucasus, *nubianus*, p. 278, Egypt, Nubia, and ? Greece, *kraatzi*, p. 287, Sarepta, *tricolor*, p. 449, Altai and Songarei, *theophili*, p. 454, Trebizond, *biskrensis*, p. 456,

Biskra, Capiomont, *l. c.*; *L. dubitabilis*, L. Fairmaire, *l. c.* p. 534, Tunis: spp. nn.

Hylobiides.

Hylobius signatipennis, Roel., = *gebleri*, Boh., Sch., *ex. typ.*; W. Roelofs, CR. Ent. Belg. xviii. p. cxxx. *Pimelocerus cinctus*, Dej. *ex. typ.*, is probably specifically different from *Hylobius macilentus*, Sch.; *id. ibid.* note.

Hylobius exculptus, sp. n., *id. l. c.* p. cxxx. Kioto, Hiogo.

Erirrhinides.

Gryporrhynchus, g. n., W. Roelofs, Ann. Ent. Belg. xviii. p. 189. ? *Eugnomides*; possibly allied to *Eutecheus*, Sch., facies of *Orchestes*. Type, *G. obscurus*, sp. n., *id. ibid.* pl. iii. fig. 13, Japan.

Clisis, g. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 58. "In a line with *Erirrhinus*, but its immediate affinities are not obvious." With a pectoral cavity not extending behind the anterior coxæ, as in *Bagous*; but with filiform tarsi. *C. modesta*, sp. n., *id. ibid.* King George's Sound, Australia.

Methone, g. n., *id. l. c.* p. 60. Like *Dicomada* in facies, but the abdominal segments are not curved at the sides, the middle coxæ are approximate, and scrobes oblique. *M. ornata*, sp. n., *id. ibid.* K. George's Sound.

Tysius, g. n., *id. l. c.* p. 218. "Apparently differentiated from" *Eugnomus*. *T. amplipennis*, sp. n., *id. ibid.* pl. v. fig. 1, New Zealand, and

Agestra rubiginea, sp. n., *id. l. c.* p. 59, King George's Sound. *canus*,

Cydmæa selligera, Champion Bay, *notaticollis*, W. Australia, *id. ibid.*

Dicomada murina, sp. n., *id. l. c.* p. 60, Champion Bay.

Antyllis togata, sp. n., *id. ibid.* Adelaide.

Myossita sublineata, sp. n., *id. l. c.* p. 61, Albany.

Smicronyx angustus, p. 534, Tunis, *varipilis*, ibid. note, and *angusticollis*, p. 535, note, Algeria, *rudicollis*, p. 535, note, Tangiers and Algeria, L. Fairmaire, Ann. Mus. Genov. vii. spp. nn.

Apionides.

A list of the species of *Apion* occurring in France, with the plants on which they feed, their Hymenopterous parasites, where known, and general observations; J. de Gaulle, Feuil. Nat. v. pp. 133–136, 141–145.

Apion bohemani, Sch., = *varipes*, Germ.; *A. bohemani*, Thoms., *nec* Sch., = *ononicola*, Bach, = *ononidis*, Gyll., *nec* Kirby, is a variety of *fagi*, Kby., *nec* L. (which is an *Orchestes*), = *apricans*, Hbst. [!]; G. Seidlitz, Fauna Baltica, p. 461.

Apion basicorne, Thoms., = *caullii*, Weuck., var.; E. Eppelsheim, Deutsche E. Z. 1875, p. 411.

Apion intermedium, sp. n., E. Eppelsheim, S. E. Z. xxxvi. p. 76, Darmstadt.

Attelabides.

Attelabus curculionides. The depositing of eggs and rolling up of the

oak leaf on which they were laid described by X. Thibiat, Feuil. Nat. v. p. 90.

Phialodes heros, Roel., var. n. *sumptuosus*, from N. Nipon; W. Roelofs, CR. Ent. Belg. xviii. p. cxxxii.

Evops pulchella, sp. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 61, Port Bowen.

Hoplapoderus vanvolxemi, sp. n., W. Roelofs, CR. Ent. Belg. xviii. p. cxxxi. Kioto, Japan.

Rhinomacerides.

Rhynchites betuleti rolling the leaves of vines in an alternately different direction with each egg; S. A. de Marseul, Nouv. et Faits, 1875, p. li. See also Pet. Nouv. (1875) pp. 524, 528, 532, 533.

Rhynchites azureus, Ol., is a good species, and observations on synonymy of *R. cœlestinus*, Gyll.; F. P. Pascoe, Ann. N. H. (4) xv. p. 391, note.

Scolocnemus, g. n., T. Kirsch, MT. Mus. Dresd. i. p. 39. Next *Eugnamptus*; elytra exposing the 3 last abdominal segments. *S. wallacii*, sp. n., *id. ibid.* Malacca.

Rhynchites elysius, Sumatra, *alcyoneus*, India, p. 391, *hispoides*, p. 392, *cupido*, p. 394, Penang, *lævigatus*, Menado, *gagates*, Macassar, p. 392, *æstuans*, Tondano, *leucothyreus*, Xulla, *venustus*, Japan, p. 393, *clavicornis*, Java, *sculpturatus*, India, p. 394, *tenuirostris*, Sarawak, and *R.* (?) *coral-*
var. *scro-* Malacca, F. P. Pascoe, *l. c.*; *R. cribrum*, Desbrochers des Loges, *tarsis* and Ent. Fr. (5) v. p. clxxxvi. Syria: spp. nn.
made of *bius beckeri*, sp. n., Des Loges, *l. c.* p. clxxxvii. Derbent.
of the br *clinides.*
conico
Magdalinus asphaltinus, Boh., is different from *aterrimus*, L.; *M. kraatzi*, Weise, is not 1½ m. but 2½ mm. long; Deutsche E. Z. 1875, p. 128.

Magdalis cyanea, sp. n., G. Seidlitz, Fauna Baltica, p. 430, Livland, Lapland.

Balaninides.

Balaninus syriacus, Desbrochers des Loges, Bull. Soc. Ent. Fr. (5) v. p. clxxxvii. Syria; *B. interruptus*, T. Kirsch, MT. Mus. Dresd. i. p. 40, Malacca: spp. nn.

Anthonomides.

Orchestes semirufus, Gyll. Specimens with tarsi and antennal club, and sometimes also the femora and tibiæ, pitchy, recorded from wild cherry in S. of England; G. C. Champion, Ent. M. M. xii. p. 134.

Orchestes rhamphoides, Duv., = *Rhamphus tomentosus*, Ol.; H. Tournier, Bull. Soc. Ent. Fr. (5) v. p. xli.

Sphinxis, g. n., W. Roelofs, Ann. Ent. Belg. xviii. p. 190. Very near *Thamnobius*. *S. pubescens*, sp. n., *id. ibid.* pl. iii. fig. 14, Japan.

Orchestoides, g. n., *id. l. c.* p. 191. Differs from *Orchestes* in its short and differently formed rostrum, also in its antennæ; doubtfully saltatorial. Type, *O. decipiens*, sp. n., *id. l. c.* p. 192, pl. iii. fig. 15, Japan.

Anthonomus baudueri, sp. n., Desbrochers des Loges, Bull. Soc. Ent. Fr. (5) v. p. clxxxvii. Syria.

Bradybatus (?) *limbatus*, sp. n., W. Roelofs, *l. c.* p. 191, Hakodadi.

Orchestes perpusillus, sp. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 61, Champion Bay, Australia (the first of the genus in the southern hemisphere).

Coryssomerides.

Prodotes (dubiously retained here, as the anterior coxæ are rather distant in this new species) *gibbicollis*, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 167, Peru.

Prionomerides.

Polyponus, g. n., *id. l. c.* p. 162. *Piazorrhinides*: in many characters resembling *Apoderus* in the *Attelabides*, but really allied to *Piazorrhinus*. *Pol. athiops*, p. 163, *bicallosus* and *cærulescens*, p. 164, spp. nn., *id. l. c.* Peru.

Prionomerus bituberosus, sp. n., *id. l. c.* p. 161, Peru.

Tychiides.

Elleschus scanicus bred in quantity from fallen catkins of *Populus alba*; E. Hofmann, Württ. nat. JH. xxix. [1873] p. 368.

Miccotrogus signaticollis, Chevr., ? = *monachus*, Chevr., var., but neither of them have anything to do with *capucinus*, Boh.; A. Chevrolat, Bull. Soc. Ent. Fr. (5) v. p. lix.

Lignyodes longirostris, p. 165, *subfasciatus*, p. 166, T. Kirsch, Deutsche E. Z. 1875, Peru; *L. oblique-fasciatus*, L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. cxciv. Constantinople: spp. nn.

Pachytychius insularis, sp. n., A. Chevrolat, *l. c.* p. lviii. Sardinia.

Cionides.

Cionus olens mining leaves of *Verbascum thapsus*; E. Hofmann, Württ. nat. JH. xxix. [1873] p. 368 [Zool. Rec. x. p. 307].

Nanophyes maurus, sp. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 61, S. Australia (the first yet known from that country, *N. ferrugatus*, Blanch., being a *Cionus*).

Gymnetrides.

Gymnetron griseo-hirtellum, Desbr., = *laniger*, Bris.; L. v. Heyden, Deutsche E. Z. 1875, p. 384.

Gymnetron plantaginis, E. Eppelsheim, S. E. Z. xxxvi. p. 77, Germany; *G. lanuginosum*, T. V. Wollaston, Ent. M. M. xi. p. 218, Atlas; *G. villosipennis* [*-ne*], W. Roelofs, Ann. Ent. Belg. xviii. p. 149, Japan: spp. nn.

Miarus vestitus, sp. n., W. Roelofs, *l. c.* p. 150, Japan.

Læmosaccides.

Læmosaccus frontalis, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 168, Peru.

Alcidides.

Alcides flavo-signatus, p. 151, Kobé, *piceus* and *albo-lineatus*, p. 152,

Japan, W. Roelofs, Ann. Ent. Belg. xviii.; *A. triangulifer*, T. Kirsch, MT. Mus. Dresd. i. p. 40, Malacca: spp. nn.

Ocladius bifasciatus, p. 475, *sharpi*, p. 476, Arabia, *ægyptiacus*, p. 476, Egypt, spp. nn., H. Tournier, Pet. Nov. (1875).

Camarotides.

Camarotus pusillus, sp. n., T. Kirsch, *l. c.* p. 169, Peru.

Menimachides.

Acicnemis macula-alba, p. 153, *suturalis*, p. 154, spp. nn., W. Roelofs, Ann. Ent. Belg. xviii. Japan.

Cholides.

Aphioramphus guerini, sp. n., T. Kirsch, *l. c.* p. 170, Peru.

Dionychus jekeli, sp. n., *id. l. c.* p. 171, Peru.

Cryptorrhynchides.

Cryptorrhynchus lapathi very destructive to young poplars and osiers, the dryness of 1874 having favoured its increase. The latter half of July recommended for destruction of the imago before coupling. Blanchard, Bull. Soc. industr. Angers (3) xvi. pp. 34 & 35 (quoting Bull. Soc. centrale d'Agriculture de France).

Ectatorrhinus adamsi, Pasc., ♀, described from Japan; W. Roelofs, Ann. Ent. Belg. xviii. p. 155. In Japanese species of *Colobodes*, the first 2 joints of the funiculus are equal; *id. ibid.*

New genera and species:—

Pheloconus (Jekel, *ined.*), W. Roelofs, *l. c.* p. 193. *Ithyporides*: differs from *Conotrachelus* in the interstices of the elytra being all elevated, or with the alternate elevations more or less interrupted; in the form of the head, rostrum, and antennæ, and in the clothing of hairs. *C. pilosellus*, Boh. (which occurs in Japan, doubtlessly imported), and many species yet undescribed.

Catagmatus, id. *l. c.* p. 157. *Cleogonides*: facies of *Melanterius*. *C. japonicus*, id. *l. c.* p. 158, pl. ii. fig. 6, Japan.

Teutheria, F. P. Pascoe, Ann. N. H. (4) xvi. p. 63. *Cleogonides*, but scarcely allied to any of the known genera; claws united at base, thus differing from *Melanterius* and allies. *T. insculpta*, id. *ibid.*, Albany.

Æthreus, id. *l. c.* p. 65. Suggested to have *Menios* and *Mitrastethus* as remote allies: an isolated form. *Æ. cicatricosus*, id. *ibid.*, pl. i. fig. 8, Lord Howe Island.

Catabonops, Roelofs, *l. c.* p. 161. *Tylodides*: near *Plagiocorynus* and *Lembodes*. *C. monachus*, id. *l. c.* p. 162, pl. ii. fig. 7, Japan.

Monaulax, id. *l. c.* p. 162. True *Cryptorrhynchides*: differ from *Cyamobolus* in the form of the antennæ and the construction of the mesosternum. *M. rugicollis*, id. *l. c.* p. 163, pl. ii. fig. 8, Japan.

Catarrhinus, id. *l. c.* p. 163. Allied to *Euthyrrhinus*. *C. umbrosus*, id. *l. c.* p. 164, pl. ii. fig. 9, and *C. septentrionalis*, id. CR. Ent. Belg. xviii. p. cxxxii., Japan.

Diplogrammus, A. Chevrolat, Bull. Soc. Ent. Fr. (5) v. p. cx. Not

characterized, but stated to comprise *Cryptorrhynchus* 4-*vittatus*, Ol., and 5 new species, all from S. America.

Conotrachelus (*Cyphorrhynchus*) *caudatus*, p. 172, *luridus*, p. 173, and *defricatus*, p. 174, *C. carinirostris* and *funereus*, p. 175, *tristis*, p. 176, *ferrugineus* and *quadrisignatus*, p. 177, *quadriguttatus*, p. 178, *basalis*, p. 179, *signatus* and *angulicollis*, p. 180, *carinellus*, p. 181, T. Kirsch, Deutsche E. Z. 1875, Peru.

Desmidophorus ursus, W. Roelofs, CR. Ent. Belg. xviii. p. xxxviii. Madagascar.

Colobodes v-album, p. 155, *ornatus*, p. 156, W. Roelofs, Ann. Ent. Belg. xviii. Japan.

Rhyssomatus rufipennis, p. 182, *peruvianus*, p. 183, *æthiops* and *minutus*, p. 184, Kirsch, *l. c.* Peru; *R.* (?) *rufitarsis*, Roelofs, *l. c.* p. 159, Japan.

Melanterius carinicollis, Cape York, *fugitivus*, Swan River, *floridus*, Adelaide, Pascoe, *l. c.* p. 63.

Mecistocerus (gen. charact. given) *denticulatus*, id. *ibid.*, Queensland.

Salcus elevatus and *latissimus*, id. *l. c.* p. 64, Port Bowen.

Acalles simulator, Roelofs, *l. c.* p. 160, Japan; *A. granulicollis*, H. Tournier, Pet. Nouv. (1875) p. 475, Tangiers.

Cryptorrhynchus funereus, p. 188, *niveicollis*, p. 189, *tibialis*, p. 190, *modestus*, p. 191, *innocens* and *gonocnemus*, p. 192, *minutus* and *binævus*, p. 193, *cyphorrhynchoides*, p. 194, T. Kirsch, *l. c.* Peru; *C. navicularis*, p. 165, *rufescens*, p. 166, *insidiosus*, p. 167, W. Roelofs, *l. c.* Japan.

Celosternus neutralis and *umbrosus*, p. 195, *vilis*, p. 196, *convexus*, p. 197, *oblongus* and *lævirostris*, p. 198, *nanus*, p. 199, Kirsch, *l. c.* Peru; *C.* (?) *sulcato-striatus*, p. 168, *fasciculatus*, p. 169, *electus*, p. 170, *nigro-variegatus*, p 171, Roelofs, *l. c.* Japan.

Mamactes vestitus, Kirsch, *l. c.* p. 185, Peru.

Gasterocercus erinaceus, p. 186, *exiguus*, p. 187, *clitellarius*, p. 188, *id. l. c.* Peru.

Crypharis damrii, É. Perris, L'Ab. (3) i. p. 10, Corsica.

Zygopides.

The Japanese species constitute one of the most tropical types of the fauna of that country, and have relations with those of S. America; W. Roelofs, Ann. Ent. Belg. xviii. p. 172.

Mecopus audineti, Rld., Sch., = *bispinosus*, Web.; T. Kirsch, MT. Mus. Dresd. i. p. 42.

Apiophorus, g. n., W. Roelofs, *l. c.* p. 173. Possibly only a form of *Brimoda*, Pasc., from which it differs only in the form of the rostrum and tarsi. *A. pictus*, sp. n., *id. ibid.* pl. ii. fig. 10, Japan.

Podeschrus, g. n., *id. l. c.* p. 175. Near *Nyphæba*, Pasc. Type, *P. signatus*, sp. n., *id. l. c.* p. 176, pl. iii. fig. 11, Japan.

Metialma pusilla, sp. n., *id. l. c.* p. 175, Jagami.

Cratosomus campestratus, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 200, Peru.

Piazurus alternans, sp. n., *id. l. c.* p. 201, Peru.

Copturus ruficeps, p. 203, *posticus* and *variegatus*, p. 203, *ocularis*, p. 204, *vitticollis*, p. 205, *niger*, p. 206, *cyphogaster*, p. 207, *albo-pictus*, p. 208,

convexicollis, p. 241, *dorsalis* and *decoratus*, p. 242, *pectoralis*, p. 243 *perdix*, p. 244, *signaticollis*, p. 245, *nebulosus*, p. 246, *femoralis* and *musicus*, p. 247, *bellus*, p. 248, *inornatus* and *apicalis*, p. 249, *lineolatus*, p. 250, *subfasciatus* and *rufirostris*, p. 251, *sulcifrons*, p. 252, spp. nn., *id. l. c.* Peru.

Agametis pulchra, sp. n., *id.* MT. Mus. Dresd. i. p. 41, Malacca.

Osphilia albo-maculata, sp. n., *id. ibid.* Malacca.

Mecopus abdominalis, p. 42, Malacca, *moluccarum*, p. 43, note, Moluccas, spp. nn., *id. l. c.*

Arachnopus albo-scapulatus and *guttulifer*, p. 1009, *misoriensis*, p. 1010, spp. nn., R. Gestro, Ann. Mus. Genov. vii. Geelvink Bay, New Guinea.

Tachygonides.

Tachygonus (in which the abrupt narrowing of the eyes and their prolongation beneath is not noticed by Schönherr or Lacordaire) *scutellaris* and *rufo-varius*, spp. nn., T. Kirsch, Deutsche E. Z. 1875, p. 253, Peru.

Ceuthorrhynchides.

Phytobius. Notes on the European species; *P. notula*, Germ., is not *canaliculatus*, Sch., by description, and a type of it = *4-tuberculatus*, F.; another from Suffrian = *P. waltoni*, Sch.; T. Kirsch, Deutsche E. Z. 1875, pp. 398–400.

Phytobius quadricornis, Gyll., *Rhinoncus pericarpius*, L., and *R. bruchoides*, Hbst., occur in Japan; W. Roelofs, Ann. Ent. Belg. xviii. p. 180.

Phytobius (*Eubrychius*) *velatus*, Beck, swims artistically, very much better than *P. leucogaster*, Marsh.; A. Schultze, Deutsche E. Z. 1875, p. 397.

Ceuthorrhynchus asper and *ancora*, spp. nn., W. Roelofs, *l. c.* p. 177, Japan.

Ceuthorrhynchidius albo-suturalis, sp. n., *id. l. c.* p. 178, Japan.

Mecysmoderes fulvus, id. *l. c.* p. 179, Japan; *M. carinifer*, T. Kirsch, MT. Mus. Dres. i. p. 44, Malacca: spp. nn.

Phytobius japonicus, sp. n., W. Roelofs, *l. c.* p. 180, Japan.

Peridinetides.

Peridinetus circulifer, p. 254, *nanus*, p. 255, spp. nn., T. Kirsch, *l. c.* Peru.

Megops lineola, sp. n., *id. l. c.* p. 256, Peru.

Baridiides.

Baridius. In many species, the pygidium is entirely covered by the elytra, a character entirely opposed to Lacordaire's diagnosis of the groups; T. Kirsch, Deutsche E. Z. 1875, p. 257.

Scambus requires an extension of its characters, and variation of essential points occurs also in *Centrinus*; id. *l. c.* p. 264.

Centrinopsis, g. n., W. Roelofs, Ann. Ent. Belg. xviii. p. 185. True *Baridiides*, group *Madopterides*; facies of *Centrinus* or *Madarus*. Type, *C. niteus*, sp. n., *id. l. c.* pl. iii. fig. 12, Japan.

Platyphœus, g. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 66. Allied to the Brazilian *Parallelosomus*, but with broader outline, eyes very coarsely faceted and contiguous beneath, more subulate rostrum, and scrobes commencing behind the middle. Facies of *Lyterius*. *Pl. lyterioides*, sp. n., *id. ibid.* Gayndah.

Radamus [anagram of *Madarus*], g. n., T. Kirsch, Deutsche E. Z. 1875, p. 276. *Madarides*: differing from *Madarus* in its wide, subdepressed form, short antennæ, and connate tarsal claws. *R. æreus*, ibid., *atratus*, p. 277, spp. n., *id. l. c.* Peru.

Baridius ferrugo, p. 257, *vulneratus* and *thoracicus*, p. 258, *inanis* and *anescens*, p. 259, *æthiops*, p. 260, *subæneus* and *corvinus*, p. 261, *funereus* and *longirostris*, p. 262, *parvus*, p. 263, T. Kirsch, *l. c.* Peru; *B. parumpunctatus*, L. Fairmaire, Ann. Mus. Genov. vii. p. 535, Bizerta (Tunis); *B.* (*Baris*) *maritima* [*-mus*], *melancholica* [*-cus*], p. 181, *pilosa* [*-sus*], p. 182, *armipes*, *deplanata* [*-tus*], p. 183, *orientalis*, p. 184, W. Roelofs, *l. c.* Japan: spp. nn.

Scambus dromedarius, p. 264, Bogota, *ruficeps*, p. 265, *lineatus*, p. 266, *squamipes*, p. 267, Peru, Kirsch, *l. c.* spp. nn.

Centrinus cicatricosus, p. 268, *brunnirostris*, p. 269, *relucens* and *biseriatus*, p. 270, *tibialis*, p. 271, *rectirostris*, p. 272, *geniculatus* and *exiguus*, p. 273, *æthiops*, p. 274, spp. nn., *id. l. c.* Peru.

Diorymerus sulcatus, sp. n., *id. l. c.* p. 275, Peru.

Calandrides.

Sphenophorus carinicollis and *glabricollis*, described by Schönherr as from Java, occur in Japan; W. Roelofs, Ann. Ent. Belg. xviii. p. 187.

Anapygus, g. n., T. Kirsch, MT. Mus. Dresd. i. p. 44. *Sphenocorynides*: facies of *Sphenophorus*, but allied to *Oxypygus*, with the abdomen of *Heterotoxus*. *A. carinicollis*, sp. n., *id. l. c.* p. 45, Malacca.

Otidognathus jansoni, sp. n., W. Roelofs, *l. c.* p. 186, Japan.

Oxypygus trisignatus, sp. n., T. Kirsch, *l. c.* p. 44, Malacca.

Sphenophorus melanurus, sp. n., *id.* Deutsche E. Z. 1875, p. 278, Chancho majo, Peru.

Calandra elongata, sp. n., W. Roelofs, *l. c.* p. 187, Japan.

Stromboscerides.

Xerodermus, Lac., = *Orthosinus*, Motsch., and is not properly ranged near *Mecinus* by Gemminger and Von Harold; Lacordaire was right in placing it near the *Calandrides*. Observations on its affinities and the known species. J. Faust, S. E. Z. xxxvi. pp. 94–96.

Sipalides.

Sipalus granulatus, F., is much the largest *Curculio* found in Japan, where it is very common and variable in size; W. Roelofs, Ann. Ent. Belg. xviii. p. 188.

Cossonides.

Tetratemnus sculpturatus, Woll., is from China, and is distinct from *Dryophthorus bituberculatus*, F., and *D. excavatus*, Boh.; W. Roelofs, CR. Ent. Belg. xviii. p. cxxxiii.

Cossonus linearis, Gyll., *nec* Fab., 1787, = *cylindricus*, Sahlb.; *C. ferrugineus*, Clairv., 1798, = *linearis*, Payk., 1792, *nec* Fab., = *parallelopipedus*, Hbst., 1795: G. Seidlitz, Fauna Baltica, p. 455.

Phlœophagus pilosus, Bach, = *spadix*, Hbst.; *Rhyncolus crassirostris*, Perris, = *elongatus*, Sch.: L. v. Heyden, Deutsche E. Z. 1875, p. 391.

Glœodema spatula, Woll., var. n. *bispatulata*; W. Roelofs, CR. Ent. Belg. xviii. p. cvi. New Guinea.

Oligopus, g. n., T. Kirsch, Deutsche E. Z. 1875, p. 279. Next *Amorphocerus*, but with shorter scape and longer funiculus to the antennæ, the thorax bisinuate behind, and connate claws. *O. pellitus*, sp. n., *id. ibid.*, Peru.

Cossonus (genus new to Japan) *gibbirostris*, W. Roelofs, *l. c.* p. cxxxiv. Yesso; *C. areatus*, p. 280, *peruanus*, p. 281, T. Kirsch, *l. c.* Peru: spp. nn.

Raymondia lævithorax, p. 11, *damrii*, p. 12, É. Perris, L'Ab. (3) i. Corsica; *R.* (*Alaocyba*) *benjaminis*, Marquet, Bull. Soc. Toulouse, ix. (1874–75), p. 280, and Pet. Nouv. (1875) p. 511, Massanne, E. Pyrenees: spp. nn.

Scolytidæ.

Lindemann, K. Beiträge zur Kenntniss der Borkenkäfer Russlands. Bull. Mosc. xlix. pt. 1, pp. 131–146.

——. Vergleichend-anatomische Untersuchung über das männliche Begattungsglied der Borkenkäfer. *L. c.* pp. 196–252, diagram, pls. i.–v. and figs. 1–6 in text.

The author has examined the genitalia of the males of 39 species, with the following results: 1, the numerous forms are divided into two groups, primary (probably metamorphosed parts of abdominal segments), and accessory (probably cuticular formations); 2, the structure is very variable, containing many special types, even in genera of small extent; 3, the formation follows no family series, but there are 3 separate groups, not as yet connected, though in themselves merging by easy steps (these groups, according to a diagram, p. 199, being typically represented by *Xyloterus lineatus*, *Hylurgus piniperda*, and *Scolytus rugulosus*); 4, the various differences afford a probability of our understanding the true analogies of the family. The author discusses in detail and figures the organs in *Scolytus*, the *Hylesinides*, and *Tomicides*, in a manner not easily capable of abstraction, but worthy of the most attentive study; this paper being probably the most philosophical on any entomological subject published during the year.

Lindemann also describes three forms of the digestive apparatus in the proventriculus of the *Scolytidæ*, the 1st peculiar to *Scolytus*, the 2nd to the *Tomicides* (?), and the 3rd to the *Hylesinides*. A specifically characteristic appendage at the basal inner angle of the mandible in most *Scolytidæ*, of which an analogue is found is many *Curculionidæ* (especially *Rhyncolus*), is also described. Tageblatt, p. 102, of Entomologische Vorträge, gehalten auf der 48 Versammlung deutscher Natur- Ent. Soc. und Aertze zu Graz (*cf.* Deutsche E. Z. 1875, p. 428).

Hylesinus vittatus. Swarms in flight, especially of the ♂; A. Lucante, Feuil. Nat. v. p. 123.

Blastophagus piniperda and *B. minor* occur in Japan; F. Chapuis, Ann. Ent. Belg. xviii. p. 197.

Blastophagus piniperda. Observations on its power of emitting sound, by K. Lindemann, Bull. Mosc. xlix. pt. 1, pp. 143–146. This is possessed by both sexes, and the apparatus is found on the upper side of the penultimate and antepenultimate abdominal segments and the under side of the apex of the elytra, the sound being produced by the friction of a file (with about 250 prismatic furrows) on the latter, against two minutely ridged spots on each of the former. This structure is wanting in *B. minor*.

Eutomus, Dej., Lac., ? ? = *Rhipidandrus*, Lec., and is doubted as belonging to the *Tenebrionidæ* as Chapuis states; G. H. Horn, Tr. Am. Ent. Soc. v. p. 151.

Tomicus bidens, var. *trepanatus*, Nördlinger, = *chalcographus*, L., Gyl., Thoms.; *T. chalcographus*, Ratz., and all other authors, = *xylographus*, Sahlb.; but the two are doubtfully distinct as species, representing a dimorphism not previously known in the *Scolytidæ*, with two distinct forms in the ♀, and only one form in the ♂. K. Lindemann, *l. c.* pp. 181–186.

"*Bostrichus Bulmerincqii*," Kolenati. E. v. Harold, C. H. xiii. p. 163, in referring to the Recorder's mention of this species in Ent. M. M. x. p. 229, corrects the generic name to *Bostrychus*, adding in a note, "and not *Bostrichus*, as Rye writes it!" with an observation as to the difficulty of eradicating such mistakes. The Recorder, however, has for many years employed the correct reading *Bostrychus* (see Zool. Rec. 1869 to date), but in quoting Kolenati's names he thought it better to do so *literatim*, a correction of the generic name necessitating also some alteration of the specific, which the Recorder did not feel inclined to touch. Harold himself gives this latter, *l. c.*, incorrectly (for a quotation) as "*Bulmerincqui*."

Eidophelus [*Ido-*], g. n., W. Eichhoff, Ann. Ent. Belg. xviii. p. 200. Differs from *Pityophthorus* in its 4-jointed funiculus, and sub-solid clava. *E. imitans*, sp. n., *id. l. c.* p. 201, Japan.

Hylastes parallelus and *interstitialis*, p. 196, *obscurus*, p. 197, spp. nn., F. Chapuis, *l. c.* Japan.

Phlæosinus lewisi and *perlatus*, spp. nn., *id. l. c.* p. 198, Japan.

Phlæotribus obesus, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 283, Peru.

Stephanoderes tristis, sp. n., W. Eichhoff, *tom. cit.* p. 200, Japan.

Tomicus (*Cyrtotomicus*) *angulatus*, sp. n., *id. ibid.* Japan.

Dryocœtes aceris, K. Lindemann, *l. c.* p. 140, Moscow; *D.* (? ?) *apatoides*, W. Eichhoff, *l. c.* p. 201, Japan: spp. nn.

Xyleborus atratus and *compactus*, ibid., *rubricollis*, *validus*, *sobrinus*, and *festivus*, p. 202, *vicarius*, p. 203, spp. nn., *id. l. c.* Japan.

Cryphalus alni, sp. n., K. Lindemann, *l. c.* p. 136, Moscow.

Scolytus japonicus, sp. n., Chapuis, *l. c.* p. 199, Japan.

BRENTHIDÆ.

Stereodermus pilosus, sp n , T. Kirsch, Deutsche E. Z. 1875, p. 281, Peru.

Cyphagogus eichhorni, p. 45, *planifrons*, p. 46, spp. nn., *id.* MT. Mus. Dresd. i. Malacca.

Megacerus (*Ectocemus*) *conciliator*, p. 46, *M. pubescens*, p. 47, Malacca, *badeni*, p. 48, note, Philippine Islands, *pulchellus*, p. 49, note, Moluccas, spp. nn., *id. l. c.*

Stratiorrhina pascoei, id. *l. c.* p. 48, Malacca.

Orychodes lineolatus, p. 49, Malacca, *splendens*, p. 50, note, and *striolatus*, p. 51, note, Philippine Islands, *indus*, p. 51, note, Siam, spp. nn. *id. l. c.*

ANTHRIBIDÆ.

Lawsonia, Shp., = *Exillis*, Pascoe, and *L.. longicornis*, Shp., clashes with *E. longicornis*, Pasc. ; F. P. Pascoe, Ann. N. H. (4) xvi. p. 210, note.

Sympaetor, g. n., T. Kirsch, MT. Mus. Dresd. i. p. 52. *Acorynides*; rostrum twice as long as thorax, strongly curved, narrower at base than head, much dilated and truncate at apex. *S. vittifrons*, sp. n., *id. l. c.* p. 53, Malacca.

Tophoderes annulatus, sp. n., C. O. Waterhouse, Ann. N. H. (4) xv. p. 412, Madagascar.

Sintor vittatus, p. 50, *guttatus*, p. 51, spp. nn., T. Kirsch, *l. c.* Malacca.

Acorynus bimaculatus, sp. n., *id. l. c.* p. 52, Malacca.

Litocerus multilineatus, sp. n., *id. ibid.* Malacca.

Cedus nigripectus, sp. n., *id. l. c.* p. 53, Malacca.

Nessiara lineola, sp. n., *id. l. c.* p. 54, Malacca.

Apatenia tessellata, sp. n., *id. ibid.* Malacca.

Apolecta aspericollis, sp. n., *id. l. c.* p. 55, Malacca.

Xenocerus fastuosus and *velutinus* (mimics), p. 1012, *humeralis*, p. 1014, *niveo-fasciatus*, p. 1015, *coræ*, p. 1017, *barbicornis*, p. 1018 (with observations on other Papuasian species), R. Gestro, Ann. Mus. Genov. vii., New Guinea ; *X. pictus*, T. Kirsch, *l. c.* p. 55, Malacca : spp. nn.

Brachytarsus fallax, sp. n., É. Perris, L'Ab. (3) i. p. 13 (Mt. de Marsan ?).

BRUCHIDÆ.

Bruchus chinensis, L. (*pectinicornis*, L., *scutellaris*, F., *rufus*, Dej., *ornatus*, Boh., *elegans*, St.), recorded from Japan; K. Letzner, JB. schles. Ges. liii. p. 178.

Bruchus marginellus, F., bred from *Astragalus glycyphyllus*; E. Hofmann, Württ. nat. JH. xxix. [1873]. p. 368.

Bruchus sp. bred in Bâle from palm nuts brought from Brazil ; F. Burckhardt, Verh. Ges. Bas. vi. [1874], p. 213.

Bruchus impiger, Horn, = *ramicornis*, Boh. ; G. H. Horn, Tr. Am. Ent. Soc. v. p. 151.

Caryoborus sp. from nuts of "Baba" palm from Bahia; A. Grouvelle, Bull. Soc. Ent. Fr. (5) v. p. clxii.

Bruchus (*Pachymerus*) *lallemanti*, sp. n., S. A. de Marseul, Nouv. et Faits, 1875, p. xxxix. L'Arba.

Trictenotomidæ.

Trictenotoma is considered as a survival of a series "which in former ages represented the objects that are now known as *Tenebrionidæ*, with a strong resemblance to *Prionidæ* and *Lucanidæ*, and perhaps a slight tendency towards *Cucujidæ*," similar views having been expressed before by the author with regard to the *Spondylidæ*. The characters are discussed in detail; and observations are made on the original and earliest ideal forms of *Coleoptera*, and the indications of their existence afforded by existing insects. J. L. Leconte, Tr. Am. Ent. Soc. v. pp. 167 & 168.

H. Deyrolle, Bull. Soc. Ent. Fr. (5) v. pp. lix.–lxi., gives an abridged synoptical table of species, including *Trictenotoma mniszechi*, Bengal, *thomsoni*, Borneo, *mouhoti*, Siam, and *davidi*, Central China, incidentally characterized; *T. childreni*, Dupont, *nec* Gray, is renamed *westwoodi*, and *grayi*, Harold, *nec* Smith, is renamed *doriæ*.

Autocrates aneus, Westw., ♂ described; C. A. Dohrn, S. E. Z. xxxvi. pp. 79–81.

Cerambycidæ.

A list of species found near Antwerp, probably bred from wood introduced for building purposes; E. van Segvelt, CR. Ent. Belg. xviii. p. lxxxv.

Prionides.

Parandra sayi, *quadricollis*, *conformis*, *dentata*, and *minuta*, J. Thoms., = *brunnea*, F., varr.; *P. cylindrica*, Chevr., from Mexico, = *polita*, Say; there are two forms in the genus, distinguished by the distinct and indistinct onychium. G. H. Horn, Tr. Am. Ent. Soc. v. p. 150.

Ægosoma javanicum, Redt., = *marginale*, F., ♀; H. W. Bates, Ent. M. M. xii. p. 51.

Prionoplus reticularis, White, alive near London; C. G. Hall, Ent. M. M. xii. p. 83.

Eudianodes swanzii, Pasc., briefly recharacterized and figured; F. P. Pascoe, Ann. N. H. (4) xv. p. 60, pl. viii. fig. 7.

Chalcoprionus, g. n., H. W. Bates, Ent. M. M. xi. p. 273. Sub-metallic, with facies of *Pyrodes*, but more nearly allied to *Ctenoscelis* and *Mecosarthron*; thorax with a long lateral spine. *C. badeni*, sp. n., *id. l. c.* p. 274, New Granada.

Apotrophus, g. n., *id. op. cit.* xii. p. 48. *Ctenoscelinæ*; with the antennæ of *Cyrtognathus*. *A. simplicollis*, sp. n., *id. l. c.* p. 49, Paraná.

Dinoprionus, g. n., *id. l. c.* p. 49. *Ægosominæ*; basal joints of tarsi very short and narrow, antennæ with joints 4–10 short and triangular, mesosternum nearly atrophied. *D. cephalotes*, sp. n., *id. l. c.* p. 50, India.

Ærogrammus, g. n., *id. l. c.* p. 50. *Ægosominæ*: head very thick behind, upper lobe of eyes narrow, 3rd antennal joint but little elongate, thorax parallel-sided. *Æ. rufus*, sp. n., *id. l. c.* p. 51, N. W. Borneo.

Temnestheš, g. n., *id. l. c.* p. 51. *Anacolinæ*: antennal joints carinated as in *Myzomorphus*. *T. lobicollis*, sp. n., *id. l. c.* p. 52, Bogotá.

Erythrænus, g. n., *id. l. c.* p. 52. Type of a new sub-family, *Erythræninæ*, allied to the *Anacolinæ*. Thorax approaching *Purpuricenus*, but with the anterior coxæ, &c., of the *Prioninæ*; wings as in *Myzomorphus*; metathoracic episterna parallelogrammic. *E. borneensis*, sp. n., *id. l. c.* p. 53, Sarawak.

Psilopus [Poli, *Mollusca*, 1795; Meigen, *Diptera*, 1824; Gould, *Aves*, 1837], g. n., V. Motschoulsky, Bull. Mosc. xlix. pt. 1, p. 152. For the species of *Prionus* with abbreviated elytra and which have not the tarsi villose beneath. Type, *Prionus brachypterus*, (Kar.) Fald., from which *P. hemipterus* [? Mots.] is distinct.

Rhæsus, g. n., *id. l. c.* p. 153. "Procéphalide:" intermediate between *Exgates* [*Erg-*] and *Prionus*, with antennæ not pectinate in both sexes, and shorter than the body, and thorax with many lateral spines. Type, *Rhæsus persicus*, Karelin [sp. n.], p. 154, Asterabad, stated to be perhaps a large local var. of *Prionus cerraticollis* [*serr-*], Mots.; also *Aulacopus robustus*, Heyden.

Miocydus, g. n., F. P. Pascoe, Ann. N. H. (4) xv. p. 59. Allied to *Prionus*, but with the clypeus not marked off from the frons, the labrum being concealed, serrate antennæ, and shorter tarsi. *M. prionoides*, sp. n., *id. l. c.* p. 60, pl. viii. fig. 9, W. Australia.

Parandra janus, sp. n., H. W. Bates, Ent. M. M. xii. p. 47, Menado, New Guinea.

Anoploderma quadricolle, sp. n., *id. ibid.* Mendoza.

Elaptus brevicornis, sp. n., F. P. Pascoe, *l. c.* p. 60, pl. viii. fig. 8, Gawler, S. Australia.

Ægosoma angustatum, sp. n., H. W. Bates, *l. c.* p. 51, Ceylon.

Closterus major, sp. n., C. O. Waterhouse, Ann. N. H. (4) xv. p. 413, Madagascar.

Cerambycides.

Hammaticherus acuminatus, ? Mots., = *heros*, local var.; V. Motschoulsky, Bull. Mosc. xlix. pt. 1, p. 147.

Tryphocharia was not adopted by Lacordaire, owing to mistaken identification of the type; *Allotisis* was represented in his collection by *Phoracantha senio*; F. P. Pascoe, Ann. N. H. (4) xv. p. 61.

Cœleburia sulphureo-signata, Er., var. n. *umbrosa*, T. Kirsch, Deutsche E. Z. 1875, p. 285, Peru.

Gracilia brevipennis and *pygmæa*: on their habits, P. Delarue, Feuil. Nat. vi. p. 11.

Leptidea brevipennis, Muls., at Brussels, with notes on its habits; J. L. Weyers, CR. Ent. Belg. xviii. pp. lxxxvi. cvi.

Hylotrupes bajulus common at times in Paris, the larva feeding in pine lamp posts; H. Lucas, Bull. Soc. Ent. Fr. (5) v. p. cxxxvii.

Clytus nitidus, Horn, is not *magicus*, being a *Xylotrechus*, and the latter

species a *Neoclytus*; *Plagythmysus pulverulentus*, Mots., is a *Neoclytus*, and the former generic name has priority; G. H. Horn, Tr. Am. Ent. Soc. v. p. 150.

Clytus 4-punctatus, F. A larva (described) found feeding on ebony, reared to the perfect state in dry sycamore in the British Museum, a year and ten months after being apparently nearly full grown; C. O. Waterhouse, Ann. N. H. (4) xvi. p. 235.

Rhagium lineatum, Ol.; on its habits in N. America, Canad. Ent. vii. pp. 96 & 97.

Vesperus xatarti in a natural state leaves the pupa in September, but does not leave the puparium until early January; it couples in February, and its larva is polyphagous; E. Pellett, Nouv. et Faits. 1875, pp. x.–xii. Instances of its appearing earlier, especially in a more southern locality; J. Lichtenstein, *tom. cit.* p. xix. Pupa referred to and figured; J. Lichtenstein & V. Mayet, Ann. Soc. Ent. Fr. (5) v. p. 93, pl. iv. No. ii., and Bull. p. xiii. The insect only occurs in the Eastern Pyrenees from the end of January to middle of March; Xambeu, Bull. Soc. Ent. Fr. (5) v. p. xxxi. Lichtenstein, *ibid.*, records fertile eggs from ♀ taken at end of December. Brûlerie, *l. c.* p. xxxii., notes capture of a *Vesperus* in September. Leprieur, *ibid.*, from analogy with *Donacia*, believes that altitude and latitude influence the periods of appearance. The ♀ proved to be disclosed and fecundated early in December at Roussillon; Lichtenstein, *l. c.* p. ccxx.

Ectinope, g. n., F. P. Pascoe, Ann. N. H. (4) xv. p. 60. Dubiously referred to the *Œminæ*, with the facies of *Neocorus*, and eyes of *Ciopera*; peculiar from an erect spine on each side of the prothorax at the base. *E. spinicollis*, sp. n., *id. l. c.* p. 61, pl. viii. fig. 3, Sydney.

Emenica, g. n., *id. l. c.* p. 62. *Uracanthinæ*; no differential characters given. *E. nigripennis*, sp. n., *id. l. c.* p. 63, pl. viii. fig. 2, W. Australia.

Titurius, g. n., *id. l. c.* p. 63. Dubiously referred to the *Pytheinæ*; no differential characters given. *T. calcaratus*, sp. n., *id. ibid.* New S. Wales.

Stenopotes, g. n., *id. op. cit.* xvi. p. 216. Eyes coarsely granulated, an exceptional character in Sect. B. of Lacordaire. Differentiated from *Rhagiomorpha* and *Tritocosmia*, the tuft of hair in 3rd joint of antennæ being deciduous (other observations on allied forms are incidentally made). *S. pallidus*, sp. n., *id. l. c.* p. 217, pl. v. fig. 7, New Zealand.

Xuthodes, g. n., *id. l. c.* p. 217. Allied to *Grammicosum* and *Hesperophanes*. *X. punctipennis*, sp. n., *id. ibid.* pl. v. fig. 9, Pitt's Island.

Pronocerus, g. n. [though not so indicated], V. Motschoulsky, *l. c.* p. 149. Distinguished from all other *Callidiides* by the 3rd joint of its antennæ being longer than the 1st and 2nd joints together, the 2nd joint being almost 6 times shorter than the 3rd, and almost 4 times shorter than the 1st. *P. dauricus*, sp. n., *id. ibid.* Dacuria and Mongolia.

Elaphidion alienum, sp. n., J. E. Leconte, Tr. Am. Ent. Soc. v. p. 173, Arizona.

Purpuricenus magnificus, sp. n., *id. ibid.* Arizona.

Syllitus papuanus, sp. n., R. Gestro, Ann. Mus. Genov. vii. p. 1021, Mt. Arfak, New Guinea.

Zorion batesi, sp. n., D. Sharp, Ent. M. M. xii. p. 57, New Zealand.

Sagridola quinquemaculata, sp. n., C. O. Waterhouse, Ann. N. H. (4) xv. p. 414, Madagascar.

Tryphocaria mastersi, sp. n., F. P. Pascoe, Ann. N. H. (4) xv. p. 61, Victoria.

Lygesis mendica, sp. n., F. P. Pascoe, *l. c.* p. 62, New S. Wales.

Uracanthus strigosus, sp. n., *id. ibid.* New S. Wales.

Pachyta marginalis, p. 139, Siberia, *mutabilis*, p. 140, and *guttulata*, p. 141, S. Daouria, *obsidiana*, p. 140, Alps of Mongolia, spp. nn., V. Motschoulsky, Bull. Mosc. xlix. pt. 1.

Leptura laterimaculata, p. 141, Crimea, *apicalis*, p. 142, Siberia, *id. l. c.*; *L. anthracina*, J. E. Leconte, *l. c.* p. 174, Oregon; *L. tangeriana* [*tingitana*], H. Tournier, Pet. Nouv. (1875) p. 475, Tangiers: spp. nn.

Grammoptera parallipipeda [!] and *abbreviata*, spp. nn., V. Motschoulsky, *l. c.* p. 143, S. Daouria.

Anoplistes affinis, sp. n., *id. l. c.* p. 147, Altai.

Closteropus lineatus, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 285, Peru.

Chrysoprasis frontalis, sp. n., *id. l. c.* p. 286, Peru.

Callidium viridescens, sp. n., V. Motschoulsky, *l. c.* p. 148, E. Siberia.

Hylotrypes bifasciatus, sp. n., *id. ibid.* N. China.

Clytus rectangulus, p. 149, S. Daouria, and *C. angulosus*, p. 150, Lake Inderskoe, near the Ural Mts. (incidently named and briefly characterized), spp. nn., *id. l. c.*

Lamiides.

"*Monohammus.*" F. P. Pascoe, Ann. N. H. (4) xv. p. 65, adheres to the original generic name, *Monochamus*, as used (in Dejean's Cat. and) by Latreille, Serville, and others. He rightly observes that *Monohammus* from ἄμμα, has no application, adding, "If such be its derivation, I take it that the orthography should be *Monammus*," not observing that the "α" is aspirated in his quotation, though it is often used without that breathing. The *Monohammus* version appears to have been originated in Agassiz's "Nomenclator." The same author, *l. c.* p. 66, criticizes Gemminger and Von Harold's "Catalogus" for its restoration of disused names pre-occupied elsewhere than in *Coleoptera*. See E. v. Harold, C. H. xiii. p. 157. *Praonetha melanura*, Gerst., is Malayan; *Phorycles mucoreus*, Gerst., = *Enaretta castelnaudi*, Thoms.; and *Rhopalizus sansibaricus*, Gerst., is a *Callichroma*; id. *l. c.* p. 69, note. The tomentose depressions of the abdomen in certain *Lamiides* were first noticed by the author in *Symphyletes*, but are found unsatisfactory, even as sexual marks; *id. l. c.* p. 72.

Monohammus minor, Lec., ? = *carolinensis*, Ol. ? *Eutessus asper*, Lec., = *Mecotetartus antennatus*, Bates; *Pogonocherus sordidus*, Lec., is an *Estola*; *Amphionycha* was first characterized by Leconte, with *Saperda flammata*, Newm., as its type, and Thomson's *Amphionycha*, with *luctuosa*, Less., for its type, adopted by Lacordaire, is another genus, for which *Œdudes*, J. Thoms., should stand. G. H. Horn, Tr. Am. Ent. Soc. v. pp. 150 & 151.

Systene, Pasc., = *Euthyorus*, Duv., = *Euthia* (Dej., *nec* Steph.), is not required, as *E. filum* is a *Spalacopsis*, Newm., and ? = *Sp. stolata*, Newm.; J. L. Leconte, Tr. Am. Ent. Soc. v. p. 174.

Pogonocherus ovatus, *hispidus*, and *dentatus*. Observations on habits, the latter bred from dead ivy stems; J. L. Weyers, CR. Ent. Belg. xviii. p. lxxxvii.

Monoplesa, g. n., V. Motschoulsky, Bull. Mosc. xlix. pt. 1, pt. 144. "Dorcadiens"; with many affinities to *Manilema* [*Moneilema*] and *Dorcacephalum*, though with more of the facies of *Morimus*. For *Mon. scabra*, California, "Nova-Helvetia," and *armigera*, "Nova-Helvetia," spp. nn., *id. l. c.* p. 146.

Eusthenomus, g. n., H. W. Bates, Ent. M. M. xi. p. 277. Intermediate between *Platysternus* and *Stirastoma*, having the antennæ of the latter, and the thorax, elytral carinæ, and open middle acetabula of the former. Separated from the *Anisocerinæ* by the long and slender apical joint of its antennæ. *E. wallisi*, sp. n., *id. l. c.* p. 278, New Granada.

Corestetha, g. n., F. P. Pascoe, *l. c.* p. 64. *Dorcadioninæ*; closely allied to *Mesolita*, but with the posterior tibiæ scarcely as long as the tarsus, and cylindrical. *C. insularis*, sp. n., *id. ibid.* Eclipse Island.

Eynithera, g. n., *id. l. c.* p. 65. *Ceroplesinæ*; differs from *Thysia* in the cicatricized basal joint of the antennæ, divergent claws, and elevated mesosternum, which is produced in front. Type, *Thysia viduata*, Pasc., figured *l. c.* pl. viii. fig. 4.

Psycholupis, g. n., *id. l. c.* p. 67. *Phrynetinæ*; differs from *Pachystola* in its short, linear, not setaceous antennæ, and its entire intermediate tibiæ. *P. fahræi*, sp. n., *id. ibid.* Angola.

Chætostigme, g. n., *id. l. c.* p. 69. *Niphoninæ*; near *Micracantha*, Montr., but wants the prothoracic tubercle, and the antennæ have a longer basal joint. *C. casta*, sp. n., *id. l. c.* p. 70, pl. viii. fig. 5, W. Australia.

Achriotypa, g. n., *id. l. c.* p. 71. *Niphoninæ*; temporarily placed near *Symphyletes*; elongate, cylindrical, with unusually short legs and slender setaceous antennæ not hooked or curved at the tip of the apical joint. *A. basalis*, sp. n., *id. l. c.* p. 72, N. S. Wales.

Monochamus fulvicornis, p. 64, Japan, *acanthias*, p. 65, N. S. Wales, spp. nn., *id. l. c.*

Ceroplesis sumptuosa, Cape of Good Hope, *aulica*, Angola, spp. nn., *id. l. c.* p. 66.

Hebesecis anisocera, p. 67, *cristata*, p. 68 (both with 12-jointed antennæ in ♂), spp. nn., *id. l. c.* Queensland.

Protorrhopala (?) *elegans*, sp. n., *id. l. c.* p. 68, Madagascar.

Praonetha dohrni, sp. n., *id. l. c.* p. 69, Ceylon.

Corrhenes grisella and *fulva*, p. 70, *cruciata*, p. 71, spp. nn., *id. l. c.* Australia.

Symphyletes torquatus, sp. n., *id. l. c.* p. 71, Queensland.

Rhyti[*do*]*phora latifasciata*, sp. n., *id. l. c.* p. 72, Cape York.

Penthea melanosticta, sp. n., *id. ibid.* W. Australia.

Bebelis picta and *acuta*, pl. viii. fig. 6, spp. nn., *id. l. c.* p. 73, Rio Janeiro.

Phacellocera plagiata, sp. n., H. W. Bates, Ent. M. M. xi. p. 275, R. Huallaga.

Chalastinus recticornis, sp. n., *id. ibid.* Santarem.

Gymnocerus badeni, sp. n., *id. l. c.* p. 276, New Granada.

Hoplistocerus (from which *Demophoo*, J. Thoms., is not generically separable) *dives*, sp. n., *id. ibid.* Bahia.

Onychocerus ampliatus, sp. n., *id. l. c.* p. 277, Peru, Ecuador.

Estola seriata, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 287, Peru.

Eutrypanus [*h*]*ypsilon*, p. 288, *petulans*, p. 289, spp. nn., *id. l. c.* Peru.

Amphionycha sp. n., described but not named, *id. l. c.* p. 290, Peru.

Glenea danæ, p. 1022, *xanthotænia*, p. 1023, *albertisi*, p. 1024, spp. nn., R. Gestro, Ann. Mus. Genov. vii. New Guinea.

Xyloteles costatus, sp. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 217, pl. v. fig. 8, Pitt's Island.

Exocentrus revelieri [*i*], sp. n., E. Mulsant & C. Rey, Ann. Soc. L. Lyon (n.s.) xxi. p. 413, Corsica.

Saperda sedecimpunctata, S. Daouria, *duodecimpunctata*, E. Siberia, p. 150, *impunctata*, p. 151, Daouria, spp. nn., V. Motschoulsky, Bull. Mosc. xlix. pt. 1.

Compsidia balsamifera [*-ræ*], sp. n., *id. l. c.* p. 151, Mongolia.

Agapanthia fasciculosa, sp. n., *id. ibid.* S. Daouria.

CHRYSOMELIDÆ.

The 11th vol. of the "Genera des Coléoptères," continuing LACORDAIRE's great work, has been published by F. CHAPUIS (Paris: 1875, pp. 1–220). It contains the continuation of the "Phytophages," discussing the tribes *Galérucides* (with sub-tribes *Halticides* and *Galérucides*) of section iii. CYCLIQUES; also section iv. CRYPTOSTOMES, tribes *Hispides* and *Cassidides*. Various groups of these tribes are proposed, and new genera characterized, new species being very curtly diagnosed in the foot notes. In addition to the usual list of genera, &c., there is at the end a systematic table of the portion discussed in the vol.

Sagrides.

Duboulaia flavipennis, Baly, ♂, and *Polyoptilus lacordairii*, Germ., ♀, described; J. S. Baly, Cist. Ent. ii. pp. 45 & 46.

Duboulaia fulva, p. 45, *rugosa*, p. 46, spp. nn., *id. l. c.* W. Australia.

Polyoptilus waterhousii, p. 46, *pachytoides* and *pascoei*, p. 47, spp. nn., *id. l. c.* W. Australia.

Donaciides.

Hæmonia curtisi, Thoms., *nec* Lac., is a variety of *H. zosteræ*, Sahlb., *nec* Fab., Lac., = *sahlbergi*, Lac., and is renamed *baltica*; G. Seidlitz, Fauna baltica, p. 504.

Hæmonia pubipennis, sp. n., O. M. Reuter, Not. Fenn. (n.s.) xi. p. 326, Finland.

Criocerides.

Zeugophora cyanura and *marginata*, Hope, are respectively referred to *Aulacophora* and *Atysa*; *Lema solani*, Web., *nec* F., renamed *weberi*; E. v. Harold, C. H. xiii. pp. 106 & 185. *Thricolema* (? *Tricholema*), Crotch, = *Syneta*, Esch.; *id.* (*teste* Horn) *op. cit.* xiv. p. 211.

Lema lævicollis, C. Ritsema, Tijdschr. Ent. xviii. p. 138, Congo; *L. acroleuca* and *mesoxantha*, p. 295, *socia*, p. 296, T. Kirsch, Deutsche E. Z. 1875, Peru: spp. nn.

Megascelides.

Megascelis integra, p. 291, *discicollis*, p. 292, *cyanoptera*, p. 293, *rufi-collis*, p. 294, spp. nn., Kirsch *l. c.* Peru.

Megalopides.

Mastostethus punctiger, sp. n., *id. l. c.* p. 297, Peru.

Clithrides.

Clithra (*Titubæa*) *attenuata*, L. Fairmaire, Ann. Mus. Genov. vii. p. 536, Tunis; *C.* (*Gynandrophthalma*) *wærdeni*, C. Ritsema, Tijdschr. Ent. xviii. p. 138, Congo: spp. nn.

Coptocephala kerimi, sp. n., Fairmaire, *l. c.* p. 537, Kéruan (Tunis).

Megalostomis (*Heterostomis*) *histrionica*, sp. n., E. v. Harold, C. H. xiv. p. 95, Cordova.

Coscinoptera tibialis, sp. n., *id. l. c.* p. 96, Cordova.

Dachrys gracilis and *manca*, spp. nn., *id. l. c.* p. 97, Cordova.

Stereoma burmeisteri, sp. n., *id. l. c.* p. 98, Cordova.

Urodera bergi, p. 98, *lævicollis*, p. 99, *fallax*, p. 101, spp. nn., *id. l. c.* Cordova.

Cryptocephalides.

Marseul, S. A. de. Monographie des Cryptocéphales du Nord de l'Ancien-Monde. L'Ab. xiii. 1874, pp. 1–326 [although this date appears as a sheet-mark on the work, it was issued in livraisons 6, 8, 9, 11, 13, 15, 19–22 of the vol. for 1875].

The title sufficiently explains this work, another of the many useful and handy compilations, mixed with original matter, which the author has given to the entomological world. The rule of priority is not followed strictly in the names employed. A list is given of the plants upon which the different species feed. *Cryptocephalus phaleratus*, Tappes, = *undatus*, Suffr.; *C. granularis*, Suffr., = *melanocephalus*, Suffr., var.; *C. perrieri*, Fairm., = *suffriani*, Suffr., *nec* Dohrn (*beckeri*, Morav.), = *albo-lineatus*, Suffr.; *C. abietinus*, Gaut., and *carinthiacus*, Suffr., = *fasciatus*, H. S., varr.; *C. lividimanus*, Kies., = *lusitanicus*, Suffr., var.; *C. ramosus*, Mann., = *stschuckini*, Fald., var.; *C. tamaricis*, Solsky, = *astracanicus*, Suffr.; *C. pœciloceras*, Heyd., = *tibialis*, C. Bris.; *C. cærulescens*, Suffr., is renamed *cærulans* (p. 152); *C. nigridorsum*, Chevr., is doubtless a mixture of various species; *C. rhæticus*, Stierl., = *4-pustulatus*, Gyl., of which varr. *apicalis* and *bisignatus* are described, p. 161; a var. *gaditanus* of *C. rossii*, Suffr., p. 205; *C. ocularis*, Heyd.,

ex. typ., = *labiatus*, L., var.; *C. larvatus*, Suffr., = *mystacatus*, Suffr., ♂; *Pachybrachys scripticollis*, Suffr., *nec* Fald., is renamed *scriptidorsum*, p. 261; *P. israelita*, Tappes, = *scripticollis*, Fald.; *P. astragali*, Stierl., = *vermicularis*, Suffr.; *Stylosomus bituberculatus*, Desbr., = *ericeti* Kies.

Observations on some species attributed to England, and others wrongly omitted in this monograph; E. C. Rye, Nouv. et Faits, 1875, pl. lxxiv.

F. Chapuis, CR. Ent. Belg. xviii. p. lxxiv. *et seq.* publishes diagnoses of new Australian species, many of which have been named in MS. by Suffrian.

Cryptocephalus bidens, Suffr., = *tappesi*, Mars.; L. v. Heyden, Deutsche E. Z. 1875, p. 384.

Cryptocephalus undulatus, Suffr. Observations on its affinities and differences from *C. undatus*, Suffr. Suffrian, S. E. Z. xxxvi. p. 257.

Cryptocephalus pistaciæ, Suffr., in France; Belon, Bull. Soc. Ent. Fr. (5) v. p. cxciii.

Polyachus, g. n., F. Chapuis, *l. c.* p. lxxxi. Recalls the American *Monachus* and African *Cœnobius*. Type, *P. geminus*, sp. n., *id. ibid.*, Sydney, Adelaide.

Stylosomus flavus, sp. n., De Marseul, *l. c.* p. 295, Greece.

Pachybrachys pradensis, p. 270, E. Pyrenees, Alps, S. France, *lallemanti*, p. 272, Algiers, *lætificus*, p. 282, no locality mentioned, *simius*, p. 283, Algeria, *riguus*, p. 287, Sardinia, *id. l. c.* spp. nn.

Monachus suffriani, p. 300, *obtrectatus*, p. 301, spp. nn., T. Kirsch, Deutsche E. Z. 1875, Peru.

Elaphodes æneolus, *epilachnoides*, *rutilus*, *rufo-varius*, *amictus*, p. lxxxii., *pilula*, *tigrinus*, *signifer*, *scutellaris*, p. lxxxiii., F. Chapuis, *l. c.* spp. nn., various Australian localities.

Ditropidus comans, *puberulus*, *canescens*, *pubicollis*, *comptus*, *lacordairii*, pl. lxxv., *pallidipennis*, *cuneatus*, *obtusus*, *rufescens*, *maculicollis*, p. lxxvi., *fugitivus*, *apiciflavus*, *opulentus*, *costatus*, *pastus*, p. lxxvii., *cupreus*, *splendidus*, *aciculatus*, *suffriani*, *maculifrons*, *cærulescens*, p. lxxviii., *distinguendus*, *tibialis* (also from Fiji Isles), *geminatus*, *abdominalis*, *laminatus*, p. lxxix., *labiatus*, *punctulum* (also from Fiji Isles), *angustifrons*, *frontalis*, *ovatulus*, p. lxxx., *nobilis*, *cavifrons*, *lentulus* (also from Tasmania), p. lxxxi., various Australian localities, *subæneus*, p. lxxix., Tasmania, *id. l. c.* spp. nn.

Cryptocephalus chrysomelinus, *eumolpus*, p. xc., *gracilior*, *convexicollis*, p. xci., *aciculatus*, *argentatus*, *condensatus*, p. xcii., *cyanipennis*, *dichrous*, *rugifrons*, *eximius*, p. xciii., *viridinitens*, *perlongus* (also from Tasmania), *bihamatus*, p. xciv., *pœcilodermus*, *filum*, *jocosus*, *bellicosus*, *crassicornis*, p. xcv., *conjugatus*, *attennalis* [*ant-*], *clavicornis*, *æger*, p. xcvi., *attenuatus*, p. xcvii., various Australian localities, *fraterculus*, p. xci., Fiji Isles, *id. l. c.*; *C. fulguritus*, p. 49, Algiers, Boghari, *zambanellus*, p. 130, Mt. Zambano, Italy, *peyroni*, p. 169, Beyrouth, *acupictus*, p. 172, Boghari, *pelleti*, p. 183, E. Pyrenees, *androgyne*, p. 184, Piedmontese Alps, *bidorsalis*, p. 218, Lebanon, *sindonicus*, p. 236, Bône, *reichii*, p. 247, no locality mentioned, S. A. de Marseul, *l. c.*; *C. impressipennis*, Suffrian,

S. E. Z. xxxvi. p. 258, Madagascar; *C. alliaceus*, p. 302, *quæstuosus*, p. 303, *agricola*, p. 304, T. Kirsch, *l. c.* Peru: spp. nn.

Cadmus sericeus, *luctuosus*, p. xcvii. *strigillatus*, *aurantiacus*, *ornatus*, p. xcviii., *arrogans*, *ringens*, *stratioticus*, *scutatus*, *sculptilis*, p. xcix., *colossus*, *histrionicus*, *canaliculatus*, p. c., *alternans*, *trispilus*, *purpurascens*, *maculicollis*, p. ci., spp. nn., F. Chapuis, *l. c.* various Australian localities.

Rhombosternus saundersi and *cicatricosus*, spp. nn., *id. l. c.* p. cii. Australia.

Chlamydides.

Exema chapuisi, sp. n., T. Kirsch, Deutsche E. Z. 1875, p. 298, Peru.

Lamprosomides.

Lamprosoma ardens, sp. n., *id. ibid.* Peru.

Eumolpides.

Iphimeis cyanicollis, Lef., = *Amasis calcaratus*, Chap., ♀; *Galeruca angusta*, Pty., is a *Metaxyonycha*; *Colaspis aureo-fasciata*, Mots., = *Dermorrhytis igneo-fasciata*, Baly; Motschoulsky's Ceylonese species of *Odontionopa* belong to *Scelodonta*; *Syagrus buqueti*, Chap., = (*Brevicolaspis*) *ruficollis*, Thoms., ? = *calcaratus*, F.; *B. rufo-nitens*, Thoms., is also apparently a *Syagrus*, to which *Eumolpus argopoides*, Fairm., also belongs: E. v. Harold, C. H. xiii. pp. 106 & 107.

Nodostoma bimaculatum, Raffr., is a *Chloropterus*; É. Lefèvre, Bull. Soc. Ent. Fr. (5) v. p. xii.

Bromius vitis. The pupa observed; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. cv.

Bedelia, g. n., É. Lefèvre, Bull. Soc. Ent. Fr. (5) v. p. x. Distinguished from *Chloropterus* by its almost quadrate, subcylindric thorax, and the bifid claws of its tarsi. *B. insignis* and *angustata*, spp. nn., *id. l. c.* p. xi. Persia.

Thyra, g. n., *id.* R. Z. (3) iii. p. 67, pl. v. figs. 5–10. Antennæ of *Corynodes* and facies of *Endocephalus*; anterior femora toothed beneath. *T. lateritia*, sp. n., *id. l. c.* p. 68, Cayenne.

Biorus, g. n., *id. l. c.* p. 68. Differs from *Thyra* in the antennæ and prosternum, and from *Endocephalus* in the anterior femora being more or less strongly angulated beneath. For *Endocephalus geniculatus*, Guér., pl. v. figs. 11–14, and *B. clytroides*, p. 70, pl. v. fig. 3, River Maroni, *femoralis*, p. 71, fig. 4, spp. nn., *id. l. c.*

Spintherophyta, g. n., *id. l. c.* p. 104. Allied to *Chrysodina*, but with the epistoma rather deeply and semicircularly emarginate, a strongly transverse prothorax, &c. For *S. lesueuri*, sp. n., *id. l. c.* p. 105, Mexico.

Coytiera, g. n., *id. l. c.* p. 116. Mesosternum strongly elevated transversely between the middle coxæ; intermediate between the *Chalcophanites* and *Iphimeites*. *C. marginicollis*, sp. n., *id. l. c.* p. 117, Cayenne (= *Colaspis rubripes*, Sturm; E. v. Harold, C. H. xiv. p. 174, note).

Sterneurus [rectius *Eurysternus*; Dalman, *Coleoptera*, 1824], g. n., *id. l. c.* p. 119. Near *Chalcophana*, but with wider prosternum, sub-dentate front femora, &c. *S. fulgidus*, p. 120, *distinctus*, p. 121, *rufipes* and *lateralis*, p. 122, Brazil, *id. l. c.* spp. nn.

Agrosterna, g. n., E. v. Harold, C. H. xiv. p. 102. Facies of *Iphimeis* and *Noda*; belongs to the *Chalcophaninæ*, and distinguished by the narrow prosternum, which is shortly bi-spinose at the apex. *A. buphthalma*, sp. n., *id. l. c.* p. 103, Cordova.

Dolometis, g. n., *id. l. c.* p. 139. *Colaspinæ*: no affinities mentioned. *D. discoidalis*, sp. n., *id. ibid.* New Granada.

Chrysodina punctato-striata, p. 102, *elegans* and *semiaurata*, p. 103, Lefèvre, *l. c.* Brazil, spp. nn.

Phædra maxima, Cayenne, *opacicollis*, Brazil, *id. l. c.* p. 106, spp. nn.

Iphimeis bifasciata, p. 108, *rugicollis*, p. 109, *id. l. c.* Brazil, spp. nn.

Noda costipennis, p. 109, Brazil, *cretifera*, p. 110, Mexico, *tuberculata*, p. 111, Cumana, *propinqua*, p. 112, 3-*costulata*, p. 113, *fraterna*, p. 114, *semicostata*, p. 115, Columbia, *strigicollis*, Maryland (= *pilula*, Germ.; E. v. Harold, C. H, xiv. p. 174, note), p. 112, *subangulata*, p. 113, Caraccas, *id.* l. c.; *N. atra*, E. von Harold, C. H. xiii. p. 31, New Granada: spp. nn.

Metaxyonycha fasciata, p. 65, fig. 1, Peru, *bonvouloiri*, fig. 2, and *nigritarsis*, p. 66, Brazil, Lefèvre, *l. c.*; *M. lefevrii*, E. v. Harold, C. H. xiv. p. 139, New Granada: spp. nn.

Colaspis maculipes, p. 101, Cordova, *hypochalcea* and *leucopus*, p. 139, New Granada, E. v. Harold, C. H. xiv. spp. nn.

Chalcophana peruana, id. C. H. xiii. p. 32, Peru; *C. gigantea*, Lefèvre, *l. c.* p. 118, Brazil: spp. nn.

Dermorrhytis fasciato-rutilans, sp. n., Lefèvre, *l. c.* p. 123, Ceylon.

Scelodonta insignis, p. 125, Manilla, *viridula*, p. 127, Old Calabar, *id. l. c.*, spp. nn.

Nerissus femoralis, sp. n., *id. l. c.* p. 129, Old Calabar.

Rhyparida nigro-limbata, sp. n., C. Ritsema, Tijdschr. Ent. xviii. p. 140, Congo.

Euryope consobrina, sp. n., Lefèvre, *l. c.* p. 130, Caffraria.

Edusa viridicollis, id. *l. c.* p. 131, Australia.

Chloropterus stigmaticollis, sp. n., L. Fairmaire, Ann. Mus. Genov. vii. p. 537, Tunis.

Endocephalus biguttatus, p. 72, 4-*punctatus*, p. 73, spp. nn., Lefèvre, *l. c.* Brazil.

Colasp[*id*]*oides limbicollis*, Cayenne, *fasciata*, Bogota, p. 135, *tibialis*, p. 136, *smaragdina* and *rufitarsis*, p. 137, *fulgurans* and *fulgida*, p. 138, Brazil, *id. l. c.*

Chrysomelides.

Phædon carniolicus, Germ., and its allies and varieties, including var. n. *carpathicus*, from the Carpathians; J. Weise, Deutsche E. Z. 1875, pp. 365 & 366. On synonymy of *P. pyritosus*, Rossi; G. Kraatz, *tom. cit.* p. 366.

Hydrothassa (*Prasocuris*) *hannoverana*, varr.; K. Letzner, JB. schles. Ges. liii. pp. 177 & 178.

Lina lapponica: on Silesian forms, and habits of the species; *id. l. c.* pp. 170–175. *L. collaris*: on forms and larva; *id. l. c.* pp. 175–177.

Lina alpina recorded in Belgium; J. Sauveur, CR. Ent. Belg. xviii. p. lxxxiv.

Chrysomela melanostigma, H. S., = *sparshalli*, Curt., = *variolosa*, Petagna, *nec* Linn. (*C. variolosa*, Linn., is a *Clithra*), and *C. variolosa*, Mann., Dej., must be deposed for *turczaninoffi*, Fald., the next available; E. v. Harold, S. E. Z. xxxvi. p. 176. *C. princeps*, Gray, = *superba*, Perty, 1832; *id.* C. H. xiii. p. 107.

Chrysomela staphylea and *C. violacea* observed *in copulâ*; Ent. Nachr. i. p. 155.

Chrysomela marginata near Edinburgh, feeding on *Achillea millefolium*; W. A. Forbes, Ent. M. M. xii. p. 135.

Carystea, Baly, upheld as distinct from *Chrysomela*, the metasternal process being grooved on each side, with the apex immarginate; J. S. Baly, Tr. E. Soc. 1875, p. 24.

Doryphora 10-*lineata*.

A full general account, especially referring to the non-probability of the insect extending to Great Britain. No American beetle has as yet been acclimatized in Europe. The *Doryphora* group of *Chrysomela* occupies naturally a circumscribed area; and the more uniform humidity of N.W. Europe is opposed to its establishment. The potatoes arrive quite clean, with no refuse to serve as a cover. The beetle is known to eat the tubers. H. W. Bates, J. Agric. Soc. (2) xi. pp. 361–375, pl.

"L'Ennemi de la Pomme de Terre" (Bruxelles: 1875, 8vo, pp. 1–21, coloured pl.), by Oswald de Kerchove de Denterghem, contains a useful summary of various publications on the ravages and economy of this insect, figuring it in its various stages, with *D. juncta*, Germ., for comparison.

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Eumela, g. n., J. S. Baly, Tr. E. Soc. 1875, p. 23. Resembles *Spharolina* in general form; differs from *Chrysomela* in form of thorax and the immarginate apex of the metasternal process. Type, *C. cyanicollis*, Hope.

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Chrysomela vagecincta, p. 538, Tunis, *gastonis*, p. 539, note, Algeria, L. Fairmaire, Ann. Mus. Genov. vii.; *C. rugipennis*, E. v. Harold, C. H. xiv. p. 140, Andalusia: spp. nn.

Metastyla balyi, sp. n., E. v. Harold, *ibid.* New Granada.

Æsernia corallipes, sp. n., R. Gestro, Ann. Mus. Genov. vii. p. 1025, Dorey, New Guinea.

Diphyllocera striata, sp. n., C. O. Waterhouse, Tr. E. Soc. 1875, p. 206, Port Bowen.

Lamprolina jansoni, p. 48, *impressicollis*, p. 49, spp. nn., J. S. Baly, Cist. Ent. ii. Rockhampton, Australia.

Chrysomela melanostigma, H. S., = *sparshalli*, Curt., = *variolosa*, Petagna, *nec* Linn. (*C. variolosa*, Linn., is a *Clithra*), and *C. variolosa*, Mann., Dej., must be deposed for *turczaninoffi*, Fald., the next available; E. v. Harold, S. E. Z. xxxvi. p. 176. *C. princeps*, Gray, = *superba*, Perty, 1832; *id.* C. H. xiii. p. 107.

Chrysomela staphylea and *C. violacea* observed *in copulâ*; Ent. Nachr. i. p. 155.

Chrysomela marginata near Edinburgh, feeding on *Achillea millefolium*; W. A. Forbes. Ent. M. M. xii. p. 135.

Carystea, Baly, upheld as distinct from *Chrysomela*, the metasternal process being grooved on each side, with the apex immarginate; J. S. Baly, Tr. E. Soc. 1875, p. 24.

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Metastyla balyi, sp. n[illegible]d, *ibid.*[illegible]da.

Æsernia corallipes, sp[illegible]tro, A[illegible]ov. vii. p. 1025, Dorey, New Guinea.

Diphy[illegible] *stri*[illegible] Wat[illegible]c. 1875, p. 206, Port [illegible]

I[illegible]ja [illegible]si[illegible], J. S. Baly,

C[illegible]e [illegible]li[illegible]

Stethomela fraternalis, p. 49, *limbata* and *cornuta*, p. 50, spp. nn., *id. l. c.* Queensland.

Galerucides.

F. Chapuis, Gen. Col. xi. p. 145 *et seq*, proposes the following groups:—*Adoriites*, *Aulacophorites*, *Phyllobroticites*, *Diabroticites*, *Agelasticites*, *Procalites*, *Ornithognatites*, *Agetocerites*, *Mimastrites*, *Cerophysites*, *Apophyliites*, *Scelidites*, *Luperites*, *Atysites*, *Schematizites*, *Cœlomerites*, *Metacyclites*, *Rupiliites*, *Galerucites*, *Sermylites*, *Cerotomites*, *Antiphites*, *Monoleptites*, *Hylaspites*, *Platyxanthites*, and *Goniopleurites*. *Rhombopalpa*, Chevr., Clk., is not distinct from *Adorium*. A new species of *Ootheca* is named *violaceipennis* (p. 173), but not described. *Gastrogyna*, Lec., = *Metacycla*, Baly; *Berecyntha*, Baly, = [*H*]*Aplosonyx*, Chevr.; *Melospila*, Baly, = *Galerucida*, Mots.; *Goniopleura*, Westw., is queried as a Eumolpid.

Adorium japonicum, Baly, = *Chrysomela japonica*, Hornstedt, which is an *Adorium*; E. v. Harold, C. H. xiv. p. 211.

Galeruca sanguinea, F., = *cratægi*, Forst., certe; *Cerotoma 4-pustulata*, Baly, = *Diabrotica lepida*, Say; *C. caminea*, F., = 3-*furcata*, Forst.; *Cœlomera goudoti*, Dej., = *Alphidia comitata*, Klug; *Haplosonyx ancora*, Redt., is an *Aulacophora*, and *H. heterocera*, Redt., an *Agetocera*; id. C. H. xiii. p. 182. *Diabrotica 4-vittata*, Baly, *nec* Latr., renamed *spilothorax*; id. *l. c.* p. 185.

F. Chapuis, *l. c.*, characterizes the following new genera and species:—

Miltina, p. 172. *Agelasticites*: with subclaviform antennæ and sinuous outline to the elytra. Near *Bonesia*. *M. dilatata*, p. 173, note, Malacca.

Atimeta, p. 174. *Agelasticites*, but with regularly punctured elytra; allied to the *Halticides*. *At. kirschi*, ibid. note, Malacca.

Scelida, p. 184. *Scelidites*: facies of *Lyperus*, but with unspined tibiæ. *S. elegans*, ibid. note, Guatemala.

Salamis, p. 208. *Cœlomerites*: antennæ as long as the body, with 3rd joint longer than the 1st and 2nd together; elytra regularly oval, with a wide reflexed lateral margin. *S. haroldi*, p. 209, note, Macassar.

Cydippa, p. 215. *Rupiliites*: allied to *Metalepta*. *C. balyi*, p. 216, note, Nicol Bay, Australia.

Arima, p. 217. *Rupiliites*: differs from *Adimonia* in facies, thoracic segments, &c. For *Adimonia brevipennis*, Ill., and ? *A. brachyptera*, Küst.

Ellopia [Treitschke, *Lepidoptera*, 1827], p. 218. Metasternum and parapleuræ short, coxæ contiguous on the median line. For *Galeruca pedestris*, Er.

Merista, p. 228. *Sermylites*, near *Leptarthra* and *Haplosonyx*, but with bifid claws to the tarsi. For various unnamed Indian species.

Synodita, p. 231. *Cerotomites*: represents *Cerotoma* in Australia, differing in the longer 4th joint of its antennæ. *S. borrii*, p. 232, note, Sydney.

Callima [*-mus*, Mulsant, *Coleoptera*, 1846], p. 240. *Hylaspites*: near *Doryida*. *C. candezii*, p. 241, note, New Guinea.

Diabrotica chloropus, p. 90, Minas Geraes, *mexicana*, 12-*notata*, *biannularis*, p. 91, *porracea*, *chevrolati*, p. 93, Mexico, *zonata*, p. 91, *chrysopleura*, *mimula*, p. 92, New Granada, *circulata*, p. 91, *adelpha*, p. 92, Guatemala, *togata*, Pozuzu, *corusca*, Columbia, *tarsalis*, Bogota, p. 92, *marginata*, p. 93, Brazil, E. v. Harold, C. H. xiii. spp. nn.

Exora narensis, New Granada, *insularis*, Cuba, *id. l. c.* p. 93, spp. nn.

Lyperodes kirschi, Bogota, *cisteloides*, Tigré, spp. nn., *id. l. c.* p. 94.

Calomicrus fallax, sp. n., L. Fairmaire, Pet. Nouv. (1875) p. 496, Biskra.

Metacycla marginata, sp. n., Chapuis, *l. c.* p. 213, note, Guatemala.

Galeruca (*Adorium*) *typographica*, p. 141, *G.* (*Calomicrus*) *intermedia*, p. 142, *G.* (*C.*) *irregularis*, p. 144, spp. nn., C. Ritsema, Tijdschr. Ent. xviii. Congo.

Cerotoma hilaris, sp. n., E. v. Harold, C. H. xiii. p. 90, New Granada.

Halticides.

F. Chapuis, Gen. Col. xi. p. 6 *et seq.*, considers the *Halticides* and *Galerucides* to form sub-tribes of equal value, using *Galerucides* as the tribal name. For the *Halticides*, he proposes the following groups:—*Elithiides*, *Diamphidiites*, *Blepharidites*, *Amphimelites*, *Acrocryptites*, *Arsipodites*, *Oxygonites*, *Plectroscelites*, *Crepidoderites*, *Halticites*, *Aphthonites*, *Aspicelites*, *Œdionychites*, *Monoplatites*, *Lacticites*, *Mniophilites*, and *Diboliites*.

Harold, E. von. Beiträge zur Kenntniss der Halticæ Œdipodes. C. H. xiii. pp. 1–26.

After a review of the scheme of the late Hamlet Clark's Catalogue, the author identifies *Haltica quadrivittata*, Ill., as probably a *Loxoprosopus*; *H. seriata* as a *Monoplatus*, probably either *M. grayi* or *miersi*; *H. melanura*, Ol., also as a *Monoplatus*, probably *M. semichalybeus*, Clk., *semiviolaceus*, *nigricans*, *nigrimanus*, and *dimidiatipennis* being scarcely more than varieties of it; *H. rugosa*, Ol., as a *Hypolampis*; *H. ptinoides*, Germ., as a *Physomerus*; *Thrasygæus eximius*, Clk., = *Œdionychis sericeus*, Perty; *Œ. viridis*, Pty., ex. typ., is a *Phylacticus*, *Œ. porculus*, Pty., a *Pleurochroma*; *Omototus ferrugineus*, Suffr., if not properly attributable to *Hadropoda*, Ahrens, which is not characterized, must be referred to *Octogonotes*, Drap. *Roicus*, Clk., = *Tetragonotes*; *Homotyphus*, Clk., should be written *Omotyphus*; *Sparnus*, Clk., = *Exartematopus*; *Hydmosyne*, Clk., should be written *Idmosyne*; *Eutornus africanus*, Clk., = *Haltica dilatata*, Dalm.; *Physonychis smaragdina*, Clk., = *H. viridipennis*, Dalm.

——. Beiträge zur Kenntniss der Fauna von New-Granada. Halticinæ. i. *Op. cit.* xiv. pp. 1–44.

59 species (for the most part new, and including 2 new genera), collected by E. Steinheil in New Granada, are here described, all with simple claw joints and a more or less distinct transverse basal thoracic furrow. It is suggested that *Diphaulaca* is an accidental error for *Diplaulaca*: *D. viridipennis*, Clk., ? = *aulica*, Ol., and *Haltica advena* and *st.-crucis*, F., are referred to this genus; *Haltica ambulans*, Suffr., = *Lactica*

scutellaris, Ol.; *Œdionychis austriaca*, Schauf., is a *Disonycha*; *Systena sinuato-vittata* and ? *interrogationis*, Clk., = *s-littera*, L.

Argopus hemisphæricus, Dufts., = *ahrensi*, Germ.; *Lithonoma andalusiaca*, Ros., and *africana*, Clk., = *limbata*, F.; *Œdionychis perforata*, Schauf., = *abdominalis*, Chevr., and *Œ. basalis*, Schauf., is an *Aspicela*: E. v. Harold, C. H. xiii. pp. 181 & 182. *Crepidodera lævigata*, Foudr., *nec* F., renamed *peregrina*; *Nonarthra*, Baly, vox hybr., renamed *Enneamera*; id. *l. c.* p. 185. *Haltica*, Geoffr., was beyond doubt established for *oleracea*, L., and *Graptodera*, Chevr., must be dropped; *H. hippophaes*, Aubé, = *consobrina*, Dufts., = *articulata*, Beck, = *erucæ*, Fab. (*nec* Ol.), = *tamaricis*, Schrank, and *quercetorum*, Foudr., should be adopted for *erucæ*, Ol.; comparative descriptions are given of 8 allied American species: *id.* S. E. Z. xxxvi. pp. 61–68. *Haltica dilecta*, Dalm., belongs to *Nisotra*. Baly, *Rhopalotoma*, Clk., = *Ochoscelis*, Er.; *id.* C. H. xiv. pp. 210 & 211. *Peribleptus*, Clk. (1860), *nec* Schön. (1843), is renamed *Zeteticus*; id. *l. c.* p. 213. *Thyamis inconspicua*, Baly (1874), *nec* Woll. (1860), is renamed *cervina*; *Aphthona pygmæa*, Baly (1874), *nec* Kuts. (1861), is renamed *perminuta*; J. S. Baly, *ibid.*

Cacoscelis feldneri, Clk., = *melanoptera*, Germ.; E. v. Harold, C. H. xiv. p. 104.

Ora, Clark, = *Scirtes*, teste C. O. Waterhouse; *id. l. c.* p. 105.

New genera and species :—

Elithia, Chapuis, *l. c.* p. 22. Intermediate between the *Chrysomelides* and *Halticides*; tarsi resembling those of *Timarcha*; differs from *Crimissa*, Stål, in its bifid claws. *E. grossa* and *parva*, Cayenne, *media*, Ecuador, p. 23, note, *id. l. c.*

Ophrida, id. *l. c.* p. 31. Between *Podontia* and *Blepharida*. *O. guttata*, ibid. note, Malacca, *O. oblongo-guttata*, id. *l. c.* p. 32, note, Cambodia.

Amphimela, id. *l. c.* p. 34. Facies of *Argopus*; allied to *Sphæroderma* in many respects, but with the antennæ widely separated at the base, thus differing from all known members of the group. *A. mouhoti*, id. *l. c.* p. 36, note, Laos.

Physodactyla, id. *l. c.* p. 68. *Œdionychites*: allied to *Physonychis* and *Physoma*; anterior tarsi with first joint dilated, as wide as long. *Physod. africana*, id. *l. c.* p. 69, note, W. coast of Africa.

Myrcina, id. *l. c.* p. 126. *Lacticites*; between *Hermæophaga* and *Diphaulaca*; pronotum with basal furrow limited on each side, anterior and middle tibiæ with one spine, posterior with two spines. *M. nigra*, id. *l. c.* p. 127, note, Old Calabar.

Eutrea, J. S. Baly, Tr. E. Soc. 1875, p. 24. Apex of hind tibiæ armed with double spine. For *E. bowringi*, id. *l. c.* p. 25, Hong Kong.

Xenaltica, id. *l. c.* p. 25. Also with double spines; facies of *Œdionychis*, but with four anterior tibiæ armed with a small spine. For *X. murrayi*, Old Calabar, and *picea*, Madagascar, *id. l. c.* p. 26 (this genus = *Myrcina*, Chap.; E. v. Harold, C. H. xiv. p. 185).

Euphitrea, id. *l. c.* p. 27. Resembles *Sphæroderma* in form and colour, but readily separated by the sternal structure. For *E. wallacii* and *micans*, id. *l. c.* p. 28, Java, &c.

Xanthocycla, id. *l. c.* p. 29. Somewhat agreeing with *Euphitrea* in sternal structure, but with punctate-striate elytra and different hind tibiæ. Type, *X. chapuisi*, id. *ibid.* India (this genus = *Amphimela*, Chap.; E. v. Harold, C. H. xiv. p. 185; Harold's own genus *Pydaristes*, recorded *infrà*, being obviously also referable to *Amphimela*).

Rhypetra, id. *l. c.* p. 30. Type, *R. costata*, id. *ibid.* Columbia.

Paradibolia, id. *l. c.* p. 31. Closely allied to *Dibolia*, but with very large subcontiguous eyes, and of short subrotundate form. Type, *P. indica*, id. *ibid.* India.

Ptinomorpha, E. v. Harold, C. H. xiii. p. 8. Posterior tibiæ serrate; allied to *Monoplatus*, *Palopoda*, and *Metriotes*. Type, *Pt. pectinata*, id. *ibid.* near Bogota.

Lactina, id. C. H. xiv. p. 10. Nearest to *Diphaulaca* and *Lactica*. *Lactina murina*, sp. n., *id. op. cit.* xiii. [described before foundation of the genus!] p. 90, Ecuador, also *L. steinheili*, p. 11, *chloroptera* and *agilis*, p. 12, New Granada, *chalcoptera*, p. 13, Bogota, *lanuginosa*, p. 13, note, ? Carthagena, *id. op. cit.* xiv., and *Haltica chrysoptera*, Latr.

Chorodecta, id. *l. c.* p. 28. Near *Phrynocepha*; differs from *Crepidodera*, of which it has the facies, in its thorax being contracted behind, open anterior acetabula, and antennæ thickened in the middle. *Chor. coarctata*, id. *l. c.* p. 29, Columbia.

Pydaristes, id. S. E. Z. xxxvi. p. 446. Readily distinguished from all known *Halticidæ* by its widely-separated antennæ and flat and broad frons. For *P. attageuoides*, id. *l. c.* p. 447, Africa.

Chalœnus westwoodi, Chapuis, *l. c.* p. 46, note, locality not mentioned.

Plectroscelis kerimi, L. Fairmaire, Ann. Mus. Genov. vii. p. 539, Tunis.

Arsipoda chalcea, E. v. Harold, C. H. xiii. p. 89, Caffraria.

Systena ustulata and *punctulata*, id. C. H. xiv. p. 31, Columbia.

Prasona balyi, id. *l. c.* p. 32, San Carlos.

Crepidodera consularis, p. 33, *rugata*, p. 34, *velox* and *sulcifrons*, p. 35, *pudica*, p. 36, *id. l. c.* Columbia.

Epitrix nigro-ænea, p. 36, *hirtula*, p. 37, *lucidula* and *atripes*, p. 39, *subtilis* and *opacicollis*, p. 40, *murina* and *ubaquensis*, p. 41, *pygmæa* and *tantula*, p. 42, *pulla* and *virgulata*, p. 43, *flaveola*, p. 44, *id. l. c.* Columbia.

Haltica languida, p. 23, *luctuosa*, *maculipes*, p. 24, and (? *H.*) *brevis*, p. 25, *innuba*, *sponsa*, p. 26, *petulans*, *lævinscula*, p. 27, *id. l. c.*, various Columbian localities; *H.* (*Graptodera*) *patruelis*, p. 63, Mexico, *violacea*, Brazil, and *gregaria*, Bogota, p. 64, *vulpina*, p. 66, Bogota, *id.* S. E. Z. xxxvi.

Disonycha prolixa, p. 105, *caustica*, p. 106, *id.* C. H. xiv. Cordova.

Thyamis breviuscula, Mulsant & Rey, Opusc. Ent. xvi. p. 205, Collioure.

Œdionychis cubana, E. v. Harold, C. H. xiii. p. 90, Cuba.

Physoma dohrni, id. *l. c.* p. 94, Old Calabar.

Lithonoma cyanea, H. Tournier, Pet. Nouv. (1875) p. 475, Tangiers; = *L. favieri*, Fairm., *teste* L. v. Heyden, *tom. cit.* p. 480.

Tetragonotes flavipennis, New Granada, *oculatus*, Guatemala, p. 10, *variabilis*, p. 11, New Granada, *flexuosus*, p. 12, Peru, E. v. Harold, C. H. xiii.

Physimerus antennarius, p. 13, *steinheili*, p. 14, *cinerarius*, p. 15, *variegatus*, p. 16, New Granada, *murinus*, *sobrinus*, p. 17, *foveolatus*, p. 18, *mimulus*, *plumbeus*, p. 19, *id. l. c.*

Omotyphus crassicornis, id. *l. c.* p. 20, New Granada.

Thrasygæus soricinus, id. *l. c.* p. 21, Peru.

Omototus cleroides, id. *ibid.* Peru.

Exartematopus guttipennis, p. 22, *bicolor*, p. 23, Peru, *coloratus*, p. 24, *cingulatus*, p. 25, New Granada, *id. l. c.*

Idmosyne semipurpurea, id. *l. c.* p. 25, New Granada.

Lactica xanthochroa, p. 89, Florida, *bogotana*, p. 90, Bogota, *id.* l. c.; *L. citrina*, p. 14, *dichroa*, *elegans*, p. 15, *dives*, *clara*, *elegantula*, p. 16, *misella*, p. 17, *paupercula*, p. 18, *debilis*, *obsoleta*, p. 19, *hypocrita*, p. 22, various Columbian localities, *id. op. cit.* xiv.

Diphaulaca specularis, id. C. H. xiii. p. 89, Florida; *D. columbica*, p. 6, *amœna*, p. 7, *fossifrons*, *hilaris*, p. 8, *jucunda*, p. 9, Columbia, *cordovana*, p. 104, *angularis*, p. 105, Cordova, *id. op. cit.* xiv.

Hispides.

F. Chapuis, *l. c.* p. 263 *et seq.*, proposes the following groups:— *Eurispites*, *Callispites*, *Cephaloleites*, '*Wallacéites*,' *Hispoleptites*, *Hispodontites*, *Cryptonychites*, *Botryonopites*, *Alurnites*, *Anisoderites*, *Arescites*, *Promecothecites*, *Erionispites*, *Gonophorites*, *Oncocephalites*, *Octotomites*, *Cephalodontites*, *Monochirites*, *Trichispites*, and *Hispites*. *Acanthodes*, (Chevr.) Baly, *nec* Agassiz, is renamed *Acanthispa*, p. 323; *Scelænopla*, Chevr., = *Chalepus*, Thunb.; *Metaxycera*, Chevr., *Stethispa*, Baly, and *Microdonta*, Chevr., are considered sub-genera of *Cephalodonta*.

Œdiopalpa, Baly, vox hybr., renamed *Amplipalpe*; E. v. Harold, C. H. xiii. p. 185. Subsequently renamed *Charispa* by Baly, Ent. M. M. xiii. p. 73.

Apocinocera herbacea, Blanch., = *Stenomela pallida*, Er.; E. v. Harold, C. H. xiii. p. 183.

F. Chapuis, *l. c.*, describes the following new genera, sub-genera, and species:—

Leucispa, p. 266. *Eurispites*: between *Aproida* and *Eurispa*, with no claw-joint. For *E. odewahni*, Baly.

Spilispa, p. 285. *Hispodontites*: closely allied to *Hispodonta*, but in some respects recalling *Cryptonychus*. *S. balyi*, p. 286, note, Malasia.

Octodonta, p. 289. *Cryptonychites*: near *Oxycephala*; eyes very close beneath. *Oct. depressa*, p. 290, note, Malacca.

Plesispa, p. 290. Also allied to *Oxycephala*; differs from *Octodonta* in its prosternum being very narrow between the coxæ, and acuminate in front, and in the chief angles of the body not being bidentate. *P. reichii*, p. 291, note, Malacca.

Erionispa, p. 301. Type of its group: elongate, flat, attenuate behind, set with long, sparse pubescence; suggestive of *Aproida*. *E. badeni*, p. 302, note, Damel, Australia.

Heterispa, p. 321, subg. of *Uroplata*, with type *U. infuscata*, Dej.

Pentispa, p. 322, subg. of *Uroplata*; no type mentioned.

Pseudispa, p. 328, subg. of *Cephalodonta*, for *C. marginata*, Guér.

Monochirus, p. 330. Type of its group: 4th joint of tarsi with a single claw. No type mentioned.

Trichispa, p. 331. Type of its group: covered with silky pubescence. For *Hispa sericea*, Guérin.

Hispella, p. 334, subg. of *Hispa*, for *H. atra*, L.

Podispa, p. 335, subg. of *Hispa*, with middle tibiæ strongly curved. For *H. bellicosa*, Dej.

Thoracispa, ibid., subg. of *Hispa*. Flat, with subcylindric antennæ, pronotum with long radiating spines, crossing over the head. For *H. dregii*, Dej.

Prionispa, p. 337. *Hispites*: hooks of tarsi separated by a small projecting process. *P. nitida*, Java, Sumatra, *subopaca*, Pulo-Penang, p. 338, note.

Charispa amicula, Para, *elongata*, Rio Grande, p. 73, *cærulescens*, p. 74, Bahia, spp. nn., J. S. Baly, Ent. M. M. xii.

Cephalolia emarginata, p. 74, Para, Santarem, *cæruleata*, p. 75, New Friburg, *id. l. c.* spp. nn.

Demotispa elegans, sp. n., *id. l. c.* p. 75, Ecuador.

Hispa distincta, sp. n., C. Ritsema, Tijdschr. Ent. xviii. p. 145, Congo.

Cassidides.

F. Chapuis, Gen. Col. xi. pp. 341 *et seq.*, proposes the following groups: — *Hoplionotites*, *Sphæropalpites*, *Himatidiites*, *Spilophorites*, *Priopterites*, *Tauromites*, *Batonotites*, *Basiptites*, *Hybosites*, *Ischyrosonychites*, *Cassidites*, *Mesomphaliites*, *Omoplatites*, *Chelymorphites*, *Elytrogonites*, *Chiridites*, and *Aspidimophites*. *Omocera*, Chevr. in Dej. Cat., is characterized as a subgenus of *Tauroma*, Hope, p. 373.

A solution of 1 pt. saltpetre, 2 pts. alum, and 2 pts. rock-salt, with 20 pts. water, recommended for fixing the colours of *Cassida*; Ent. Nachr. i. p. 27.

Chirida, g. n., Chapuis, *l. c.* p. 405. Type of its group: differs from all others with appendiculated hooks to the tarsi in its evident scutellum, and entirely concealed head. For *Coptocycla elatior* and *C. cruciata*, Linn., Boh.

Ctenochira, g. n., *id. l. c.* p. 409. *Aspidimorphites*: formed for the species of *Coptocycla* that have pectinated claws; differs from *Laccoptera* in the great length of the first joint of the antennæ. Type, *C. aciculata*, Dej.

Epistictia marginata, sp. n., T. Kirsch, MT. Mus. Dresd. i. p. 56, Malacca.

Coptocycla callosa, sp. n., *id. ibid.* Malacca.

Erotylidæ.

Languria angularis, Mots., = *splendens*, Wied.; *L. splendens*, Mots., *nec* Wied., renamed *micans*; *Erotylus 5-punctatus*, F., *nec* L., renamed *pentastictus*; E. v. Harold, C. H. xiii. pp. 182 & 185. *L. convexicollis*, C. O. Waterh. (1873), *nec* Horn (1867), renamed *sodalis*; C. O. Waterhouse, C. H. xiv. p. 213.

Hypodacne, g. n., J. L. Leconte, Tr. Am. Ent. Soc. v. p. 170. Differs from *Dacne* in the tarsi not being hairy beneath, with joints 1–4 shorter and closely united, and by the 9th joint of the antennæ being closely united with the 10th, forming an obtuse compressed club, the 11th being connate. *H. punctata*, sp. n., *id. l. c.* p. 171, N. W. and S. States of N. America.

Dacne picea, sp. n., J. L. Leconte, *l. c.* p. 170, California.

Cyrtomorphus 4-maculatus and *clavula*, spp. nn., T. Kirsch, MT. Mus. Dresd. i. p. 57, Malacca.

Endomychidæ.

Trycherus longanimis, Thoms., from W. Africa, redescribed; H. S. Gorham, Tr. E. Soc. 1875, p. 11.

Rhymbus minutus, Gorh., = *Alexia minor*, Crotch, which however is a *Rhymbus*, as is *A. ulkii*, Cr.; *Aphorista humeralis*, Gorh., = *Mycetina morosa*, Lec.; G. H. Horn, Tr. Am. Ent. Soc. v. p. 132.

Ectrephes, Pasc., is better placed in the *Eumorphites*, following *Trichodeus*, according to Sallé & Chevrolat, Bull. Soc. Ent. Fr. (5) v. p. clxxxviii.

Thelgetrum, g. n., H. S. Gorham, Tr. E. Soc. 1875, p. 314. *Endomychides*: no differential characters given. *T. ampliatum*, sp. n., *id. ibid.*, Philippine Islands.

Amphisternus sanguinolentus, sp. n., *id. l. c.* p. 311, Philippines.

Engonius signifer, sp. n., *id. ibid.*, N. India.

Encymon ferialis, sp. n., *id. l. c.* p. 312, Borneo.

Trycherus fryanus, sp. n., *id. l. c.* p. 12, Angola.

Eumorphus fryanus, id. *l. c.* p. 13, Malacca, *E. andamanensis*, id. Ent. M. M. xi. p. 180, Andaman Isles: spp. nn.

Corynomalus vexillarius, p. 13, Ecuador, &c., *maculicollis* and *felix*, p. 14, Peru, *id.* Tr. E. Soc. 1875; *C. tædifer*, id. Ent. M. M. xi. p. 181, Peru: spp. nn.

Ancylopus indicus, sp. n., *id.* Tr. E. Soc. 1875, p. 312, N. W. Himalaya.

Phalantha pictipennis, sp. n., *id. l. c.* p. 313, Para, Amazons.

Epipocus mollicomus, sp. n., *id. l. c.* p. 15, Mexico.

Epopterus dilectus, sp. n., *id. l. c.* p. 16, Ecuador.

Ephebus (?) *depressus*, Rio Janeiro, and *E. ignobilis*, Cayenne, *id. l. c.* p. 17.

Stenotarsus macroceras, p. 18, Columbia, *scymnoides*, Rio Janeiro, *pantherinus*, Malacca, p. 19, *punctato-striatus*, p. 20, Old Calabar, spp. nn., *id. l. c.*

Rhymbus rhizobioides, p. 20, *decipiens*, p. 21, spp. nn., *id. l. c.* Rio Janeiro.

Panomœa borneensis, sp. n., *id. l. c.* p. 21, Borneo.

Endomychus bicolor, sp. n., *id. l. c.* p. 22, India.

Coccinellidæ.

Cydonia lunata, F., figured; J. C. Melliss, "St. Helena," pl. xxiii. fig. 5.

Calvia dentato-fasciata, Burm., briefly described by C. Berg, Bol. Ac. Cordova, i. (1874), p. 289, from La Plata, is a *Neocalvia*, and very near *N. guerini*; E. v. Harold, C. H. xiv. p. 188.

Scymnus pusillus, Berg (1874), *nec* Herbst (1797), requires renaming; the latter = *minimus*, Rossi, simultaneously described: E. v. Harold, C. H. xiv. p. 188. *Hyperaspis carolinæ*, Crotch, Rev. p. 223, *nec* p. 220, renamed *crotchi*; *Epilachna persimilis*, Crotch, p. 72, *nec* p. 56, renamed *sobrina*; id. *l. c.* p. 213. *Epilachna proteus*, Gerst. (1871), *nec* Guér. (1845), renamed *polymorpha*; Gerstäcker, *ibid.* *E. nigro-cincta*, J. Thoms. (1858), *nec* Muls. (1851), renamed *nigro-limbata*; J. Thomson, *ibid.*

Exochomus xanthoderes, Fairm., = *nigripennis*, Er.; L. Fairmaire, Ann. Mus. Genov. vii. p. 540.

Alexia minor and *ulkii*, Crotch, are referred to *Rhymbus*, Gerst., in the *Endomychidæ*; G. H. Horn, Tr. Am. Ent. Soc. v. p. 132.

Rodalia parvula, sp. n., T. Kirsch, MT. Mus. Dresd. i. p. 57, Malacca.

Cranophorus (?) *vetustus*, sp. n., F. P. Pascoe, Ann. N. H. (4) xvi. p. 222, Waikato, New Zealand.

Lotis indica, sp. n., T. Kirsch, *l. c.* p. 57, Malacca.

Exoplectra fulgurata, sp. n., E. v. Harold, C. H. xiv. p. 292, La Plata.

Exochomus gestroi, sp. n., L. Fairmaire, *l. c.* p. 540, Kéruan (Tunis).

HYMENOPTERA.

BY

E. C. Rye, F.Z.S., M.E.S.

The General Subject.

Dallatorre, Carlo. Beitrag zur Kenntniss der Hymenopteren-fauna Tirols. Z. Ferd. (3) xviii. [1874].

Dewitz H. Ueber Bau und Entwickelung des Stachels und der Legescheide einiger Hymenopteren und der grünen Heuschrecke. Z. wiss. Zool. xxv. pp. 174–200, pls. xii. & xiii.

The structure and morphology of the sting of *Apis mellifica* and *Vespa vulgaris* are discussed and figured, and also the development of the male organs of generation in *Bombus*, and of the ovipositor in the female, and exterior organs of generation in the male, of *Cryptus migrator*. All insects examined have 13 segments behind the head. The sting and ovipositor consist of 6 primary parts (reduced by fusion to 5 in the *Hymenoptera* observed), in all cases arising from 6 nipples or elevations, of which 4 are on the penultimate and 2 on the antepenultimate seg-

ment. The further development of the parts is discussed, and the observations of Packard, Kräpelin, and Oulianin compared.

Lubbock, Sir John. Observations on Bees, Wasps, and Ants. Part ii. J. L. S. xii. pp. 227–251.

An account of experiments in continuation of those mentioned in Zool. Rec. xi. p. 343. Some bees certainly do not communicate with their fellows; the author doubts whether bees are in the least fond of one another; they certainly distinguish colours and scents. Some ants are much more clever than others in finding their way to food; some communicate more freely than others, and in one long series of trials, no communication or summons for help was made, although the ants on which the experiment was tried had access to a larger number of larvæ than they could carry in a whole day.

Marquet, —. Note sur les Insectes hymenoptères du Languedoc. Bull. Soc. Toulouse, ix. (1874–75), pp. 193–221.

The outline of a local Catalogue, enumerating such *Tenthredinidæ*, *Cynipidæ*, *Ichneumonidæ*, *Chalcididæ*, *Chrysididæ*, *Mutillidæ*, *Crabronidæ* (3 new species), *Vespidæ*, *Formicidæ*, and *Apidæ*, as have occurred to the author; with occasional notes on habits, &c.

Taschenberg, E. Nyssonidæ und Crabronidæ des zoologischen Museums der hiesigen Universität. Z. ges. Naturw. (2) xi. pp. 359–409.

Continues the enumeration and description of *Hymenoptera* commenced *op. cit.* xxxiv. & xxxvi.

Vollenhoven, S. C. Snellen van. Pinacographia [Zool. Rec. xi. p. 344]. Part 2. 's Gravenhage: 1875, 4to, pp. 9–16, pls. vi.–x.

Refers to *Ichneumonidæ* and *Chalcididæ*.

On the influence of *Hymenoptera* in fertilizing *Primula* (with no special mention of insect action); D. A Godron, Rev. Montp. iv. pp. 331–335.

Finland. A list of *Chrysididæ*, *Crabronidæ*, and *Vespidæ* observed, with specific localities; F. W. Woldstedt, Not. Fenn. (n.s.) xi. pp. 344–349.

Hamburg. A first instalment towards a catalogue of the *Hymenoptera* of the district, comprising the *Aphidæ*; H. Beuthin, Verh. Ver. Hamb. 1871–1874 [1875], pp. 129–136.

North Wales. *Aculeata*; F. Smith, Ent. Mo. Mag. xii. p. 109.

Congo. On recorded species; C. Ritsema, Tidjschr. Ent. xviii. p. 148.

India. Parasites (*Proctotrypidæ* and *Chalcididæ*) on insects injurious to the fig; F. Walker (communicated after his death by F. Smith), Ent. viii. pp. 15–18.

On catching and breeding *Hymenoptera*; Kriechbaumer, Ent. Nachr. i. pp. 150–153, 162 & 163, 166–169, 179 & 180, 193–196 (extract from CB. Ver. Regensb.).

Killing and preserving; *id.* S. E. Z. xxxvi. pp. 88–94; translated, Ent. M. M. xii. pp. 17–19. A. O. Ward, Ent. M. M. xii. p. 43. B. Cooke, *ibid.* F. Smith, *tom. cit.* pp. 62–65.

A method of setting and preserving specimens on frames; J. B. Bridgman, Sci. Goss. 1875, pp. 217 & 218, figs. 140–142. *Cf.* also pp. 269 & 270.

Kirchner's 'Catalogus Hymenopterorum Europæ' criticized; Snellen van Vollenhoven, Tijdschr. Ent. xviii. Versl. pp. lxxvii.–lxxxi.

Dours' Collection; Pet. Nouv. (1875) p. 493. Giraud's, *l. c.* p. 516.

APIDÆ.

MORAWITZ, F. In A. Fedchenko's Puteshestvie v Turkestan [Travels in Turkestan]; Zoogeographicheskia Izledovania, Series 9, vol. ii. part 5, Pcheli (*Mellifera*), fasc. 1, pp. 1–160. St. Petersburg and Moscow: 1875, 4to.

Issued in Nachr. Ges. Mosc. [Zool. Rec. xi. p. 250], xix., and commences the discussion of the *Apidæ* observed by the late A. Fedchenko in his explorations of Turkestan (255 species, mostly new). Some of the species are by Fedchenko in MS.

Andrenides.

Sphecodes. Von Hagens, Deutsche E. Z. 1875, pp. 315–319, discusses the German species, with especial reference to Thomson's characters. *S. reticulatus*, Thoms., ? = *distinguendus*, Hag., and *S. pilifrons*, Thoms., ? = *brevicornis*, Hag.; *S. brevis*, p. 317, *rubicundus* and *variegatus*, p. 318, are named and (more or less) characterized in a colloquial manner, as new species, presumably from Düsseldorf.

Halictus and *Prosopis.* Various observations on the affinities &c. of certain species found in Nassau; Schenck, Deutsche E. Z. 1875, pp. 321–327.

Nomia. F. Smith, Tr. E. Soc. 1875, pp. 42–48, 53–70, pls. i. & ii., describes and figures various species, including *N. curvipes*, F. (? ? *Eucera crassipes*, F.), ♀, from India, p. 42, pl. i. fig. 8. *N. humeralis*, Duf., = *diversipes*, Latr., fig. 1, and *N. monstrosa*, Costa, = *difformis*, Panz., fig. 2, posterior legs of ♂ figured; *id. l. c.* pl. ii.

J. O. Westwood, *tom. cit.* pp. 207–222, pls. iv. & v., also describes and figures various new species of this genus, supplementing some of Smith's species. *N. silhetica*, Westw. MS., Cat. Hym. Brit. Mus., = *aurifrons*, Sm., of which the ♂ is described, p. 212; *N. combusta*, Sm., pl. iv. figs. 3 & 3*a*, *N. tridentata*, Sm., pl. iv. figs. 5 & 5*a*, *N. gracilipes*, Sm., pl. v. fig. 2, *N. kirbii*, Sm., pl. v. fig. 2, figured.

Cyathocera, g. n., F. Smith, *l. c.* p. 47. Closely allied to *Nomia*, but with only two submarginal cells in the anterior wings; male with two-jointed club to the antennæ. *C. nodicornis*, sp. n., *ib. ibid.*, pl. i. fig. 5, Lucknow and Barrackpore.

Monia [anagram of *Nomia*], g. n., J. O. Westwood, *l. c.* p. 221. Antennæ with apical joint compresso-dilate in ♂, tongue dilated, bifid, hind legs comparatively slender and simple. *M. grisea*, sp. n., *id. l. c.* p. 222, pl. v. fig. 6, Mexico.

Halictus nigerrimus and *quadrifasciatus*, p. 321, *bifasciatellus*, p. 322, spp. nn., Schenck, *l. c.* Weilburg.

Prosopis trimaculata and *discrepans*, spp. nn., Schenck, *l. c.* p. 326, Weilburg.

Nomia oxybeloides, p. 42, pl. i. fig. 6, *aurifrons*, p. 43, *ellioti*, fig. 7, and *simillima*, fig. 4, p. 44, *scutellata*, p. 45, *antennata*, p. 46, fig. 9, and *thoracica*, p. 45, fig. 10, various Indian localities, the last also from China; *N. capitata* and *clypeata*, pl. ii. fig. 18, p. 54, *basalis* and *fervida*, fig. 12, p. 55, *combusta*, fig. 9, and *pilipes*, p. 56, various Indian localities, *terminata*, p. 56, Birmah, *carinata*, Ceylon, *albo-fasciata*, Java, *fuscipennis*, Sumatra, p. 57, *quadridentata*, p. 58, fig. 6, *floralis*, p. 58, *opposita* and *chalybeata*, fig. 5, p. 59, China, *australica*, fig. 11, and *mœrens* (? = *generosa*, ♀), p. 60, *generosa* and *gracilipes*, p. 61, *nana* and *ruficornis*, fig. 7, and *dentiventris*, fig. 15, p. 62, *ærata* and *ænea*, fig. 13, p. 63, various Australian localities, *nilotica*, p. 63, White Nile, *rufipes*, p. 64, fig. 3, *rubella*, p. 65, fig. 17, Gambia, *tridentata*, p. 64, fig. 10, Cape of Good Hope and Gambia, *lamellata*, p. 65, fig. 8, Gambia and Egypt, *cinerascens* and *producta*, fig. 16, and *serratula*, p. 66, Natal, *rufitarsis*, p. 67, Angola, *armata*, p. 67, fig. 14, *fulvo-hirta*, *candida*, and *nubecula*, p. 68, and *tegulata*, p. 69, Sierra Leone, and *N.* (? g. n.) *kirbii*, p. 69, figs. 19 & 20, Brazil or Mexico, F. Smith, *l. c.* (the figures, except in the first species, being of the posterior leg in the ♂); *N. buddha*, p. 205, pl. iv. fig. 1, *sykesiana*, p. 211, pl. iv. fig. 2, *iridescens*, p. 213, E. India, *punctata*, p. 213, China, *rustica*, p. 214, Ceylon, *calida*, p. 215, pl. iv. fig. 4, tropical Africa, *patelliferæ*, p. 216, pl. iv. fig. 6, Cape of Good Hope, *cressoni*, p. 218, fig. 3, *cœlestina*, p. 220, fig. 4, pl. v., Mexico, *tarsalis*, p. 221, pl. v. fig. 5, Brazil, J. O. Westwood, *l. c.*: spp. nn.

Apides.

Osmia and *Anthidium*. *Zonitis*, 3 spp., and various *Hymenoptera* and *Diptera* recorded as parasites upon these bees; Sir S. S. Saunders, Proc. E. Soc. 1875, pp. xvii. & xxv.

Megachile centrunculus, Smith. On its habits in Canada; Nat. Canad. vii. p. 58 *et seq.*

Xylocopa neglecta, Rits., ? = *albiceps*, F., var.; C. Ritsema, Tijdschr. Ent. xviii. p. 149.

Bombus, *Anthidium*, *Stelis*, and *Epeoloides*. Observations on synonymy, varieties, and habits, of various species found in Nassau; *B. arenicola*, Thoms., ? = *veteranus*, F.: Schenck, Deutsche E. Z. 1875, pp. 328–332.

Bombus pennsylvanicus and *virginicus*, *Xylocopa virginica*, and *Apis mellifica* perforating the vexillum of flowers of *Wistaria*, and hybridism in *Cucurbita* brought about by some of these bees; T. G. Gentry, Am. Nat. ix. pp. 263–267.

Melipona. On the Brazilian species, and the possibility of their acclimatization in Europe; F. Müller, Zool. Gart. Feb. 1875.

Apis mellifica. R. Leuckart, Arch. f. Nat. xli. 1, pp. 58–69, discusses various opinions upon the physiology of barren and aborted bee-eggs, and gives details of his own experiments, resulting in a corroboration of Claus and Von Siebold's opinion, that the so-called barren bee-eggs are not actually barren, but only appear so as the embryo developed in

them has not escaped. From these the author distinguishes as a second morbid form, eggs proceeding from a degenerated ovary, and which are themselves degenerate in a greater or less degree. There are references in the notes to papers on this subject published in various periodicals scarcely coming within the scope of this Record. The author also discusses the same points in Isis, Maandschr. v. Nat. iv. pp. 236–246.

Repeated stings of bees appear to render the subject insensible to the pain for the future; A. Laboulbène (quoting G. Walker, in the 'British Bee Journal'), Bull. Soc. Ent. Fr. (5) v. p. cxiii.

Stelidomorpha, g. n., F. Morawitz, in Fedchenko's Turkestan, Mellifera, p. 131, for *Anthidium nasutum*, Latr.

New species :—

Rophites vitellinus, p. 72, *orobinus* and *clavator*, p. 73, *atro-cæruleus*, p. 74, *id. l. c.* Turkestan.

Osmia longicornis, p. 78, *subcornuta*, p. 79, *prasina* and *melanocephala*, p. 80, *fedtschenkoi*, p. 81, *maxillaris*, p. 82, *rufispina* and *simplex*, p. 83, *sogdiana*, p. 84, *cyanescens*, p. 85, *indigotea*, p. 86, *dilaticornis* and *leucogastra*, p. 87, *agilis*, p. 88, *singularis*, p. 89, *atro-alba* and *robusta*, p. 90, *difficilis* and *serrilabris*, p. 91, *rufimana*, p. 92, *furcula*, p. 93, *caularis* and *proxima*, p. 94, *simplicicornis* and *tenuicornis*, p. 95, *abbreviata*, p. 96, *brachyura* and *latipes*, p. 97, *ruficrus* and *ruficornis*, p. 98, *rufo-picta*, p. 99, *acanthophora*, p. 101, *falcata*, p. 102, *id. l. c.*, Turkestan.

Lithurgus tibialis, id. *l. c.* p. 103, Samarcand.

Megachile asiatica, p. 105, *difficilis* and *desertorum*, p. 106, *rubripes*, p. 107, *grisescens* and *saussurii* (Radoszkowsky, MS.), p. 108, *villipes*, p. 110, *communis*, p. 111, *terminata*, p. 113, *nitidicollis*, p. 115, *basilaris* and *mandibularis*, p. 116, *viridicollis*, p. 117, *multispinosa* and *sanguinipes*, p. 118, *pulchella*, p. 119, *id. l. c.*, Turkestan.

Anthidium forcipatum, p. 121, *fedtschenkoi*, p. 122, *limbiferum*, p. 123, *ruficorne*, p. 124, *obscuratum*, p. 127, *nigrinum*, p. 128, *callosum* and *unicum*, p. 129, *petechiale* and *cribratum*, p. 130, *id. l. c.*, Turkestan; *A. rasorium*, F. Smith, Tr. E. Soc. 1875, p. 50, Barrackpore, Bombay.

Heriades clavicornis, F. Morawitz, *l. c.* p. 75, Warsaminor.

Ceratina ferghanica, id. *l. c.* p. 70, Ferghana.

Camptopœum mirabile, id. *l. c.* p. 72, Kisilkum Desert.

Nomada ferghanica, p. 148, *fedtschenkoi* and *subvirescens*, p. 149, *sulphuripes*, p. 150, *desertorum* and *vernalis*, p. 152, *discicollis*, p. 153, *sarta*, p. 154, *strigicollis*, p. 155, *aurantiaca* and *ruficollis*, p. 156, *obburdinensis*, p. 157, *flavilabris* and *nigricollis*, p. 158, *id. l. c.* Turkestan; *N. adusta*, F. Smith, *l. c.* p. 50, India.

Ammobates nigrinus, F. Morawitz, *l. c.* p. 145, Sarafschan.

Epeolus ruficornis, id. *l. c.* p. 144, Sarafschan.

Cœlioxys sogdiana, p. 134, *robusta*, p. 136, *tricarinata*, p. 138, *id. l. c.* Turkestan; *C. argentifrons* and *basalis*, p. 48, *cuneatus*, p. 49, *confusus*, p. 50, F. Smith, *l. c.* India.

Dioxys rufipes, p. 132, Sarafschan Valley, *formosa*, p. 133, Samarcand, F. Morawitz, *l. c.*

Crocisa picicornis, p. 142, *major* and *aberrans*, p. 143, *id. l. c.* Turkestan.

Melecta corpulenta and *fuscipennis*, Morawitz, *l. c.* p. 140, Sarafschan Valley.

Eucera melanocephala, p. 59, *tibialis* and *hirsuta*, p. 60, *proxima*, p. 61, *pusilla*, p. 62, *tegularis*, p. 63, *tomentosa* and *ferghanica*, p. 65, *sogdiana* and *melaleuca*, p. 66, *melanostoma*, p. 67, *id. l. c.*, Turkestan.

Tetralonia vernalis, p. 47, *spectabilis*, p. 48, *transitoria*, p. 49, *distinguenda*, p. 50, *intermedia*, p. 51, *mastrucata*, p. 52, *vestita* and *rufescens*, p. 54, *desertorum*, p. 57, *id. l. c.*, Turkestan.

Plistotrichia compacta, id. *l. c.* p. 55, Sarafschan Valley.

Anthophora turanica, p. 10, *heinemanni*, p. 11, *kochi* and *clessini*, p. 12, *bogdnowi* and *freimuthi*, p. 13, *stschurovskii*, p. 14, *oschanini*, p. 15, *kronebergi*, p. 16, *bifasciata*, p. 17, *kessleri*, p. 18, *ulianini*, p. 19, *olgæ*, p. 21, *magnilabris*, p. 22, *strauchi*, p. 25, *muscaria*, p. 26, *tarsidens*, p. 27, *kaufmanni*, p. 28, *saussurii* and *solskii*, p. 30, *maclachlani*, p. 32, *velocissima*, p. 33, *montivaga* and *picicornis*, p. 34, *ruficornis*, p. 35, *meridionalis*, p. 36, *loewi* (= *Tetralonia lutulenta*, Rados.), p. 37, *barbipes*, p. 38, *erschowi*, p. 3, *radoszkowskii*, p. 40, *semperi* and *abramowi*, p. 41, *excelsa*, p. 42, *flavescens* and *murina*, p. 43, *melanopyga* and *martensi*, p. 44 (all from Fedchenko's MS.), *similis*, p. 19, *clavicornis*, p. 27, *id. l. c.*, Turkestan.

Xylocopa turanica and *signata*, id. *l. c.* p. 69, Turkestan.

Bombus leucopygus, p. 2, *læsus*, p. 3, *fedtschenkoi*, p. 5, *id. l. c.*, Turkestan.

Vespidæ.

Saussure, H. de. Synopsis of American Wasps. Solitary Wasps. Sm. misc. Coll. No. 254. Washington: 1875, 8vo, pp. 1–385.

Not seen by the Recorder [? published in 1875, being noticed in Am. Nat. for January, 1877, as a "recent book"].

Celonites apiformis, Pz., = *abbreviatus*, Villers, and *C. afer*, Lep., = *fischeri*, Spin. General observations: the latter occurs in the South of France, and its nest, a small cylinder of fine mortar, is like that of *C. abbreviatus*; it has the habit of passing its wings between the thorax and abdomen, and applying them against the under side of the abdomen. *Celonites* belongs to the *Mellifera*, next *Anthidium*. J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. pp. ccx. & ccxi.

Eumenes. Nest of a new species from New Caledonia briefly described; H. Lucas, Bull. Soc. Ent. Fr. (5) v. p. lxxvii.

Polestes bipustulatus, Sauss., alive near Liverpool; F. Smith, Ent. M. M. xii. p. 156.

Vespa germanica. A gigantic nest; A. Kuwert, S. E. Z. xxxvi. pp. 221–224.

Crabronidæ.

Elis thoracica, F., ♂, and *E. hirsuta*, Sauss., ♀, described from India; F. Smith, Tr. E. Soc. 1875, p. 36.

Ammophila heydeni. In the pupa, the petiole is folded beneath the abdomen, which seems sessile; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. ccii.

Palarus, having the labrum emarginate, is wrongly referred to the *Nyssonides* by Smith ; E. Taschenberg, Z. ges. Naturw. (2) xi. p. 359.

Cemonus unicolor. Note on damage to briar-stems used for rose-stocks ; *Homalus auratus*, Dahlb., is its parasite. Covering the cut end of the briar with tar recommended, in order to prevent the ♀ from making her nest. A. Laboulbène, Ann. Soc. Ent. Fr. (5) v. pp. 303 & 304.

Notoglossa arabs, Lepell., recorded from S. France ; differences between the French and African forms, possibly of specific value, noted. J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. xii.

New species :—

Agenia festinata, F. Smith, *l. c.* p. 37, India.

Priocnemis peregrinus, id. *ibid.* Calcutta, Sumatra, Hong Kong.

Mygnimia atropos, id. *l. c.* p. 38, India.

Astata agilis, id. *l. c.* p. 39, Nischiudipore.

Stizus spectabilis, E. Taschenberg, *l. c.* p. 360, Brazil.

Larra bicolor, Khartum, *brendeli*, Illinois, p. 361, *dimidiata*, p. 362, *argentea*, p. 363, Egypt, *bicincta*, p. 364 Mendoza, *id. l. c.*

Gorytes areatus, id. *l. c.* p. 365, Brazil.

Gorytes amatorius, p. 39, *tricolor*, p. 40, F. Smith, *l. c.* India.

Hoplisus anthracipennellus, p. 366, Columbia, Brazil, *semipunctatus*, p. 367, Mendoza, *fuscus*, p. 368, *petiolatus*, p. 369, Rio de Janeiro, E. Taschenberg, *l. c.*

Trypoxylum rostratum, p. 371, *punctulatum*, p. 372, *rufo-signatum*, p. 374, *scutiferum*, p. 379, Brazil, *armatum*, p. 373, *gracile* and *annulipes*, p. 377, Venezuela, *coloratum*, p. 375, *aureo-vestitum*, p. 376, Mendoza, *javanum*, p. 378, Java, *id.* l. c. ; *T. accumulator*, F. Smith, *l. c.* p. 38, India.

Oxybelus squamosus, F. Smith, *l. c.* p. 38, India; *O. fasciatus*, E. Taschenberg, *l. c.* p. 380, Cape of Good Hope.

Crabro cubiceps, p. 382, Brazil, *eburneus*, p. 383, S. America, *maculicornis*, p. 384, Mendoza, *rugoso-punctatus*, p. 385, Venezuela, Taschenberg, *l. c.*

Mimesa aurifrons, id. *l. c.* p. 387, Brazil.

Diodontus atratulus, id. *l. c.* p. 388, Cape of Good Hope.

Cerceris viscosus, p. 40, *rufinodis* and *velox*, p. 41, F. Smith, *l. c.* India ; *C. euphorbiæ*, *eryngii*, and *rostrata*, Marquet, Bull. Soc. Toulouse, ix. (1874–75), p. 205, Toulouse ; *C. rufimana*, p. 390, Parana, *larvata*, p. 391, *annuligera*, p. 394, Mendoza, *picturata*, p. 392, *contracta*, p. 396, *velutina*, p. 397, Brazil, *rustica*, p. 393, *rufo-nigra*, p. 399, Rio de Janeiro, *albimana*, p. 395, Venezuela, *unicincta*, p. 397, Tennessee, *rufa*, p. 400, *seminigra* and *variegata*, p. 401, *lutea*, p. 402, Khartum, E. Taschenberg, *l. c.*

Philanthus (*Trachypus*) *fulvipennis*, p. 404, *terminalis*, and *varius*, p. 405, *flavidus*, p. 406, Brazil, *elegans*, p. 407, *egregius*, p. 409, Mendoza, Taschenberg, *l. c.*

MUTILLIDÆ.

H. BURMEISTER, Bol. Ac. Cordova, i. pp. 461–502, pl., under the title of "Mutillæ Argentinæ," describes (in Latin and French) the known species of the Argentine States. He considers that Gerstäcker has

wrongly separated the sexes of many species as distinct, and adopts an arrangement employed in his former essay (Abh. Ges. Halle ii. 1854, p. 19), as follows:—Division I., LIOPHTHALMÆ; sub-d. 1, Serratocinctæ, including *M. perspicillaris*, Klug, and *spinosa*, Sweder. (♂ = *corpulenta*, Gerst.); 2, Pedunculatæ, *M. trinacria*, *duplicata*, and *miniata*, Gerst., *tristis* and *parallela* (♂ = *characterea*, Gerst.), Klug, and four new species; 3, Capitatæ, *M. hæmatodes* and *diabolica*, Gerst., and one new species. Division II., MEGALOCRATINÆ; sub-d. 1, Pendulæ, *M. armata*, *miles*, *megacephala*, and *cephalotes*, Burm. (of which last, *erythraspis*, Gerst., is probably the ♂); 2, Subsessiles, *M. sumptuosa*, Gerst. (♂ = *dulcis*, Gerst.), and two new species. Division III., HELOPHTHALMÆ; sub d. 1, Carinatæ, *M. fronticornis*, Burm., *cerasina*, *amabilis*, *pythagorea*, *cometa*, and *hoplites*, Gerst., and five new species; 2, Quadrato-dorsatæ, *M. pretiosa*, Gerst. (♂ = *disjuncta*, Gerst.), and four new species; 3, Lateriplanæ, type, *M. chrysodora*, Perty (*furonina*, Burm.), of which *M. fastuosa* or *fulvipennis*, Gerst., is the ♂ (no Argentine spp.); 4, Longitergæ, *M. phalerata*, Klug (♂ = *lucidiventris*, Gerst.), and *lineola*, Fab. (♂ = *mediata*, Gerst.).

Cocoons in sand dubiously referred to *Mutilla*; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. liii.

Scaptodactyla, g. n., H. Burmeister, *l. c.* pp. 499–502. Does not enter into any of the divisions employed by the author as above mentioned, but forms a separate group, approaching *M. tenuiventris*, Spin., in the ♂, and *Bradynobænus*, Spin., in the ♀, which the author queries as themselves probably referable to one genus. Male almost Thynni-form, very slender, and female thicker than any other indigenous species, having also fossorial setæ on the outer edge of the front tarsi, and the middle and posterior tibiæ with a triple series of spines externally. *S. heterogama*, sp. n., *id. l. c.* p. 500, ♂ & ♀ figured with details, Mendoza.

Mutilla centralis, p. 473, *lasiogastra*, p. 475, Cordova, *cuyana*, p. 475, Mendoza, *mitis*, p. 476, Mendoza and Patagonian Pampas, *argyrosticta*, p. 477, Mendoza and Cordova, *infernalis*, p. 482, Mendoza, *asinana*, p. 483, Cordova, *crassiceps*, p. 486, Parana, *braconina*, p. 488, Buenos Aires and Cordova, *rubro-calva* and *polyargyrea*, p. 490, Carmen, in Patagonia, *infantilis*, p. 491, and *sororcula*, p. 493, Buenos Aires, *catulus* and *fraterculus*, p. 494, Mendoza, *minima*, p. 495, Parana, H. Burmeister, *l. c.*; *M. peculiaris* and *tecta*, p. 119, *erudita*, *pacifica*, and *arota*, p. 120, California, *edwardsi*, p. 119, Oregon, *ursula* and var. *texana*, p. 120, Texas and Oregon, E. T. Cresson, Tr. Am. Ent. Soc. v.: spp. nn.

Methoca orientalis, sp. n., J. Smith, Tr. E. Soc. 1875, p. 35, ♂, India.

FORMICIDÆ.

On powers of intercommunication, *cf.* Lubbock, *suprà*, p. 384.

C. Emery, Ann. Mus. Genov. vii. pp. 465 *et seq.* & 895, briefly discusses species of subterranean habits (not necessarily blind), especially with reference to European forms (16 known as yet). He describes the workers of *Stigmatomma denticulatum*, Rog., and *impressifrons*, Em., and

of *Epitritus argiolus*, Em., and now refers *Leptanilla revelierii*, Em., to the *Myrmicides*, near *Stenamma* and *Liomyrmex*.

On the fondness of ants for certain *Homoptera* (*Formica pubescens* and a small *Myrmica*, associated with *Tettigometra* and *Issus*); F. Delpino, Bull. Ent. Ital. vii. pp. 61–65 (translated Ent. M. M. xii. pp. 10–12). Supplementary observations, *id.* Atti Soc. Ital. xviii. pp. 62 & 63. The same author, Bull. Ent. Ital. vii. pp. 69–90 (abstract, Atti Soc. Ital. xviii. pp. 62 & 63), in some observations on the nectaries of various plants, suggests that ants (and in some cases other *Hymenoptera*) are the principal enemies of plant-enemies, and that those organs are destined chiefly to attract and secure their help.

31 species enumerated from Finland, *Camponotus pubescens*, F., and *Ponera punctatissima*, Rog., being recorded as new to the fauna; J. Sahlberg, Not. Fenn. (2) xi. pp. 310–313.

Formica fuliginosa. Nests described; L. Maggi, Atti Soc. Ital. xviii. pp. 83–91. *F. mutinensis*, Can., ♂, redescribed and the species differentiated from *F. pallida*, Can.; G. Canestrini, Atti Soc. Pad. ii. [1873], p. 52.

Sima, Roger, = *Pseudomyrma*; and the winged female of *P. bicolor*, Guér., described and figured; F. Smith, Tr. E. Soc. 1875, p. 35, pl. i. fig. 4.

Myrmecocystus mexicanus. Details received from J. Krummeck of Sta. Fé; W. Saunders, Canad. Ent. vii. pp. 12–14, fig. 1.

Meranoplus bicolor, Guér. Male and female described, and figured, with neuter, found by Mr. Rothney at Calcutta; F. Smith, *l. c.* p. 34, pl. i. figs. 1–3.

Phidole jordanica. A supposed new species, from Jericho, differentiated from *P. pallidula* under this name; F. de Saulcy, Bull. Soc. Moselle, xiii. [1874] extr. p. 17.

Solenopsis orbula, sp. n. (worker), Emery, *l. c.* p. 472, Corsica.

Epitritus bauduери, sp. n. (worker), *id. l. c.* p. 474, Sos and Corsica; head, and heads of *E. argiolus* and *Strumigenys membranifera* figured for comparison.

Chrysididæ.

Chrysis kriechbaumeri, p. 358, *australasiæ*, p. 360, Australia, *halictula*, California, *doriæ*, N. America, p. 359, *gestroi*, p. 359, *macrostoma*, p. 360, Algeria, spp. nn., G. Gribodo, Ann. Mus. Genov. vi.

Euchrœus doursi, sp. n., *id.* Pet. Nouv. (1875) p. 491, S. France.

Ichneumonidæ.

Woldstedt, F. W. Materialer till en Ichneumonologia Fennica. Bidr. Finl. Nat. xxi. [1874] pp. 61–92.

An enumeration, with bibliographical references and localities, of 67 species of *Ichneumonides*, 39 *Cryptides*, 90 *Ophionides*, 6 *Tryphonides* (raising the number of that group to 203), and 70 *Pimplides* from Finland. Some new species and unnamed varieties are described, and synonymy given.

L. Provancher, Nat. Canad. vii. pp. 20, 48, 74, 109, 138, 175, 263, 309, 328, *et seq.*, continues his enumeration of the species (some described as new, and one new genus of *Tryphonides*) found near Quebec. A concise, pendious general account, with brief characters for all the genera, is given at pp. 333–353; 58 genera are enumerated, with 386 species, whereof 239 are described as new by the author.

Ichneumonides.

Ichneumon 4-cingulatus, Gr., now considered a var. of *I. uniguttatus*, Gr., and a descriptive dichotomous table of 40 varieties of that species given, including as such *I. amputatorius*, *sibilans*, *nigripes*, *interruptus*, *messorius*, *pratensis*, and *flavo-limbatus*, Gr.; Tischbein, S. E. Z. xxxvi. pp. 274–280.

Ichneumon xanthorius, Gr. (*nec* Forst.), ♂, ♀ = 6-*cinctus*, Gr.; with observations on the geographical distribution of both species; Kriechbaumer, S. E. Z. xxxvi. pp. 386–390.

Amblyteles. General observations, and figures of *A. fasciatorius*, F., figs. 1 & 2, *natatorius*, F., fig. 3, *palliatorius*, Gr., figs. 4 & 5, *vadatorius*, Ill., fig. 6, *sputator*, F., fig. 7, *repentinus*, Gr., fig. 8, *rubro-ater*, Ratz., fig. 9; S. C. Snellen von Vollenhoven, Pinacographia, pp. 10 & 11, pl. vii.

Amblyteles subsericans. Dimorphism in the ♀; Kriechbaumer, Ent. Nachr. i. pp. 109–112, 117, 118, & 128. *Eurylabus elongatus*, Brischke, is most probably only a form of this species with narrow abdomen.

Trogus vulpinus and *fuscipennis*, and *Ichneumon lugubrator* and *condecoratus*, Grav.; the claims of these species to be considered European discussed, all being probably exotic; Kriechbaumer, S. E. Z. xxxvi. pp. 39–42.

Hybophorus, g. n., Tischbein, S. E. Z. xxxvi. p. 281. Ichneumones Amblypygi, next *Trogus*. For *Ichneumon aulicus*, Gr., of which the ♀ is now known, from Munich.

Ichneumon pilosulus, p. 25, *similaris*, p. 26, *mellicoxus*, p. 48, *calcaratus*, p. 49, *stadaconensis* and *varipes*, p. 50, *vagans* and *cinctipes*, p. 51, *signatipes*, p. 52, *bifasciatus* and *indistinctus*, p. 75, *æqualis* and *placidus*, p. 76, *lobatus* and *quebecensis*, p. 77, *lacrymans* and *scutellatus*, p. 78, *nitidus*, *erythropygus*, and *fortis*, p. 79, *hæsitans*, p. 80, *marianapolitanensis* and *mucronatus*, p. 81, *lineolatus*, *caudatus*, and *humilis*, p. 82, *inflatus*, *cervulus*, and *decoratus*, p. 83, Quebec district, *clopini*, p. 250, Yamaska, spp. nn., L. Provancher, Nat. Canad. vii.

Ischnus pyriformis, p. 109, *lentus*, *ruficornis*, and *placidus*, p. 110, *exilis* and *scutellatus*, p. 111, *impressus* and *parvus*, p. 112, Quebec district, *variegatus*, p. 250, Yamaska, spp. nn., *id. l. c.*

Alomyia pulchra, p. 120, *abdominalis*, p. 121, spp. nn., *id. l. c.* Quebec.

Megastylus politus, sp. n., *id. l. c.* p. 331, Quebec.

Cryptides.

General observations on the group, and figures of *Linoceras macrobatus*, Gr., fig. 1, *Cryptus cyanator*, Gr., fig. 2, *C. tarsoleucus*, Gr., fig. 3, *C. moschator*, Gr., fig. 4, *C. viduatorius*, F., fig. 5, *C. sponsor*, Gr., fig. 6, and

infumatus, Thoms., fig. 7, *C. arenicola*, Thoms., fig. 8, *C. titillator*, L., fig. 9; S. C. Snellen van Vollenhoven, Pinacographia, pp. 9 & 10, pl. vi.

Cryptus brachyurus, Grav., = *assertorius*, F., p. 72; *Brachycentrus pimplarius*, Taschenb., = *Cryptus brachycentrus*, Grav., and the genus is renamed *Heterocryptus* [*Heterocrypta*, Stimpson, *Crustacea*], including also *H. maculatus*, sp. n. (? = *H. brachycentrus*, Gr., var., Finland, p. 73); F. W. Woldstedt, Bidr. Finl. Nat. xxi. [1874].

Hemiteles luteolator, Grav. Habits described, and chief stages figured; André, Feuil. Nat. v. p. 69, pl. iii. figs. 1–4.

L. Provancher, Nat. Canad. vii. describes the following new species from Quebec:—

Stilpnus canadensis, p. 112.

Cryptus cinctus, p. 175, *brevicornis* and *ruficoxus*, p. 176, *caudatus* and *occidentalis*, p. 314.

Phygadeuon maculatus and *rectus*, p. 178, *insignis*, *annulatus*, and *ruficornis*, p. 179, 4-*carinatus*, *ovalis*, and *apicatus*, p. 180, *rufipes* and *ornatus*, p. 181, *nigro-variegatus*, p. 182, *mellinus*, p. 315.

Mesostenus rufipes, p. 249 (Yamaska), *rufipes* [again], p. 263, *pallipes*, *nigricornis*, and *sericeus*, p. 264, *annulatus*, *tarsatus*, p. 265, *albicoxus*, *ruficoxus*, and *apicalis*, p. 266.

Nematopodius canadensis, p. 268, *coxatus*, p. 269.

Barycerus rhopalocerus, p. 269.

Hemiteles mandibularis, p. 315.

Pezomachus quebecensis, p. 330.

Ophionides.

Anomalon amictum, Nyl., *nec* F., = *Habronyx heros*, Wesm.; F. W. Woldstedt, *l. c.* p. 75. *Scolobates crassitarsus*, Gr., = *auriculatus*, F.; *id. l. c.* p. 82.

L. Provancher, *l. c.*, describes the following new species, mostly from Quebec:—

Leptobatus canadensis, p. 145.

Campoplex luctuosus, ibid.

Limneria excavata, *ruficoxa*, and *plena*, p. 146, *ruficornis*, *pallipes*, and *basilaris*, p. 147, *sericea*, *clavata*, and *sessilis*, p. 148.

Plectiscus pleuralis, p. 330.

Podogaster radiolatus, p. 329 (St. Hyacinthe and Cape Rouge).

Atractodes (?) *mellipes* and *fusiformis*, p. 332.

Tryphonides.

Woldstedt, F. W. Bidrag till kännedom af Finlands Tryphonider. Bidr. Finl. Nat. xxi. [1874], pp. 25–59.

An enumeration, with localities, bibliographical references, and some synonymy, of 18 species of *Mesoleptus*, 6 of *Catoglyptus* and *Orthocentrus*, 7 of *Euryproctus*, *Perilissus*, and *Trematopygus*, 1 of *Eclytus*, *Adetognathus*, *Eumesius*, *Monoblastus*, and *Periope*, 45 of *Mesolius*, 12 of *Endyphon*, 14 of *Polyblastus*, 4 of *Erromenus*, 2 of *Acrotomus* and *Exyston* = *Exenterus*, 9 of *Exochus*, 3 of *Chorinæus* and *Metopius*, and 32

of *Bassus*; in all, 197 species found in Finland, Lapland, and Russian Karelia, and comprising many described as new. The ♀ of *Euryproctus defectivus*, Holmgr., is described, p. 36; *E. geniculatus*, H., = *geniculosus*, Grav.; *Mesoleptus seminiger*, Grav., = *Perilissus filicornis*, Gr., var.; *Chorinæus lapponicus*, H., = *scaber*, Gr.; *Bassus areolatus*, Holmgr., = *sulcator*, Gr.; *Metopius sicarius*, Gr., = *dissectorius*, Pz.; *M. micratorius*, Gr., = *necatorius*, F. Varieties of some species are briefly described, but not named. The same author, *l. c.* p. 83, refers *Bassus pulcher*, Zett., to *Œdemopsis dorsata*, Zett., as ♀.

Colpotrochia and *Exochus*. General observations, and figures of *C. elegantula*, Schr., fig. 1, *E. femoralis*, Fourcr., fig. 3, *mansuetor*, Gr., fig. 4, *flaviceps*, Ratz., fig. 5, *gravipes*, Gr., fig. 6, *prosopius*, Gr., fig. 7, *flavomarginatus*, Holmgr., fig. 8, *tibialis*, Holmgr., fig. 9, *notatus*, Holmgr., fig. 10; S. C. Snellen van Vollenhoven, Pinacographia, pp. 11–13, pl. viii.

Posocentrus, g. n., L. Provancher, Nat. Canad. vii. p. 272. Distinguished from *Mesoleptus* and *Tryphon* by the pentagonal areolet; from *Mesostenus* by the abdomen being scarcely pedunculated, and with a transverse impression on its second segment; and from the *Pimplides* by its inflated face. *P. huardi*, sp. n., *id. l. c.* p. 273, Quebec.

Mesoleptus micans, *depressus*, and *maculosus*, p. 114, *variabilis*, p. 115, *incompletus*, p. 270, *longipes*, p. 271, *erectus*, p. 317, Quebec, *sanctihyacinthi*, p. 251, Yamaska, *id.* l. c.; *M. prætermissus*, p. 30, *lugubris* (? = *sordidus*, Gr.), p. 31, *vividus* and *sylvaticus*, p. 32, Finland, *glacialis*, p. 33, Russian Karelia, F. W. Woldstedt, *l. c.*: spp. nn.

Euryproctus vafer, sp. n., Woldstedt, *l. c.* p. 35, Finland.

Perilissus discedens, p. 37, and *stigmaticus*, p. 38, Finland, *id. l. c.* spp. nn.

Mesolius palmeni, p. 39, *autumnalis*, p. 42, and *sahlbergi*, p. 44, Lapland, *alutaceus*, p. 40, *almi*, p. 41, and *longicornis*, p. 43, Finland, *id. l. c.* spp. nn.

Tryphon perfidus, id. *l. c.* p. 47, Finland; *T. canaliculatus*, p. 116, *humeralis* and *canadensis*, p. 117, *laurentianus* and *sanguineus*, p. 118, *tardus* and *annulatus*, p. 119, *moyeni*, p. 120, *clypealis* and *dufresnii*, p. 309, *excavatus*, p. 310, L. Provancher, *l. c.* Quebec: spp. nn.

Polyblastus holmgreni, p. 49, Lapland, and *P. affinis* (? *Tryphon albovinctus*, Gr.), p. 83, Finland, Woldstedt, *l. c.* spp. nn.

Exenterus umbellatarum, p. 51, and *pratorum*, p. 52, spp. nn., *id. l. c.* Finland.

Cteniscus concolor, sp. n., L. Provancher, *l. c.* p. 139, Quebec.

Colpotrochia affinis, sp. n., S. C. Snellen v. Vollenhoven, *l. c.* p. 12, pl. viii. fig. 2, Arnhem.

Exochus semilividus, sp. n., *id. l. c.* p. 13, pl. viii. fig. 11, Switzerland.

Orthocentrus canadensis, p. 142, *pleuralis*, p. 328, spp. nn., L. Provancher, *l. c.* Quebec.

Bassus fuscitarsus and *pulchripes*, id. *l. c.* p. 143, Quebec; *B.* macr... p. 58, Russian Lapland, and *B. confusus*, p. 84 (= *deplanatus*, C... fig. ...s Finland, Woldstedt, *l. c.*: spp. nn.

Catocentrus dilatatus, sp. n., L. Provancher, *l. c.* p. 316, Quebec. ...he ...nd

Pimplides.

Pimpla. General observations (*Theronia* being referred to as "a new genus," though described by Holmgren in 1859), with figures of *P. instigator*, F., fig. 1, *arctica*, Zett., fig. 2, *flavo-notata*, Holmgr., fig. 3, *rufata*, Gm., fig. 4, *examinator*, F., fig. 5, *scanica*, Vill., fig. 6, *turionellæ*, L., fig. 7, *alternans*, Gr., fig. 8, *stercorator*, F., fig. 9, *variegata*, Ratz., fig. 10 ; S. C. Snellen van Vollenhoven, Pinacographia, pp. 13 & 14, pl. ix.

Pimpla flavo-notata, Holmgr., = *rufata*, Gml. ; *P. rufata*, Holmgr., = *varicornis*, F. ; *Exetastes albitarsus*, Gr., ex. typ., = *Meniscus murinus*, Gr. ; F. W. Woldstedt, *l. c.* pp. 86 & 90.

Polysphincta rufipectus, p. 140, *cingulatus* [*-ta*], p. 141, *pleuralis*, p. 312, spp. nn., L. Provancher, Nat. Canad. vii. Quebec.

Arenetra quebecensis, sp. n., *id. l. c.* p. 141, Quebec.

Xorides canadensis, sp. n., *id. l. c.* p. 248, Yamaska (= *Xylonomus albopictus*, Cresson, *id. l. c.* p. 339, note).

Echthrus caudatus, sp. n., *id. l. c.* p. 313, Quebec.

Westwoodia fumipennis, sp. n., *id. l. c.* p. 329, Quebec.

Phytodietus gracilis, sp. n., *id. l. c.* p. 331, Quebec.

Braconidæ.

Aphidius depositing eggs in *Aphis pruni* ; D. H. R. von Schlechtendal, JB. Ver. Zwickau, 1874 ; Ent. Nachr. i. p. 160.

Bracon charus, sp. n., C. V. Riley, Rep. Ins. Mo. vii. p. 75, fig. 13, parasitic on *Chrysobothris femorata* (*Col.*) in Missouri.

Evaniidæ.

Evania appendigaster recorded from Ovalau, Fiji ; J. D. E. Schmeltz, Verh. Ver. Hamb. 1871–1874 [published 1875], p. 33.

Chalcididæ.

Mayr, G. Die europäischen Encyrtiden, biologisch und systematisch bearbeitet. Verh. z.-b. Wien, xxv. pp. 675–778.

This revision of the sub-family *Encyrtides* is based upon an examination, amongst others, of the types of Dalman, Ratzeburg, and Nees, the collections of Von Heyden & Förster, and the Vienna Museum, containing Kollar's, Tschek's, and Rogenhofer's species. Dalman's species are tabulated with their modern equivalents (p. 676) ; and, after a history of the group, a notice of the most salient generic features of some of its members, a table of the insects of various orders upon which the species are known to be parasitic, and analytical tables of the genera by male and female characters, the known species are described in detail, also by sexes.

The following observations occur :—*Rhopus piso*, Walk., Först., = *testaceus*, Ratz. ; *Cerchysius*, Westw., is not generically separable from *Encyrtus* ; *E. jancirus*, Walk., = *melanacis*, Dalm. ; *E. syrphi*, Ratz., = *æruginosus*, Dalm. ; *E. mucronatus*, Ratz., *fuscipes* and *misellus*, Dalm.,

= *clavellatus*, Dalm. ; *Cinips bombycum*, Fonsc., ? = *E. tardus*, Ratz., ♂ ; *Encyrtus tegularius*, Ratz., *anceus*, Walk., = *Copidosoma flagellare*, Dalm. ; *E. albipes*, Westw., = *Copid. citripes*, Ratz. ; *Enc. atheas*, Walk., and *Cinips agrotis*, Fonsc., = *Copid. truncatellum*, Dalm. ; *Encyrtus eupales*, Walk., ? = *Bothriothorax clavicornis*, Dalm. ; *Crantor*, Hal., is a trifle older than *Choreia*, Westw., but has no type ; *Anusia nasicornis* and *austriaca*, Först., = *fulvescens*, Walk. ; *Dicellelocerus vibrans*, Menzel, = *Encyrtus platycerus*, Dalm., = *Mira macrocera*, Schellenberg ; *Encyrtus xanthostictus*, Ratz., is a *Coccophagus*. Much more synonymy (especially of Walkerian species) is given, and the figures in Snellen v. Vollenhoven's ' Schetsen ' are often mentioned as being incorrect in detail, In all cases, the insects from which the various species have been bred are mentioned.

The following new genera and species are described :—

Holcothorax, p. 691. Allied to *Rhopus* ; mesonotum and scutellum very finely, thickly, and sharply longitudinally striate, scape of antennæ not or very little foliate-dilate, funiculus 5 or 6-jointed. *Encyrtus testaceipes*, Ratz., *E. fuscicollis* and *atricollis*, Dalm., *H. nepticulæ*, sp. n., p. 693, Munich (? = *testaceipes*, Ratz., var.), and ? *Encyrtus nobilis*, Nees.

Aphycus, p. 695. Mesonotum and scutellum extremely finely and thickly punctured, joints of funiculus thicker than long, and clava somewhat longer than half the funicle in ♀, the elbowed joint longer than first joint of funiculus in ♂. *Encyrtus apicalis* and *punctipes*, Dalm., and *E. hederaceus*, Westw.

Blastothrix, p. 679. Differs from *Aphycus*, ♀, in the first 5 funicle-joints being longer than thick, and the clava only as long as the last 2 funicle-joints, and in having a distinct ramus marginalis ; ♂ with short fringes to the wings and dull head and thorax. *E. sericans*, Dalm., = *sericeus*, Dalm. [see *Microterys*, Thoms., *infrà*], *E. erythrostethus*, Walk , *E. bohemani* and *schœnherri*, Westw., and *B. bifasciata*, sp. n., p. 698, Austria.

Prionomitus, p. 701. Mesonotum deeply grooved on the hinder lateral angles ; funicle deeply serrate, with very long hairs ; no ramus marginalis. *Encyrtus chlorinus*, Dalm. [see *Microterys*, Thoms., *infrà*].

Prionomastix, p. 725. Differs from *Dinocarsis*, Först., in its not flattened scape, serrate and very shortly haired funicle, strongly transversely convex scutellum, &c. ; ramus postmarginalis thick, more than twice as long as the r. stigmaticus ; no r. marginalis ; only ♂ known. Type, *Encyrtus morio*, Dalm. [see *Liocarus*, Thoms., *infrà*].

Psilophrys, p. 727. No ramus marginalis ; fore-wings not fringed and antennæ very long and thin, especially in the funicle, of which the 6th joint is the shortest, &c., in the ♀ ; fore wings very shortly fringed, and antennæ much shorter and thicker in the ♂. Type, *Encyrtus longicornis*, Walk.

Liothorax, p. 728. Head and thorax very shining, almost perfectly smooth ; antennæ very thin, with the elbowed joint more than 3 times as long as its apical thickness, &c. Type, *Encyrtus glaphyra*, Walk.

Homalotylus, p. 752. Only ♀ known; between *Habrolepis* and *Bothriothorax*. For *Encyrtus flaminius*, *vinulus*, and *flaviceps*, Dalm. [see *Nobrimus*, Thoms., *infrà*].

Bæocharis, p. 767. Scutellum not large, almost circular, yellow, distinctly convex, not reaching the 1st abdominal segment behind. *B. pascuorum*, sp. n., p. 768, Germany.

Encyrtus hyalipennis, Saxony, *lineola*, Vienna, p. 717, *rogenhoferi*, p. 720, Aix-la-Chapelle, Ems, *bifasciatellus*, Aix, *festucæ*, ? France, p. 721, *fœrsteri*, p. 722, ? Aix, *aphidivorus*, p. 724, Vienna, *notodontæ*, p. 725, ? Germany.

Leptomastix histrio, p. 730, Italy.

Copidosoma terebrator, p. 736, ? Frankfort, *coleophoræ*, *hartmanni*, *kriechbaumeri*, *cidariæ*, p. 738, Germany and Austria.

Comys lecaniorum, p. 741, Schönbrunn.

Chiloneurus microphagus, p. 746, Germany, *quercûs*, ibid., and *kollari*, p. 747, Vienna.

Bothriothorax schlechtendali, p. 756, Halle.

Phænodiscus intermedius, p. 759, Vienna.

Ericydnus reinhardi, p. 765, ? Germany.

Anusia heydeni, p. 770, Frankfort, Vienna.

Thomson, C. G. Skandinaviens Hymenoptera bearbetade af,—4:e Delen, innehållande Slägtet *Pteromalus*, Svederus. Lund: 1875, 8vo, pp. 1–192.

Adopting the name *Pteromalidæ* for the family, the author (after an account of its external anatomical characters) commences a description of the Scandinavian species under the following divisions: Section i., Macrocentri; anterior tibiæ with a large curved spur; tarsi pentamerous; antennæ mostly multi-articulate, upper wings with costa longer than stigma, and radius often large. Comprises, as tribes, *Chalcidina*, *Perilampina*, *Eurytomina*, *Torymina*, *Eupelmina*, *Encyrtina*, *Aphelinina*, *Pirenina*, *Tridymina* (with the characters of which, this first part terminates), *Spalangiina*, and *Pteromalina*. Section ii., Microcentri; anterior tibiæ with a slender, short, straight spur; tarsi mostly 4-, rarely 3-jointed, very rarely heteromerous; antennæ usually with few joints; upper wings with the stigma mostly long, sometimes longer than the costa, and the radius often short (no tribes mentioned).

The following observations occur:—*Eurytoma minuta*, Walk., ? = *brachycera*, Boh., = *gibba*, Boh., ♂; *E. albimana*, Boh., = *afra*, B., ♂; *E. flavipes*, B., = *flavimana*, B., ♂; *E. brevicornis*, B., = *Systole albipennis*, Walk.; *Torymus collaris*, B., = *Megastigmus aculeatus*, Svederus; 15 species of *Pteromalus* described by Svederus are referred to various modern genera (p. 64); *Torymus parellinus* [sic], B., = *Holaspis militaris*, B., var; *Syntomaspis caudata*, Mayr, = *S. saphirina*, B.; *S. pubescens*, Mayr, = *S. druparum*, B.; *Torymus chrysocephalus*, Mayr, ♂, = *igniceps*, Mayr; *T. lasiopteræ*, Mayr, ? = *arundinis*, Walk.; *T. juniperi*, Mayr, ? = *amethystinus*, Boh.; *T. druparum* and *elegans*, Mayr, = *bedeguaris*, Lin.; *T. cupratus*, Mayr, = *fuscipes*, Boh., ♂; *T. conjunctus*, Nees, = *nobilis*, Boh.; *T. cynipidis*, B., = *cingulatus*, Nees; *T. æneus*,

Nees, = *abdominalis*, Boh.; *T. regius*, Mayr, = *nigricornis*, Boh.; *T. abbreviatus*, Boh., = *cyaninus*, Boh.; *T. abbreviatus*, Mayr, = *contubernalis*, Boh.; *T. parellinus*, Mayr, is named *frater*; *Holaspis militaris*, Mayr, *nec* Boh., is renamed *papaveris*; Degeer's types of *T. bedeguaris* are of 3 different species; *Siphonura brevicauda*, Nees, = *Ormyrus gastris*, Boh.; *O. nigricyaneus*, Walk., ? = *variolosus*, Nees; *Macroneura maculipes*, Walk., = *Eupelmus degeeri*, Dalm.; *Pteromalus subulatus*, Dalm., = *Calosoter vernalis*, Walk.; *Encyrtus hirticornis*, Dalm., = *swederi*, Dalm.; *E. strigosus*, Walk., = *Ericydnus longicornis*, Dalm.; *Er. pallidatus*, W., ? = *ventralis*, D.; *Mira macrocera*, Schellenberg, ? = *Lonchocerus platycerus*, Dalm.; *Sceptrophorus anomalus*, Först., = *Encyrtus paradoxus*, Dalm., = *E. clavicornis*, D., ♂; *E. melanopterus*, Nees, and ? *Bothriothorax fumipennis*, Ratz., = *Phænodiscus æneus*, Dalm.; *Encyrtus melanopus*, Walk., = *subplanus*, Dalm., = *Cerchysius urocerus*, Dalm., ♂; *Encyrtus longicornis*, Ratz., = *dendripennis*, Ratz., ♂, = *Habrolepis zetterstedti*, Walk.; *Aphelinus basalis*, Walk., = *abdominalis*, Dalm.; *A. idæus*, Walk., = *lycimnia*, Walk., ♂, = *Entedon scutellaris*, Dalm., = *Aphelinus insidiator*, Dalm., var.; *Eunotus* (*Tridymus areolatus*, Ratz.) forms a good transition point to *Telenomus*; *Pirene scaphus*, Walk., ? = *eximia*, Hal.

The following new genera and species are described:—

Spilochalcis, p. 15, type, *Chalcis xanthostigma*, Dalm.

Lioterphus, p. 99. *Torymina*: funiculus strongly incrassate, first joint abruptly smaller. For *Torymus pallidicornis*, Boh., and *L. mœlleri*, ibid. Sweden.

Liocarus, p. 121. *Encyrtina*: differs from *Encyrtus* in the tomentose callus of its metathorax, &c. Type, *Encyrtus morio*, Dalm. [see *Prionomastix*, Mayr, *suprà*].

Stenoterys, p. 128. Allied to *Ectroma* and *Ericydnus*; for *S. orbitalis*, p. 129, Sweden.

Sphæropisthus, p. 131, near *Lonchocerus* and *Chiloneurus*; for *S. pascuorum*, p. 132, Lund.

Nobrimus, p. 137; eyes oblong, antennal club obliquely truncate, almost subulate. For *Encyrtus flaminius* and *flaviceps*, Dalm., *E. apicalis*, Ratz., = *eitelweini*, Ratz., and *E. intermedius*, Boh., = *vinulus*, Dalm., ♂ [see *Homalotylus*, Mayr, *suprà*].

Trichomasthus, p. 142, allied to *Cerchysius* and *Chiloneurus*; for *Encyrtus nigripes*, Walk., = *cyanellus*, Dalm., = *cyaneus*, Dalm., ♂, *E. cyanifrons*, Dalm., and *T. albimanus*, p. 144, Sweden.

Cœnocercus, p. 145 (*Cœno-* in table, p. 117), allied to *Bothriothorax*; for *C. puncticollis*, ibid. Sweden.

Microterys, p. 155, differs from *Eusemion* in its prominent forehead and shorter stigma, and from *Metallon* in its 6-jointed funiculus. For *Encyrtus sericans*, Dalm., = *sericeus*, Dalm., ♂ [see *Blastothrix*, Mayr, *suprà*]; *E. zephyrinus*, D., = *sylvius*, D., ♂, *E. cyanocephalus*, *interpunctus*, *tessellatus*, *subcupratus*, *lunatus*, *fuscipennis*, *herbidus*, *fuscipes*, *clavellatus*, *barbarus*, *brevicornis*, *malanacis*, and *apicalis*, Dalm.; *E. æstivus*, D., = *chalcostomus*, D., ♂; *E. chlorinus*, D. [see *Prionomitus*.

Mayr, *suprà*], = *mitratus*, D., ♂; *E. cupratus*, Först., = *tiliaris*, D.; *E. miscellus*, D., = *aruginosus*, D., ♂; *E. fulvifrons*, Hal., = *punctipes*, D.; and *M. claviger*, p. 164, *annulipes*, p. 165, *radialis* and *læviscuta*, p. 166, various Swedish localities.

Litomastix, p. 171, allied to *Cercobelus*, with 3-toothed mandibles 6-jointed funiculus, smaller club, &c.; for *Encyrtus chalconotus*, *truncatellus*, *serricornis*, and *filicornis*, Dalm.; *E. tegularius*, Ratz., = *flagellarius*, Dalm., *Copidosoma boucheanum*, Ratz., and *L. auricollis*, *latifrons*, and *phalænarum*, p. 175, *fuscisquama* and *triangularis*, p. 177, *genalis*, p. 178, *stylatus*, p. 180, *annellus*, p. 181, various Swedish localities, and *L. ungularis*, p. 176, Lapland.

Henicetrus, p. 190. *Pirenina*: differs from *Macroglenes*, Westw., and *Pirene*, Hal., in its longer radius and metacarpus, and in the equal length of joints 2–5 of the funiculus. For *H. annellus*, *caudatus*, and *filicornis*, p. 191, Sweden.

Smiera [misprint for *Smicra*, rectius *Micra*] *microstigma*, p. 14, Sweden.

Chalcis dalmanni, p. 17 (*femorata*, Dalm., *nec* Pz.), S. Sweden, *fumata*, p. 18 (*minuta*, Walk., *nec* Dalm.) Gottland, *boops*, p. 19, Germany.

Perilampus emarginatus, p. 23, Sweden.

Decatoma fasciata, p. 29, *incrassata*, p. 31, *strigifrons*, *inæqualis*, *caudata*, p. 32, *submutica*, p. 33, Sweden.

Eurytoma claripennis, p. 35, *dilatata*, *angulata*, *strigifrons*, p. 36, *globiventris*, p. 37, *subsulcata*, *microphthalma*, p. 38, *incrassata*, p. 39, *nasalis*, p. 41, *petiolata*, p. 42, *crassinervis*, p. 44, *salicis*, p. 47, *arctica*, p. 48, *umbilicata*, p. 49, *parvula*, *stenostigma*, p. 50, *cylindrica*, p. 51, *intermedia*, p. 52, various Swedish localities.

Isosoma buccata [*-tum*], *opaca* [*-cum*], p. 55, *inæqualis* [*-le*], p. 56, Sweden.

Megastigmus microspilus, p. 62, Sweden.

Monodontomerus rugulosus, p. 68, Sweden, *virens*, ibid., Germany (= *dentipes*, Mayr, p. 100), and *punctatus*, p. 69, France.

Syntomaspis incrassata, p. 75, *annellus*, p. 76, Sweden.

Callimome [script. *Callimomus*] *scaposus*, p. 77, *discolor* (= *Torymus ventralis*, Mayr, ♀), p. 79, *arcticus* (= *cupratus*, Mayr), p. 80, Sweden.

Torymus borealis, p. 83, *alpinus*, p. 85, *bohemani* (= *speciosus*, Mayr), *pleuralis*, p. 89, *triangularis*, p. 96, *liogaster*, *pulchellus*, p. 98, Sweden.

Encyrtus niveitarsis, p. 121, Middle and S. Sweden.

Ericydnus latiusculus, p. 125, Sweden.

Bothriothorax conformis, p. 134, *trichops*, *callosus* [*-sa*], p. 135, Sweden.

Chiloneurus claviger and *submuticus*, p. 150, Sweden.

Ceraptocerus multiradiata [*-tus*], p. 151, *pilicornis*, p. 152 (2 species confused by Westwood as *C. mirabilicornis*), Sweden.

Metallon fuscitarsis [*-se*], p. 169, Sweden.

Aphelinus transversus (? = *chaonia*, Walk.) and *brevicalcar* (? = *Myina abdominalis*, Nees), p. 186, Sweden.

Macroglenes occultus, p. 188, *brevicornis*, p. 189, S. Sweden.

Torymus and *Syntomaspis*. General observations, with figures (from types received of Mayr) of *T. erucarum*, Schr., fig. 1, *abdominalis*, Boh., fig. 2, *nobilis*, Boh., fig. 3, *regius*, Nees, fig. 4, *bedeguaris*, L., fig. 5, *cyanimus*, Boh., fig. 6, *S. lazulina*, Först., fig. 7, *fastuosa*, Boh., fig. 8; S. C. Snellen von Vollenhoven, Pinacographia, pp. 14–16, pl. x.

Perilampus auratus bred from cocoon of *Crabro vagus* or *rubicola*; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. cxxvii.

Isanisa, g. n., F. Walker, Ent. viii. p. 15. *Eurytomides*, for *I. decatomoides* [? sp. n.], p. 16, India, parasitic on fig-eating insects.

Agrianisa, g. n., *id. l. c.* p. 16. *Sycophagides*; for *A. myrmecoides* [sp. n.], p. 17, India.

Polanisa [? g. n.], *id. l. c.* p. 17. For *P. lutea* [? sp. n.], p. 18, India.

Micranisa [? g. n.], *id. l. c.* p. 18. No species mentioned.

Idarnes orientalis, ? sp. n., *id. l. c.* p. 17, India.

Halticella myrmeleonis, sp. n., L. Fairmaire, Bull. Soc. Ent. Fr. (5) v. p. cciv., bred from *Myrmeleo* at Donnemarie.

Proctotrypidæ.

Pseudisa, g. n., F. Walker, Ent. viii. p. 15. ? *Dryinoides*; for *P. smicroides* [? sp. n.], *ibid.* India, parasitic on fig-eating insects.

Mymar taprobanicus, sp. n., A. O. Ward, Ent. M. M. xi. p. 197, Ceylon.

Cynipidæ.

General observations, with descriptions of 59 North-German species and galls; F. Rudow, "Die Pflanzengallen Nord-deutschlands und ihre Erzeuger" [*suprà*, p. 267].

Mayr's 'Mitteleuropäischen Eichengallen, abstracted and translated, with copies of figures; Herkomer, Ent. viii. p. 73 *et seq.*

Aphilothrix radicis. Galls on the trunks of oaks, 6 feet from the roots; P. Cameron, Ent. M. M. xii. p. 42.

Andricus glandium, Gir., in Scotland; *id. l. c.* p. 83.

Cynips lignicola on *Quercus phellos*; F. Walker, Ent. viii. p. 4.

Biorrhiza aptera on *Quercus pedunculata*; JB. schles. Ges. liii. p. 182.

Allotria erythrocephala, Htg., observed in the act of depositing an egg in *Aphis rosæ*; D. H. R. von Schlechtendal, JB. Ver. Zwickau, 1874; Ent. Nachr. i. p. 159.

Synergus pallidipennis, "sp. n.," J. H. Kaltenbach, quoting Mayr, in "Die Pflanzenfeinde," pp. 790, 791, & 792, Germany.

Uroceridæ.

The species occurring near Quebec enumerated and briefly described by L. Provancher, Nat. Canad. vii. pp. 368–378; viz., 6 of *Urocerus*, 1 *Tremex*, 3 of *Xiphydria*, one of a new genus, and 2 of *Phyllœcus* (placed here, with *Cephus*, by the author, on account of the single spur to the anterior tibiæ). *Sirex bizonatus*, Steph., = *U. flavicornis*, F.

A dichotomous table of genera; L. Gobert, Pet Nouv. (1875) p. 501.

Xiphidion [*-ium* ‖, Serville, *Orthoptera*, 1831], g. n., L. Provancher, *l. c.* p. 374. Allied to *Xiphydria*, from which it differs in the two recurrent nervures being distinctly received by the 2nd cubital; the author thinks it evident this cannot be an abnormal *Xiphydria*. Type, *Xiphidion canadensis* [*-se*], sp. n., *id. ibid.* Quebec.

Xiphydria canadensis, sp. n., *id. l. c.* p. 373, St. Hyacinthe.

Tenthredinidæ.

Brischke, C. G. A., & Zaddach, G. Beobachtungen über die Arten der Blatt- und Holz-wespen. Schr. Ges. Königsb. xvi. (1875), pp. 23–89, pls. i.–iii.

Dr. Zaddach resumes the task of elucidating the known European species, commenced by himself and Herr Brischke ten years ago in the same medium of publication. He gives a supplement to the original bibliographical references, and a continuation, to the beginning of 1875, of works, papers, &c., on the *Tenthredinidæ*.

The *Nematidæ* are discussed, and defined as including all species of which the larvæ have only 10 pairs of feet (3 pectoral, 6 ventral, and 1 posterior), comprised in the following genera; *Nematus*, *Cryptocampus*, *Leptopus*, *Cladius*, *Dineura*, and *Leptocerca*. The species of *Nematus* proper are then divided into 24 groups, according to colour-differences, and the following described, the larvæ being in most cases figured:—*Nematus abdominalis*, Pz. (*ventralis*, Htg., *nec* Pz., which is a *Selandria*), pl. i. fig. 5, *lyæus*, F., fig. 6, *bilineatus*, Kl., fig. 7 (*klugi*, Thoms.), *acuminatus*, Thoms., *septentrionalis*, L., fig. 2, *latipes*, Vill., fig. 3, *varus*, Vill., fig. 4, *erichsoni*, Htg., fig. 8, *quercûs*, Htg., pl. iii. fig. 17, *lucidus*, Pz., *insignis*, Sax., *histrio*, Lep., pl. i. fig. 10, *longiserra*, Thoms., *fallax*, Lep., pls. ii. fig. 11, iii. fig. 4, *variator*, Ruthe, *capreæ*, Pz., pl. ii. figs. 8 & 9, *canaliculatus*, Htg., *umbripennis*, Eversm., pl. ii. fig. 4, *wesmaeli*, Tischb., *saxeseni*, Htg., and *abietinus*, Chr.

S. C. Snellen van Vollenhoven, Tijdschr. Ent. xviii. pp. 33–52, in the 18th part of his work "De inlandsche Bladwespen in hare Gedaantewisseling en Levenswijze beschreven," describes and figures the life histories of *Cimbex sylvarum*, F., pl. iii., *Phyllotoma tenella*, Zadd., new to the fauna, pl. iv., and *Tenthredo colon*, Kl., pl. v. The part ends with a systematic list of all the species described in Tijdschr. Ent. J. W. May, Ent. viii. p. 5 *et seq.*, continues his translations from former parts of this work.

A dichotomous table of genera; L. Gobert, Pet. Nouv. (1875) p. 699.

Dineura degeeri, Kl., *stylata*, K., *testaceipes*, K., *verna*, K., and *fuscula*, K. (with which *Dolerus minutus*, Htg., is queried as identical), recorded from Britain, with synonymy, &c.; P. Cameron, Ent. M. M. xi. pp. 251–253.

Cladius difformis, Pz., *rufipes*, Lep., *eradiatus*, Htg., *viminalis*, Fall., & *padi*, L., and ? *brullæi*, Dbm., and *drewseni*, Thoms., recorded from Britain, with synonymy; *id. l. c.* p. 253. *C. brullæi* feeding on *Rubus*

idæus in Scotland, and the full-fed larva described; P. Cameron, Ent. M. M. xii. p. 42.

Abia sericea. Larva described; *id. op. cit.* xii. p. iii.

Trichiosoma lucorum, L., *betuleti*, Kl., *sorbi*, Htg., and *vitellinæ*, L., recorded from Britain, with synonymy; *id. op. cit.* xi. p. 254.

Pœcilosoma guttatum, Fall., *submuticum* and *excisum*, Thoms., recorded as British, with doubts as to the specific value of the last two; *P. submuticum*, Th., ? = *Selandria klugi*, Steph.: *id. ibid.*

Eniscia, Thoms., = *Sciapteryx*, Steph.; *Phyllotoma tenella*, Zadd., = *Druida parviceps*, Newm., = *Tenthredo nemorata*, Fall.; *Asticta ianthe*, Newm., = *Emphytus lepidus*, Klug: *id. l. c.* p. 255.

Nematus trimaculatus, Voll., = *fulvus*, Htg., = *croceus*, Fall., var.: *N. trimaculatus*, Lep., is the true gooseberry pest; *N. perspicillaris*, Brischke, = *melanocephalus*, Htg., = *salicis*, Deg., Thoms. (? Linn.); Scotch vars. of *N. luteus* and its larva described; *Fenusa pygmæa*, Healy, = *Phyllotoma tormentillæ*, Healy, = *Fenella nigrita*, Westw.: *id. op. cit.* xii. pp. 128–131.

Tenthredo colon. Larva on fuchsia; Snellen van Vollenhoven, Tijdschr. Ent. xviii. Versl. p. xxi.

Emphytus amaurus, Klug (?), economy, on *Alnus glutinosa*; JB. schles. Ges. liii. p. 181.

Nematus brischkii, p. 57, *anderschi*, p. 62, *turgidus*, p. 82, *umbrinus*, p. 84, *mœstus*, p. 85, Prussia, *princeps* (Palmén, MS.), p. 65, S. Germany to Finland, *imperfectus*, p. 80, Finland, Scotland, Prussia, Zaddach, *l. c.*, *N. marshalli*, p. 9, Corsica, *cadderensis*, p. 127, *dorsatus*, p. 129, Scotland, P. Cameron, Ent. M. M. xii.: spp. nn.

Strongylogaster femoralis, sp. n., P. Cameron, *op. cit.* xi. p. 250, Scotland.

Dineura selandriiformis, sp. n., *id.* p. 252, England.

Phœnusa albipes, sp. n., *id. op. cit.* xii. p. 131, Scotland.

Blennocampa tiliæ, sp. n., J. H. Kaltenbach, "Die Pflanzenfeinde," p. 78, Germany.

Phyllotoma aceris, sp. n., *id. l. c.* p. 91, Germany.

Monophadnus iridis, sp. n., *id. l. c.* p. 717, Germany.

LEPIDOPTERA.

BY

W. F. KIRBY, M.E.S., &c.

GENERAL NOTES.

Parts 93–96 of W. C. Hewitson's "Exotic Butterflies," parts 3 & 4 of vol. ii. of W. H. Edwards' "Butterflies of North America," and part 12 of H. Strecker's "Lepidoptera," have appeared within the year.

FELDER & ROGENHOFER have published the fifth and concluding part of the Lepidoptera Zoologischer Theil, ii. pt. 2, of the "Reise der Österreichischen Fregatte Novara um die Erde," containing pls. cxxi.–cxl. (*Geometridæ* to *Pterophoridæ*), each with a sheet of text, giving names, localities, and occasional diagnoses of new genera. The title pages and indexes to the whole work are included in the present part, which bears date May—July, 1875, although it did not reach England till Midsummer, 1876. Localities are also now given for the species published without them in part 4. The Recorder fears that a large proportion of described species have been indicated in this work as new.

S. H. SCUDDER has published an "Historical Sketch of the Names proposed for Butterflies," P. Am. Ac. (2) ii. pp. 91–293, giving the synonymic and historical use of over 1100 names. Any author, whatever rules he may adopt, will be able to apply them at once by Scudder's work, to discover the correct use of any name. But the writer has not distinguished between names with and without descriptions, which is to be regretted, as many entomologists do not admit the latter. He does not admit the generic value of the Linnean divisions of *Papilio*. The preliminary remarks on nomenclature, and on the dates of Hübner's works, will be found interesting and instructive. On this work, *cf.* A. G. Butler, Ent. M. M. xii. pp. 15–17.

On the nomenclature of *Lepidoptera*; E. L. Ragonot, Pet. Nouv. vi. pp. 507 & 508.

On the nomenclature of the genera in moths; A. R. Grote, Canad. Ent. vii. pp. 113–115.

H. STRECKER (*Lepidoptera*, pp. 107 & 108) condemns the usual Ameri-

can practice of an author attaching his own name, instead of that of the original describer, to any species which he removes to another genus.

S. H. SCUDDER has published an exhaustive memoir on Fossil Butterflies (Mem. Am. Ass. i. pp. 1–99, pls. i.–iii. 4to, Salem: 1875). He commences with a full bibliography, and then discusses 9 different species; their comparative age, the probable food of their larvæ, and the present distribution of their nearest living allies; ending with a general summary, notices of undetermined forms, and remarks on fossils erroneously referred to butterflies. All known fossil butterflies come from the tertiaries of Europe; the oldest is probably *Coliates proserpina*. species are Indo-Malayan in their affinities, and 4 American, 1 is M. N. terranean, and 1 African. Butterflies, as far as we know, seem to chke, appeared first in the lower tertiaries. The 9 species admitted and h vars. by Scudder are *Neorinopsis sepulta*, Boisd., and *Lethites reynesi*, : *Phyl-* (*Satyrinæ*); *Eugonia atava*, Charp. (*Nymphalinæ*); *Mylothrites it.* xii. Heer, *Coliates proserpina*, Scudd., and *Pontia freyeri*, Heer (*Pi. Thaites ruminiana*, Scudd. (*Papilioninæ*); *Thanatites vetula*, V. idschr. and *Pamphilites abdita*, Scudd. (*Hesperiidæ*). Among fossils erroneou. considered to be Lepidopterous, Scudder includes *Cyllonium boisduvalianum* and *hewitsonianum*, Westw., and *Palæontina oolitica*, Butl. He still maintains that the last is a *Cicada*.

A. WERNEBURG, "Der Schmetterling, und sein Leben" (Berlin, 1874; 8vo), appears, from a notice in Z. ges. Naturw. (2) xi. pp. 56 & 57, to be a popular work, discussing the part played by *Lepidoptera* in the economy of nature, and their relations to man.

J. A. LINTNER has published part 2 of his "Entomological Contributions"; Rep. N. Y. S. Mus. xxiv. pp. 109–170. It is devoted chiefly to notices of the transformations of various N. American *Lepidoptera*.

A. WEISMANN, "Über den Saison-Dimorphismus der Schmetterlinge" (Leipzig: 1875, 8vo, pp. iv. & 94, 2 col. plates; also Ann. Mus. Genov. vi. pp. 209–302, pls. viii. & ix.), discusses the difference between the broods of various butterflies, especially *Vanessa levana*, *porima*, and *prorsa*; *Pieris napi*, *napææ*, and *bryoniæ*; and *Papilio ajax*, *marcellus*, and *telamonides*, and gives the result of numerous experiments. The most constant forms are *Vanessa levana* and *Pieris bryoniæ*, which appear to have survived from the glacial period, and to be the original forms of their species. *Pap. telamonides* seems to be an intermediate form tending to reversion from casual circumstances, and corresponding to *Van. porima*. *Pier. bryoniæ* is not variable in the Polar Regions, and its variability in Switzerland appears to be due to its hybridizing with the more modern forms of the plains. Climatic varieties are defined as those which are directly produced by climate, and local varieties as those which have arisen from other local circumstances. *Polyommatus phlæas* is single-brooded in Lapland, and double-brooded in Germany, but it shows no variation in either country, whereas in Southern Europe it exhibits seasonal dimorphism. The winter and summer broods of *P. agestis* differ considerably in Germany; in Italy

the winter form is the same as the German summer form; the German winter form does not occur in Italy; and the Italian summer form (*P. allous*) is not found in Germany. Season-dimorphism is simply the splitting of one species into two climatic varieties in the same locality. The eggs and larvæ never differ. After discussing Heterogeny and Metagenesis in the lower animals, the author sums up his conclusions as follows:—

(1.) The differences between species may have arisen chiefly from the direct influence of external conditions of life. (He thinks Darwin is mistaken in attributing the colours of *Lepidoptera* entirely to sexual selection.)

(2.) Every alternation of climate during geological epochs must have given rise to a fresh series of species of *Lepidoptera*.

(3.) All the individuals of one species are modified in the same direction by climatic influences, which is due to the physical constitution of each species.

(4.) Periodical causes of variation lead to periodically recurring variations, and the series of monomorphic generations becomes a cycle of dimorphic or polymorphic generations.

(5.) Finally, a species can only become variable from the influence of altered external conditions of life, more especially when this variation takes a definite direction, which again depends on the physical nature of the varying organism, which differs in different species, and even in the two sexes of one and the same species.

The work concludes with a detailed account of the author's experiments in breeding the different forms of *Vanessa levana* and *Pieris rapæ* and *napi*.

An abstract of the above work, with an account of some further experiments on *Papilio ajax*, is given by W. H. Edwards, Canad. Ent. vii. pp. 228–240.

Prothoracic glands in Lepidopterous larvæ; S. H. Scudder, Psyche, i. p. 64.

On varying the food of larvæ, and its effects on the imago; L. Glaser, Zool. Gart. xvi. pp. 263–266.

A summary of observations on digestion in the larvæ of *Cossus ligniperda* and *Liparis dispar*, and in the imagos of *Papilio machaon*, *Vanessa io*, *polychloros*, and *urticæ* is given by F. Plateau, Mem. Ac. Belg. xli. No. 2, pp. 80–97.

On the preparation of larvæ for collections; G. J. Wittmack, Abh. Verh. Hamb. 1871–74, pp. 75–90.

Varieties, &c., of *Lepidoptera*; G. B. Corbin, Ent. viii. pp. 268 & 269.

Hybernation of *Lepidoptera*; T. Goossens, Bull. Soc. Ent. Fr. (5) v. pp. xxiv. & xxv.

A discussion on variation in *Lepidoptera*; CR. Ent. Belg. xviii. pp. xxiv. & xxv.

On the fertilization of the flowers of *Hesperis tristis* by various *Lepidoptera*, and of *Lilium martagon* by *Macroglossa stellatarum*, H. Müller, Nature, xii. pp. 50, 51, 190 & 191.

Notes on the oviposition of various *Lepidoptera*; P. H. Jennings, Ent. viii. pp. 130, 131, 147–150, 172–175, 217 & 218.

On the use of cyanide of potassium for killing moths; J. E. Chase & W. V. Andrews, Canad. Ent. vii. pp. 97, 98, 138.

Directions for sugaring; G. Norman, *op. cit.* pp. 61 & 62; H. Doubleday, Ent. viii. pp. 106 & 107.

Instructions for bleaching wings of *Lepidoptera*; G. Dimmock, Psyche, i. pp. 97–99.

For a rambling paper on the supposed genealogical descent of *Lepidoptera*, incapable of being abstracted, *cf.* T. G. Gentry, P. Ac. Ph. 1875, pp. 24–54.

Great Britain.

J. Merrin has published a second and greatly enlarged and improved edition of his "Lepidopterist's Calendar, giving the time when British Lepidoptera appear in the egg, larval, pupal, and imago states, with their food plant and habitat." Gloucester: 1875, 8vo, pp. 248 & 250. This work contains in a convenient form much useful information for working-Lepidopterists, besides that specified in the title, and in addition to the complete information furnished relating to the species which may be met with in their various stages during each month in the year, which forms the bulk of the book, has two appendices, one containing a list of the English and Latin names of plants mentioned, and another of all the British Lepidoptera, with parallel columns & 57, to ing the months in which they occur in all their stages.

F. B. White continues his "Insecta Scotica Lepidoptera," *dena* to *Chariclea*, Scot. Nat. iii. pp. 29–32, 81–84, 129–132. Additions to former parts; J. Boswell Syme, *op. cit.* p. 9.

Notes on *Lepidoptera* observed in Northumberland and Durham in 1874; W. Maling, Tr. North. Durh. v. pp. 141–146.

Additions to the list of *Lepidoptera* occurring in Guernsey and Sark; W. A. Luff, Ent. viii. pp. 29–32.

List of *Micro-Lepidoptera* taken or reared in 1874; W. Machin, Entds viii. pp. 80–82.

Captures at sallows; G. F. Mathew, Ent. viii. pp. 99–103.

Captures near Plymouth in June, 1872, by G. F. Mathew, pp. 13–14; in the Lake District, by S. L. Mosley, pp. 19 & 20; at Whittlesford, by A. Thurnall, pp. 52 & 53; in the New Forest in May and July of 1874, by B. Cooper, pp. 84–86; at Limerick, by W. Talbot, p. 89; in Somersetshire, by F. Stansell, pp. 158 & 159; in Kent, by G. T. Porritt, pp. 218 & 219; in North Kent, by W. H. Tugwell, pp. 291–293: and its viii. At Witherslack, by J. B. Hodgkinson, p. 13; in the Isle of Sheppey by G. T. Porritt, p. 138: Ent. M. M. xii. And near Edinburgh, by W. A. Forbes, Scot. Nat. iii. p. 64.

France.

A. Guénée has published "Statistique Scientifique d'Eure et Loire, Lépidoptères" (Chartres: 1875). Not seen by the Recorder. Noticed in Zool. (2) x. p. 4668. It includes the *Macro-Lepidoptera* of the dis-

trict. The preface is dated 1866, and the title page 1867, though the work itself was only issued in 1875.

Catalogues of the *Lepidoptera* of the Departments of the Seine-Inférieure and Nord, and of Douai, have been published by G. Viret, G. Le Roi, and A. Foucard. Not seen by the Recorder; *cf.* Pet. Nouv. vii. pp. 465 & 534.

On the abundance of various larvæ on the Loire in 1875; S. Ebrard, Bull. Soc. Ent. Fr. (5) v. p. cxxix.

Captures in the Pyrenees, by W. L. Distant, Ent. M. M. xii. pp. 138 & 139.

Notes on various *Lepidoptera*; D. Pierat, Pet. Nouv. vii. p. 536.

Holland.

Lepidoptera new to Holland noticed; Tijdschr. Ent. xviii. pp. xcvi., xcix., 109–112.

Additions to the list of *Macro-Lepidoptera* of Breda and environs; F. J. M. Heylaerts, Jr., Tijdschr. Ent. xviii. pp. 79 & 80.

Belgium.

Captures at Dinant; Fondu, CR. Ent. Belg. xviii. p. lxxxiv.

Italy.

A. Curó has continued his "Saggio di un Catalogo dei Lepidotteri d'Italia," Bull. Ent. Ital. vii. pp. 107–121, 192–201. The portion published in 1875 contains the Sphinges according to Staudinger's arrangement, from *Acherontia* to *Naclia*.

Spain.

M. C. Y. Martorell has published a catalogue of the *Lepidoptera* of Barcelona, &c. *Cf.* Pet. Nouv. vii. p. 478.

Switzerland.

Micro-Lepidoptera new to Switzerland; H. Frey, MT. schw. ent. Ges. iv. pp. 152 & 153.

Captures in Glarus by C. Blæsch; Pet Nouv. vii. p. 504.

Germany.

A popular notice of the principal *Lepidoptera* injurious to forests, with woodcuts, is given by B. Altum, in his Forst-zoologie, iii. 2, pp. 1–214.

On the *Lepidoptera* of the lower Elbe; J. D. E. Schmeltz, Abh. Verh. Hamb. 1871–1874, pp. 136–166.

Captures at light at Bornich; A. Fuchs, S. E. Z. xxxvi. pp. 50–53.

Hungary.

Géza & János, Catalogue of the *Macro-Lepidoptera* of Hungary noticed; Pet. Nouv. vii. p. 534.

Russia.

On the *Lepidoptera* of Dorpat, including additions to fauna and captures; F. Sintenis, SB. Ges. Dorp. iii. pp. 395–399, 454–460, 492–498, iv. pp. 27–29, 75–88, 110–113.

Asia.

F. Sintenis criticises Koch's Indo-Australische Lepidopteren Fauna, ed. 2; SB. Ges. Dorp. iii. pp. 464–469.

Notes on Japanese butterflies; R. P. Murray, Ent. M. M. xi. pp. 169–172, xii. pp. 2–4.

Captures at Magi Dagh, &c.; A. Becker, Bull. Mosc. 1875, iii. p. 137.

List of butterflies collected in Siam by Thomson; H. W. Bates, in J. Thomson's "Straits of Malacca" (London: 1875, 8vo), pp. 545 & 546.

P. C. T. Snellen mentions some European *Lepidoptera* found in Java; Tijdschr. Ent. xviii. p. xix.

Australia, &c.

A. G. Butler (Contributions towards a knowledge of the *Rhopalocera* of Australia; Tr. E. Soc. 1875, pp. 1–10) describes a few new species, and criticises the publications of Masters & Miskin.

List of Butterflies collected by W. W. Perry in the New Hebrides and Loyalty Islands (41 species, many new); *id.* P. Z. S. 1875, pp. 610–619, pl. lxvii.

Six species collected by Perry in Fiji noticed; *id. l. c.* pp. 619 & 620.

Africa.

H. Druce has published a list of the Diurnal Lepidoptera (166 species) obtained by J. J. Monteiro in Angola, with descriptions of a few new species and varieties. The fauna of Angola appears more to resemble that of the Cape and Natal than that of the tropical West Coast of Africa. P. Z. S. 1875, pp 406–417.

List of a collection of *Lepidoptera* from Natal (138 species, many new); A. G. Butler, Ann. N. H. (4) xvi. pp. 394–420.

The *Lepidoptera* of St. Helena are discussed by J. C. Melliss in his work on that island, pp. 180–193. He enumerates 47 species (of which 20 are described as new by F. Walker) mostly with remarks on their habits and transformations.

North America.

P. C. Zeller, "Beiträge zur Kenntniss des nordamericanischen Nachtfalter, besonders der Microlepidopteren, 3te Abth.," Verh. z.-b. Wien, xxv. pp. 207–360, pls. viii.–x., notices and in most cases redescribes a large number of known North American species, besides describing and figuring many new forms. The bulk of the paper is devoted to the *Tortricidæ*.

On the effects of the Glacial Epoch on the distribution of *Lepidoptera* in North America; A. R. Grote, Canad. Ent. vii. pp. 164–167.

On the transformations of various Pacific Coast *Lepidoptera*; H. Edwards, P. Cal. Ac. v. pp. 325–332, 367–372.

S. H. Scudder proposes English names for New England Butterflies; Psyche, i. pp. 40, 43, 44, & 56.

Notes on the eggs and larvæ of some North American butterflies, with remarks on the best means of inducing butterflies to lay; T. L. Mead, Canad. Ent. vii. pp. 161–163.

Various popular notes on North American *Lepidoptera*, with woodcuts, will be found in Rep. Soc. Ont. 1874.

Captures in North Ontario, T. L. Mead, pp. 39 & 40; at Salt Lake, Utah, E. L. Graef, pp. 98 & 99; in various parts of the United States (butterflies), W. V. Andrews, p. 137; in Essex County, Connecticut, F. C. Lowe, pp. 139 & 140; at Godbout River, north shore of the St. Lawrence (butterflies), N. Corneau, p. 208; at Chateauquay Basin, C. W. Pearson, pp. 242–244: Canad. Ent. vii. In New York State in 1870 (with dates and notes) by J. A. Lintner, Rep. N. Y. S. Mus. xxiv. pp. 157–170.

Summer Butterflies, *Noctuidæ*, and Insect Fauna of the White Mountains; H. K. Morrison & A. R. Grote, Psyche, i. pp. 34, 35, 41–43, 76 & 77.

List of butterflies, *Sphingidæ* and *Zygænidæ* occurring in the island of Montreal; F. B. Caulfield, Canad. Ent. vii. pp. 86–90, 241 & 242; Canad. Nat. (n.s.) viii. pp. 25–27.

Notes on butterflies (16 known species) captured by J. Milne in Newfoundland; H. W. Bates, Ent. M. M. xi. pp. 244–246.

List of 22 butterflies collected by G. M. Dawson on the boundary line between British America and the United States, from the Lake of the Woods to the Rocky Mountains, and compared with those collected by the Yellowstone Expedition of 1873. S. H. Scudder, in Dawson's Report on the Geology and Resources of the region in the vicinity of the 49th Parallel (Montreal: 1875, 8vo), App. D, pp. 341 & 343.

List of Texan *Lepidoptera* (chiefly *Noctuidæ*) collected by G. W. Belfrage, with descriptions of new species; L. F. Harvey, Bull. Buff. Soc. iii. pp. 3–16. He adds a few notes on synonymy, &c., and figures of some new species.

South America.

List of the *Lepidoptera* of Patagonia (56 species, many new); C. Berg, Bull. Mosc. 1875, iv. pp. 191–247.

Papilionidæ.

On the relations of the European and North American species of *Papilio* (the former of which are probably derived from the latter), and on the connecting links between the European species of *Parnassius* and the other genera of the family *Papilionidæ*; A. Pagenstecher, Verh. Ver. Heidelb. (2) i. pp. 78–122.

Ornithoptera minos, Cram. The larva feeds on *Aristolochia indica* at Malabar, and the pupa produces a sound; A. F. Sealy, P. E. Soc. 1875, pp. ix. & x.; *cf.* also J. W. Dunning, *op. cit.* p. xvii. *O. rhadamanthus*, Boisd., var. *thomsoni* from Siam, described by H. W. Bates, in J. Thomson's "Straits of Malacca," p. 546.

Papilio alexanor, Esp., its reputed occurrence in Spain confirmed; P. Mabille, Bull. Soc. Ent. Fr. (5) v. p. xv. *P. asterias*, Fabr., tenacity of life in the pupa state; A. Y. Moore, Canad. Ent. vii. p. 60. *P. podalirius*, Linn., var., E. Lelièvre, Pet. Nouv. vii. p. 468. *P. machaon*: varieties; Backer, Tijdschr. Ent. xviii. p. xxiii. The Japanese form

[*P. hippocrates*, Feld. ?] is renamed *P. mikado* ; A. Pagenstecher, Verh. Ver. Heidelb. (2) i. p. 98. *P. zolicaon*, Boisd., and *brevicauda*, Saund., figured and redescribed, with transformations, by W. H. Edwards, Butt. N. Amer. ii. pls. vi. & viii.

Euryades. Structure of pouch in ♀ compared with that of *Parnassius*; Hagen, CR. Ent. Belg. xviii. p. lvi.

Thaites, g. n. (Heer, MS.), S. H. Scudder, Fossil Butterflies, p. 57. Allied to *Thais*, *Sericinus*, &c. ; type, *T. ruminiana*, sp. n. (Heer, MS.), p. 60, pl. iii. figs. 1, 3, 8–10. Tertiaries of Aix, Provence. (*Thais rumina* and *Parnassius smintheus* are figured for comparison of their neuration and markings, pl. iii. figs. 2, 4, & 5.)

Papilio charicles, Andaman Islands, *antonio*, Philippines, and *bimaculatus*, Ecuador, W. C. Hewitson, Ex. Butt. v. *Papilio*, pl. xiv. figs. 45–47 ; *P. mangoura*, id. Ent. M. M. xi. p. 226, Madagascar ; *P. xynias*, id. *l. c.* xii. p. 153, Bolivia ; *P. abstrusus*, A. G. Butler, P. Z. S. 1875, p. 618, Maré, Loyalty Group ; *P. guaco*, O. Staudinger, Verh. z.-b. Wien, xxv. p. 91, Chiriqui ; *P. pergamus*, H. Edwards, P. Cal. Ac. v. p. 423, California : spp. nn.

Pieridæ.

Terias hecabe, L., *asiope*, Mén., *brenda*, Doubl. & Hew., and *sari*, Horsf., are probably vars. of one species ; R. P. Murray, P. E. Soc. 1875, p. vii.

Pieris autodice, Hübn. ; larva described, C. Berg, Bull. Mosc. 1875, iv. p. 194. *P. capricornus*, Ward, = *Belenois larima*, Boisd., and *P. periclea*, Feld., = *B. nabis*, Luc., H. Druce & A. G. Butler, P. Z. S. 1875, pp. 415 & 618. *P. rapæ*, L., its extension in Canada, W. Saunders, Canad. Ent. vii. p. 163 ; its ravages in Cleveland, Ohio, T. B. Comstock, Am. Nat. ix. p. 426.

Pontia freyeri, Heer, redescribed and refigured by S. H. Scudder, Fossil Butterflies, pp. 53–56, pl. ii. figs. 16–18. He considers it to be nearest allied to *P. protodice* and *daplidice*, and figures the wing of the former for comparison (fig. 12).

Tachyris. C. Hopffer describes 10 species (1 new) occurring in the Philippines, and adds comparative and general remarks on these and other butterflies occurring in the different islands ; S. E. Z. xxxvi. pp. 393–410.

Gonepteryx rhamni. Food-plants ; N. C. Tuely, Ent. viii. pp. 160 & 161.

Colias boothi, Curt., recorded by A. E. Holmgren, Œfv. Ak. Förh. xxix. pt. 6, p. 105. *C. philodice* turns crimson on contact with cyanide ; A. R. Grote, Canad. Ent. vii. pp. 18 & 19.

Styx, g. n., O. Staudinger, Verh. z.-b. Wien, xxv. p. 92 ; type, *S. infernalis*, sp. n., *l. c.* p. 93, Peru.

Mylothrites, g. n., S. H. Scudder, Fossil Butterflies, p. 44. Allied to *Mylothris* and *Hebomoia* ; type, *Vanesso pluto*, Heer, discussed in full, *l. c.* pp. 45–51, pl. ii. figs. 2, 7, 15 (?) & 17.

Coliates, g. n., *id. l. c.* p. 51. Allied to *Delias* ; type, *C. proserpina*, sp. n., *id. l. c.* p. 52, pl. ii. fig. 5, tertiaries of Aix in Provence. (Neuration of *Delias* given for comparison, fig. 4.)

New species :—

Leptalis medorina, Bolivia, and *hippotas*, Ecuador; W. C. Hewitson, Ent. M. M. xii. pp. 9 & 10.

Sphænogona semiflava, A. G. Butler, Ann. N. H. (4) xv. p. 396, Trinidad.

Terias sulphurata, Maré, Loyalty Group, *variata*, *hebridina*, pl. lxvii. fig. 8, *inanata*, and *pumilaris*, pl. lxvii. fig. 7, all from New Hebrides, *id.*, P. Z. S. 1875; *T. butyrosa*, Aru, *solifera*, Ambriz, Old Calabar, p. 396, *diodina*, Venezuela, p. 397, *id.*, Ann. N. H. (4) xv.

Eurema (*Terias*) *venustula*, O. Staudinger, *l. c.* p. 93, Chiriqui.

Pieris achamantis, C. Berg, Bull. Mosc. 1875, iv. p. 196, Patagonia.

Tachyris maria, C. Hopffer, S. E. Z. xxxvi. p. 405 (= *Pieris agave*, Feld., ♀, *nec* ♂), Luzon.

Daptonura florinda & var. ? *monstrosa*, A. G. Butler, *l. c.* pp. 224 & 225, Veragua; *D. panamensis* and vars. *anceps* and *chagris*, pp. 94 & 95, Panama and Chiriqui, *chiricana*, p. 95, Chiriqui, O. Staudinger, *l. c.*

Danaidæ.

Danaida plexippus, L. On its introduction into the Pacific Islands; Gulick & Scudder, Psyche, i. pp. 81–84.

Danais berenice [*erippus*]. On its occurrence in New Zealand; T. B. Gillies & Von Stürmer, Tr. N. Z. Inst. vii. pp. 523 & 524.

Amauris echeria, Stoll. Var. *albimaculata* from Natal described; A. G. Butler, Ann. Nat. Hist. (4) xvi. p. 394.

Euplœa proserpina, A. G. Butler, ♀ noticed by him; P. Z. S. 1875, p. 619.

Calliplœa, g. n., A. G. Butler, Tr. E. Soc. 1875, p. 1; type, *Euplœa darchia*, Macl. To include *E. tulliolus*, *priapus*, *hyems*, &c., also *C. niveata*, sp. n., *l. c.* p. 2, Queensland.

Donais hebridesia, p. 610, pl. lxvii. fig. 6, and *moderata*, p. 611, both from New Hebrides; *id.* P. Z. S. 1875, spp. nn.

Euplœa torvina, id. *l. c.* p. 611, Aneiteum, New Hebrides.

Heliconiidæ.

Heliconius clara, Fabr., redescribed and figured; G. Weymer, S. E. Z. xxxvi. p. 384, Panama, New Granada. *H. pachinus*, Salv., figured and redescribed by W. C. Hewitson, Ex. Butt. v. *Heliconia*, pl. viii. fig. 26.

New species :—

Eutresis imitatrix, O. Staudinger, Verh. z.-b. Wien, xxv. p. 96, Peru.

Dircenna lorica, G. Weymer, S. E. Z. xxxvi. p. 370, pl. i. fig. 3, Guiana.

Ceratinia boucardi and *mylassa*, H. Druce, Ent. M. M. xii. p. 126, Veragua.

Aeria olena, G. Weymer, *l. c.* p. 376, pl. ii. fig. 3, Brazil.

Ithomia munda, S. America, fig. 4, *methonella* (Hew., MS.), Brazil, fig. 5, pl. i., *pellucida* (Hopff., MS.), Trinidad, Brazil, fig. 2, and *aquata*,

Brazil, fig. 1, pl. ii. G. Weymer, *l. c.* pp. 372–375; *I. pagasa*, H. Druce, *l. c.* p. 126, Veragua.

Hymenitis nepos, G. Weymer, *l. c.* p. 372, pl. i. fig. 1, New Granada.

Melinæa ribbei (Staud., MS.), G. Weymer, *l. c.* p. 379, pl. ii. fig. 4; O. Staudinger, *l. c.* p. 97, Chiriqui.

Heliconia longarena, New Granada, and *gynæsia*, locality unknown, W. C. Hewitson, Ent. M. M. xi. p. 182, & Ex. Butt. v. *Hel.* pl. viii. figs. 28 & 29; *H. hewitsoni* (Staud., MS.), *id. l. c.* fig. 27, & O. Staudinger, *l. c.* p. 98, Chiriqui; *H. satis*, p. 380, pl. i. fig. 6, Brazil, and *robigus*, p. 382, pl. ii. fig. 5, Venezuela, G. Weymer, l. c.; *H. clarescens*, Veragua, p. 223, *superioris*, Ega, Villa Nova, and *nubifer*, Fonte Boa, p. 224, A. G. Butler, Ann. N. H. (4) xv.

Euides lybioides, O. Staudinger, Verh. z.-b. Wien, xxv. p. 99, Chiriqui.

Acræidæ.

Acræa. W. C. Hewitson (Ex. Butt. v. *Acr.* pl. vii.) figures and redescribes his *A. oreta*, fig. 42, *orina*, figs. 43 & 48, *acerata*, fig. 44, *vinidia*, figs. 45 & 46, *orestia*, fig. 47, and *oppidia*, figs. 49 & 50.

Acræa naura, H. Druce, Cist. Ent. i. p. 358, Merida, Venezuela; *A. lygus*, id. P. Z. S. 1875, p. 408, Angola; *A. buxtoni*, A. G. Butler (= *A. serena*, Trim., pt.), Ann. N. H. (4) xvi. p. 395, Cape, spp. nn.

Nymphalidæ.

S. H. Scudder has published a "Synonymic List of the Butterflies of North America, North of Mexico, pt. 1, Nymphales" (Bull. Buff. Soc. ii. pp. 233–269). It includes 187 species, belonging to all the groups of *Nymphalidæ*, as extended by Bates; and the *Libytheidæ* are also included as a sub-group. A table of genera is prefixed.

Notes on transformations of *Melitæa phaeton*, *Phyciodes nycteis*, and *Argynnis idalia*; W. H. Edwards, Canad. Ent. vii. pp. 150 & 151.

Argynnis. W. H. Edwards (Butt. N. Amer. *Arg.*) figures and redescribes his *A. eurynome* (with egg), pl. i., *meadii*, pl. ii., *bischoffi*, figs. 1–4, and *opis*, figs. 5–8, pl. iii. He also (Canad. Ent. vii. pp. 189–195) discusses the natural history of *A. myrina*, Cram., and considers that its habits are not (as supposed by Scudder) different from those of other butterflies. He also objects to its being placed in the genus *Brenthis*, Hübn., and to the retention of Hübner's names generally. *A. chariclea*, Herbst, recorded from East Greenland; A. E. Holmgren, Œfv. Ak. Förh. xxix. pt. 6, p. 105. *A. frigga*, Thunb., redescribed in detail from Esthonian specimens; F. Huene, S. E. Z. xxxvi. pp. 188–190. *A. euphrosyne*, reflex action in the legs of a dead specimen; H. J. Channon, Ent. viii. pp. 233 & 234. *A. selene*, var. figured; E. Newman, Ent. viii. p. 25. *A. leto*, Behr, and *nokomis*, Edw., may be western forms of *A. cybele*, Fabr.; H. Strecker, Lepidoptera, p 106. *A. pallescens* and *vorax*, Butl., are probably vars. of *A. adippe*, L.; R. P. Murray, Ent. M. M. xi. p. 170.

Brenthis triclaris, *chariclea*, *freija*, *polaris*, and *frigga* are redescribed

from Labrador by S. H. Scudder, P. Bost. Soc. xvii. pp. 294–310. *B. polaris* was also taken by Captain Hall at Polaris Bay, lat. 81° 38′ N.; it is probably confined to Arctic America, and erroneously recorded from Lapland and Siberia: *id.* Psyche, i. pp. 57–59.

Melitæa dyctinna, a variety noticed by E. Martin, Bull. Soc. Ent. Fr. (5) v. p. cxxv. *M. phaeton*, Dru., figured and redescribed in all stages; the larvæ live under a common web: W. H. Edwards, Butt. N. Amer. ii. *Mel.* pl. i.

Grapta. S. H. Scudder (Bull. Buff. Soc. ii. pp. 252 & 253) considers several of the North American species to be dimorphic. He divides *G. zephyrus*, Edw., into *hylas*, Edw., and *thiodamas*, Scudd. (= *zephyrus*, Edw.); *faunus*, Edw., into *virescens*, Scudd. (= *faunus*, Edw.), and *gracilis*, Grote & Rob.; and *progne*, Cram., into *c-argenteum*, Kirb., and *i-argenteum*, Scudd. *G. faunus*, Edw., larva described; F. B. Caulfield, Canad. Ent. vii. pp. 49 & 50. *G. hylas*, Edw., figs. 1–4, and *marsyas*, Edw., figs. 5–8, figured and redescribed by W. H. Edwards, Butt. N. Amer. ii. *Grapta*, pl. ii. *G. satyrus*, Edw., recorded from near Quebec; C. W. Pearson, Canad. Ent. vii. pp. 216 & 217.

Vanessa io and *urticæ*: varieties noticed by T. Goossens, Bull. Soc. Ent. Fr. (5) v. p. cxlix. *V. xanthomelas* and *polychloros* are only doubtfully distinct; R. P. Murray, Ent. M. M. xii. p. 4.

Eugonia atava, Charp. (= *Sphinx atava*, Charp., = *Vanessa attavina*, Heer), fully redescribed and refigured by S. H. Scudder, Fossil Butterflies, pp. 40–44, pl. i. figs. 1, 3, 7. He figures the neuration and markings of *E. j-album*, Boisd. & Lec., for comparison (figs. 4 & 6).

Megalura (*Timetes*) *livius*, Kirb., redescribed by O. Staudinger, Verh. z.-b. Wien, xxv. p. 104, Peru.

Diadema pallescens, Butl., ♀ (= *D. auge*, aberr., *sec.* H. S.), noticed by A. G. Butler, P. Z. S. 1875, p. 620.

Euralia anthedon, Doubl., var. *marginalis*, from S. Africa noticed; *id.* Ann. N. H. (4) xvi. p. 395.

Euryphene phantasia, Hew., ♀ noticed; H. Druce, P. Z. S. 1875, p. 410.

Harma theodota, Hew., probably = *H. beckeri*, H. S., ♂; *id. l. c.* p. 412.

Adolias acontius, fig. 11, and *cibaritis*, figs. 12, 13, & 15, figured and redescribed by W. C. Hewitson, Ex. Butt. v. *Adol.* pl. iv.

Apatura. W. H. Edwards (Butt. N. Amer. ii., *Ap.* pl. i. figs. 1–5) figures and redescribes *A. celtis*, Boisd. & Lec. (= *lycaon*, Riley) in all stages. He also figures and redescribes his *A. leilia*, l. c. figs. 7 & 8. *Pap. lycaon*, Fabr., probably = *A. alicia*, Edw., and *Pap. herse*, Fabr., probably = *A. idyja*, Hübn.

Paphia glycerium, auct. Amer., *nec* Doubl. & Hew., is renamed *Anea andria*; S. H. Scudder, Bull. Buff. Soc. ii. p. 248.

New genera and species:—

Semnopsyche, S. H. Scudder, Bull. Buff. Soc. ii. p. 258. Allied to *Argynnis*; type, *Pap. diana*, Cram.

Thessalia, id. *l. c.* p. 265. Allied to *Lemonias* [*Melitæa*]; type, *Mel. leanira*, Feld.

Anthanassa, Scudder, *l. c.* p. 268. Allied to *Chlosyne*; type, *Eresia cincta*, Edw.

Synchloe adelina, O. Staudinger, Verh. z.-b. Wien, xxv. p. 102, Panama.

Junonia albicincta, A. G. Butler, Tr. E. Soc. 1875, p. 5, North Australia and Queensland.

Doleschallia herrichi (= *bisaltide*, H. S., *nec* Cram.) and *montrouzieri* (= *polibete*, Montr., *nec* Cram.), *id.* P. Z. S. 1875, pp. 612 & 613, New Hebrides.

Perisama gœringi, H. Druce, Cist. Ent. i. p. 358, Merida, Venezuela.

Catagramma bugaba, O. Staudinger, *l. c.* p. 103, Chiriqui.

Megalura alcibiades, id: *l. c.* p. 104, Chiriqui.

Diadema constans, A. G. Butler, Tr. E. Soc. 1875, p. 6, Tasmania ?; *D. perryi*, id. P. Z. S. 1875, p. 613, pl. lxvii. fig. 3, New Hebrides.

Neptis latifasciata and *mortifacies*, id. Tr. E. Soc. 1875, pp. 4 & 5, Queensland.

Rhomaleosoma coprates, H. Druce, P. Z. S. 1875, p. 411, Angola.

Adolias cenespolis, W. C. Hewitson, Ent. M. M. xi. p. 183, & Ex. Butt. v. *Adol* pl. iv. fig. 14, Borneo.

Prepona xenagoras, id. Ent. M. M. xii. p. 153, Bolivia.

Paphia ada, Veragua, Bogota, and *rutilans*, Peru, A. G. Butler, Ann. N. H. (4) xv. pp. 222 & 223; *P. bertha* (? = *P. panariste*, Hew., var.), H. Druce, Cist. Ent. i. p. 359, Columbia.

Protogonius aquatorialis, Ecuador, and *fulvus*, Pebas, p. 35, *diffusus* and *semifulvus*, Ecuador, p. 36, A. G. Butler, P. Z. S. 1875, pl. v. figs. 1–4.

Morphidæ.

Morpho rhetenor, Cram., var. *cacica* from Chancomayo; O. Staudinger, Verh. z.-b. Wien, xxv. p. 100.

Morpho candelarius, id. *l. c.* p. 101, Panama; *M. polybaptus*, A. G. Butler, Ann. N. H. (4) xv. p. 175, Costa Rica: spp. nn.

Brassolidæ.

Opsiphanes bogotanus, sp. n., W. L. Distant, Ent. M. M. xi. p. 203, Bogota, Venezuela.

Satyridæ.

Neorinopsis sepulta, Boisd. The literature of this fossil is reproduced, and its characters and affinities are discussed by S. H. Scudder, F. Ak. Butterflies, pp. 9–33, pl. i. figs. 8–17. Its closest affinities are from *Zophoessa*, *Neorina*, *Debis*, and *Lethe*, various species of which are figured for comparison of markings and neuration (pl. ii. figs. 1, 3, 6, 8–11, 13, & 14).

Lethites reynesi, Scudder, redescribed and figured by him, *l. c.* pp. 34–40, pl. i. figs. 2 & 5; it is allied to *Neorina*, *Lethe*, *Debis*, *Cercyonis*, and *Maniola*.

Satyrus janira; larva noticed by M. Girard, Bull. Soc. Ent. Fr. (5) v.

pp. cxliv. & cxlv. *S. prieuri*, Pierr., var. ♀ *uhagonis*, from Spain described; C. Oberthur, An. Soc. Esp. iv. pp. 371, pl. xvii. figs. 3 & 4. *S. semele*, var. *anopenopterus* described and figured; Lambrichs, CR. Ent. Belg. xviii. p. xxii.

Erebia ligea reported to have occurred at Margate [!]; W. J. Mercer, Ent. viii. p. 198.

Heteropsis drepana, Westw., ♀ described; W. C. Hewitson, Ent. M. M. xi. p. 227.

Chionobas. W. H. Edwards (Butt. N. Amer. ii. *Chi.* pl. ii.) figures and redescribes *C. gigas*, Butl., figs. 1 & 2, and *californica*, Boisd., figs. 3–6.

New genera and species :—

Cercyonis (Speyer, MS.), S. H. Scudder, Bull. Buff. Soc. ii. p. 241. Allied to *Minois*; type, *Pap. alope*, Fabr.

Satyrodes, id. *l. c.* p. 242. Allied to *Pararge*; type, *Pap. eurydice*, L.

Antirrhœa tomasia, A. G. Butler, Ann. N. H. (4) xv. p. 222, Veragua.

Zophoessa dirphia, H. Druce, Cist. Ent. i. p. 357, Darjeeling.

Euptychia mollis and *macrophthalmus*, O. Staudinger, Verh. z.-b. Wien, xxv. pp. 105 & 106, Chiriqui.

Erebia zapateri, C. Oberthur, An. Soc. Esp. iv. p. 370, pl. xvii. figs. 1 & 2, Spain; *E. merula* [? = *E. pluto*, Fered., *nec* Esp.], W. C. Hewitson, Ent. M. M. xii. p. 10, New Zealand.

Mycalesis mutata and *lugens*, A. G. Butler, P. Z. S. 1875, p. 612, New Hebrides.

Hypocysta undulata, p. 2, *metirius* and *pseudirius*, p. 3, *epirius*, p. 4, all from Australia, *id.* Tr. E. Soc. 1875.

Oxeoschistus thammi and *leucospilos*, O. Staudinger, *l. c.* pp. 107 & 108, Peru.

Eurytelidæ.

Elymnias bammakoo, Westw., is quite distinct from *E. phegea*, Fabr.; H. Druce, P. Z. S. 1875, p. 407.

Ergolis actisanes, sp. n., W. C. Hewitson, Ent. M. M. xi. p. 183, W. Africa.

Melanitis masoura, sp. n., id. *l. c.* p. 227, Madagascar.

Erycinidæ.

W. C. Hewitson (Ex. Butt. v. *Erycinidæ*, various plates) figures the following species previously described by him: *Limnas ambryllis*, *ægates*, and *cercopes*, figs. 17–19, *bryaxis*, figs. 20 & 21; *Xynias cynosema*, fig. 1; *Lemonias curulis*, fig. 3, *antanitis*, figs. 4 & 5, *creusis*, figs. 8 & 10, and *felix*, fig. 9; *Hermathena candidata*, fig. 1; *Eurygona chirone*, figs. 2 and 3, *corduena*, figs. 4–6; *Nymphidium anthias*, figs. 10 & 11, *anetus* and *cyneas*, figs. 12 & 13; *Erycina miranda* and *mira*, figs. 2 & 3; *Symmachia chrysame*, figs. 7 & 8, *asclepia*, fig. 9; and *Aricoris eleomedes*, fig. 11.

Lyropteryx. 5 species enumerated, 1 new; *L. olivia*, Butl., ? = *lyra*, Saund., ♀: H. Druce, Cist. Ent. i. p. 360, and note.

Mesene monostigma, Erichs., redescribed and figured by G. Weymer, S. E. Z. xxxvi. p. 370, pl. i. fig. 7.

New species :—

Eurybia patrona, G. Weymer, S. E. Z. xxxvi. p. 368, pl. i. fig. 2, New Granada; *E. persona*, O. Staudinger, Verh. z.-b. Wien, xxv. p. 109, Chiriqui.

Panara soana, Brazil, fig. 2, and *sicora*, Espiritu Santo, figs. 3 & 4, W. C. Hewitson, Ex. Butt. v. *Erycinidæ*.

Limnas opites, id. *l. c.* fig. 16, Brazil.

Lyropteryx cleades, H. Druce, Cist. Ent. i. p. 359, Rio Polochic, Guatemala.

Necyria zaneta, W. C. Hewitson, *l. c.* fig. 1, Quito.

Esthemopsis carnutes, id. *l. c.* fig. 6, New Granada; *E. strigosus*, O. Staudinger, *l.* c. p. 110, Chiriqui.

Anteros kupris, W. C. Hewitson, *l. c.* figs. 4 & 5, Venezuela; *A. micon*, H. Druce, *l. c.* p. 360, Calobre.

Calydna cephissa, St. Paulo, figs. 7 & 8, and *catiena*, Brazil, fig. 9, W. C. Hewitson, *l. c.*

Charis clusia, id. *l. c.* fig. 10, Bolivia; *C. iris*, O. Staudinger, *l. c.* p. 110, Chiriqui.

Bœotis barissus, locality unknown, and *barce*, Mexico, W. C. Hewitson, l. c. *Lemonias* and *Bœotis*.

Lemonias laobotas, figs. 1 & 2, Panama, *lencates*, fig. 11, locality unknown, *id. l. c.*

Lycænidæ.

Eumæus atala, Poey. Habits and transformations discussed, and in part figured by S. H. Scudder, Mem. Bost. Soc. ii. pp. 413–419, pl. xiv. figs. 5–17. *Eumæus* is a connecting link between the *Vestales* and *Ephori* (*Erycinidæ* and *Lycænidæ*), which families are hardly distinct. It belongs to the latter, but has strong affinities to the former.

Polyommatus chryseis, W. V. A variety noticed; E. Martin, Bull. Soc. Ent. Fr. (5) v. p. cxxv.

Lampides samoa, H. S., probably = *L. caledonica*, Feld.; A. G. Butler, P. Z. S. 1875, p. 614.

Lycæna alexis. Hermaphrodite, left side ♂, right side ♀; Bellier de la Chavignerie, Bull. Soc. Ent Fr. (5) v. p. xiv. Another, right side ♂, left side ♀; T. Matthews, Ent. M. M. xii. p. 111, and Ent. viii. pp. 237 & 238. A ♂ var. with most of the ocelli replaced by streaks; E. M. Geldart, P. Liverp. Soc. xxix. p. 1.

Lycæna communis, H. S., MS., = *L. phœbe*, Murr., and *L. alsulus*, H. S., is probably a dark ♀ of the same; A. G. Butler, *l. c.* p. 616.

Lycæna orbitulus, De Prunn.: transformations described; A. Rogenhofer, Verh. z.-b. Wien, xxv. p. 797.

Lycæna pseudargiolus. W. H. Edwards thinks that *violacea*, *neglecta*, and *lucia* may be broods of this; W. Saunders and J. A. Lintner consider the two latter to be distinct, though the first is proved not to be so: Canad. Ent. vii. pp. 81–83, 122 & 123.

Lycæna regia, Boisd., figs. 1–4, and *heteronea*, Boisd., figs. 5–8, figured and redescribed; W. H. Edwards, Butt. N. Amer. ii. *Lyc.* pl. i. *L. regia*, Boisd., = *sonorensis*, Feld.; *L. rhœa*, Boisd., = *catalina*, Reak.; H. Strecker, *Lepidoptera*, p. 105.

Agriades aquilo, Boisd., redescribed from Labrador; S. H. Scudder, P. Bost. Soc. xvii. pp. 310–314.

New species :—

Amblypodia japonica, R. P. Murray, Ent. M. M. xi. p. 170, Japan.

Liphyra vininga, W. C. Hewitson, *tom. cit.* p. 183, Fernando Po.

Myrina genuba, id. *op. cit.* xii. p. 106, Cameroons.

Iolaus cytæis, id. *op. cit.* xi. p. 182, Fernando Po.

Aphnæus vixinga, id. *op. cit.* xii. p. 39, Borneo.

Dipsas japonica and *orientalis*, R. P. Murray, *l. c.* p. 169, Japan.

Thecla dama, H. Bruce, Cist. Ent. i. p. 362, Calobre.

Hypochrysops delicia, Australia, and *bubases*, Malacca, W. C. Hewitson, Ent. M. M. xii. p. 38.

Lampides armillata, p. 614, New Hebrides, *deplorans*, ibid. Maré, Loyalty Group, *carissima*, pl. lxvii. figs. 4 & 5, and *evanescens*, p. 615, New Hebrides, A. G. Butler, P. Z. S. 1875.

Lycæna caduca, id. *l. c.* p. 616, New Hebrides; *L. kazamoto*, H. Druce, *l. c.* p. 361, Yokohama.

Scolitantides excellens, A. G. Butler, *l. c.* p. 616, pl. lxvii. figs. 1 & 2, New Hebrides.

Miletus [illegible], Yokohama, and *docus*, Madagascar, H. Druce, *l. c.* p. 361.

Hesperiidæ.

H. Burmeister, "Recherches sur les chenilles des Lépidoptères de la Tribu des Hesperides," R. Z. (3) iii. pp. 50–64, pl. i., describes and figures the earlier stages of *Goniurus exadeus*, Cram. (fig. 2, larva), *Thracides ethlius*, Cram. (figs. 5 & 6, larva and pupa), which probably = *T. olynthus*, Boisd. & Lec., and *Pachlyodes sebaldus*, Fabr. (fig. 4, larva). The larvæ of the *Hesperiidæ* resemble those of the other butterflies except by their larger and more detached head. They approach those of the *Morphidæ* in the structure of their antennæ and maxillæ, and those of the *Papilionidæ* in the arrangement of the eyes. Burmeister also discusses the larvæ of this group which have been figured by other authors.

Eudamus. W. C. Hewitson (Ex. Butt. v. *Eud.* pl. ii. figs. 9–17) figures *E. alcæus, amisus, otriades, aziris, auginus, aminias, albofasciatus, undulatus*, and *athesis*. Also (*Eud.* pl. iii. fig. 18–26) his *D. antæus, naxos, aurunce, claites, enispe, barisses, asander, azines*, and *pausias*.

Pyrrhopyge hygieia, Feld., & *lereda*, Hew., are probably distinct; O. Staudinger, Verh. z.-b. Wien, xxv. p. 113. *P. phylleia* and *cosinga*, Hewitson, figured by him, l. c., *Pyrrh.* and *Erycides*, figs. 38 & 39.

Erycides charonitis, Hewitson, figured by him, *l. c.* figs. 33 & 34.

Ægiale, Feld. (pre-occupied) is renamed *Acentrocneme* (Feld., MS); S. H. Scudder, P. Am. Ac. x. p. 150.

Leucochitonea. W. C. Hewitson (l. c. *Leuc.* pl. ii.) figures and redescribes his *L. flavo-fasciata*, fig. 11, *thestia*, figs. 12 & 13, *laviana*, figs. 15 & 16 (= *leca*, Butl.), *leucola*, figs. 17 & 18, and *trifasciata*, fig. 22.

Hesperia sao, Hübn. (*nec* Bergstr.), transformations described; A. Rogenhofer, Verh. z.-b. Wien, xxv. p. 797.

Syrichthus alveolus. Natural history; J. Hellins, Ent. M. M. xi. pp. 226 & 227.

Scelothrix carthami. Var. *valesiaca* from Switzerland described by P. Mabille, Bull. Soc. Ent. Fr. (5) v. p. ccxiv.

Netrocoryne beata and *denitza*, Hew., are probably sexes of the same species; W. C. Hewitson, P. E. Soc. 1875, p. xix.

Nisoniades lucilius, Scudd. & Burg. Habits of larva; J. A. Lintner, Rep. N. Y. S. Mus. xxiv. pp. 164 & 165.

New genera and species:—

Thanatites, S. H. Scudder, Fossil Butterflies, p. 62. Allied to *Thanaos*; type, *Vanessa vetula*, Heyd., redescribed and figured, pp. 63–66, pl. iii. figs. 12 & 16 (*Thanaos juvenalis*, Fabr., figured for comparison, *l. c.* figs. 11 & 11*a*).

Pamphilites, id. *l. c.* p. 66. Allied to *Pansydia* and *Carystus*; type, *P. abdita*, sp. n., *l. c.* p. 68, pl. iii. figs. 14, 17 & 18, Tertiaries of Aix, Provence. (*Carystus* and *Pansydia* figured for comparison, pl. iii. figs. 13, 15, & 19.)

Daimio, R. P. Murray, Ent. M. M. xi. p. 171; type, *Pyrgus tethys*, Mén.

Thymele albimargo, P. Mabille, Bull. Soc. Ent. Fr. (5) v. p. ccxiii. Panama, Columbia ?.

Goniuris tmolis, H. Burmeister, R. Z. (3) iii. p. 53, Buenos Ayres. Described in all stages. Larva and details figured, pl. i. figs. 1, 8 & 9.

Telegonus chiriquensis and *henricus*, O. Staudinger, Verh. z.-b. Wien, xxv. pp. 111 & 112, Chiriqui.

Ismene libeon, H. Druce, P. Z. S. 1875, p. 416, Angola.

Pyrrhopyge cossea, Columbia, and *cosyra*, Bugaba, Veragua, *id.* Cist. Ent. i. pp. 362 & 363; *P. æsculap[i]us*, Chiriqui, *insana*, Peru, and *cyclops*, Chiriqui, O. Staudinger, *l. c.* pp. 112-114; *P. periphana*, Bolivia, and *rhacia*, Minas Geraes, W. C. Hewitson, Ex. Butt. v. *Pyrrh.* and *Erycides*, figs. 36 & 37.

Erycides oreades, id. *l. c.* figs. 32 & 35, Peru; *E. romula*, H. Druce, *l. c.* p. 363, Columbia.

Pamphila vitrea, p. 171, *varia* and *pellucida*, p. 172, R. P. Murray, *l. c.*; *P. flava*, id. *op. cit.* xii. p. 4: all from Japan.

Phlebodes clericalis, p. 60, and *musculus*, p. 61, Buenos Ayres, H. Burmeister, *l. c.* The former is described in all stages, and larva, pupa and head of larva figured, pl. i. figs. 3, 7, & 10.

Pyrgus colotes, H. Druce, P. Z. S. 1875, p. 416, Angola.

Scelothrix trisignatus, Valparaiso, and *zona*, Pekin; P. Mabille, *l. c.* p. ccxiv.

Leucochitonea latrea, fig. 14, Nicaragua, *locutia*, figs. 19 & 20, Panama, and *lucetia*, fig. 21, Angola, W. C. Hewitson, *l. c.* v. *Leuc.* pl. ii.

Cyclopides howa, P. Mabille, *l. c.* p. ccxv. Madagascar.

Pythonides amaryllis, O. Staudinger, *l. c.* p. 114, Chiriqui.

Achlyodes osyris, Chiriqui, and *A.* (*Helias*) *anacreon*, Chiriqui to Brazil, *id. l. c.* pp. 114 & 115.

Helias ascalaphus, Panama, Chiriqui, and *ascalon*, Brazil, p. 116, *aurocapilla* (? = *ascalon*, var.), Buenos Ayres, and *H.* (?) *ribbei*, Chiriqui, p. 117, *id. l. c.*

Tagiades heræus, H. Druce, *l. c.* p. 417, Angola.

Sphingidæ.

J. A. Boisduval has published in the "Suites à Buffon," "Histoire Naturelle des Insectes. Species Général des Lépidoptères. Hétérocères. Tome Premier. Sphingides, Sesiides, Castnides." Paris: 1874, 8vo, pp. iv., 568, 11 pls. plain or col.

Though dated 1874, this work was not published till about February, 1875; having been confessedly written in 1853, and but little altered since. About 130 described species of true *Sphingidæ* have been wholly overlooked. Felder's new genera and species are characterized, and localities given. Many species, described as new, are named after the plants on which the larvæ are *supposed* to feed. The names taken up from previous authors are, as usual with Boisduval, frequently altogether misapplied; thus, *Brachyglossa*, Boisd. (the original type of which, if anything, was *Acherontia atropos*), is substituted for *Cæquosa*, Walk.; and *Cæquosa*, Walk., is quoted as a synonym of Boisduval's new genus *Metagastes*, although it only contains two species, one of which was overlooked by Walker, and the other was placed by him in his genus *Cæquosa* with doubt! Boisduval's arrangement of the groups treated of in this work is as follows:—

Sphingides: Acherontides, Smerinthides, Leucophlebides, Euryglottides, Deilephilides, Macroglossides, Endophytides.

Sesiides: Sesiaires, Stygides, Thyrides.

Castnides: Castniaires, Synemonides.

A. R. Grote has published a Check-List of North American *Sphingidæ*, Bull. Buff. Soc. ii. pp. 224–228 (74 species). It is reviewed by H. B. Möschler, S. E. Z. xxxvi. pp. 202–211.

H. Edwards (P. Cal. Ac. v.) has published a list of the *Sphingidæ* of California, amounting to 25 species, some new. *Arctonotus lucidus* and *Proserpinus clarkiæ*, Boisd. (= *Lepisesia victoriæ*, Grote), are redescribed; *Hemaris thetis*, Boisd., is noticed; *Euproserpinus phaeton*, G. & R. = *Macroglossa erato*, Boisd.; *Deilephila chamænerii*, Harr., is probably distinct from *D. galii*; *Smerinthus ophthalmicus*, v. *pallidulus* (= *ophthalmicus*, ♀, Streck.) and *modestus*, var. or sp. n. *occidentalis*, are described; *Macrosila carolina*, and probably also *M. celeus*, are introduced species in California; H. Strecker thinks that *Sphinx oreodaphne*, Edw., may = *chersis*, Hübn., var.

J. A. Lintner (Rep. N. Y. S. Mus. xxiv. pp. 109–131) describes the

transformations of *Sesia diffinis*, Harr., *S. buffaloensis*, G. & R., *Thyreus abboti*, Swains. (remarkable for constant sexual differences in the larva), *Philampelus achemon*, Dru., *Smerinthus geminatus*, Say (of which *jamaicensis*, Dru., and *cerisyi*, Kirb., are probably varieties with but one eye, whereas *S. ophthalmicus*, Boisd., is probably distinct), and *Daremma undulosa*, Walk.

Hemaris whitelyi, Butl., = *sieboldi*, Boisd.; A. G. Butler, P. Z. S. 1875, p. 239.

Sesia cunninghami, Walk., is renamed *Macroglossa yunx*, and *M. kingi*, Macl., is redescribed and figured under the name of *M. cunninghami*, Boisd.; J. A. Boisduval, *l. c.* pp. 375 & 376, pl. ix. fig. 5.

Sataspes infernalis, Westw., is figured; *id. l. c.* pl. x. figs. 1 & 2.

Macroglossa hirundo, Boisd., is figured by him, *l. c.* pl. ix. fig. 4. *M. nox*, Newm., ♂ (= *M. micacea*, ♀, Walk.), redescribed and figured by A. G. Butler, *l. c.* p. 5, pl. i. fig. 6. *M. stellatarum* trying to extract honey from painted flowers on wall-paper; M. R. Vallette, CR. Ent. Belg. xviii. p. xxviii.

Lepisesia victoriæ, Grote, = *Pterogon clarkiæ*, Boisd.; A. R. Grote, Bull. Buff. Soc. ii. p. 225.

Pogocolon nessus, Cram. Figured, and transformations described by J. A. Boisduval, *l. c.* p. 317, pl. i. figs. 5 & 6.

Perigonia coffeæ, Walk., is figured; *id. l. c.* pl. viii. fig. 4. *Macroglossa lefebvrii*, Luc., *nec* Guér., is renamed *Perigonia iloides*; id. *l. c.* p. 327.

Temnora rhadamistus, Fabr., is figured; *id. l. c.* pl. ix. fig. 1.

Aspledon brisæus, Boisduval, is figured by him, *l. c.* pl. viii. fig. 2.

Pterogon pumilum and *nanum*, Boisd., figured by him, *l. c.* pl. ix. figs. 2 & 3.

Eucheryx licastus, Cram., figured; *id. l. c.* pl. vi. fig. 3.

Chærocampa gordius, Walk., *nec* Cram., is renamed *epicles*; *C. chiron*, Dru., is renamed *druryi*, on account of the [later!] *Sphinx chiron*, Cram., pp. 244 & 267; *C. charis*, Walk., is figured, pl. vi. fig. 2, *id.* l. c. *C. elpenor*: food-plant, Zool. Gart. xvi. pp 113, 114 & 188; a variety from Mou-pin, Thibet, described by H. Lucas, Bull. Soc. Ent. Fr. (5) v. p. cli. *C. erotus* formerly used in Hervey Islands as an incendiary agent; W. W. Gill, in "Leisure Hour" (*cf.* Ent. M. M. xii. pp. 139 & 140).

Deilephila porcellus, var.; Bellier de la Chavignerie, Bull. Soc. Ent. Fr. (5) v. p. lxxviii.

Deilephila euphorbiarum, Guér., larva described; C. Berg, Bull. Mosc. xlix. pt. 2, p. 206, Buenos Ayres, Patagonia. *D. lathyrus*, Walk., is figured by J. A. Boisduval, *l. c.* pl. vi. fig. 2; *D. spinifascia*, Butl., is redescribed as new under the name of *D. celeno*, id. p. 170. *D. nicæa*, var. from Crimea described; H. Lucas, *l. c.* p. clxxiii.

Philampelus jussieuæ, Hübn.: transformations described, and larva and pupa figured; J. A. Boisduval, *l. c.* pp. 202 & 203, pl. i. figs. 7 & 8. *P. vitis*, L.: varieties of the larva described, C. Berg, *l. c.* pp. 204 & 205. G. Weymer maintains that *P. linnei*, Grote, is this species, and that *vitis*, Grote, should retain the name of *fasciatus*, Sulz.; S. E. Z. xxxvi. pp. 46–49.

Macrosila, Walk.: J. A. Boisduval, *l. c.* p. 61, makes *Sphinx tetrio*, L.

[the type of *Pseudosphinx*, Burm., founded in the same year as *Macrosila*!], the type, and restricts the name to this species. A. G. Butler, P. Z. S. 1875, p. 11, note, selects *M. incisa*, Walk., as the type.

Sphinx convolvuli, larva described, E. Newman, Ent. viii. pp. 272–274. *S. ligustri*, its abundance in the Canaries, F. C. Noll, Zool. Gart. xvi. p. 114. *S. plebeia*, Fab., and *jasminearum*, Boisd., larvæ figured, J. A. Boisduval, *l. c.* pl. i. figs. 3 & 4. *S. strobi*, Boisduval, figured by him, *l. c.* pl. v. fig. 3.

Acherontia atropos. F. P. Johnson suggests that the well-known phenomenon of dimorphism in the larva is due to the green and brown larvæ simulating fresh and dried stalks and leaves respectively; Nature, xi. p. 427. On its cry; T. de Rochebrune & M. Girard, Pet. Nouv. vii. pp. 472 & 476.

Dilophonota marianæ, Grote, recorded by him as occurring in Texas; Canad. Ent. vii. p. 221.

Smerinthus modestus, Harr., renamed *populicola*; J. A. Boisduval, *l. c.* p. 22. [If *Sphinx modesta*, Fab., is distinct from *S. dentata*, Cram., and *S. timesius*, Stoll, then *modestus*, Harr., must take the name of *princeps*, Walk.] *S. ophthalmicus*, Boisd.; larva described and figured, J. A. Boisduval, *l. c.* p. 34, pl. i. fig. 1. *S. pavoninus*, Hübn., probably = *excæcatus*, A. & S.; G. Weymer, S. E. Z. xxxvi. pp. 49. *S. tiliæ*, var. described and figured; E. Newman, Ent. viii. p. 193.

Triptogon, Brem., recharacterized; A. G. Butler, P. Z. S. 1875, p. 253.

Leucophlebia lineata, Westw. (nec *Sphinx lineata*, Fabr.) is renamed *luxeri*; J. A. Boisduval, *l. c.* p. 55.

Ceratomia amyntor, Hübn. Transformations described and larva figured; *id. l. c.* p. 54, pl. i. fig. 2.

The following new names for old genera are proposed, *id. l. c.*:—*Everyx* (= *Darapsa*, Walk), p. 208; *Euchloron* (= *Chlorina*, Guén.), p. 213; *Epistor* (= *Enyo*, Hübn.), p. 296; *Aspledon* (= *Diodosida*, Walk.), p. 305; and *Pogocolon* (= *Lepisesia*, Grote), p. 314.

New genera and species:—

Rhopalopsyche, A. G. Butler, P. Z. S. 1875, p. 239. Allied to *Macroglossa*; types, *M. nycteris*, Koll., and *bifasciata*, sp. n., *id. l. c.* pl. xxxvi. fig. 4, South India.

Metagastes, J. A. Boisduval, Lép. Hét. i. p. 11. Allied to *Cocquosa*, Walk. (*Brachyglossa*, Boisd.); types, *Sphinx phalaris*, Cram., and *nicobarensis*, Schwarz.

Euclea [Hübn., *Bombyces*, 1816], *id. l. c.* p. 14; type, *Sphinx dumolini*, Latr.

Nycteryx, id. *l. c.* p. 16; type, *Ambulyx hyposticta*, Feld.

Meganoton [*Megalonotus*], id. *l. c.* p. 58; types, *Macrosila nyctiphanes* and *discistriga*, Walk.

Euryglottis, id. *l. c.* p. 68; type, *Macrosila aper*, H. S.

Madoryx (= *Calliomma*, Walk., pt.), *id. l. c.* p. 150. To include *Sphinx oiclus*, *pluto*, *triptolemus*, and *pan*, Cramer, and *Hemeroplanes pseudothyreus*, Grote; also *M. lynceus*, p. 151, pl. iv. fig. 4, and *faunus*, p. 153, both from Cayenne, and *déborrei*, p. 155, Brazil, spp. nn.

Tricholon, J. A. Boisduval, Lép. Hét. i. p. 301 ; type, *Pterogon inscriptum*, Harr.

Acosmeryx, id. *l. c.* p. 214. To contain *Sphinx anceus*, Cram., and *Philampelus naga*, Moore; also *A. anceoides* (? = *P. sericeus*, Walk.), East Indies, *shervillii*, Darjeeling, *daulis*, locality unknown, and *socrates*, Manilla, spp. nn., *id. l. c.* pp. 216–219. *Cf.* also A. G. Butler, *l. c.* p. 245, who describes *A. cinerea*, sp. n., Silhet.

Eucheryx, Boisduval, *l. c.* p. 219. Types, *Sphinx licastus*, Cram., *Calliomma nomius*, Boisd., *Sph. crœsus*, Dalm. (= *thorates*, Hübn. [= *pluto*, Fabr., *nec* Cram.]), and *A. depuiseti*, sp. n., p. 222, Brazil.

Angonyx, id. *l. c.* p. 317. Allied to *Lepi*[*do*]*sesia*; type, *A. emilia*, sp. n., *l. c.* p. 318, pl. viii. fig. 1, Ternate.

Hemaris mandarina, A. G. Butler, *l. c.* p. 239, pl. xxxvi. fig. 2, Shanghai.

Sataspes uniformis, Silhet, and *ventralis*, Hong-Kong and Silhet, p. 3, *xylocoparis*, p. 239, pl. xxxvi. fig. 1, Shanghai, A. G. Butler, l. c. ; *S. tagalica*, J. A. Boisduval, *l. c.* p. 378, pl. x. figs. 3 & 4, Bourias.

Macroglossa bombylans, Central Asia, and *avicula* (redescribed by A. G. Butler, *l. c.* p. 240), India, p. 334, *regulus*, Coromandel, p. 335, *zena*, Simla, p. 337, *pyrrhula*, East Indies, p. 338, *sinica*, Hong Kong, and *aquila*, Cochin China, Silhet, p. 340, *bengalensis*, Pondicherry, p. 341, *troglodytes*, North India, and *tinnunculus*, Saigon, p. 344, *opis*, India, p. 345, *phlegeton*, New Guinea, Philippines, ?, p. 346, *motacilla*, Dorey, p. 347, *sturnus*, Cochin China, p. 349, *sylvia*, Celebes, Ternate, and *cyniris* [nec *M. cyaniris*, Guér., which is omitted], Halmaheira, p. 350, *mitchelli*, Java, p. 351, *fringilla*, India, p. 352, *heliophila*, Halmaheira, p. 354, pl. xi. fig. 2, *westermanni*, Guinea, p. 355, *ædon*, Cuba, p. 357, pl. xi. fig. 1, *etolus*, United States, p. 370, *pyramus*, Northern States, p. 372, *curtisi*, Silhet, p. 374, and *confinis*, West Africa, p. 376, J. A. Boisduval, l. c.; *M. fervens*, Canara, fig. 3, and *proxima*, Canara, Ceylon, fig. 1, p. 4, *obscura* (Horsf. MS.), Java, fig. 2, *trochiloides*, Sierra Leone, p. 5, pl. i., *affictitia*, fig. 7, and *vialis*, fig. 5, p. 240, *glaucoptera*, fig. 9, pl. xxxvi. and *nigro-fasciata*, fig. 3, all from Ceylon, *luteata*, Silhet, p. 241, fig. 3, *interrupta*, Darjeeling, p. 242, fig. 2, pl. xxxvii. *pyrrhosticta* (larva described), Shanghai, fig. 8, and *insipida*, Ceylon, p. 242, *catapyrrha*, North India, Ceylon, fig. 6, pl. xxxvi. *hemichroma*, Silhet, fig. 1, and *imperator*, Ceylon, fig. 4, p. 243, pl. xxxvii., A. G. Butler, l. c. ; *M. æthra* (? = *diffinis*, var.), H. Strecker, Lepidoptera, p. 107, Montreal.

Proserpinus œnotheroides, A. G. Butler, *l. c.* p. 621, Brazil [?].

Perigonia nictitans, p. 322, Minas Geraes, *nephus*, p. 323, Brazil, and *passerina*, p. 327, South America ?, J. A. Boisduval, *l. c.*

Pachygonia hopfferi, O. Staudinger, Verh. z.-b. Wien, 1875, p. 118, Chiriqui (? = *caliginosa*, var.).

Lophura pumilio, J. A. Boisduval, *l. c.* p. 311, Silhet; *L. masuriensis*, Masuri, pl. xxxvi. fig. 3, and *pusilla*, Silhet, p. 244, *himachala*, North Eastern Himalayas, *sangaica*, Shanghai, and *crebina*, North-West India, p. 621, A. G. Butler, *l. c.*

Calliomma lutescens, id. *l. c.* p. 5, pl. i. fig. 5, Haiti.

Epistor luctuosus, J. A. Boisduval, *l. c.* p. 298, Brazil.

Isognathus famosa, Brazil (? = *leachi*, ♀), and *metascyron*, Villa Nova, A. G. Butler, *l. c.* p. 258.

Tylognathus emus, Silhet ?, or South America ?, and *ypanemæ*, Ypanema, J. A. Boisduval, *l. c.* pp. 294 & 295.

Aleuron orophilos[*-lus*] and *pudens*, id. *l. c.* pp. 205 & 207, Brazil.

Ambulyx palmeri, p. 181, pl. iv. fig. 3, Brazil, *crethon*, p. 182, Peru, *daphne*, p. 184 (= *gannascus*, Walk. & Mén., *nec* Stoll), Brazil, *astygonus*, p. 188, Brazil, *coquereli*, pl. iv. fig. 2, Nossi Bé, and *lycidas*, Brazil, p. 191, J. A. Boisduval, l. c.; *A. moorei* (Boisd. MS.), Java, and *marginata*, Rio Janeiro, p. 10, *liturata* (larva described), locality unknown, p. 250, *rhodoptera*, Darjeeling, *sericeipennis*, Masuri, and *lahora*, North-West Himalayas, p. 251, *turbata*, India, p. 252, A. G. Butler, *l. c.*

Chærocampa hesperus, p. 228, and *echeclus*, p. 233, Philippines, *geryon*, p. 241, pl. vii. fig. 3, Tamatave, *yorki*, p. 248, Cape York, *rhesus*, p. 254, Philippines, *jugurtha*, p. 256, Senegal, *pollux*, p. 261, Java, Philippines, *tyndarus*, p. 264, pl. iv. fig. 5, Brazil, *alcides*, p. 266, and *epaphus*, p. 267, both from Cayenne, *cumedon*, Mexico, and *isaon*, Brazil, p. 273, *maculator*, p. 274, Venezuela, *aglaor*, p. 275, Brazil ?, and *rivularis*, p. 280, Simla, J. A. Boisduval, l. c.; *C. macromera*, p. 7, North India, *gracilis*, fig. 2, West Africa, *elegans*, fig. 1, Java, Silhet, *argentata*, fig. 3, Australia, p. 8, pl. ii., *C. virescens*, Bogota, *docilis*, Ecuador, *haitensis*, Haiti, p. 9, *ignea*, p. 10, pl. i. fig. 4, Moreton Bay, *lewisi* (with description of larva), Japan, and *fraterna*, North India, p. 247, *mirabilis*, *rosina*, pl. xxxvii. fig. 6, and *punctivenata*, North-West Himalayas, p. 248, *bistrigata*, Java, *gonographæ*, India, *minor*, Masuri, and *major*, North India, p. 249, *pruinosa*, Ceylon, p. 622, *puellaris*, Rawal, Pindi, and *intersecta*, Queensland, p. 623, A. G. Butler, *l. c.*

Elibia linigera, J. A. Boisduval, *l. c.* p. 180, Manilla.

Pergesa aurifera, North India, p. 7, *ægrota*, Silhet, and *gloriosa*, Darjeeling, p. 246, *P. mongoliana*, China, Japan, p. 622, A. G. Butler, *l. c.*

Panacra tiridates, J. A. Boisduval, *l. c.* p. 286, pl. vii. fig. 4, locality unknown; *P. metallica* (= *P. mydon*, Boisd., MS., *nec* Walk.), North India, p. 6, *ella*, Silhet, p. 246, *regularis*, Java, p. 247, and *perfecta*, Darjeeling, p. 391, A. G. Butler, *l. c.*

Philampelus capronnieri, p. 194, pl. vii. fig. 2, Oyapock, *pistacina*, p. 199, Minas Geraes, J. A. Boisduval, *l. c.*

Everyx astyanor, id. *l. c.* p. 211, Mexico ?.

Daphnis pallescens, A. G. Butler, *l. c.* p. 6, Queensland.

Zonilia rhadama, p. 146, pl. vi. fig. 1, Madagascar and *zebu* (? = *Pachylia æquivalens*, Walk.), p. 148, Sierra Leone; J. A. Boisduval, *l. c.*

Nephele rosæ, Boma, and *variegata* (= *penæus*, Walk., pt., = *funebris*, Boisd., *nec* Fabr.), Congo, A. G. Butler, *l. c.* pp. 14 & 15.

Pseudosphinx cyrtolophia, id. *l. c.* p. 259, Madras (larva described).

Amphonyx beelzebuth, p. 63, Brazil, *godarti*, p. 65, pl. v. fig. 1, Minas Geraes, and *walkeri*, p. 67, Oyapock, French Guiana, J. A. Boisduval, l.c.; *A. rivularis*, A. G. Butler, *l. c.* p. 11, Ega.

Sphinx lycopersici, p. 71, California, *petuniæ*, p. 73, pl. v. fig. 2 [? = *S. diffissa*, Butl.], Buenos Ayres, *nicotianæ*, p. 75, Columbia, *tabaci*, p. 78, Chili, Paraguay, *hamilcar*, p. 79, Brazil, *capsici*, p. 80, Columbia, *asta-*

roth, p. 86, Brazil, *canadensis*, p. 93, Quebec, *cupressi*, p. 102, pl. ii. figs. 3–5 (transformations), Georgia, *catalpæ*, p. 103, pl. ii. figs. 1 & 2 (imago and larva), Georgia, *abietina*, p. 108 [? = *incerta*, Walk.], Himalaya, *nestor*, p. 113 [? = *obliqua*, Walk.], locality unknown, and *jasmini*, p. 114, Madagascar, J. A. Boisduval, l. c.; *S. plota*, H. Strecker, Lepidoptera, p. 106, Montreal.

Diludia brevimargo, Brazil, and *rufescens*, Rio, p. 12, *melanomera*, Silhet, *vates*, India, Ceylon, and *natalensis*, Natal, p. 13, *grandis*, Nepal, and *rubescens* [*rufescens*, misprint, *cf.* p. 623], North India, p. 260, A. G. Butler, *l. c.*

Protoparce fulvinotata, S. Africa, p. 11, *contracta*, Rio Janeiro, p. 12, and *griseata*, p. 259, Venezuela, *id. l. c.*

Hyloicus asiaticus, Scinde ?, and *uniformis*, North-west Himalayas, *id. l. c.* pp. 260 & 261.

Dilophonota domingonis [!], id. *l. c.* p. 258, Haiti.

Anceryx cahuchu, p. 122, Brazil ?, *pedilanthi*, p. 124, pl. vii. fig. 1, Cayenne, *papayæ*, Cayenne, and *pelops*, locality unknown, p. 126, *excelsior*, S. America, p. 127, *lassauxi*, North Brazil, p. 129, *janiphæ*, p. 131, and *piperis* (? = *Sphinx penæus*, Fabr.), p. 132, locality unknown, J. A. Boisduval, *l. c.*

Dolba hartwegi, A. G. Butler, *l. c.* p. 259, Oaxaca.

Œnosanda spuria, J. A. Boisduval, *l. c.* p. 319, pl. viii. fig. 3, Mexico.

Basiana exusta, A. G. Butler, *l. c.* p. 252, Kunáwur (larva on poplar).

Smerinthus echephron, p. 21, pl. iii. fig. 3, Japan, *meander*, p. 22, pl. iv. fig. 1, Madagascar, *adansoniæ*, p. 27 [? = *subjectus*, Walk.], Senegal, *ailanti*, p. 28, pl. iii. fig. 2 [? = *decolor*, Walk.], Hong Kong, *oculata* [*-tus*] and *pseudambulyx*, p. 29, and *saliceti*, p. 35, all from Mexico, J. A. Boisduval, *l. c.*

Triptogon gigas, Silhet, and *cristata*, Darjeeling, p. 253, *albicans*, Masuri, *sinensis*, Hong Kong, *javanica*, Java, p. 254, *ceylanica*, Ceylon, *silhetensis*, Silhet, *oriens*, N.E. India, p. 255, *massurensis*, Masuri, *fuscescens* and *spectabilis*, Darjeeling, p. 256, *roseipennis*, p. 257 (larva described), Hakodadi, A. G. Butler, *l. c.*

Leucophlebia rosacea, Coimbatoor, and *bicolor*, Almorah, North India, pp. 15 & 16, pl. ii. figs. 4 & 5, *damascena*, p. 392, Sikkim: *id. l. c.*

Brachyglossa banksiæ, J. A. Boisduval, *l. c.* p. 11, pl. iii. fig. 1, Australia.

ÆGERIIDÆ.

Grote's last Catalogue of the *Ægeriidæ*, *Zygænidæ*, &c., is reviewed by H. B. Möschler, S. E. Z. xxxvi. pp. 282–289.

Sesia tabaniformis, Rott., is mimicked by a Dipterous insect, *Cœria conopoides*, L., found with it on the trunks of poplars; A. Rogenhofer, Verh. z.-b. Wien, xxv. SB. p. 23.

Sannina uroceriformis, "Valker" (nec *Ægeria uroceriformis*, auctt.), is renamed *Saunina uroceripennis*, and *Melittia bombyliiformis*, Cram. (*nec* Esp.), is renamed *bombyli*[*i*]*pennis*; J. A. Boisduval, Lép. Hét. i. pp. 465 & 473.

Myrsila, g. n., id. *l. c.* p. 433. Type, *M. auripennis*, sp. n., *l. c.* Para.

Ægeria floridensis, A. R. Grote, Canad. Ent. vii. p. 174, Florida. Type of a new group, named *Pyrrhotænia*.

Sesia pimplæformis [*-plif-*] [Oberthur ?], p. 388, Caucasus, *anthracipennis*, p. 392, Georgia, *panorpæformis* [*-pif-*], p. 393, Luzon, and *xiphiæformis* [*-phiif-*], p. 409, United States, J. A. Boisduval, *l. c.*

Bembecia eucheripennis, id. *l. c.* p. 384, Mexico.

Melittia lagopus, Oyapock, Cayenne, and *staudingeri*, Silhet, *id. l. c.* pp. 475 & 476.

Thyris montana, H. Edwards, P. Cal. Ac. v. p. 413, Colorado, Rocky Mountains.

Pachythiris rajah, J. A. Boisduval, *l. c.* p. 492, Central India. (This genus is now referred to the *Noctuæ* by Rogenhofer, Reise Nov. Lep., Index.)

Uraniidæ.

Cydimon poeyi, H. S., figured by Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxi. figs. 6 & 7,

Alcidis liris, Feld., figured, *iid. l. c.* fig. 2.

Sematura lunus, Cl., figured as *S. actæon*, iid. *l. c.* fig. 5.

Alcidis arnus, iid. *l. c.* fig. 1, Aru ?, sp. n.

Larunda (*Coronis*) *rosina*, iid. *l. c.* figs. 3 & 4, Bogota, sp. n.

Castniidæ.

R. H. Stretch has published synonymic notes on some of the *Castniidæ*, *Zygænidæ*, and *Bombycidæ* figured in Felder's "Lepidoptera of the Novara," pt. iv.; Cist. Ent. ii. pp. 11–19.

Castnia tricolor, Feld., = *diva*, Butl.; *id. l. c.* p. 13.

Megathymus yuccæ, Boisd. & Lec., is referred by A. R. Grote to the *Castniidæ*; Canad. Ent. vii. p. 173.

Synemon parthenoides, Feld., refigured, pl. xi. fig. 5; *S. hesperioides*, Feld., may be one of the *Hesperiidæ*, allied to *Thanaos*: J. A. Boisduval, Lép. Hét. i. p. 555.

Synemon icaria and *parthenoides*, Felder, may be varieties respectively of *S. læta*, Walk., and *S. sophia*, White; R. H. Stretch, *l. c.* p. 13.

Ceretes, g. n., J. A. Boisduval, Lép. Hét. i. p. 535; types, *Castnia chremes*, Fabr., *thais*, Dru., and *fabricii*, Godt.

New species :—

Cocytia chlorosoma, A. G. Butler, Ann. N. H. (4) xv. p. 144, Aru.

Castnia grayi, p. 498, Brazil, *procera*, p. 503, Guatemala, *menetriesi*, p. 511, Brazil, *viryi*, p. 515, pl. xi. fig. 3, Mexico, *argus*, p. 522, Brazil, *licoides*, p. 527 (= *licus*, Hübn., *nec* Dru.), Brazil, *humboldti*, p. 528, New Granada, and *salasia*, p. 529, Mexico, J. A. Boisduval, *l. c.*

Orthia nexa, id. *l. c.* p. 543, locality unknown.

Gazera columbina, p. 546, New Granada, *simulans*, p. 547, pl. xi. fig. 4, *id. l. c.*

Agaristidæ.

W. F. Kirby has published a review of Boisduval's "Monographie des Agaristidées," enumerating the species omitted by Boisduval, and making some corrections already incorporated in the notice of the paper in last year's Record. Cist. Ent. i. pp. 343–347.

A. G. Butler, Ann. N. H. (4) xv. pp. 135–137, makes the following notes on various genera which have been referred to the *Agaristidæ*: *Hespagarista*, *Damias* (pt.), *Phasis* (including *P. noctilux* and *Josia ? separata* and *continua*, Walk.), and *Metagarista* (including *Eusemia transiens*, Walk., *Phegorista bala*, Moore, *P. catocalina* and *triphænoides*, Walk., *P. leucomela*, H. S., and *Catocala ? longipennis*, Walk.) are *Agaristidæ*; *Callidula* and *Cleosiris* are *Melameridæ*; and *Arycanda*, Walk., = *Tigridoptera*, H. S., = *Panæthia*, Guén. (*Zerenidæ*) belongs to the *Lithosiidæ*.

Agarista. A. G. Butler, Ann. N. H. (4) xv. pp. 137 & 138, publishes the following notes on species described by Boisduval; *A. lincea*, Boisd., = *bambucina*, Esch., *A. linceoides*, Boisd., = *lincea*, Cram. The following are *Noctuidæ*:—*A. frontinus*, Don. (= *Ophiusa pyrrhargyra*, Walk.), *A. ostorius*, Don., = *Fodina ostorius*, Walk.; *A. alienata* will probably form a new genus near *Ophideres*.

Agarista lindigi and *batesi*, Feld., belong to the genus *Phasis*, Walk., and the latter = *P. noctilux*, Walk.; R. H. Stretch, Cist. Ent. ii. p. 19.

Agarista micacea, Walk., Cat. Lep. Het. xxxi. p. 48, *nec* vii. p. 1772, is renamed *ceramensis*; W. F. Kirby, *l. c.* p. 345.

Eusemia. A revision of the species by A. G. Butler, Ent. M. M. xii. pp. 116–120.

Eusemia. A. G. Butler, Ann. N. H. (4) xv. pp. 137–139, makes the following notes on the species described by Boisduval: *E. rosenbergi*, *luctifera*, *fenestrata*, *semyron* (= *chrysospila*, Walk.), *radians*, and probably also *conferta*, *agrius*, *pedasus*, *zea*, and *pales* belong to *Agarista*; *E. lambertiana* = *bisma*, Moore, *E. saturata* is probably a *Burgena*, *E.* (?) *ægoceroides* = *Metagarista transiens*, Walk., and *E.* (?) *sabulosa* is also a *Metagarista*.

Ægocera rubida, Feld., = ? *Æ. magna*, Walk., = ? *Æ. latreillii*, H. S.; R. H. Stretch, *l. c.* p. 19.

Charilina intercis, Feld., = *C. amabilis*, Dru.; *id. l. c.* p. 19.

Tyndaris lætifica, Feld., = *Callidula erycinata*, Walk.; *Callidula erycinoides*, Feld., = *C. evandrus*, Cram.: *id. ibid.*

New genera and species:—

Mimeusemia, A. G. Butler, *l. c.* p. 397. Allied to *Eusemia villicoides* and *Alypia*; type, *M. persimilis*, sp. n., *ibid.*, Hakodadi.

Scudyra [anagram of *Eudryas*], R. H. Stretch, *l. c.* p. 19. Allied to *Eudryas*; type, *Eusemia transiens*, Walk. *Agarista ægoceroides*, Feld., also belongs here.

Agarista polysticta and *neptioides*, A. G. Butler, *l. c.* p. 138, Australia.

Eusemia silhetensis, Silhet, *orientalis*, Mussooree, p. 139, *nigripennis*, Ceylon, *nipalensis*, Nepal, *distincta* and *communis*, fig. 1, Silhet, p. 140,

villicoides, fig. 2, Hakodadi, *superba*, fig. 3, p. 141, and *africana*, S. Africa, *ochracea*, Congo (= *pardalina*, Walk., *sec.* Butler, Ent. M. M. xii. p. 120), *tricolor* (? = *hesperoides*, ♀), Sarawak, p. 142, *pulchra*, fig. 4, Muhrut, and *vittata*, Java, p. 142, *id. l. c.* pl. xiii.; *E. tyrianthina*, North India, p. 116, *sectinotis* and *contracta*, India, p. 117, *simplex*, Canara, and *afflicta*, Bombay, p. 118, *vulcania*, Burmah, p. 123, and *eudamoides*, Celebes, p. 124, *id.* Ent. M. M. xii.

Vithora agrionides, id. Ann. N. H. (4) xv. p. 137, Hakodadi.

Zygænidæ.

R. H. Stretch (Cist. Ent. ii. pp. 14–16) remarks on some of Felder's species as follows:—*Zygæna subdiaphana* = *Z. contraria*, Walk., var.; *Euctenia zygænoides* = ? *Procris contraria*, Walk.; *Eucyrta subulifera* = *Rhipha strigosa*, Walk.; *Euplesia vittigera* = *Automolis sphingidea*, Perty; *E. ochrophila*, Feld., = *Apiconoma opposita*, Walk.; *Eucerea thalassica* = *Arridopsis marica*, Cram., var.

Zygæna trifolii and *meliloti*. The British specimens of *meliloti* [which is not known on the Continent to occur west of Alsace] appear to be a dwarfed form of *trifolii*; T. H. Briggs, P. E. Soc. 1875, pp. xiv. & xv. *Z. filipendulæ* with yellow spots; W. A. Forbes, *tom. cit.* p. xxiv. *Z. sarpedon*, var. from Cartagena figured and described; C. Oberthur, An. Soc. Esp. iv. p. 373, pl. xvii. fig. 7.

Belemnia inaurata, Cram., *nec* Sulz., is renamed *crameri*; A. G. Butler, Ann. N. H. (4) xv. p. 339.

New genera and species:—

Acridura, A. G. Butler, Ann. N. H. (4) xv. p. 398. Allied to *Echoneura*; to include *A. gryllina* (type) and *metallica*, spp. nn., *l. c.* pp. 398 & 399, Espiritu Santo.

Hyaleucerea, id. *l. c.* p. 399. Allied to *Eucereon*; type, *Glaucopis erythrotelus*, Walk., also *H. vulnerata*, sp. n., *l. c.* Espiritu Santo.

Thysanoprymna, id. *l. c.* p. 400. Allied to *Eucereon*; type, *Eucerea pyrrhopyga*, Walk.

Didasys, A. R. Grote, Canad. Ent. p. 174. Allied to *Burtia*; type, *D. belæ*, sp. n., *l. c.* p. 175, Florida.

Duhana, id. *l. c.* p. 175. Between *Glaucopis* and *Ctenucha*; type, *D. atripennis*, sp. n., *ibid.* Florida.

Isanthrene crabroniformis, O. Staudinger, Verh. z.-b. Wien, xxv. p. 120, Chiriqui.

Glaucopis (*Cosmosoma*) *hector*, id. *l. c.* p. 120, Panama.

Belemnia jovis, A. G. Butler, *l. c.* p. 339, Veragua.

Nycteolidæ.

Halias prasinana. On sound produced by it; T. H. Briggs, P. E. Soc. 1875, p. xv.

Sarothripus lintnerana[*-nus*], sp. n., A. Speyer, S. E. Z. xxxvi. p. 170, New York State.

Lithosiidæ.

R. H. Stretch (Cist. Ent. ii. pp. 14–19) makes the following notes on some of Felder's species: — *Heterusia microcephala* = *Eterusia dirupta*, Walk.; *H. cicada* = *Et. pulchella*, var. ? Walk. (nec *Chalcosia pulchella*, Koll.), = *Gynautocera phalænaria*, Guér.; *Isochroa eburneigutta* = *Secusio* ? [*Eudyra*] *phedonia*, Cram.; *Leptosoma maculosum* = *Nyctemera bijunctella*, Walk.; *L. tricolor* = *N. apicalis*, Walk., var.; *Esthema confluens* of Felder & Butler are identical; *E. venosa* = *E. speciosa*, Butl.; *E. calida* = *Eucyane hystaspes*, Butl.; *Esth. jucunda* = *Euc. temperata*, Walk.; *Hyalurga irregularis* = *H. albo-vitrea*, Walk.; *Stenele aletis* = *Chrysauge repanda*, Walk.; *Polyptychia fasciculosa* = ? *Josia erynnis*, Walk.; *Josiomorpha longivitta* is a large form of *J. penetrata*, Walk. (*cf.* also A. G. Butler, Ann. N. H., 4, xv. p. 342); *Terna major* = *Phæochlæna brevilinea*, Walk.; *T. minuta* = *Virbia mentiens*, Walk.; *Dioptis erycinoides* = *D. ithomeina*, Butl.; *D. salvini* = *D. noctilucis*, Butl.; *Gnatholophia longinervis* = *Eucontha sublactigera*, Walk.; *Josia lugens* = *J. hyperia* and *pilarge*, Walk.; *Antiotricha vexata* = *Mennis integra*, Walk.; *Adelphoneura nerias* = *Glissa bifacies*, Walk.; *Aganais renigera* = ? *Hypsa membliaria*, Cram.; *A. albifera* = *H. plana*, Walk.; *A. cyanopyga* = *H. chloropyga*, Walk., of which *H. analis*, Walk., is a var.; *Termessa hamula* = *T. discrepans*, Walk.; *Cratosia parallela*, Feld., = *Cissura decora*, Walk.; *Lithosia bifasciata* = *Cyllene transversa*, Walk.; *Teinopyga reticularis* = *Deiopeia transversa*, Walk.; *Pyralidia deserta* = ? *Lithosia nexa*, Boisd.; *Dichromia nietneri* = *Scaptesyle bicolor*, Walk.; *Ptychoglene erythrophora* = *Lithosia miniata*, Coll. B. M., nec Walk., Cat. Lep. Het. ii. p. 512, which = *Hypoprepia fucosa*, Hübn.

Ctenucha multifaria, Boisd. Transformations described; H. Edwards, P. Cal. Ac. v. pp. 344 & 345.

Pericopinæ. This group is revised by A. G. Butler, Ann. N. H. (4) xvi. pp. 163–177, who places it between *Anaxita* and *Hypercompa* in the *Arctiidæ*. He refers the genus *Stenele* to the *Chrysaugidæ*.

Phalæna fulvia, Clerck, is a *Chrysauge*; id. *l. c.* xv. p. 340.

Carpella districta, Walk., figured; Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxx. fig. 28.

Hypsa. The species referable to this genus, as used by Walker, are revised, and several described as new by A. G. Butler, Tr. E. Soc. 1875, pp. 315–329. *H. lanceolata*, Walk., is distinct from *H. doryca*, Boisd.; *H. æqualis* and *significans*, Walk., may be sexes of the same species; *Aganais borbonica*, ♀, H. S., fig. 188 (*nec* Boisd.), = *insularis*, Boisd.; *A. borbonica*, ♂, H. S., fig. 119, from Australia, is renamed *H. sphærifera* (the true *A. borbonica*, Boisd., is probably not congeneric with *Hypsa*); *H. analis*, Walk., = *cyanopyga*, Feld., = *chloropyga*, var. Walk.; *A. aphidas*, Hopff., = *H. subretracta*, Walk.; *A. iodamia*, H. S., & *H. antica* and *stipata*, Walk., = *A. borbonica*, Boisd.; *H. dominia*, Walk., nec Cram., = *marmorea*, Walk.; *Phalæna mauritia*, Cram., and *Lithosia arthusbertrand*, Guér., belong to *Amerila*.

Lithosia complana. Its larva a cannibal; R. Kay, Ent. viii. pp. 198 & 199.

Emydia grammica, var., E. Lelièvre, Pet. Nouv. vii. p. 468.

Deiopeia bella, Linn., figured and redescribed; W. Saunders, Canad. Ent. vii. pp. 85 & 86.

Nola. P. C. T. Snellen discusses this genus, and gives a table of the species known to him; 4 new are described and figured: Tijdschr. Ent. xviii. pp. 61–69, pl. vi.

New genera and species:—

Methypsa, A. G. Butler, Tr. E. Soc. 1875, p. 324. Allied to *Petalia*; type, *Hypsa saturata*, Walk. *Aganais cusemioides*, Feld., probably belongs to this genus.

Pachyphilona, id. *l. c.* p. 325; type, *Hypsa correcta*, Walk.

Scepsis (?) *unicolor*, Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxix. fig. 11, Mexico.

Josia cruciata, A. G. Butler, Ann. N. H. (4) xv. p. 340, Veragua.

Hypocrita (?) *trichiura*, Felder & Rogenhofer, *l. c.* pl. cxxxviii. fig. 52, Amazon.

Celerena tricolor and *funebris*, Moluccas, *andamana*, Andamans, *chrysauge*, Gebeh, and *eucnemis*, Celebes, *iid. l. c.* pl. cxxx. figs. 10, 14, 18, 20, & 30.

Genussa radiata, Amazon, *G.* (?) *dioptis*, Veragua, and *G. famulata*, Amazon, *iid. l. c.* pl. cxxx. figs. 8, 21, & 29.

Agyrta nolckeni, New Granada and Panama, and *sapphira*, Chiriqui, O. Staudinger, Verh. z.-b. Wien, xxv. pp. 121 & 122.

Hyalurga amazonica, Ega, and *pura*, Para, A. G. Butler, *op. cit.* xvi. pp. 175 & 176.

Pericopis lucretia, id. *op. cit.* xv. p. 340, Veragua.

Phaloesia fulvicollis, Santa Marta, *venezuelæ*, Venezuela, and *chalybea*, Vera Cruz, *id. op. cit.* xvi. p. 171.

Eucyane diana, id. *l. c.* p. 174, Ega.

Tmetoptera (?) *costosa*, Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 26, Moluccas.

Calodesma marginata (= *amica*, Walk., *nec* Cram.), A. G. Butler, *l. c.* p. 174, locality unknown.

Sangala (?) *necyria*, Felder & Rogenhofer, *l. c.* pl. cxxxiii. fig. 19, Peru.

Bursada magata and *maculifera*, Moluccas, *B.* (?) *cleis*, Amboina, and *B. minor*, Moluccas, *iid. l. c.* pl. cxxx. figs. 11, 12, 22 & 24.

Nyctemera variolosa, iid. *l. c.* pl. cxxix. fig. 15, India ?.

Ayalope primularis, A. G. Butler, P. Z. S. 1875, p. 392, Darjeeling.

Cadphises moorei, id. *ibid.* Darjeeling.

Hypsa dicta, Borneo, Philippines, p. 316, *clavata* (= *silvandra*, Walk., *nec* Cram.), East Indies, and *persecta*, Silhet, Ceylon, p. 317, *clara*, Java, p. 318, *plaginota*, India, and *producta*, Ceylon, p. 320, *strigivenata*, North India, Penang, p. 321, and *nebulosa*, Sarawak, p. 322, A. G. Butler, Tr. E. Soc. 1875.

Panglima gloriosa, id. *l. c.* p. 325, Cabinda, Old Calabar.

Euplocia moderata (= *E. membliaria*, Moore, *nec* Cram.), Java, and *inconspicua*, Macassar, A. G. Butler, Tr. E. Soc. 1875, pp. 327 & 328.

Neochera stibostethis, id. *l. c.* p. 329, Bourou.

Hypoprepia (?) *hæmatopus*, Felder & Rogenhofer, *l. c.* pl. cxxxix. figs. 54 & 55, Assam.

Lithosia procris, iid. *l. c.* pl. cxxxix. fig. 12, Bogota.

Eustixis (?) *chrysauge*, iid. *l. c.* pl. cxxxviii. fig. 50, Amazon.

Areva (?) *jubata*, iid. *l. c.* pl. cxxxix. fig. 52, Venezuela.

Vitessa formosa, iid. *l. c.* pl. cxxxvii. fig. 1, East Indies.

Amblothridia cuprina and *iris*, iid. *l. c.* pl. cxxix. figs. 21 & 25, Moluccas; *A. albitarsis*, Rogenhofer, *l. c.* note 2, locality unknown.

Mieza (?) *picta* and *M.* (?) *erythocera*, pl. cxxxviii. figs. 49 & 53, Cape York, Australia, *M.* (?) *phænodes*, Australia, *M. nervosa*, Bogota, and *mactata*, Cape York, pl. cxxxix, figs. 37, 43 & 44, Felder & Rogenhofer, *l. c.*

Pitane (?) *biplaga*, pl. cxxxix. fig. 5, Sarawak, *P.* (?) *oblita* and *P. sejuncta*, *amanda*, and *albicollis*, pl. cxl. figs. 23, 24, 36 & 37, *iid. l. c.*

Cyrtochila (?) *marginalis*, iid. *l. c.* pl. cxxxix. fig. 14, Moluccas; *C. petosia*, Rogenhofer, *l. c.* note 1, Amboina.

Cyme (?) *ochropyga* and *C.* (?) *pardalina*, Moluccas, *C.* (?) *princeps*, Amboina, and *C.* (?) *luzonica*, Manilla, pl. cxxxix. figs. 15, 20, 28 & 53, and *C.* (?) *orbicularis*, pl. cxl. fig. 27, Nicobar Islands, Felder & Rogenhofer, *l. c.*

Anatolmis (?) *viridiceps*, iid. *l. c.* pl. cxxxix. fig. 16, Bogota.

Cisthene tenuifascia (? = *subjecta*, Walk., var.), L. F. Harvey, Bull. Buff. Soc. iii. p. 4; *C.* (?) *suspecta* and *C.* (?) *aglaope*, Amazon, *C. corvina*, Fiji, pl. cxxxviii. figs. 45, 55, & 63, *C. hilaris*, *C.* (?) *rufibasis*, and *C.* (?) *eucera*, pl. cxxxix. figs. 3, 4, & 10, Bogota, Felder & Rogenhofer, *l. c.*; *C. bisigna* [*-ta*], C. Berg, Bull. Mosc. xlix. pt. 2, p. 208, Patagonia.

Ruscino latifasciatus (? = *menea*, Walk., var.), A. G. Butler, Ann. N. H. (4) xv. p. 340, Veragua.

Stenoplastis pallinervis, Felder & Rogenhofer, *l. c.* pl. cxxxiii. fig. 16, Bogota.

Nola taniata, Celebes, *dimidiata*, Java, *agyptiaca*, Cairo, and *pumila*, Celebes, P. C. T. Snellen, Tijdschr. Ent. xviii. pp. 65–68, pl. vi. figs. 1–4; *N. ovilla*, A. R. Grote, Canad. Ent. vii. p. 221, Canada.

ARCTIIDÆ.

Spilosoma and allied genera revised by A. G. Butler, Cist. Ent. ii. pp. 21–44. Several new species are described. *S. marmoratum*, Walk., is a *Digama*; *S. rubescens*, Walk., is congeneric with *Arctia strigulata*, Walk.; *S. submacula*, Walk., and *obscurum*, Walk., and *Aloa rhodophæa*, Walk., will together form a new genus near *Alope*; *S. fulvia*, Don., and *costatum*, Boisd., may belong to *Hypsa*; *A. tripartita*, *dentata*, and *erosa*, Walk., *Creatonotus* (?) *vuteria*, Stoll, and *Spilosoma dilectum*, Boisd., are rejected from the group. The following notes are made on known species allied to *Spilosoma*:—*Halesidota mundata*, Walk., = *Spilosoma lutescens*, ♂, Walk., *Creatonotus emittens*, ♀, and *Spilosoma*

strigatum, Walk., = *Aloa diminuta*, Walk.; *Aloa candidula*, Walk. var., = *A. emittens*, Walk. (a var. from South India is described by Butler, p. 25); *Spilosoma strigatum*, Wallengr., = *dorsale* and *linea*, Walk., = *Lacydes lineata*, Butl. (p. 27); *S. truncatum*, Walk., ? = a ♀ var. of the last; *S. confertum*, Walk., = *Ardices fulvo-hirta*, Walk., ♂, and *A. fulvo-hirta*, ♀, = *S. subocellatum*, Walk., *Sanura alba*, Wallengr., = *Aloa simplex*, Walk., = *Spilosoma lineatum*, Walk.; *Ecpantheria indeterminata* and *Halesidota* (?) *macularia*, Walk., = *Alpenus æqualis*, Walk., ♂, = *A. maculosa*, Cram., local form; *Spilosoma conspurcatum*, Walk., = *S. maculifascia*, Walk.; *Aloa isabellina*, Walk., = *S. transiens*, Walk.; *Arctia sciurus*, Boisd., = *Tanada antica*, Walk., = *Hyphantria collaris*, Fitch; *Spil. rubidorsa*, Moore, = ? *S. rhodophilum*, Walk.; *S. subtinctum*, Walk., = *rubitinctum*, Moore; *S. sanguinale*, Moore, = *S. casigneta*, Koll.; *Aloa undistriga*, Feld., = *S. eugraphica*, Walk.

Arctia americana, Harr.: transformations described; R. Bunker, Canad. Ent. vii. pp. 149 & 150, and J. A. Lintner, Rep. N. Y. S. Mus. xxiv. pp. 134 & 135. *A. anna*, Grote, is a melanotic var. of his *A. persephone*; H. Strecker, Lepidoptera, p. 106. *A. arge*, Dru., *anna*, Grote, and *intermedia*, Stretch: remarks by A. R. Grote, Canad. Ent. vii. pp. 196 & 197; Stretch's figure of the last probably = *A. saundersi*, Grote. *A. caja*: the larva gnaws holes in linen fabrics laid out on the grass to blanch; Nature, xiv. p. 54. *A. fuliginosa*, L., var. *borealis*, Staud., new to France; A. Foucart, Pet. Nouv. vii. p. 524.

Platarctia parthenos, Harr., and *Euchætes egle*, Dru. Transformations; J. A. Lintner, Rep. N. Y. S. Mus. xxiv. pp. 132, 133, 136 & 137.

Eupsychoma geometrica, Grote, is quite distinct from *Nemeophila petrosa*, Walk.; A. R. Grote, Canad. Ent. vii. p. 3.

Euthemonia russula. Rearing; G. Haggar, Ent. viii. pp. 227 & 228.

Halesidota albidator and *vitripennis*, Walk., are identical; A. G. Butler, Ann. N. H. (4) xvi. p. 233.

Isochroma fallax, Feld., = *Sciathos punctigera*, Cram., and *Rhinogyne calligama*, ♀, Feld., = *Pinara cana*, Walk.; R. H. Stretch, Cist. Ent. ii. p. 14.

New genera and species:—

Epilacydes, A. G. Butler, Cist. Ent. ii. p. 27; type, *E. simulans*, sp. n., West Africa.

Eyralpenus, id. *l. c.* p. 35. Allied to *Spilosoma* and *Spilarctia*; type, *Spilosoma testaceum*, Walk. (= *S. subflavescens*, Walk.).

Spilarctia, id. *l. c.* p. 39. Uncharacterized; type, *Spilosoma lubricipeda*, Linn. Add *S. nydia*, Nepal, *ione*, Hakodadi, Japan, p. 41, and *confusa*, North India, p. 42, spp. nn.

Leucaloa, id. *l. c.* p. 44. Allied to *Spilarctia*; type, *Spilosoma eugraphicum*, Walk.

Arctia michaba, Nebraska, p. 196, *stretchi*, Texas, and *snowi*, Kansas, A. R. Grote, Canad. Ent. vii. p. 197.

Antarctia severa, C. Berg, Bull. Mosc. xlix. pt. 2, p. 209 (transformations also described), Patagonia.

Areas cardinalis, Philippines, p. 22, *roseicostis*, Rockingham Bay, Australia, and *moorei*, Almorah, North India, A. G. Butler, *l. c.*

Spilosoma (*Diaphora*) *pteridis*, H. Edwards, P. Cal. Ac. v. p. 264, Vancouver Island.

Euchætes spraguei, A. R. Grote, *l. c.* p. 200, Kansas; *E. aurata*, A. G. Butler, *l. c.* Espiritu Santo.

Lacydes arborifera, id. *l. c.* p. 26, Loanda, Ambriz.

Ardices canescens, id. *l. c.* p. 29 (? = *Spilosoma subocellatum*, Walk., var.), Australia.

Elysius cardinalis, O. Staudinger, Verh. z.-b. Wien, xxv. p. 123, Peru.

Phægoptera rhodosoma, Ecuador, and *fumosa*, Brazil, A. G. Butler, Ann. N. H. (4) xvi. p. 233.

Pseudolabes snelleni, C. Ritsema, Pet. Nouv. vii. p. 479, Java.

Liparidæ.

R. H. Stretch, Cist. Ent. ii. pp. 15 & 16, makes the following notes on some of Felder's species:—*Oligochlona chordigera* = *Dasychira antica*, Walk.; *O. nervosa* ? = *Gazalina venosata*, Walk.; *Ochrogaster ruptimacula* = *Teara interrupta*, Walk.; *Chœrotricha* (= *Gogana*, Walk., of which the type is *atro-squama*, Walk.) *nobilis* = *Orgyia josiata*, Walk. [but *Chœrotricha* will stand, for *Gogana*, Walk., Suppl. p. 1920 (*Liparidæ*), is later than *Gogana*, Walk., Suppl. p. 1219 (*Deltoidæ*)]; *Xenosoma nigricosta* and *erycinoides*, Feld., = *Eloria flaviceps* and *discalis*, Walk., respectively; *Panthea chavannesi*, Feld., = *Bathyra sagata*, Walk.

Orgyia pudibunda. A var. of the larva described; A. Guénée, Bull. Soc. Ent. Fr. (5) v. p. 188.

Lagoa crispata, Pack. Transformations very fully described. The larva stings, though less severely than that of *Hemileuca maia* or *Hyperchiria io*, by means of clusters of short hairs on the tubercles, which are concealed under the long hairs surrounding them. J. A. Lintner, Rep. N. Y. S. Mus. xxiv. pp. 138–145.

Ocneria monacha destructive in Guelderland; A. B. Van Medenbach, Tijdschr. Ent. xviii. p. xxx.

Lopera punctulata, sp. n., A. G. Butler, Ann. N. H. (4) xvi. p. 400, Natal.

Dreata triseriata, sp. n., *id.* P. Z. S. 1875, p. 393, South India.

Psychidæ.

On collecting and rearing *Psychidæ*; G. Rouart, Ent. M. M. xii. pp. 112 & 113. (Translated from Feuil. Nat., Sept. 1875.)

Notes on various species of *Psychidæ*; A. Brant, Tijdschr. Ent. xviii. pp. xxvi.–xxix.

Psyche graminella: habits, coupling, &c.; Lafaury, Pet. Nouv. vii. pp. 531 & 532; *cf.* also p. 552. *P. quadrangularis*, Christoph: its remarkable case noticed (from North Africa) by A. Laboulbène, and described by P. Mabille; Bull. Soc. Ent. Fr. (5) v. pp. cxxx., cxxxi.–cxxxvi.

& cxxxvii.; also by H. Lucas, Ann. Soc. Ent. Fr. (5) v. pp. 222–224, including notice of parasite.

Epichnopteryx. As in other genera of *Psychidæ*, the pupa of the ♂ protrudes itself from the cocoon before the pupa-skin bursts; F. J. M. Heylaerts, Tijdschr. Ent. xviii. p. xcvi. *E. helicinella*, and the affinities of *Lepidoptera* and *Trichoptera*; M. Girard & P. Mabille, Bull. Soc. Ent. Fr. (5) v. pp. lxxxix. & xc. *E. tarnierella*, Bruand: transformations described; F. J. M. Heylaerts, S. E. Z. xxxvi. pp. 35–38.

Pachypasa effusa, Walk., = *Gonometa postica*, Walk., ♀, figured by Felder; R. H. Stretch, Cist. Ent. ii. p. 14.

Rhinogyne calligama, ♂, Feld., = *Entometa obliqua*, Walk.; *id. ibid.*

Bombyx (?) *deserticola*, sp. n., C. Berg, Bull. Mosc. xlix. pt. 2, p. 212, Patagonia [perhaps belongs to the *Psychidæ*].

Cryptothelea tuckeri, sp. n., A. G. Butler, Ann. N. H. (4) xvi. p. 400, Natal.

Notodontidæ.

Dicranura. Salivary glands of larva; Loy, J. Quek. Club, iii. p. 34. *D. argentea*, Feld., = *Cerura liturata*, Walk.; R. H. Stretch, Cist. Ent. ii. p. 15. *D. vinula*: a popular article, S. Bristow, Naturalist (2) i. pp. 69–73. Variety from Bordeaux; P. Mabille, Bull. Soc. Ent. Fr. (5) v. p. ccxix.

Clostera curtula, var.; H. Wittich, Ent. viii. pp. 134 & 135.

Notodonta cucullina: larva described by G. T. Porritt, *op. cit.* pp. 56 & 57. *N. palpina*, black var.; W. H. Harwood, *op. cit.* p. 199.

Hyleora sphinx, Feld., = *H. eucalyptus*, Doubl.; R. H. Stretch, *l. c.* p. 15.

Datana perspicua, G. & R., &c.; A. R. Grote, Canad. Ent. vii. pp. 195 & 196.

Stretchia, g. n., H. Edwards, P. Cal. Ac. v. p. 266. Allied to *Edema*; type, *S. plusiiformis*, sp. n., p. 267, Nevada.

Derriodes, g. n., A. G. Butler, Ann. N. H. (4) xvi. p. 401. Allied to *Paravetta*; type, *D. hypenissa*, sp. n., *ibid.*, Natal.

Cerura multiscripta, sp. n., C. V. Riley, Tr. Ac. St. Louis, iii. p. 241, fig. 13, Missouri, Illinois.

Limacodidæ.

Letois similis, Feld., = *Neæra latistriga*, Walk.; R. H. Stretch, Cist. Ent. ii. p. 13.

Lithacodia peneta, sp. n., H. K. Morrison, P. Ac. Philad. 1875, p. 71, New York.

Drepanulidæ.

Homochroa ornata, Feld., ? = *Tagora anthereata*, Walk.; R. H. Stretch, Cist. Ent. ii. p. 15.

Saturniidæ.

Saturnia cynthia. On its naturalization in Brooklyn, N. Y.; D. S. Martin & J. Akhurst, P. Lyc. N. York, ii. pp. 28 & 29.

Attacus (*Samia*) *columbia*, Smith, and parasites discussed by H. A. Hagen, Bull. Buff. Soc. ii. pp. 201–208. There are good reasons for supposing it to be a hybrid between *A. cecropia* and *polyphemus*, and it may possibly = *S. gloveri*, Streck.

Samia columbia, Smith, and *euryalus*, Boisd., are figured and redescribed by H. Strecker, Lepidoptera, pp. 103 & 102, pl. xii. figs. 1 & 2.

Callosamia promethea. Two gynandromorphous specimens described and figured, with remarks on gynandromorphism in other *Lepidoptera*; A. S. Packard, Mem. Bost. Soc. ii. pp. 409–412, pl. xiv. figs. 1, 1 *a–d*, & 2.

Saturnia yama mai. Several articles on Sericiculture, with special reference to this species, occur in Bull. Soc. Acclim. (3) ii.

Saturnia pernyi. On rearing; Maitland, Tijdschr. Ent. (2) xviii. pp. lxxxii.–lxxxviii.: also Forel, Bull. Soc. Vaud. (2) xiii. p. 709, who proposes to render the insect single-brooded by retarding the hatching of the eggs by cold. On its silk; G. Suhock, MT. schw. ent. Ges. iv. pp. 153–155.

Actias luna, Linn. Transformations described; R. V. Rogers, Canad. Ent. vii. pp. 141–143, 189 & 190. On collecting the cocoons, and on the difference between them and those of *Telea polyphemus*; R. Bunker, *tom. cit.* p. 63.

Eudæmonia jehovah [!], H. Strecker, figured and redescribed by him; Lepidoptera, p. 101, pl. xii. fig. 1.

Saturnia eglanterina, Boisd., = *hera*, Harr., p. 107; *S. galbina*, Clem., figured and redescribed, p. 104, pl. xii. figs. 4 & 5: *id. l. c.* *S. pyri* acclimatized at Windheim; Jäckel, Zool. Gart. xvi. p. 464.

Hyperchiria, Hübn. Under the new generic name of *Io* [itself barely admissible, being the specific name of the oldest known species], J. A. Boisduval has given (Ann. Ent. Belg. xviii. pp. 188–248, pls. iv. & v.) a "monograph" of this genus. 71 species are described, the great majority as new. Simply because it is Hübner's, Boisduval rejects Hübner's genus *Hyperchiria*, accepted by all other entomologists. Identification of the 71 species is impossible here, but the following is a complete list with localities (the new names are marked with an asterisk):—*I. janus*, Cram., Cayenne, Surinam, *mestli*, Sallé, Mexico, p. 208, *zelleri*, G. & R., Mexico, p. 209, *egeus*, Cram., Guiana, Brazil, *boops*, Feld., Central America, p. 210, *palegon* (*), Brazil, *coresus*, Boisd., Buenos Ayres, p. 211, *banus* (*), Mexico, *abdominalis*, Feld., hab. ?, p. 212, *phales* (*), S. America, *pylades* (*), Brazil, Surinam ?, p. 213, *coffeæ* (*) (? = *pylades*, var.), New Friburg, p. 214, *liberia*, Cram., Cayenne (larva figured, pl. iv. fig. 1), *tridens*, H. S., Brazil, p. 215, *cinctistriga*, Feld., Central America, *amœna* (*), Cayenne, p. 216, *jucunda*, Cram., S. America, p. 217, *divergens* (*) (= *jucunda*, Cram., ♂), Surinam, *erisichton* (*), Caracas, p. 218, *godarti* (*), Mexico ?, Columbia ?, *arminia*, Cram., Cayenne, Surinam, p. 219, *brasiliensis* (*), Brazil, *orestes* (*), Cayenne, p. 220, *crameri* (*) (= [illegible] Cram., figs. F & G [= *vala*, Kirb., pt.]), Surinam, *titania*, Feld., Bogota, p. 221, *gayi* (*; Luc. MS.), pl. iv. fig. 2, Chili, *lucasi* (*), pl. iv. fig. 3, Chili, p. 222, *fabricii* (*) ([= *varia*, Walk.] = *io*, Fabr.), larva figured, pl. iv. fig. 4, North America, p. 223, *cecrops* (*), *montezuma*, Luc., p. 224,

and *eogena*, Feld., Mexico, *mendosa*, Mexico ?, New Granada ?, p. 225, *fumosa* (*), Brazil, *tristis* (*), hab. ?, p. 226, *umbrata* (*) and *orodes* (*), Brazil, p. 227, *stolli* (*) (= *io*, Cram., figs. D & E [= *vala*, Kirb., pt.]), Surinam, p. 228, *nausica*, Cram., Cayenne, Surinam, *plicata*, H. S., Brazil, p. 229, *flexuosa*, Feld., and *caudatula*, Feld., Central America, p. 230, *mimusops* (*), Brazil, *falcata* (*), Cayenne, p. 231, *norcestes* (*), Brazil, *fumata*, Feld., Brazil, p. 232, *nyctimene*, Latr., New Granada, p. 233, *leucane*, Hübn., Mexico, *damœus* (*), America, p. 234, *irene*, Cram., Guiana, p. 235, *scapularis* (*), Brazil, *huebneri*, Minas Geraes, p. 236, *salmonea*, Cram., Surinam, *amphirene* (*), Brazil, p. 237, *hersilia* (*) (= *arminia*, Cram., fig. A, ♂, = ? *metea*, Cram.), Surinam, *erubescens* (*), Brazil, p. 238, *porus*, Brazil, *beckeri*, H. S., hab. ?, p. 239, *aspera*, Feld., South America, *dioxippus* (*), hab. ?, p. 240, *oberthuri* (*), Buenos Ayres, *auletes*, H. S., Surinam, p. 241, *abasia*, Cram., Surinam, Cayenne, p. 242, *abas*, Cram., Surinam, *episcopus* (*) (= *abas*, ♂, Cram., fig. B), Surinam, p. 243, *anableps*, Feld., Mexico, *arguta* (*), Brazil, p. 244, *irmina*, Cram., Surinam, Brazil, *theseus* (*), hab. ?, *pandarus*, Brazil, p. 245, *barii* (*), Cayenne, *cruenta* (*), Brazil, p. 246, and *cæsa* (*), Columbia, p. 247. Upwards of 40 described species are passed over in this so-called "monograph"; and if one of two species requires a name on account of "double emploi," it is generally the earlier which is renamed.

Hyperchiria anableps, Feld., = *abas*, Cram.; R. H. Stretch, Cist. Ent. p. 15. *H. io*, Fabr.: transformations described; J. A. Lintner, Rep. Grote, s. xxiv. pp. 146–149. *H. viridescens*, Walk.: larva described; pp. 105 & A. Vine, Trans. Mosc. xlix. pt. 2, p. 213.

Caulfield *des trisignata*, Feld., = *Dirphia multicolor*, Walk.; R. H. to for *l. c.* p. 15.

Asota senatoria, A. & S. Early stages of larva described; J. A. Lintner, *l. c.* pp. 155 & 156. Dr. Eights, of Albany, believes this to have been the species which on one occasion, some years ago, proved a great impediment to a train upon the New York Central Railroad, from the numbers of larvæ crushed under the wheels.

Eacles imperialis, Dru. Transformations described by J. A. Lintner, *l. c.* pp. 150–154.

Breyeria borinensis, g. & sp. n., De Borre, CR. Ent. Belg. xviii. p. lx. pl. v. fig. 2 (and J. Zool. iv. pp. 291–297), oil schists of Mons. A fossil, probably belonging to the *Saturniidæ*. The neuration of *Attacus aurota* and *Breyeria* figured; pl. vi. figs. 1 & 2.

Attacus hercules, W. Miskin, P. E. Soc. 1875, p. xxvi. Cape York (not described), sp. n.

Pseudohazis nuttalli, H. Strecker, Lepidoptera, p. 107, Rocky Mountains, sp. n.

ENDROMIDÆ.

Thauma, g. n., H. Edwards, P. Cal. Ac. v. p. 265; type, *T. ribis*, sp. n., *l. c.* p. 266, Vancouver's Island.

Bombycidæ.

Trichiura cratægi, *Pœcilocampa populi*, and *Diloba cæruleocephala*. On the construction of their cocoons; Pet. Nouv. vii. p. 487.

Bombyx rubi. Instructions for rearing; W. Buckler, Ent. M. M. xi. pp. 188 & 189.

Opsirrhina flexicosta, ♀, Feld., = ? *O. decorata*, Walk.; R. H. Stretch, Cist. Ent. ii. p. 14.

Kleber, E. Duseigneur. Le cocon de Soie. Histoire de ses transformations, description des races civilisées et rustiques, production et distribution géographique, maladies des vers à soie, physiologie de cocon, et du fil de soie. 2me édition. Paris: 1875.

Not seen by the Recorder. Appears from a notice in Nature, xi. pp. 206 & 207, to be a valuable monograph.

Bombyx mori. On its acclimatization; G. Semper, Abh. Ver. Hamb. 1871–74, pp. 90 & 91.

Brahmæa ledereri, Rog. Transformations described; A. Rogenhofer, Verh. z.-b. Wien, xxv. p. 801.

Dryocampa pallida (= *D. rubicunda*, var. *alba*, Grote), G. J. Bowles, Canad. Ent. vii. p. 108, Quebec, Kansas [should not the name *alba* be adopted ?], sp. n.

Zeuzeridæ.

Cossus ligniperda. On the instinct of the larva in provi[illegible], l. c. *S. pyri* for the moth: it will destroy ash, a tree formerly suppos[illegible] empt from its attacks; A. Dutreux, Publ. Inst. Luxemb. xv. [illegible]self barely 219. Notes on its transformations; Pet. Nouv. vii. pp. 491 & 4[illegible]es], J. A. *Hypopta cæstrum*, Hübn.; P. Millière, Pet. Nouv. vii. p. 523. [illegible] v.) a *Cossus incanescens*, sp. n., A. G. Butler, Ann. N. H. (4) xvi. p. 40[illegible] as Natal.

Hepialidæ.

Hepialus lupulinus. Larva noticed; P. Mabille & T. Goossens, Bull. Soc. Ent. Fr. (5) v. p. ccxiii.

Gorgopis 4-guttatus, Grote, is probably a var. of the variable *argenteomaculatus*, Harr.; H. Strecker, Lepidoptera, pp. 105 & 106. *G. libania*, of Walker, is probably distinct from that of Cramer; A. G. Butler, Ann. N. H. (4) xvi. p. 402.

Pielus hydrographus, Feld., = *P. labyrinthicus*, Walk.; R. H. Stretch, Cist. Ent. ii. p. 13.

Hepialus thule, p. 105, pl. xii. fig. 6, Montreal, and *desolatus*, p. 107, Owen's Lake, Nevada, H. Strecker, Lepidoptera; *H. mathewi*, H. Edwards, P. Cal. Ac. v. p. 265, Vancouver's Island: spp. nn.

Noctuidæ.

A Speyer discusses the relationship existing between the European and American *Noctuæ* and *Deltoidæ*. 49 pairs of identical or representa-

tive species are discussed in great detail; S. E. Z. xxxvi. pp. 97–127, 131–175, 345–352. The affinities of the North American *Noctuæ* are also discussed by A. R. Grote, *op. cit.* pp. 193–202, 340–343. An abstract of Speyer's paper is published in Psyche, i. pp. 65–68.

On allied species of *Noctuidæ* inhabiting Europe and North America; A. R. Grote, Bull. Buff. Soc. ii. pp. 313 & 314.

Additions to the list of *Noctuidæ*, &c., common to North America and Europe; W. V. Andrews, Canad. Ent. vii. p. 19.

A. R. Grote publishes a supplement to his List of North American *Noctuidæ*, preceded by remarks relating to Morrison's criticisms, and to the employment of Hübner's generic names; Bull. Buff. Soc. ii. pp. 209–223. The paper includes additions, and a few corrections of synonymy.

A. R. Grote has also published a Check List of the *Noctuidæ* of America, north of Mexico, i. *Bombyciæ* and *Noctuelitæ* (*Nonfasciatæ*), Buffalo, 1875, 8vo, pp. 28, pl. i. (photographic), 786 species enumerated. Remarks on the structural characters and geographical distribution of the *Noctuæ*, and descriptions of a few new species are appended.

Preliminary list of *Noctuidæ* of California; A. R. Grote, Canad. Ent. vii. pp. 25–28, 44–49, 67–72, 101–104.

List of *Noctuidæ* taken at St. Catherine's, Ontario; G. Norman, *tom. cit.* pp. 3–6, 21–24, and Ent. M. M. xi. pp. 258–262.

A controversy between H. K. Morrison & A. R. Grote, respecting recent papers on North American *Noctuidæ* in Canad. Ent. vii. pp. 15–17, pp. 105–106–80, 99 & 100.

A. Vine, Eu[illegible]alk., recharacterized, and referred to the *Noctuæ*: it is per- Caulfield, Ca[illegible] *Demas* and *Diloba*; H. K. Morrison, Ann. Lyc. N. York, to forewi[illegible]

Ophiddra decora, Morrison, is not Californian; A. R. Grote, Check ment[illegible] p. 25.

o[illegible] *Apatela*. A. R. Grote figures *A. funeralis*, G. & R., and *lithospila*, Grote, Check List, pl. i. figs. 1 & 2, and *A. subochrea*, Grote, Canad. Ent. vii. pl. i. fig. 10. *A. tritona*, Hübn., and *grisea*, Walk. (? = *pudorata*, Morrison); A. R. Grote, Canad. Ent. vii. pp. 221 & 222. *A. paupercula*, Grote, figured; L. F. Harvey, Bull. Buff. Soc. iii. pl. ii. fig. 2.

Acronycta rumicis. Extraordinary movements of a pupa; F. Sintenis, SB. Ges. Dorp. iv. pp. 83 & 84. *A. verrilli*, G. & R., and *Diphthera graefi*, Grote, = *A. brumosa* and *innotata*, Guén., respectively; H. K. Morrison, Canad. Ent. vii. p. 79.

Leucania henrici and *evanidum*, Grote, and *Ablepharon fumosum*, Morr., = *Arsilonche albo-venosa*, Goeze: *Ablepharon obsidum*, Harr., really belongs to that genus; H. K. Morrison, P. Ac. Philad. 1875, p. 428.

Calamia lutosa, Hübn. Variation; C. J. Grube, Tijdschr. Ent. xviii. pp. 118–120, pl. vii.

Zosteropoda hirtipes, Grote, ♀ described; A. R. Grote, Canad. Ent. vii. p. 25.

Eudryas referred to the *Hadenidæ*; H. B. Möschler, S. E. Z. xxxvi. p. 285. *E. grata*, Fabr., transformations described, and eggs, larva, and imago figured; W. Saunders, Canad. Ent. vii. pp. 41–43.

Hydræcia nictitans (Linn. ?), Borkh., var. *americana* defined; A.

Speyer, S. E. Z. xxxvi. p. 152. *H. petasitis*, larva described; E. Newman & R. Kay, Ent. viii. pp. 195 & 196.

Pseudolimacodes, Grote, is allied to *Arzama*, Walk.; A. R. Grote, S. E. Z. xxxvi. p. 199.

Xylophasia lithoxylea and *polyodon*. Comparative description of larvæ; W. Buckler, Ent. M. M. xi. pp. 208–210.

Xylomiges conspicillaris. Larva described; J. Fenn, Ent. M. M. xi. pp. 83 & 84.

Cucullia yosemitæ, Grote, is an *Aporophylla*, near *australis*; A. Speyer, *l. c.* p. 349.

Adita chionanthi, Smith & Abb. Structure; H. K. Morrison & A. R. Grote, Ann. Lyc. N. York, xi. pp. 95 & 109.

Miselia adjuncta, Boisd. (*Hadena adjuncta*, Grote) is a *Mamestra*; H. K. Morrison, *op. cit.* p. 96.

Mamestra rufula, Morr., and *brassicæ*, Grote, = *lubens*, Grote; H. K. Morrison, P. Bost. Soc. xviii. p. 119. *M. serratilinea*, Tr.: transformations described; A. Rogenhofer, Verh. z.-b. Wien, xxv. p. 799. *M. trifolii*, Rott. (= *chenopodii*, W. V.), var. *major*, from North America defined; A. Speyer, *l. c.* p. 138.

Hadena (*Apamea*) *finitima*, Guén., does not seem to be distinct from *basilinea*, W. V.; *id. l. c.* p. 150. *H. ancocisconensis*, Morrison, = *Xylina contraria*, Walk., = *Hyppa xylinoides*, Guén.; A. R. Grote, Check List, p. 24.

Caradrina tarda, Guén., from West Virginia, redescribed; H. K. Morrison, *l. c.* p. 121.

Agrotis. List of 70 North American species, preceded by several; A. R. Grote, Bull. Buff. Soc. ii. pp. 301–308. He [illegible]elf barely his *A. pressa*, Check List, pl. i. fig. 7, *A.* (*Matuta*) *catherina*, and [illegible]s], J. A. *collis*, Canad. Ent. vii. pl. i. figs. 7 & 12. *A. augur*, Fabr., var. *gra* [illegible] v.) a from North America, defined; A. Speyer, *l. c.* p. 122. This is *A. un*[illegible]*s macula*, Morrison, *nec* Staud., and is renamed *A. haruspica*, by A. R. Grote, Bull. Buff. Soc. ii. pp. 212 & 302. *A. clandestina*, Harr., and *ravida*, W. V., structure of the abdominal segments described; *id. l. c.* pp. 347 & 348. *A. campestris*, Grote, seems to be a form of *A. tessellata*, Harr. (= *maizi*, Fitch), *id.* Canad. Ent. vii. p. 188; Grote *l. c.* p. 227, pl. i. fig. 6, refers it to *decolor*, Morr., and figures it. *A. cinereo-macula*, Grote, *nec* Morrison, is renamed *turris*; id. *l. c.* p. 226. *A. claviformis*, ♂, and *A. decolor*, H. K. Morrison, redescribed by him; P. Bost. Soc. xviii. pp. 115 & 116, and Canad. Ent. vii. p. 214. *A. crassa*, Hübn., new to Guernsey; H. A. Luff, Ent. viii. p. 111. *A. exsertistigma*, Morrison (stated by Morr., *op. cit.* p. 26, to be distinct from *alternata*, Grote), *cupidissima*, Grote, and *obeliscoides*, Guén. (which last may = *saxatilis*, Grote), noticed by A. R. Grote, Canad. Ent. vii. pp. 101 & 102. *A. gilvipennis*, Grote, = *A. chardinii*, Boisd.; H. K. Morrison, P. Bost. Soc. xviii. p. 117. *A. helvetina*, Boisd.: the supposed specimen taken in Britain is probably only *neglecta*, Hübn.; H. Doubleday, Ent. viii. p. 135. *A. intrita*, Morrison, ♂ described; A. R. Grote, Canad. Ent. vii. p. 68. *A. mimallonis* and *rufipennis*, Grote, are identical; *id. l. c.* p. 226. *A. musiva*, Hübn.: transformations described by A. Rogenhofer,

l. c. p. 798, who remarks that all previous indications on the subject are erroneous, Hübner's figure probably representing an aberration of the larva of *A. plecta*. *A. plagigera*, *redimicula* (*redimacula*, olim, errore), *rileyana*, *gladiaria*, and *unimacula* (= *haruspica*, Grote), Morrison, redescribed; P. Ac. Philad. 1875, pp. 57–59. *A. scandens*, Riley, and *muræmula*, G. & R., are distinct; A. R. Grote, *l. c.* p. 100. *A. scropulana* and *opipara*, Morrison, are referred to *Pachnobia carnea*, Thunb., and *Agrotis islandica*, Staud., respectively, as vars., by A. R. Grote. *Cf.* Grote & Morrison, Psyche, i. pp. 99 & 100.

Ammoconia badicollis, Grote, belongs to *Agrotis*; H. K. Morrison, P. Ac. Philad. 1875, p. 55.

Anicla alabamæ, Grote, = *Agrotis incivis*, Guén.; *id.* Canad. Ent. vii. p. 78.

Noctua baja and *rubi*. Larvæ described; G. T. Porritt, Ent. viii. p. 55, and Ent. M. M. xi. p. 210.

Tæniosea gentilis and *perbellis*, Grote, belong to *Dyschorista*, Led.; H. K. Morrison, P. Ac. Philad. 1875, p. 432.

Orthosia lota, or sp. n. ? *americana*, id. *l. c.* p. 433, New Jersey. *O. minuscula*, Morr., belongs to *Hadena*; id. *l. c.* p. 431.

Scopelosoma. 8 North American species enumerated: *S. vinulenta*, Grote, probably = *sidus*, Guén.; A. R. Grote, Canad. Ent. vii. p. 206.

Scopelosoma devia, Grote, redescribed; H. K. Morrison, Ann. Lyc. N. York, xi. p. 97.

Parastichtis gentilis and *perbellis*, Grote, and *minuscula*, Morr., figured; Grote, is pl. i. figs. 1–3.

pp. 105 & *alla*, G. & R., and *bicolorago*, Guén., are varieties of *Ortho*- A. Vine, *ideoides*, Guén.; H. K. Morrison, P. Ac. Philad. 1875, p. 66. Caulfield to A. R. Grote (*op. cit.* p. 328), *X. bicolorago*, Walk. (? Guén.), to *fourcata*, Walk., = *Xanthia ferruginea*, v. *ferrugineoides*, Guén., but .. *ralla*, G. & R., is distinct. *Cf.* also Grote & Lintner, Canad. Ent. vii. pp. 78, 79, 99, 128 & 129.

Cirrhædia xerampelina, dark var.; G. A. Smallwood, Ent. viii. p. 238.

Pachypolia atricornis, A. R. Grote, figured by him; Check List, pl. i. fig. 8.

Oligia versicolor, A. R. Grote, figured by him; Canad. Ent. vii. pl. i. fig. 11.

Homohadena badistriga, Grote, figured by him; Check List, i. pl. i. fig. 5. *H. inducta*, Harv., = *retroversa*, Morr.; H. K. Morrison, Canad. Ent. vii. p. 95.

Epunda nigra. Transformations; Grigg, P. Bristol Soc. (2) i. p. 308.

Aplecta occulta. Transformations described; W. Buckler, Ent. M. M. xii. pp. 66–68.

Xylina rhizolitha. Natural history; *id. l. c.* pp. 140 & 141.

Lithophane thaxteri, A. R. Grote, figured by him; *l. c.* fig. 3.

Litholomia napæa, Morr., figured; *id.* Canad. Ent. vii. pl. i. fig. 4.

Cleophana occata, Grote, figured; L. F. Harvey, Bull. Buff. Soc. iii. pl. ii. fig. 6.

Cucullia formosa, Rogenh. The larva described, in 1862, by Rogen-

hofer, as that of this species was only a variety of that of *C. tanaceti*, and the true larva of *C. formosa* closely resembles that of *C. absinthii*; A. Rogenhofer, Verh. z.-b. Wien, xxv. p. 802. *C. serraticornis*, Lintn., figured by A. R. Grote, Check List, pl. i. fig. 10.

Calocampa nupera, Lint., is only doubtfully distinct from *vetusta*, L.; H. K. Morrison, Ann. Lyc. N. York, xi. pp. 99–101.

Schinia gracilenta, Grote, var. *oleagina* from Texas, described; H. K. Morrison, P. Ac. Philad. 1875, p. 67. Grote considers it identical with the type; Canad. Ent. vii. p. 222.

Anthœcia arcifera, Guén., is a ♀ melanotic variety of *A. sprayuei*, Grote & Robinson, of which *A. brevis*, Grote, is also a var.; H. K. Morrison, P. Bost. Soc. xviii. p. 123.

Acerra normalis, A. R. Grote, figured by him; Check List, pl. i. fig. 4.

Heliothis. Table of North American species related to this genus; A. R. Grote, Bull. Buff. Soc. ii. pp. 219–221. Further additions, pp. 308–312. He redescribes and figures his *H. cupes*, l. c. p. 311, pl. iii. fig. 4. *H. dipsacea*: transformations described; W. Buckler, Ent. M. M. xi. pp. 256–258.

Prothymia argiæ, A. R. Grote, redescribed and figured by him; *l. c.* p. 311, pl. iii. fig. 2.

Pyrrhia exprimens and *angulata*, A. R. Grote, figured by him; *l. c.* pl. iii. figs. 5 & 6.

Heliodes arbutoides, Chav. (= *jocosa*, Zell.), noticed; Bellier de la Chavignerie, Bull. Soc. Ent. Fr. (5) v. pp. xiii. & xiv.

Choreutes lascivalis, Led., is a *Noctua* of the genus *Acc*[illegible] *l. c. S. pyri* Ragonot, *tom. cit.* pp. xlii. & xliii.

Xanthoptera semicrocea, Guén., redescribed and figured in itself barely C. V. Riley, Tr. Ac. St. Louis, iii. pp. 236–238. [illegible]es], J. A.

Metoponia koekritziana, Hübn. (*flavida*, auct.), new to Lower Aus[illegible] v.) a A. Rogenhofer, *l. c.* p. 801. [illegible]as

Erastria africana, Feld., = ? *Microphysa decissima*, Walk.; A. G. Butler, Ann. N. H. (4) xvi. p. 404.

Nolaphana malana, Zell., discussed, and its neuration and that of *Nola confusalis* figured; P. C. Zeller, Verh. z.-b. Wien, xxv. pp. 326 & 327, pl. x. figs. 43*a* & *b*, 44*a* & *b*. The former is correctly referred by Grote to the *Noctuidæ*.

Agrophila truncatula, Zell., redescribed in both sexes; *id. l. c.* pp. 327 & 328.

Palindiidæ. C. Bar has commenced a revision of the species occurring in French Guiana, Ann. Soc. Ent. Fr. (5) v. pp. 289–302, pl. v., with descriptions and figures of many new species. He has now raised the number from 19 in Guénée's work to 38 [being apparently ignorant of the many new species described or figured by Walker, Herrich-Schäffer, Felder, and others]. *Phalæna striataria*, Cram., probably does not belong to this group, but may be a Deltoid, near *Cyclopteryx*. The genus *Palindia* is recharacterized, and *P. corinna*, Cram., redescribed and figured, p. 296, pl. v. fig. 3.

Sudariophora callitrichioides, Grote, noticed; P. C. Zeller, *l. c.* pp. 328 & 329.

Plusia. List of 39 North American species by A. R. Grote, Canad. Ent. vii. pp. 204 & 205; the following are still undetermined:—*omicron*, Linn., *falcigera* and *rectangula*, Kirb., *flagellum*, *indigna*, *selecta*, and *secedens*, Walk. *P. alticola*, Walk., and *ignea*, Grote, = *P. hochenwarthi*, Hochenw., and *Leptina formosa*, Grote, is a *Plusia*; H. K. Morrison, Ann. Lyc. N. York, xi. pp. 98 & 99. *P. fratella*, Grote, = *ou*, Guén., according to H. K. Morrison, but denied by A. R. Grote, Canad. Ent. vii. pp. 79 & 99. *P. gamma*, var. ? *californica*, fully described by A. Speyer, S. E. Z. xxxvi. p. 164. *P. interrogationis*: food plant; H. A. Kelly & F. B. White, Scot. Nat. iii. p. 9. *P. microgamma*, Hübn.: larva described; F. Sintenis, SB. Ges. Dorp. iv. pp. 111 & 112.

Cosmophila edentata, Walk., = *indica*, Guén.; A. G. Butler, *l. c.* p. 405.

Amphipyra pyramidoides, Guén. Transformations described, with figures of larva and imago; W. Saunders, Canad. Ent. vii. pp. 14 & 15.

Bolina nigrescens, G. & R., is distinct from *fasciolaris*, Hübn.; A. R. Grote, Tr. Am. E. Soc. v. p. 116. *B. ochreipennis*, L. F. Harvey, figured by him; *l. c.* pl. ii. fig. 10.

Syneda graphica, Hübn., var. *media*, described by H. K. Morrison, P. Bost. Soc. xviii. p. 125. *S. stretchi*, Behr, = *howlandi*, Grote; A. R. Grote, *l. c.* p. 117.

Catocala levettii, Grote, = *judith*, Streck., *anna*, Grote, = *amestris*, Streck., *adoptiva*, Grote, = *delilah*, Streck., *concumbens*, Walk., is very close to *pacta*, Linn., *simulatilis*, Grote, = *obscura*, Streck., ♀, *residua*, Grote, is a common form of *insolabilis*, Guén.; H. Strecker, Lepidoptera, pp. 105 & 106. *C. electa*, Borkh., stated to have occurred at Brighton; A. Vine, Ent. viii. pp. 282 & 283. *C. ilia*, Cram.: larva described; F. B. Caulfield, Canad. Ent. vii. pp. 208 & 209. *C. nupta* with *Acari* attached to forewing instead of to body; Phippson, P. E. Soc. 1875, p. xxiii.

Ophideres. The proboscis is modified into a strong rigid boring instrument, armed with spines, with which the insect pierces the skin of oranges, and sucks the juice (that of *A. fullonica* is figured); J. Kunckel, C. R. lxxxi. pp. 397–400 (translation, Ann. N. H., 4, xvi. pp. 372-374), and Bull. Soc. Ent. Fr. (5) v. p. ccxii. The structure of the proboscis of *O. fullonica* is also described with figures by F. Darwin, Q. J. Micr. Sci. xv. pp. 384–389, and is referred to in M. Micr. J. xix. pp. 235 & 236.

Hypopyra anteponens and *Remigia venusta*, Walk., = *Entomogramma pardus*, Guén.; A. G. Butler, *l. c.* p. 406.

Drasteria erichtea, Cram. Transformations described and imago figured; W. Saunders, *l. c.* pp. 115–117.

Euclidia triquetra, Fabr. Transformations described; A Rogenhofer, *l. c.* p. 800.

Litomitus elongatus, Grote, = *Celiptera frustulum*, Guén.; H. K. Morrison, Canad. Ent. vii. p. 79.

Remigia. A. G. Butler redescribes *Herminia nigrifrontalis*, Walk., and refers it to this genus; *l. c.* p. 408.

Remigia latipes, var. *texana*, Morr.: H. K. Morrison now considers this form to be distinct, and calls it *R. texana*; P. Ac. Philad. 1875, p. 71.

New genera and species :—

Trichosea, A. R. Grote, Bull. Buff. Soc. ii. p. 213. Allied to *Moma*; type, *Noctua ludifica*, Linn.

Eucalyptra, H. K. Morrison, Ann. Lyc. N. York, xi. p. 103. Allied to *Amolita* and *Thaumatopsis*; type, *E. bipuncta*, id. *l. c.* p. 104, Massachusetts.

Metalepsis, A. R. Grote, Check List, i. p. 25 (= *Pachnobia*, V. Hein., *nec* Guén.); type, *Pachnobia cornuta*, Grote; also includes the European *rubricosa*, W. V.

Crocigrapha, id. Canad. Ent. vii. p. 57; type, *Perigrapha normani*, Grote, pl. i. fig. 13.

Eucirrœdia [*-rhœ*], id. *l. c.* p. 205. Allied to *Atethmia* (*Cirrhœdia*); type, *C. pampina*, Guén.

Litholomia, id. *l. c.* p. 206. Allied to *Lithophane*; type, *Scopelosoma napœa*, Morrison, redescribed, *l. c.*

Copihadena, H. K. Morrison, *op. cit.* p. 91; type, *Homohadena atricollaris*, Harv.

Metahadena, *id.* P. Ac. Philad. 1875, p. 431; type, *M. atrifasciata*, ibid. Maine.

Oxylos, A. R. Grote, Check List, i. p. 19, note 25. Type, *Heliothis citrinella*, G. & R.

Eutricopis, H. K. Morrison, Ann. Lyc. N. York, xi. p. 102. Allied to *Omia* and *Heliolonche*; type, *E. nexilis*, id. *ibid.* Colorado.

Agrotiphila, A. R. Grote, *op. cit.* p. 108. Allied to *Anarta*; type, *Agrotis montana*, Morrison [*infrà*].

Grotella, L. F. Harvey, Bull. Buff. Soc. ii. p. 278. Allied to *Heliothis*; type, *G. septempunctata*, id. *ibid.* pl. iii. fig. 1, Texas.

Acopa, id. *l. c.* p. 279. Allied to *Lygranthœcia*; type, *A. carina*, id. *ibid.* pl. iii. fig. 7, Texas.

Pippona, id. *l. c.* iii. p. 9. Allied to *Grotella* and *Euleucyptera*; type, *P. bimatris*, id. *l. c.* p. 10, Texas.

Spragueia, A. R. Grote, Check List, p. 25. Allied to *Erotyla*; type, *Agrophila leo*, Guén. Add *S. guttata* and *fasciatella*, Grote, Canad. Ent. vii. p. 225, Texas.

Exyra, A. R. Grote, *l. c.* p. 26; type, *Xanthoptera semicrocea*, Guén.

Calydia, C. Bar, Ann. Soc. Ent. Fr. (5) v. p. 291. Between *Homodes* and *Palindia*; types, *C. bourgaulti* and *osseata*, French Guiana, pp. 292 & 293, pl. v. figs. 1 & 2.

Behrensia, A. R. Grote, Canad. Ent. vii. p. 70. Allied to *Plusia*; type, *B. conchiformis*, id. *l. c.* p. 71, and Check List, pl. i. fig. 6, California.

Eubolina, L. F. Harvey, *l. c.* ii. p. 280; type, *E. impartialis*, id. *l. c.* p. 281, Texas.

Cirrhobolina, A. R. Grote, Tr. Am. E. Soc. v. p. 117. Between *Bolina* and *Syneda*; type, *Syneda deducta*, Morr., of which *S. pavitensis*, Morr., is the ♀. Add *C. incandescens*, Grote, *ibid.* Texas.

Lita [preoccupied in *Tineidæ*], L. F. Harvey, *l. c.* ii. p. 280. Allied to *Syneda*; type, *L. sexsignata*, id. *ibid.* Nevada.

Trama, id. *op. cit.* iii. p. 13. Allied to *Agnomonia*; type, *T. arrosa*, ibid. Texas.

Litosea, A. R. Grote, Canad. Ent. vii. p. 49. Allied to *Drasteria*; types, *Drasteria convalescens*, Guén., and *L. adversa*, id. *ibid.* California.

Homophoberia, H. K. Morrison, P. Bost. Soc. xviii. p. 125. Allied to *Phoberia*; type, *H. cristata*, ibid., New Jersey.

Hexeris, A. R. Grote, *l. c.* p. 176. Allied to *Endropia* and *Syllectra*; type, *H. euhydris*, ibid., Florida.

Tatorinia, A. G. Butler, Ann. N. H. (4) xvi. p. 408. Allied to *Thermesia*; type, *T. burrowsi*, ibid. Natal.

Dicopis electilis, H. K. Morrison, *l. c.* p. 114, Pennsylvania.

Edema packardi, id. Ann. Lyc. N. York, xi. p. 92, Waco, Texas.

Charadra decora, id. P. Ac. Philad. 1875, p. 55, Colorado.

Panthea leucomelana, id. *l. c.* p. 428, Maine, New Hampshire.

Bryophila galathea (? = *perloides*, Guén., var.) figs. 8 & 9, St. Martin (Alpes Maritimes), and *oxybiensis*, figs. 10–12, P. Millière, Ann. Soc. Ent. Fr. (5) v. p. 13, pl. i.

Acronycta pudorata, H. K. Morrison, Ann. Lyc. N. York, xi. p. 93, New York, Canada.

Apatela dentata, A. R. Grote, *l. c.* p. 222, Quebec; *A. radcliffii*, Massachusetts, p. 270, and *persuasa*, Texas, p. 271, pl. ii. fig. 1, L. F. Harvey, Bull. Buff. Soc. ii.

Ablepharon obsidum, id. *l. c.* p. 275, Oregon.

Heliophila ligata, A. R. Grote, Tr. Am. E. Soc. v. p. 115, Texas; *H. pertracta*, H. K. Morrison, P. Bost. Soc. xviii. p. 120, Philadelphia; *H. subpunctata*, L. F. Harvey, *l. c.* iii. p. 8, Texas.

Nonagria læta, H. K. Morrison, *l. c.* p. 120, New Jersey.

Tapinostola variana, id. P. Ac. Philad. 1875, p. 432, Michigan.

Xylophasia patagonica, C. Berg, Bull. Mosc. xlix. pt. 2, p. 217, Patagonia.

Xylomiges crucialis, L. F. Harvey, *l. c.* ii. p. 277, California.

Laphygma inflexa, H. K. Morrison, *l. c.* p. 65, Florida.

Prodenia flavimedia and *lineatella*, L. F. Harvey, *l. c.* pp. 274 & 275, Texas; *P. præfica*, A. R. Grote, Canad. Ent. vii. p. 44, California.

Mamestra marinitincta, L. F. Harvey, *l. c.* p. 273, Texas; *M. illaudabitis* (*illaudabilis*, laps. cal.), pp. 27 & 72, California, *goodelli*, p. 223, Amherst, Massachusetts, A. R. Grote, Canad. Ent. vii.; *M. dodgii*, H. K. Morrison, *op. cit.* p. 90, Nebraska; *M. curta* and *promulsa*, id. Ann. Lyc. N. York, xi. pp. 96 & 97, Colorado (*M. promulsa* is referred to *Anarta*, by Grote, Canad. Ent. vii. p. 223); *M. lubens*, A. R. Grote, Tr. Am. E. Soc. v. p. 113, Canada, East and Middle States; *M. repentina*, New Jersey, *ectypa*, West Virginia, p. 118, *rugosa*, Maine, p. 119, H. K. Morrison, P. Bost. Soc. xvii., *M. thecata*, p. 59, New Hampshire, Massachusetts, *rufula*, p. 62, United States, and *quadrannulata*, p. 430, Nebraska, *id.* P. Ac. Philad. 1875.

Apamea natalensis, A. G. Butler, Ann. N. H. (4) xvi. p. 403, Natal; *A. subvelata*, F. Walker, in Melliss's "St. Helena," p. 184, St. Helena.

Caradrina derosa, H. K. Morrison, P. Bost. Soc. xviii. p. 121, New Jersey; *C. meralis*, id. Canad. Ent. vii. p. 215, Maine; *C. indicata*, F. Walker, *l. c.* p. 185, St. Helena.

Amyna undulifera, A. G. Butler, *l. c.* p. 403, Natal.

Agrotis morrisoniana, C. V. Riley, P. Bost. Soc. xvii. p. 286, United States; *A. digna*, Texas, *infracta*, Colorado, Texas, p. 115, *manifesta*, New York, *oblata*, Anticosti Island, p. 116, *prafixa*, Rocky Mountains, p. 117, *brochus* (= *A. brocha*, P. Ac. Philad. 1875, p. 56), Nebraska, p. 163, H. K. Morrison, op. cit.; *A. dilucida*, New Hampshire, p. 55, *fernaldi* and *tristicula*, Maine, p. 429, and *hortulana*, California, p. 430, *id.* P. Ac. Philad. 1875; *A. acclivis*, p. 93, New York, and *montana*, p. 94, Colorado, *id.* Ann. Lyc. N. York, xi.; *A. pallidula*, F. Walker, *l. c.* p. 183, St. Helena; *A. obtusa*, A. Speyer (probably = *A. normaniana*, Grote), S. E. Z. xxxvi. pp. 124 & 126, note, North America; *A. lagena*, California, p. 26, *silene*, Nevada, p. 67, *pastoralis*, Vancouver, p. 68, *gagates*, Colorado, p. 69, *rufipennis*, New York, p. 83, *perexcellens* (= *excellens*, Grote, *nec* Staud., Tr. Am. E. Soc. v. p. 115), Vancouver's Island, p. 139, *observabilis*, California, p. 144, *versipellis*, Orillia, p. 172, fig. 9, *treati* and *brunneipennis*, Massachusetts, pp. 186 & 187, *friabilis*, Canada ?, p. 187, fig. 5, and *rubifera*, Canada, p. 207, fig. 14, A. R. Grote, Canad. Ent. vii. pl. i.; *A. ridingsiana*, id. Bull. Buff. Soc. ii. p. 305, Colorado, Nevada; *A. rudens*, pl. ii. fig. 7, and *sculptilis*, p. 271, *chortalis*, p. 272, and *inconcinna*, iii. p. 5, all from Texas, L. F. Harvey, op. cit.; *A. feniseca* and *carissima*, id., in Grote's Check List, p. 25, California.

Graphiphora arthrolita, L. F. Harvey, *l. c.* ii. p. 275, California; *G. behrensiana*, A. R. Grote, Canad. Ent. vii. p. 71, California.

Segetia mersa, H. K. Morrison, P. Bost. Soc. xviii. p. 120, California.

Pachnobia orilliana, A. R. Grote, *l. c.* p. 154, pl. i. fig. 8, Orillia, Canada (? = *Agrotis flaviformis*, Morr.; Grote, *l. c.* p. 227).

Tæniocampa vegeta, H. K. Morrison, P. Ac. Philad. 1875, p. 432, Texas.

Orthosia perpura and *differta*, pp. 66 & 67, New York, *immaculata*, p. 433, South Nevada, *id.* l. c.; *O. crispa*, ii. p. 276, California, and *posticata*, iii. p. 8, Texas, L. F. Harvey, Bull. Buff. Soc.; *O. helva*, A. R. Grote, *op. cit.* ii. p. 310, and Canad. Ent. vii. p. 84, Eastern United States; *O. disticha*, id. Tr. Am. E. Soc. v. p. 114, Texas.

Anchocelis insularis, F. Walker, *l. c.* p. 182 (transformations noticed), St. Helena.

Glœa tremula, L. F. Harvey, *l. c.* ii. p. 276, Texas; *G. venustula*, A. R. Grote, Canad. Ent. vii. p. 84, Maryland.

Scopelosoma pettiti, id. *l. c.* p. 188, Ontario.

Ipimorpha intexta, L. F. Harvey, *op. cit.* p. 136, Sharon Springs, New York.

Dianthœcia lustralis, A. R. Grote, *l. c.* p. 223, Racine; *D. palilis*, L. F. Harvey, Bull. Buff. Soc. ii. p. 273, Texas.

Oncocnemis riparia (? = *chandleri*, var.), H. K. Morrison, Canad. Ent. vii. p. 213, Long Island; *O. meadiana*, id. P. Ac. Philad. 1875, p. 60, Colorado.

Pachypolia acutissima, A. R. Grote, Check List, p. 23, pl. i. fig. 9, Montreal.

Trigonophora v-brunneum (= *Phlogophora periculosa*, var. a, Guén.), *id. l. c.* p. 23, Canada, New York.

Dryobota stigmata, id. *ibid.* Montreal.

Hadena interna, Chicago, and *cucullilformis*, Sanzalito, *id. l. c.* p. 24; *H. indirecta*, Vancouver's Island, and *stewarti*, California, *id.* Canad. Ent. vii. p. 28; *H. ancisconensis*, Mount Washington, p. 198, and *norna*, Texas, p. 216, H. K. Morrison, op. cit.; *H. suffusa*, United States, p. 61, *inordinata*, Massachusetts, p. 63, *stipata*, Illinois, and *paginata*, Florida, p. 64, *id.* P. Ac. Philad. 1875; *H. patina*, L. F. Harvey, *l. c.* iii. p. 7, pl. iii. fig. 4, Texas; *H. intonsa*, C. Berg, Bull. Mosc. xlix. pt. 2, p. 215, Patagonia.

Homohadena figurata, L. F. Harvey, Canad. Ent. vii. p. 117, Nevada; *H. incomitata*, id. *l. c.* p. 136, and Bull. Buff. Soc. iii. p. 6, pl. ii. fig. 9, Texas; *H. atricollaris*, id. *l. c.* ii. p. 273, and *induta*, p. 274, iii. pl. ii. fig. 8, Texas.

Actinotis derupta, H. K. Morrison, P. Ac. Philad. 1875, p. 62, Texas.

Lithophane georgii, A. R. Grote, Canad. Ent. vii. p. 188, Orillia, Canada.

Cucullia lætifica, J. A. Lintner, in Grote's Check List, p. 24, Texas; *C. luna*, H. K. Morrison, P. Bost. Soc. xviii. p. 122, Dacota.

Cleophana occata, A. R. Grote, Tr. Am. E. Soc. v. p. 114, Texas.

Chariclea pretiosa, H. K. Morrison, *l. c.* p. 122, Kansas.

Heliothis cupes, A. R. Grote, *l. c.* p. 113, Texas; *H. lupatus*, id. Canad. Ent. vii. p. 224, Texas; *H. luteitinctus*, id. Check List, p. 19, n. 711, and note 24, Kansas; *H. lucens*, H. K. Morrison, P. Ac. Philad. 1875, p. 69, Massachusetts, Nebraska; *H. eximius* and *patagonicus*, C. Berg, *l. c.* pp. 218 & 220, Patagonia.

Anarta membrosa, H. K. Morrison, Ann. Lyc. N. York, xi. p. 101, White Mountains; *A. nivaria*, A. R. Grote, *op. cit.* p. 107, Colorado.

Schinia tefferi, H. K. Morrison, *l. c.* p. 68, Texas; *S. media*, id. P. Bost. Soc. xviii. p. 123, Pennsylvania, Kansas.

Tarache obatra, id. *l. c.* p. 124, Louisiana.

Lygranthœcia roseitincta, L. F. Harvey, Bull. Buff. Soc. ii. p. 278, pl. iii. fig. 3, Texas; *L. meskeana*, A. R. Grote, Canad. Ent. vii. p. 224, Texas.

Metoponia perflava, L. F. Harvey, *l. c.* iii. p. 11, Texas.

Annaphila mera, id. *op. cit.* ii. p. 277, and Canad. Ent. vii. p. 160, California; *A. decia*, A. R. Grote, *l. c.* p. 47, California.

Acontia formosa, A. G. Butler, *l. c.* p. 404, Natal.

Tricopis aleucis (*alencis*, laps. cal.), L. F. Harvey, Canad. Ent. vii. pp. 117 & 135, and Bull. Buff. Soc. iii. pl. ii. fig. 5, Texas.

Tarache binodula, A. R. Grote, Canad. Ent. vii. p. 224, Texas; *T. lactipennis*, L. F. Harvey, *op. cit.* p. 135, and Bull. Buff. Soc. iii. p. 10, pl. ii. fig. 3, Texas; *T. patula*, Texas, and *crustaria*, Nebraska, H. K. Morrison, P. Ac. Philad. 1875, pp. 69 & 70.

Trichotarache assimilis, A. R. Grote, *l. c.* p. 48, California.

Xanthoptera ridingsi, C. V. Riley, Tr. Ac. St. Louis, iii. p. 240, fig. 12, Alabama.

Thalpochares carmelita, H. K. Morrison, *l. c.* p. 434, Texas.

Palindia stella (= *corinna*, Guén., *nec* Cram.), p. 297, fig. 4, *emilia*, p. 299, fig. 5, *formosa* and *lucia*, pl. 300, figs. 6 & 7, *sabina*, p. 301, fig. 8, C. Bar, Ann. Soc. Ent. Fr. (5) v. pl. v. French Guiana.

Ingura præpilata, A. R. Grote, Bull. Buff. Soc. ii. p. 311, Texas.

Telesilla navia, L. F. Harvey, *op. cit.* iii. p. 10, Texas; *T. vesca*, H. K. Morrison, Ann. Lyc. N. York, xi. p. 103, Texas, Wisconsin.

Plusia monodon, p. 202, *pseudogamma*, Cape Breton, and *dyaus*, Texas and Jamaica, p. 203, *pedalis*, Kansas, p. 204, A. R. Grote, Canad. Ent. vii.; *P. metallica*, id. Bull. Buff. Soc. ii. p. 311, California; *P. laticlavis*, H. K. Morrison, *l. c.* p. 98, New York.

Gonitis pusilla, A. G. Butler, *l. c.* p. 405, Natal.

Homopteræ uniformis, Georgia, and *cinerea*, Massachusetts, H. K. Morrison, Canad. Ent. vii. p. 148; *H. edusina*, *atritincta*, and *benesignata*, L. F. Harvey, *l. c.* iii. p. 14, Texas.

Homoptera galbanata, H. K. Morrison, P. Ac. Philad. 1875, p. 435, Nebraska.

Bolina agrotipennis, L. F. Harvey, *l. c.* ii. p. 280; *B. ochreifascia* (Harvey, MS.), A. R. Grote, Tr. Am. E. Soc. v. p. 117: both from Texas.

Syneda ingeniculata, H. K. Morrison, *l. c.* p. 435, Texas.

Catocala jocaste, H. Strecker, Lepidoptera, p. 107, Kansas; *C. nebraskæ*, G. M Dodge, Canad. Ent. vii. p. 2, Nebraska; *C. belfragiana*, L. F. Harvey, *l. c.* ii. p. 281, Texas; *C. verrillana*, A. R. Grote, Bull. Buff. Soc. iii. p. 12, and Canad. Ent. vii. p. 185, Texas.

Pleonectyptera immaculalis, L. F. Harvey, *l. c.* iii. p. 13, Texas.

Patula walkeri (= *macrops*, Walk., pt., *nec* Linn.), A. G. Butler, *l. c.* p. 406, Africa.

Sphingomorpha monteironis, id. *l. c.* Ambriz, Natal.

Ophisma rivularis, id. *l. c.* p. 407 (= *O. croceipennis*, var. γ, Walk.), West Africa.

Euclidia tehuelcha, C. Berg, *l. c.* p. 221, Patagonia.

Prothymia subolivacea, L. F. Harvey, *l. c.* iii. p. 11; *P orgyiæ*, A. R. Grote, Tr. Am. E. Soc. v. p. 116: both from Texas.

Remigia hexastylus, Canada to Texas, and *indentata*, Texas, L. F. Harvey, Bull. Buff. Soc. ii. p. 282; *R. enixa*, A. R. Grote, *op. cit.* p. 310, Texas.

Renodes pallidula, A. G. Butler, *l. c.* p. 409, Natal.

Selenis costalis, id. *ibid.* Natal.

Deltoidæ.

Zanclognatha tarsipennalis, Tr., is a very variable species; *Z. bidentalis*, V. Hein., is one variety, and two others are noticed under the names of *kuwerti* and *varialis*: A. Fuchs, S. E. Z. xxxvi. pp. 53–59, 225–227.

Colobochila saligna, Zell., = *Madopa interpuncta*, Grote; P. C. Zeller, Verh. z.-b. Wien, xxv. p. 329.

Hypena laciniosa, Zell., = *benignalis*, Walk., = *baltimoralis*, Grote, (? Guén.); *H. pallialis*, Zell., = *bijugalis*, Walk.; *H. achatinalis*, Zell., var. noticed: P. C. Zeller, *l. c.* pp. 329 & 330.

Pseudorgyia, g. n., L. F. Harvey, Bull. Buff. Soc. ii. p. 284. Allied to *Bomolocha*; type, *P. versuta*, sp. n., *id. ibid.* Texas.

New species:—

Tamyra physophora, Brazil, *pusilla*, Amazon, *tumida*, Bogota, *splen-*

dens, Cayenne, Brazil, *crumena* and *gibbosa*, Bogota, Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxvii. figs. 10–12, 15, 16 & 36.

Dichromia (?) *taminia*, iid. *l. c.* pl. cxxxix. fig. 29, Java.

Semnia egacalis and *aurivitta*, figs. 19 & 20, Amazon, *albivitta*, figs. 21 & 22, Brazil, and *S.* (?) *funerea*, fig. 23, Amazon, *iid. l. c.* pl. cxxxiv.

Acronolepia tryphænalis, *biguttalis*, and *josialis*, iid. *l. c.* pl. cxxxiv. figs. 17, 18, & 24, Amazon.

Hypena velatipennis, A. G. Butler, Ann. N. H. (4) xvi. p. 410, Natal.

Pseudaglossa denticulalis, L. F. Harvey, Bull. Buff. Soc. ii. p. 283, Pennsylvania.

Bomolocha perangulalis id. *ibid.* New York.

Herminia rectalis, F. Walker, in Melliss's "St. Helena," p. 188, St. Helena.

GEOMETRIDÆ.

A. S. PACKARD proposes to monograph the North American *Geometridæ*, and gives a plate of representative forms; Am. Nat. ix. pp. 179 & 180.

Idiodes inspirata, Guén., figured; Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxiv. fig. 3.

Paragonia succedens, Walk. ?, figured; *iid. l. c.* pl. cxxii. fig. 11, from Bogota.

Crochiphora coloraria, Fabr., var. *sphæromacharia* from Alabama described; L. F. Harvey, Bull. Buff. Soc. ii. p. 284.

Heterolocha phænicotaniata, Koll., figured; Felder & Rogenhofer, *l. c.* pl. cxxxiii. figs. 6 & 6*a*.

Tetracis agrotata, Guén., var. ? *polyplagaria* from South America figured; *iid. l. c.* pl. cxxii. fig. 5.

Azelina spectrata and *saturata*, Walk., figured; *iid. l. c.* pl. cxxiii. figs. 13 & 33.

Erebomorpha mauraria, Guén., figured; *iid. l. c.* pl. cxxvi. figs. 18, 18*a*, 19 & 19*a*.

Phigalia pilosaria: J. T. Boswell & H. Doubleday, Ent. viii. pp. 161–163.

Cleora glabraria: transformations described, W. Buckler, Ent. M. M. xii. pp. 84 & 85, and E. Newman, Ent. viii. p. 193. *C. pulchraria*, Minot: variation; H. K. Morrison, Psyche, i. pp. 68–70.

Tornos robiginosus, described by H. K. Morrison as a *Noctua*, is a *Geometra* near *Cymatophora* (*Boarmia*); L. F. Harvey, *l. c.* iii. p. 15.

Boarmia merops, Cram., figured by Felder & Rogenhofer, *l. c.* pl. cxxv. fig. 11.

Boarmia repandata, aberr. *nigricata* from the Taunus, and *B. glabraria*, abb. *nigro-cinctata*, and *obscura* described; A. Fuchs, S. E. Z. xxxvi. pp. 231–233.

Ephyra punctaria and *pendularia*: B. J. Cole, Ent. viii. pp. 125 & 126.

Asthena blomeraria, Curt., = *pulchraria*, Eversm.; larva described, and larva and imago figured, by P. Millière, Ann. Soc. Ent. Fr. (5) v. p. 11, pl. i. figs. 1 & 2.

Acidalia contiguaria, Hübn., is double-brooded in the Rheingau, and

dimorphous, a paler and darker form (v. *obscura*, Fuchs) occurring; its habits and characters are described: A. Fuchs, *l. c.* pp. 227–231. *A. emarginata*, life history; P. H. Jennings, Ent. viii. pp. 180 & 181. *A. lactaria* and *derasata*, Walk., are identical; A. G. Butler, Ann. N. H. (4) xvi. p. 418. *A. reaumuraria*, Mill., = *Phalæna pratana*, Fabr.; A. Rogenhofer, Verh. z.-b. Wien, xxv. p. 801.

Berberodes conchylata, Guén., figured by Felder & Rogenhofer, *l. c.* pl. cxxviii. fig. 12.

Macaria galbineata, Zell., ? = *quadrisignata*, Walk; P. C. Zeller, Verh. z.-b. Wien, xxv. p. 330.

Semiothisa gambarina, Guén. (? Cram.), fig. 18, and *divergentata*, Snell., figs. 22 & 22*a*, figured by Felder & Rogenhofer, *l. c.* pl. cxxviii.

Fidonia halesaria, Zell., = *fimetaria*, Grote; P. C. Zeller, *l. c.* p. 336.

Syrrhodia versatiliaria, Guén., var. from Haiti figured by Felder & Rogenhofer, *l. c.* pl. cxxiii. fig. 22.

Osteodes turbulentata, Guén., figured; *iid. l. c.* pl. cxxix. figs. 4 & 4*a*.

Selidosema ambustaria, Hübn., = *duponchelaria*, Lef.: transformations described and figured by P. Millière, Ann. Soc. Ent. Fr. (5) v. pp. 12 & 13, pl. i. figs. 3–7.

Rhyparia grandaria, Feld., figured by Felder & Rogenhofer, *l. c.* pl. cxxix. fig. 28.

Abraxas interruptaria, Feld., figured; *iid. l. c.* fig. 29.

Anisopteryx vernata, Peck, and *pometaria*, Harr., figured and redescribed in all stages; C. V. Riley, Rep. Ins. Mo. vii. pp. 89–90.

Larentia ruficinctata, Guén., and *cæsiata*, W. V.: natural history, J. Hellins, Ent. M. M. xii. pp. 5–7 & 113. Both species are single brooded in Scotland; Porritt, White, and Chapman, *op. cit.* pp. 68 & 86.

Emmelesia decolorata. Larva described; G. A. Smallwood, Ent. viii. pp. 194 & 195.

Eupithecia. C. Dietze (S. E. Z. xxxvi. pp. 69–76) notices *E. fraxinata*, Crewe, *impurata*, Hübn. (= *modicata*, Hübn.), *semigrapharia*, H. S., *castigata*, Hübn., and *lanceata*, Hübn. In the Black Forest, he has met with *laquearia*, H. S., *scabiosata*, Borkh. (= *piperata*, Steph.), *pimpinellata*, Hübn., *trisignaria*, H. S., and *exiguata*, Hübn. The larvæ of all these species, except *lanceata*, are mentioned, and the transformations of the first three are fully described. Dietze also (*l. c.* pp. 236–263) notices *abietaria*, Goeze (= *strobilata*, Hübn.), pl. i. figs. 30–33, *fraxinata*, Crewe, *innotata*, Hufn., *tamariscata*, Freyer, *castigata*, Hübn., *linariata*, W. V., *pulchellata*, Steph., pl. i. fig. 23, and var. *digitaliata*, Dietze, describing the eggs of some species and the larvæ of others; and also a doubtful species, possibly = *castigata*, Hübn., pl. i. figs. 1–3. He also notices *E. primulata*, Mill. (or sp. n. ? *bergunensis*, p. 248), pl. ii. fig. 1, from Bergun, and redescribes and figures *E. altaicata*, Guén., from the Altai, p. 253, pl. ii. fig. 5. Many other species are noticed more briefly, and the following additional larvæ and larva-details are figured on pl. i.: *E. veratraria*, H. S., fig. 4; *E.* sp. ?, on seed-capsules of *Gentiana lutea*, figs. 5 & 6, *E. lanceata*, Hübn., figs. 7 & 8, *E. impurata*, Hübn., figs. 9–14, *pusillata*, W. V., fig. 29, *abbreviata*, Steph., figs. 34–36, and *pygmæata*, Hübn., figs. 37 & 38.

Eupithecia extensaria, Freyer, new to Britain, taken at Hull; H. Doubleday & J. Prest, Ent. viii. pp. 108 & 109. *E. knautiata*, Gregs.: a discussion on its asserted identity with *E. minutata* runs through Ent. viii. *E. millefoliata*, Rössl.: transformations described; A. Fuchs, *l. c.* pp. 234–236. *E. subciliata*, Guén.: the larva is described as very similar to that of *irriguata*, Hübn.; *id. l. c.* pp. 59 & 60. *E. togata*, Hübn.: larva and habits; H. H. Crewe, Ent. M. M. xii. pp. 157 & 158, *cf.* also Ent. viii. pp. 297 & 298.

Melanippe luctuata, Hübn., new to Scotland; H. Doubleday, Ent. viii. p. 141.

Coremia munitata, Hübn., new to France; A. Foucart, Pet. Nouv. vii. p. 524. *C. quadrifasciata*, Clerck; larva described by P. H. Jennings, Ent. viii. pp. 109 & 110.

Cidaria ondinata, Guén., pl. cxxviii. fig. 17, and *circumcidata*, Snell., pl. cxxxii. fig. 13, figured by Felder & Rogenhofer, l. c. *C. sagittata*: habits of larva; W. Saunders, Ent. M. M. xii. pp. 113 & 114.

Scotosia affirmata, Guén., var. ♀ (? = *S. dubiferata*, Walk.), and var. n. *bicolor* figured by Felder & Rogenhofer, *l. c.* pl. cxxxi. figs. 37 & 38, from Bogota.

Lygris momaria, Snell., figured by Felder & Rogenhofer, *l. c.* pl. cxxxi. fig. 35.

Elvia glaucata, Walk., figured; *iid. l. c.* pl. cxxxii. figs. 25 & 25*a*.

Eubolia peribolata, Hübn. Larva described; E. Newman, Ent. viii. pp. 107 & 108.

New genera and species:—

Merida, Rogenhofer, Reise Nov. Lep. v. pl. cxxiv. (Erklärung). Allied to *Idiodes*; type, *M. scelestaria*, Felder & Rogenhofer, *l. c.* pl. cxxiv. fig. 2, South Africa.

Acrasia, Rogenhofer, *l. c.* pl. cxxxi. (Erklärung). Allied to *Merida*; type, *A. crinita*, Felder & Rogenhofer, *l. c.* pl. cxxxi. fig. 26, Knysna.

Melanomma, A. R. Grote, Tr. Am. E. Soc. v. p. 117. Allied to *Eupithecia*; type, *M. auricinctaria*, ibid. Pennsylvania.

Urapteryx luteiceps, Japan, *kantalaria*, North India, *quadrifilata*, Brazil, and *prætoraria*, East Indies, Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxii. figs. 2, 3, 7, & 13.

Dalima patnaria, iid. *l. c.* fig. 12, Darjeeling.

Chærodes bifilaria, iid. *l. c.* fig. 1, Peru.

Idiodes punctiger, iid. *l. c.* pl. cxxiv. figs. 4 & 4*a*, Melbourne.

Sabulodes (?) *magicaria*, iid. *l. c.* pl. cxxii. fig. 10, Bogota.

Cimicodes manoaria, iid. *l. c.* fig. 14, Brazil.

Paragonia deustata, iid. *l. c.* pl. cxxiv. fig. 8, Chili.

Oxydia clavata, figs. 9 & 9*a*, Venezuela, *batesi* (? = *apidania*, Cram., var.), Amazon, *nattereri* and *vitiligata* (? = *vesulia*, Cram., var.), Brazil, figs. 15–17, *iid. l. c.* pl. cxxii.

Drepanodes albicoxaria and *D.* (?) *olindaria*, iid. *l. c.* pl. cxxiii. figs. 5 & 18, Brazil.

Pyrinia icterata, pl. cxxiii. figs. 10 & 10*a*, *castaneata*, figs. 3 & 3*a*.

eubaphe, fig. 4, *apriata* and *spilota*, figs. 28 & 29, pl. cxxxiii. all from Amazons, Felder & Rogenhofer, *l. c.*

Polla varipes, pl. cxxiii. fig. 30, Amazon, and *P.* (?) *virgultaria*, pl. cxxiv. fig. 5, Cayenne, *iid. l. c.*

Cratoptera retectaria, iid. *l. c.* pl. cxxxiii. fig. 17, Amazons.

Gynopteryx (?) *tendinaria*, iid. *l. c.* pl. cxxiii. fig. 24, Amazon.

Microgonia amazonaria, iid. *l. c.* fig. 14, Amazon.

Scardamia taprobanes, iid. *l. c.* fig. 2, Ceylon.

Euchlæna limettaria, *E.* (?) *algoaria*, and *E. sofalaria*, pl. cxxiii. figs. 9, 17, & 23, South Africa, *E.* (?) *palthidata*, figs. 21 & 21*a*, and var. (?) *cinerea*, fig. 22, pl. cxxxii. New Zealand, *iid. l. c.*

Hyperythra leucicolor (= *H. limbolaria*, Walk., pt.), A. G. Butler, Ann. N. H. (4) xvi. p. 417, Natal.

Acratomia quietaria, Felder & Rogenhofer, *l. c.* pl. cxxiii. fig. 19, Chili.

Heterolocha patalata, iid. *l. c.* pl. cxxxii. figs. 9 & 9*a*, Himalaya.

Opistograptis pangiaria, iid. *l. c.* pl. cxxiii. fig. 4, Ladak.

Caustoloma (?) *ziczac*, iid. *l. c.* pl. cxxxii. fig. 4, New Zealand.

Endropia mibuaria, iid. *l. c.* pl. cxxiii. fig. 31, Japan.

Metrocampa (?) *maranharia*, iid. *l. c.* fig. 34, Maranham.

Caberodes interpellans, A. G. Butler, *l. c.* p. 417, Natal.

Gonodontis (?) *semilutearia*, Bogota, pl. cxxii. fig. 6, *G.* (?) *nelsonaria*, New Zealand, pl. cxxiii. fig. 3, and *G. antucaria*, pl. cxxiv. fig. 20, Chili, Felder & Rogenhofer, *l. c.*

Azelina fuscularia, Brazil, Cayenne, *clysiaria*, Amazon, *cyclodaria*, Venezuela, *lindigi*, Bogota, *guruparia*, Amazon, *A.* (?) *claustraria*, Venezuela, pl. cxxiii. figs. 11, 12, 16, 20, 21, 25, *iid. l. c.*

Pergama pumaria, iid. *l. c.* fig. 15, Amazons.

Hygrochroa (?) *dulcinaria*, pl. cxxiii. fig. 8, Knysna, *H.* (?) *davalliata*, figs. 12 & 12*a*, and *H. galbanaria*, figs. 13, 13*a*, 14, & 14*a*, pl. cxxiv. Amazon, *iid. l. c.*

Colotois apuraria, Bogota, pl. cxxii. fig. 4, *kametaria*, Himalaya, pl. cxxiii. fig. 28, and *C.* (?) *chilenaria*, Chili, pl. cxxiv. figs. 6 & 7, *iid. l. c.*

Himera mosegata, pl. cxxiii. fig. 7, and *villaria*, pl. cxxiv. fig. 1, *iid. l. c.*, South Africa.

Erebomorpha prætextata and *xanthosoma*, iid. *l. c.* pl. cxxvi. figs. 16 & 17, Darjeeling.

Laudosia (?) *aliculata* and *typtaria*, iid. *l. c.* pl. cxxxiii. figs. 32 & 36, Venezuela.

Monoctenia smerintharia, iid. *l. c.* pl. cxxiv. figs. 18 & 19, Australia.

Arhodia (?) *lutosaria*, figs. 15 & 16, Melbourne, and var. *puniceæ*, figs. 17 & 17*a*, North Australia, *iid. l. c.* pl. cxxiv.

Meticulodes (?) *moritzi*, iid. *l. c.* pl. cxxiii. fig. 27, Venezuela.

Biston immissus, iid. *l. c.* pl. cxxxiii. fig. 24, Amazons.

Amphidasys cladonia, iid. *l. c.* pl. cxxv. fig. 13, Silhet.

Hemerophila subspersata, pl. cxxv. fig. 16, Japan, *jugorum*, Himalaya, *H.* (?) *sulpitiata* and *H. caprimulgata*, New Zealand, pl. cxxvi. figs. 2, 7, & 12, *iid. l. c.*

Synopsia hedemanni, iid. *l. c.* pl. cxxv. figs. 14 & 15, Mexico (transformations described).

Bryoptera (?) *panteata* and *B.* (?) *lecideata*, iid. *l. c.* pl. cxxvi. figs. 8 & 9, Chili.

Hypochroma sphagnata, fig. 2, Darjeeling, *nyssiata*, fig. 3, and *wilsoni*, figs. 4 & 4*a*, South Australia, *H.* (?) *cetraria*, figs. 7 & 7*a*, Moreton Bay, pl. cxxv. and *H. squamata*, pl. cxxvi. fig. 14, Tasmania, *iid. l. c.*

Pachyodes luteipes, iid. *l. c.* pl. cxxv. figs. 8 & 8*a*, Cochin China.

Gnophos umbratilis, A. G. Butler, *l. c.* p. 417, Natal.

Scotopteryx paganata, India (?), *S.* (?) *usneata*, Himalaya, and *S.* (?) *rinodaria*, Chili, pl. cxxv. figs. 9, 12, & 21. *S. maoriata*, New Zealand, and *S.* (?) *valdiviata*, Chili, pl. cxxvi. figs. 4 & 6, Felder & Rogenhofer, *l. c.*

Bronchelia vexillata, Amazon, and *anonaria*, Venezuela and New Granada, *iid. l. c.* pl. cxxv. figs. 19 & 20.

Psodos fissilata, iid. *l. c.* pl. cxxvi. figs. 20 & 20*a*, Bogota.

Boarmia tulbaghata and *B.* (?) *accentuata*, figs. 5 & 6, Knysna, *pertusaria*, Sikhim, and *ponderata*, Cochin China, figs. 17 & 18, pl. cxxv. *nigraria*, fig. 1, Sidney, *adamata*, figs. 5 & 5*a*, Ceylon, *trikotaria*, fig. 10, Himalaya, *B.* (?) *squamigera*, fig. 11, Bogota, *B.* (?) *infumata*, figs. 13 & 13*a*, South Australia, *rupertata*, fig. 15, Bogota, pl. cxxvi. and *B. mergiata*, pl. cxxxiii. fig. 11, Bogota, *iid. l. c.*

Epimecis dibapha, iid. *l. c.* pl. cxxv. figs. 10 & 10*a*, Chili.

Xenodrymes (?) *subflavata*, iid. *l. c.* pl. cxxii. fig. 8, Java.

Percnia ♀ *cœnobiata*, Bogota, and *roscipalpis*, Venezuela, *iid. l. c.* pl. cxxxvi. figs. 32 & 33.

Chrysotæ

Orthostira valida, iid. *l. c.* fig. 37, Japan.

taicommoris eximiata, fig. 5, South Africa, *baliata*, fig. 7, Java, *exarata*, *Nepi* Knysna, and *adiposata*, figs. 19 & 19*a*, Caffraria, *iid. l. c.* *A*xxvii.

Nemoria (?) *corruptata* and *N. tædiata*, Amazon, *N. bryata*, Bogota, *N.* (?) *lunigera*, Natal, *N. stillata*, Plettenberg Bay, *N.* (?) *hadrata*, Knysna, and *N. caducata*, Cayenne, *iid. l.c.* pl. cxxvii. figs. 6, 11, 12, 15, 17, 27, & 35.

Iodis (?) *olivacea*, iid. *l. c.* pl. cxxviii. fig. 13, Bogota.

Thalassodes scissaria, iid. *l. c.* pl. cxxvii. fig. 9, South Africa.

Omphax (?) *sanguinipuncta*, fig. 1, *O.* (?) *frondinata*, figs. 2 & 3, and *O.* (?) *trimeni*, fig. 4, *iid. l. c.* pl. cxxvii. South Africa.

Comibæna albiceps, Amboina, *calcinata*, Australia, and *pacifica*, Fiji, *iid. l. c.* figs. 13, 23 & 24.

Rhacheospila coryphata and *R.* (?) *koranata*, South Africa, *R. morbilliata*, Brazil, *R. jucunda* and *R.* (?) *albicoma*, Amazon, *R. stagonata*, Bogota, and *R. saliata*, Natal, *iid. l. c.* figs. 10, 14, 16, 18, 22, 25, & 36.

Chlorosoma psittacina, iid. *l. c.* fig. 26, Moluccas.

Eumelea obesata, Luzon, and *flagrata*, Singapore, *iid. l. c.* figs. 34 & 39.

Palyas abunata, iid. *l. c.* fig. 38, Amazons.

Phrygionis pallicosta, iid. *l. c.* fig. 31, Cayenne.

Chrysocestis limbo-guttata, iid. *l. c.* fig. 21, Mexico.

Anisodes lancearia, fig. 28, Bogota, *pardalis*, fig. 29, Moluccas, and

annularis, figs. 30 & 30*a*, North Brazil, pl. cxxvii., *A.* (?) *lateritia*, pl. cxxviii. fig. 21, Knysna, and *A.* (?) *mundata*, pl. cxxxiii. fig. 10, Moluccas, Felder & Rogenhofer, *l. c.*

Aselbodes thyreata, iid. *l. c.* pl. cxxviii. fig. 6, Venezuela.

Drapetodes (?) *matulata*, iid. *l. c.* pl. cxxxiv. fig. 44, Java.

Trygodes physciata, Amazon, and *agrata*, Moluccas, *iid. l. c.* pl. cxxviii. figs. 8 & 19.

Cambogia (?) *lurida*, Brazil, and *C. leprosa*, Brazil, Mexico, *iid. l. c.* figs. 23 & 36.

Acidalia pedilata, Ceylon, *tuhuata*, New Zealand, *quadrigata*, Amazon, *argentifilata*, Bogota, *mimetata*, Amazon, *concinnata*, Haiti, *insolata*, Bogota, and *straminea*, Knysna, pl. cxxviii. figs. 1, 5, 9, 10, 11 & 11*a*, 15, 26, & 33, and *A.* (?) *speciosa*, pl. cxxxiii. fig. 5, locality unknown, *iid.* l. c.; *A. natalica* and *cinerascens*, A. G. Butler, *l. c.* p. 418, Natal; *A. separata* and *atlantica*, F. Walker, in Melliss' "St. Helena," pp. 186 & 187, St. Helena.

Timandra goniaria, Felder & Rogenhofer, *l. c.* pl. cxxviii. fig. 3, Bengal.

Problepsis agretta, iid. *l. c.* fig. 14, South Africa.

Pellonia perezaria, G. Oberthur, An. Soc. Esp. iv. p. 372, Spain.

Argyris vestalis, A. G. Butler, *l. c.* p. 419, Natal.

Zanclopteryx (?) *cookaria* and *Z.* (?) *haastiaria*, Felder & Rogenhofer, *l. c.* pl. cxxiii. figs. 26 & 32, New Zealand.

Strophidia pannata, Gilolo, Salawatti, and *phantasmah*, Java, *iid. l. c.* pl. cxxviii. figs. 39 & 40.

Syngria drepanata, iid. *l. c.* figs. 35 & 35*a*, Amazons. *cyclodaria*,

Nedusia acalis, iid. *l. c.* fig. 25, Bogota. *-aria*, Vene-

Erosia verticaria, Ceylon, fig. 7, *hians*, Venezuela, figs. 2 *bisinuata*, Cayenne, fig. 21, and *bidens*, Bengal, fig. 38, pl. cxxv. *gula*, Amazon, Cayenne, figs. 2 & 2*a*, and *mamillata*, fig. 18, A?*alliata*, pl. cxxxiii., *iid. l. c.* -xxiv.

Epiplema furcillata, iid. *l. c.* pl. cxxviii. fig. 30, Brazil.

Schidax evulsa, iid. *l. c.* fig. 31, Guiana.

Molybdophora schedata, iid. *l. c.* fig. 34, Amazon.

Stegania (?) *allogata*, iid. *l. c.* pl. cxxxi. figs. 15 & 15*a*, Australia.

Amilapis (?) *achroiaria*, iid. *l. c.* pl. cxxiii. fig. 6, New Zealand.

Semiothisa (?) *annulipes*, pl. cxxiii. fig. 1, and *S. egaria*, pl. cxxiv. fig. 10, Amazon, *foveolata*, fig. 4, Bogota, *diplotata*, fig. 16, Bengal, *marmorea*, figs. 27 & 27*a*, Amazon, *dominicata*, fig. 28, Hayti, *gentilata*, fig. 29, Amazon, *delauta*, fig. 37, Bogota and Brazil, pl. cxxviii., and *S.* (?) *jotaria*, pl. cxxix. fig. 26, Java, *iid. l. c.*

Krananda vitraria, iid. *l. c.* pl. cxxviii. fig. 32, Java.

Phasiane catillata, Chili, and *P.* (?) *miliaria*, South Africa, *iid. l. c.* pl. cxxix. figs. 3 & 6.

Itame (?) *terinata*, pl. cxxix. figs. 13 & 13*a*, Natal, and *I.* (?) *cinerascens*, pl. cxxxi. fig. 1, New Zealand, *iid. l. c.*

Thamnonoma (*Halia*) *acquiaria*, P. Millière, Bull. Soc. Ent. Fr. (5) v. p. clxv. Acqui, Italy.

Psamatodes (?) *nunctata* and *frenata*, Felder & Rogenhofer, *l. c.* pl. cxxix. figs. 20 & 21, Moluccas.

Liodes (?) *angasi*, iid. *l. c.* pl. cxxxi. fig. 13, Australia.

Rhinodia (?) *biocellata*, iid. *l. c.* pl. cxxix. fig. 14, Chili.

Hemigalma inspersa, iid. *l. c.* fig. 19, Sidney.

Epirrhanthis (?) *antipodaria*, iid. *l. c.* pl. cxxvi. fig. 3, New Zealand.

Numeria melinata, New Zealand, fig. 9, *N.* (?) *inusta*, Chili, fig. 11, *N.* (?) *alicata*, Knysna, fig. 17, pl. cxxix. *N.* (?) *quadriplaga*, Guiana, fig. 8, and *N. galbulata*, Ceylon, figs. 20 & 20*a*, pl. cxxxiii., *iid. l. c.*

Selidosema (?) *pungata* and *fragosata*, iid. *l. c.* pl. cxxxi. figs. 23 & 29, New Zealand.

Hyposidra australis, Australia, figs. 23 & 24, and *leptosoma*, fig. 25, Luzon, *iid. l. c.* pl. cxxix.

Fidonia anguinata, Knysna, fig. 1, *rubellata*, Cape, fig. 2, *brephos*, New Zealand, figs. 5 & 5*a*, *scarata*, Chili, fig. 7, *bivirgata*, Knysna, fig. 22, pl. cxxix., and *F.* (?) *setinata*, pl. cxxx. fig. 25, Caffraria, *iid. l. c.*

Baptria exsecuta, iid. *l. c.* pl. cxxxiii. fig. 15, Japan.

Stirrhoe cichroma, iid. *l. c.* pl. cxxvii. fig. 20, Plettenberg Bay.

Aspilates niponaria, pl. cxxiii. fig. 29, and *tonghata* (? = *mundataria*, Cram., var.), pl. cxxix. fig. 12, Japan, *A.* (?) *callistege*, pl. cxxxii. fig. 29, Cape, *iid. l. c.*; *A. arenosa*, A. G. Butler, *l. c.* p. 419, Natal.

Panethia atrocærulea, Felder & Rogenhofer, *l. c.* pl. cxxix. fig. 27, Celebes.

Rhyparia (?) *fenerata*, iid. *l. c.* pl. cxxxi. fig. 7, New Zealand.

Abraxas hypsata, East Indies, and *monychata*, Moluccas, *iid. l. c.* pl. cxxx. figs. 16 & 23.

Percnia guttata, iid. *l. c.* fig. 15, Darjeeling.

Chrysocraspedia ardeata, iid. *l. c.* pl. cxxxiii. fig. 7, Amazon.

Orthostixis huegeli, iid. *l. c.* pl. cxxx. fig. 19, Silhet, Cashmir [= *Zerene taicommaria*, De l'Orza].

Nephodia furciata, iid. *l. c.* fig. 27, Brazil.

Axia (?) *inscita*, iid. *l. c.* pl. cxxix. fig. 10, South Africa.

Mænas alcidata, iid. *l. c.* fig. 8, Cape.

Chlenias belidaria and *C.* (?) *fucata*, pl. cxxiv. figs. 9 & 11, Australia, *verrucosa*, New Zealand, *egregia* and *ochrosoma*, Australia, pl. cxxxi. figs. 22, 24, 30, and *C. crambaria*, pl. cxxxiii. fig. 12, South Australia, *iid. l. c.*

Alsophila cymatophora, *madidata*, *ternata*, and *A.* (?) *hypparia*, iid. *l. c.* pl. cxxxii. figs. 26-28, & 35, Chili.

Pachrophylla oblata, iid. *l. c.* fig. 36, Chili.

Microdes toriata, iid. *l. c.* pl. cxxxi. fig. 34, New Zealand.

Eupithecia undosata, p. 250, fig. 2, Livonia, *subvirens*, p. 251, fig. 3, and *suspiciosata*, p. 252, fig. 4, California, and *rivulosata* (Led. MS.), p. 252, fig. 6, Altai, C. Dietze, S. E. Z. xxxvi. pl. ii.; *E. fumipalpata*, Felder & Rogenhofer, *l. c.* pl. cxxxi. fig. 33, New Zealand.

Sauris ranata and *mistata*, iid. *l. c.* pl. cxxxi. figs. 11 & 12, New Zealand.

Lobophora (?) *ocellaris* and *L. imbricaria*, iid. *l. c.* pl. cxxxi. fig. 5, and pl. cxxxii. fig. 30, Chili.

Tomopteryx fissa, figs. 16 & 17, *betulata* and *laciniosa*, figs. 18 & 21, *iid. l. c.* pl. cxxxi., Chili.

Heterusia zeritis figs. 1 & 1*a*, *mileta*, figs. 2 & 2*a*, and *dichroata* (? =

partitata, Walk.), figs. 3 & 3*a*, Bogota, *H.* (?) *cæ[no]nympha*, figs. 4 & 4*a*, Mexico, *H. sinuosa*, figs. 5 & 5*a*, Peru, *H.* (?) *eph[e]stris*, fig. 6, Bogota, *H.* (?) *macerata*, figs. 7 & 7*a*, Chili, *H. cæsarea*, figs. 9 & 9*a*, Mexico Brazil, *anicata*, figs. 13 & 13*a*, and *ochro-zonata*, fig. 17, Bogota, and *mesenata*, fig. 26, Chili, pl. cxxx., and *H.* (?) *aluta*, pl. cxxxiii. fig. 30, Bogota, Felder & Rogenhofer, *l. c.*

Scordylia salvini, A. G. Butler, *l. c.* xv. p. 341, Veragua.

Syrtodes (?) *rostellaria*, pl. cxxv. fig. 1, Mexico, *S. pro[n]ubata*, figs. 25 & 25*a*, Amazon, and *bryifera*, fig. 28, Cayenne, pl. cxxxi. Felder & Rogenhofer, *l. c.*

Spargamia (?) *tesserulata*, iid. *l. c.* pl. cxxxi. figs. 39 & 39*a*, Bogota.

Cidaria undosata (? = *Asthena mullata*, Guén., var.), pl. cxxviii. fig. 2, New Zealand, *C. gobiata*, New Zealand, *brunniceps*, South Africa, *assata* and *nehata*, New Zealand, *galinata*, Australia, *ascotata*, *sphæriata*, *lupinata*, *verriculata*, *adonata*, and *semilineata*, New Zealand, pl. cxxxi. figs. 2–4, 6, 8, 9, 14, 19, 20, 31 & 36, *rixata*, New Zealand, *cirrhiata*, Chili, *inopiata*, New Zealand, *grumata* and *acerbata*, Bogota, *monoliata*, New Zealand, *subchlorata*, Venezuela, figs. 1–3, 6–8, 11, *perversata*, figs. 14 & 24, New Zealand, *plemyrata*, Chili, *occlusata*, Ceylon, *setaria*, Chili, *chloridata*, Venezuela, and *timarata*, New Zealand, figs. 15–19, *absitaria*, figs. 20 & 20*a*, Haiti, *molata*, fig. 23, Ceylon, *ramalaria* and *næmata*, Himalaya, *obarata*, New Zealand, and *pamphilata*, Himalaya, figs. 31–34, *consequata*, figs. 37 & 37*a*, Bogota, *aquosata*, New Zealand, *nugata*, Himalaya, *mactata*, Japan, *hymenata*, Chili, and *melidiata*, Himalaya, figs. 40–42, pl. cxxxii. ; *C.* (?) *vitellaria*, Amazon and Cayenne, and *C.* (?) *macidata*, Chili, pl. cxxxiii. figs. 1 & 13 : *iid. l. c.*

Lygris cicatriculata, C. Berg, Bull. Mosc. xlix. pt. 2, p. 29–3[0], Patagonia and Buenos Ayres.

Oligopleura aulæata, Felder & Rogenhofer, *l. c.* pl. cxxxi. fig. 10, Venezuela.

Sarracena pellicata and *declinaria* (? = *pellicata*, ♂, var.), *iid. l. c.* pl. cxxxi. figs. 27 & 32.

Psaliodes adhæsiata, iid. *l. c.* pl. cxxxii. fig. 12, Bogota.

Elvia donovani, iid. *l. c.* fig. 5, New Zealand.

Ortholitha bitrita, iid. *l. c.* fig. 10, Cape.

Graphidipus flaviceps, Venezuela, and *collaris*, Bogota, *iid. l. c.* figs. 43 & 44.

Opisogonia (?) *diffissata* and *O.* (?) *tensata*, iid. *l. c.* pl. cxxix. figs. 16 & 18, Chili.

Hedyle leptosiata, iid. *l. c.* pl. cxxxiii. fig. 33, Cayenne.

Phellinodes muscerdata, Amazons, and *bahiata*, Brazil, *iid. l. c.* figs. 34 & 35.

Eratina goniuris and *pohliata*, Bogota, *thyridiata*, Guatemala, *pæonata*, Venezuela, *mulseata*, *oriolata*, and *garrulata*, Bogota, *iid. l. c.* figs. 21, 21*a*–23, 23*a*, 25, 25*a*–27, 27*a*, & 31, 31*a*.

Emplocia cubagidaria, and *E.* (?) *tricolor*, iid. *l. c.* figs. 9 & 14, 14*a*, Bogota.

Siculidæ.

Siculodes strigatula, Felder, figured by Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxiv. fig. 9.

Herdonia accusalis, Walk., figured; *iid. l. c.* fig. 4.

Draconia (?) *oleigutta*, sp. n. *iid. l. c.* pl. cxxxiv. fig. 3, Amazon.

Siculodes lunula, Brazil, *falcata*, South America, *S.* (?) *roscola*, Bogota and Cayenne, *S. amethystea* and *punctum*, Amazon, *cinereola*, Venezuela, *carneola*, Amazon, *S.* (?) *glareola*, Java, *S. fulviceps*, Amazon, *sterna*, Bogota, *striola*, Amboina, and *xanthina*, Amazon, *iid. l. c.* figs. 1, 2, 5–8, 10–15, spp. nn.

Pyralidæ.

C. Berg's paper on the *Pyralidæ* of the Argentine Republic is reprinted [*cf.* Zool. Rec. xi. p. 433], with additions; Deutsche E. Z. 1875, pp. 129–144, 155 & 156.

Pseudasopia, Grote, is not distinct from *Asopia*, Tr.; A. R. Grote, Bull. Buff. Soc. ii. p. 229.

Erilusa crocipes, Walk., figured; Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxvi. fig. 31.

Agathodes ostentalis, Hübn., recorded from Africa; A. G. Butler, Ann. N. H. (4) xvi. p. 414.

Cataclysta lemnalis. Habits, transformations, &c.; W. Buckler, Ent. M. M. xi. pp. 102–106.

Paraponyx stratiotalis. Transformations described; *id. op. cit.* xii. pp. 160–163.

Acentropus niveus. C. Ritsema, Tijdschr. Ent. (2) xviii. pp. xxiv.–xxvi. A popular article; G. B. Corbin, Naturalist (2), i. pp. 33, 34, 49–51.

Zebronia cassusalis, Walk., is hardly distinct from his *auro-lincalis*; A. G. Butler, *l. c.* p. 415.

Botyodes flavibasalis, Moore, figured; Felder & Rogenhofer, *l. c.* pl. cxxxv. fig. 41.

Botys frustalis, Zell., South Africa, *proceralis*, Led., var. ?, Mexico, and *abruptalis*, Walk., figured; *iid. l. c.* pl. cxxxiv. figs. 28 & 42, pl. cxxxv. fig. 10 (they also figure *Margarodes polygonalis*, Doubl., as *Botys maorialis*, pl. cxxxiv. fig. 4). *B. costalis*, Tr., and *murinalis*, F. v. Rössl., recorded as new to Sweden, and redescribed; H. D. J. Wallengren, Œfv. Ak. Förh. xxx. pt. 6, pp. 43 & 44. *B. nubilalis*, Hübn. (= *lupulinalis*, Doubl.): variation, habits, larva, &c., noticed; C. J. Barrett, Ent. M. M. xi. p. 256. *B. thesealis*, Led., discussed and compared with the allied species; P. C. Zeller, Verh. z.-b. Wien, xxv. pp. 334–336.

Polythlipta cerealis, Led., figured; Felder & Rogenhofer, *l. c.* pl. cxxxv. fig. 34.

Ebulea stachydalis, Zinck., recorded as new to Britain, and Metzner's account of the species translated; Barrett & Stainton, Ent. M. M. xii. pp. 158 & 159.

Antigastra catalaunalis, Dup., figured (from Bengal) by Felder & Rogenhofer, *l. c.* pl. cxxxv. fig. 12.

Cindaphia invensalis, Led., figured; *iid. l. c.* pl. cxxxiv. fig. 39.

Scopula concisalis, Walk., = *Pionea africalis*, Guén.; A. G. Butler, *l. c.* p. 416.

Nomophila hybridalis recorded from the Argentine Republic; C. Berg, *l. c.* p. 155.

Anerastia lotella. Transformations described; W. Buckler, *l. c.* xi. pp. 186–188.

Ephestia elutella, Hübn., p. 269, and *semirufa*, Staint. (? Haw.), and *ficella*, Staint., p. 270, redescribed, with notes (pp. 272 & 273) on the capture of various species of the genus, all of which are supposed to be introduced; C. G. Barrett, l. c. *E. interpunctella*, Hübn. (= *Tinea zeæ*, Fitch), occurs all over the United States as well as in the West Indies, and *E. elutella* is also widely distributed in North America; P. C. Zeller, Verh. z.-b. Wien, xxv. pp. 336–338.

Rhodophæa suavella. Transformations described; W. Buckler, *l. c.* xii. pp. 13 & 14.

Myelois cirrigerella, Zink., new to Britain, recorded as occurring at Marlborough, Wilts, and redescribed; E. Meyrick, *op. cit.* xi. pp. 237 & 238. fig.

Phycis davisellus, Newm., = *albilineella*, Staud., = *ulicella*, H. S., = *Nephopteryx genistella*, Dup.; Staudinger & Doubleday, *op. cit.* xi. p. 211, and Ent. viii. p. 41.

Chilo obliteratellus, Zell., figured by Felder & Rogenhofer, *l. c.* pl. cxxxvii. fig. 24.

Crambus radiellus, Hübn., *tristrigellus* (new name for *fulgidellus*, Dup., *nec* Hübn., = *radiellus*, H. S., *nec* Hübn.) and *fulgidellus*, Hübn., contrasted; E. L. Ragonot, Bull. Soc. Ent. Fr. (5) v. p. lxxi. *C. fastuosellus*, Doubl., figured by Felder & Rogenhofer, *l. c.* pl. cxxxvii. fig. 32.

Eromene zonella, Zell., figured; *iid. l. c.* pl. cxxxvi. fig. 2.

Argyria lucidella, Zell., figured; *iid. l. c.* pl. cxxxvii. fig. 17.

New genera and species :—

Arta, A. R. Grote, Bull. Buff. Soc. ii. p. 229. Allied to *Asopia*; type, *A. statalis*, sp. n., *l. c.* p. 230, New York.

Œctoperia, P. C. Zeller, Verh. z.-b. Wien, xxv. p. 331. Allied to *Amblyura* and *Cordylopeza*; type, *Œ. sincera*, sp. n., p. 332, pl. x. fig. 45*a–c*, Texas.

Perispasta, id. *l. c.* p. 333. Allied to *Crocidophora*; type, *P. cæculalis*, sp. n., *l. c.* pl. x. fig. 46*a*, *b*, Texas.

Rhinaphe, C. Berg, Bull. Mosc. xlix. pt. 2, p. 231. Between *Semnia* and *Anerastia*; type, *R. signicollis*, sp. n., *l. c.* p. 233, Patagonia.

Idia (?) *scopipes*, Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxvi. fig. 39, Bogota.

Pyralis smaragdina, A. G. Butler, Ann. N. H. (4) xvi. p. 411, Natal.

Hemimatia (?) *cacalis*, Felder & Rogenhofer, *l. c.* pl. cxxxvi. fig. 16, Cayenne.

Aglossa noctuina and *ocularis*, p. 412, *fragilis*, *inconspicua*, *formosa*, p. 413, and *magnifica*, p. 414, A. G. Butler, *l. c.* N

A. steralis, Felder & Rogenhofer, *l. c.* pl. cxxxiv. fig. 27, South Africa.

Hypotia achatina, iid. *l. c.* fig. 29, South Africa.

Homura (?) *granitalis* and *H. mianalis*, iid. *l. c.* pl. cxxxvi. figs. 15 & 18, Amazon.

Deuterollyta cristalis, iid. *l. c.* fig. 17, Amazon.

Amblyura (?) *flaviscida*, and *A.* (?) *graphitalis*, pl. cxxxvi. figs. 27 & 37, *A. difficilis*, Bogota, and *A.* (?) *palmipes*, Amazon, pl. cxxxvii. figs. 14 & 23, *iid. l. c.*

Pyrausta aurea, A. G. Butler, *l. c.* p. 414, Natal.

Desmia geminalis, p. 249, fig. 5, *naclialis*, p. 250, figs. 6 & 7, and *jovealis*, p. 252, figs. 8 & 9, P. C. T. Snellen, *l. c.* pl. xiv. Anolaima?; *D. notalis*, Felder & Rogenhofer, *l. c.* pl. cxxxvi. fig. 4, Amazon.

Diathrausta (?) *aduncalis* and *D. timaralis*, iid. *l. c.* pl. cxxxv. figs. 11 & 23, New Zealand.

Erilusa pseudauxo and *radialis*, Amazon, *mimalis*, Guatemala, *euagra* and *nitialis*, Amazon, *iid. l. c.* pl. cxxxvi. figs. 30, 32–35.

Ædiodes vulcanalis, iid. *l. c.* pl. cxxxv. fig. 40, Chiriqui, Veragua.

Asopia devialis, A. R. Grote, Bull. Buff. Soc. ii. p. 229, Quebec; *A.* (?) *semnialis*, Felder & Rogenhofer, *l. c.* pl. cxxxvi. fig. 19, Amazon.

Siparocera nobilis, Grote & Robinson, Ann. Lyc. N. York, xi. pp. 128 & 129, New York. Allied to *Amblyura*.

Ethnistis eucarta, Felder & Rogenhofer, *l. c.* fig. 28, Moluccas.

Hyalea melanalis, iid. *l. c.* pl. cxxxv. fig. 16, Amazon.

Agathodes margaritis, iid. *l. c.* pl. cxxxvi. fig. 40, Natal.

Leucinodes lucealis, iid. *l. c.* pl. cxxxv. fig. 3, Amazon.

Cirrhochrista fumipalpis, iid. *l. c.* fig. 31, Moluccas.

Hymenia griseata, A. G. Butler, *l. c.* p. 415, Natal.

Nymphula lotialis, pl. cxxxv. fig. 4, Brazil, and *vitrinalis*, pl. cxxxvi. fig. 11, Guiana, Felder & Rogenhofer, *l. c.*

Metasia (?) *lactealis*, iid. *l. c.* pl. cxxxvii. fig. 38, Ceylon.

Ercta (?) *adustalis*, iid. *l. c.* pl. cxxxv. fig. 32, Bogota.

Siriocauta (?) *amboinalis*, iid. *l. c.* fig. 24, Amboina.

Cataclysta alvealis, Amazon, *patnalis*, East Indies, *cerussalis* and *chalcitis*, Bogota, *australis*, Fiji, and *samealis*, Bogota, *iid. l. c.* pl. cxxxvi. figs. 3, 7–10, & 14; *C. fraterna*, A. G. Butler, *l. c.* p. 415, Natal.

Paraponyx habitalis and *P.* (?) *gothicalis*, Felder & Rogenhofer, *l. c.* pl. cxxxvi. figs. 12 & 13, Amazon.

Lepyrodes astomalis, iid. *l. c.* pl. cxxxv. fig. 22, Knysna.

Physematia (?) *rotundalis*, iid. *l. c.* pl. cxxxiv. fig. 40, Haiti.

Zebronia magicalis, Veragua and Chiriqui, and *erminea*, Venezuela and Chiriqui, *iid. l. c.* pl. cxxxv. figs. 6 & 7.

Lypotigris jovialis, iid. *l. c.* pl. cxxxvi. fig. 25, Moluccas.

Glyphodes (?) *impuralis*, Haiti, and *G. batesi*, Amazon, pl. cxxxv. figs. 2 & 29, *G.* (?) *dermatalis*, Cayenne, *suavis*, Amazon, and *naralis*, Sarawak, pl. cxxxvi. figs. 23, 26 & 38, *iid. l. c.*

Eudioptis olealis, iid. *l. c.* pl. cxxxv. fig. 35, Bogota.

Pliniodes (?) *nattereri*, iid. *l. c.* pl. cxxxvi. fig. 29, Brazil.

Pinacia (?) *ocularis*, iid. *l. c.* fig. 20, Manilla.

A.

Botys pangialis, Himalaya, *augustalis*, Mexico, *chilialis*, Chili, *ardealis*, Nicobar Islands, *orbitalis*, South Africa, *heliacalis*, Bogota, *otagalis*, New Zealand, *carnifex*, West Indies, *B.* (?) *fugalis*, Australia, and *B. oblinalis*, South Africa, pl. cxxxiv. figs. 25, 26, 30–33, 35–38, *B. beatilis*, Australia, *witialis*, Fiji, *perticalis*, Bogota, *moluccalis*, Moluccas, *coidalis*, Bogota, *B.* (?) *phryganurus*, Amazon, *B. collaris*, *galbula*, *devialis*, and *isaralis*, Bogota, *borncalis*, Sarawak, *opalisans*, Haiti, *atyrialis* and *palmalis*, Amazon, *albiceps*, Bogota, *B.* (?) *cirrosalis*, Amazon, *octoguttalis*, Amboina, *rufinalis*, S. Africa, *B.* (?) *candacalis*, Haiti, *lentalis*, Bengal, *caudalis*, Cayenne, *pelialis*, Mexico, *triumphalis*, Bogota, *spilosoma*, Amazon, *herrules*, Bogota, *mactalis*, Fiji, pl. cxxxv. figs. 5, 8, 9, 13, 14, 18–21, 25, 27, 28, 30, 33, 36–39, 43–50, *B. vanalis*, *B.* (?) *concolor*, and *B. machinalis*, Moluccas, pl. cxxxvi. figs. 6, 24 & 36, *B.* (?) *linalis*, Amazon, and *B. mahanga*, New Zealand, pl. cxxxvii. figs. 9 & 27, *B.* (?) *metallescens*, pl. cxxxviii. fig. 58, Bogota, *iid.* l. c.; *B. feudalis* and *5-linealis*, both from New York and Massachusetts, *B.* (*Pyrausta*) *matronalis*, Canada, p. 231, *B. hircinalis* and *niveicilialis*, p. 232, New York, A. R. Grote, Bull. Buff. Soc. ii.; *B. straminea*, A. G. Butler, *l. c.* p. 416, Natal; *B. facitalis*, C. Berg, *l. c.* p. 224, Patagonia.

Marasmia (?) *crilitalis*, Felder & Rogenhofer, *l. c.* pl. cxxxv. fig. 26, Fiji.

Nosophora nubilis, iid. *l. c.* pl. cxxxvi. fig. 21, Moluccas.

Analthes (?) *crinipes*, iid. *l. c.* pl. cxxxiv. fig. 43, Amboina.

Omiodes ochrosoma, iid. *l. c.* pl. cxxxvi. fig. 5, Amazons.

Rhimphalea papualis, iid. *l. c.* fig. 22, New Guinea.

Blepharomastix (?) *garzettalis*, iid. *l. c.* pl. cxxxv. fig. 1, Amazon.

Platamonia (?) *stenosoma*, iid. *l. c.* pl. cxxxiv. fig. 16, Fiji.

Ceratoclasis barbicornis, iid. *l. c.* pl. cxxxvi. fig. 1, Fiji.

Nomophila triticalis, C. Berg, Deutsche E. Z., 1875, p. 155, Argentine Republic.

Scopula delineatalis, F. Walker, in Melliss' "St. Helena," p. 189, St. Helena.

Scoparia nolalis, pl. cxxxiv. fig. 41, South Africa, *ustimacula*, pl. cxxxv. fig. 17, *pongalis* and *moanalis*, pl. cxxxvii. figs. 33 & 34, New Zealand, Felder & Rogenhofer, *l. c.*; *S. nigritalis* and *lucidalis*, F. Walker, *l. c.* p. 190, St. Helena.

Galleria austrina (? = *mellonella*, Linn., var.), Felder & Rogenhofer, *l. c.* pl. cxxxvii. fig. 7, Knysna.

Aphomia (?) *complana*, iid. *l. c.* fig. 6, Amboina.

Ephestia ochrifrontella and *hospitella*, Texas, *milleri*, Central America, P. C. Zeller, Verh. z.-b. Wien, xxv. pp. 337–339; *E. ficulella* and *passulella*, C. G. Barrett, Ent. M. M. xi. p. 271, Britain (naturalized).

Nephopteryx privata, F. Walker, *l. c.* p. 190, St. Helena.

Myelois (?) *adorea*, Haiti, and *M.* (?) *villora*, South Africa, Felder & Rogenhofer, *l. c.* pl. cxxxvii. figs. 8 & 20.

Pempelia melogamella, C. Berg, Bull. Mosc. xlix. pt. 2, p. 230, Patagonia.

Phycis (?) *capnodes*, Felder & Rogenhofer, *l. c.* pl. cxxxviii. fig. 2, Amazon.

Chilo spectabilis, Bogota, *virgatus*, Venezuela, and *comparellus*,

gota, *iid. l. c.* pl. cxxxvii. figs. 2, 3, & 5; *C. cinnamomellus*, C. Berg, *l. c.* p. 227, Patagonia.

Ancylolomia indica, Felder & Rogenhofer, *l. c.* pl. cxxxvii. fig. 19, Calcutta.

Crambus interruptus, pl. cxxxv. fig. 15, *tuhnalis*, *rangona*, *gracilis*, *trivirgatus*, and *rotuellus*, all from New Zealand, and *aurosus*, Melbourne, pl. cxxxvii. figs. 18, 25, 26, 29–31, *iid. l. c.*

Argyria insons and *subtilis*, iid. *l. c.* figs. 21 & 22, Bogota.

Erupa (?) *titanalis*, iid. *l. c.* fig. 4, Brazil.

Catagela (?) *leucania*, iid. *l. c.* fig. 13, Ceylon.

TORTRICIDÆ.

C. G. BARRETT has continued his "Notes on British *Tortricina*"; Ent. M. M. xi. pp. 191–196, xii. pp. 7 & 8.

Teras deflectana, Rob., redescribed, and *ferrugana*, W. V. (of which *semiannula*, Rob., may be a var.), and *maculidorsana*, Clem., noticed; P. C. Zeller, Verh. z.-b. Wien, xxv. pp. 211–213. *T. hastiana*, Linn., var. ? *ptychogrammus*, from Texas, and *T. tristana*, Hübn., var. *famula*, from Cambridge, Mass., described; *id. l. c.* pp. 213 & 214.

Tortrix (*Cacœcia*) *rosœceana*, Harr., *purpurana*, Clem. (♀ = *gurgitana*, Rob.), *cerasivorana*, Fitch, *lævigana*, W. V. (= *rosana* Hein., = *oxyacanthana*, Hübn.), *T.* (*Loxotænia*) *furvana* and *flaccidana*, Rob., *rileyana*, Grote, *T.* (*Ptycholoma*) *melaleucana*, Walk., *T.* (*Lophoderus*) *lutosana*, Clem. (? = *incertana*, Clem., ? = *politana*, Haw.), *T.* (*Argyrotoxa*) *albicomana*, Clem.; *T.* (*Œnectra*) *violaceana*, Rob., *T.* (*Dichelia*) *puritana*, Rob. (*Crœsia* ? *unifasciana*, Clem., is probably distinct), *sulfureana*, Clem. (= *Crœsia* ? *virgineana*, Clem.), *furcatana*, Walk., *T.* (*Amphisa*) *disco-punctana*, Clem., *T.* (*Platynota*) *sentana*, Clem., and *flavidana*, Clem., (= *laterana*, Rob.), noticed and mostly redescribed; *id. l. c.* pp. 215–237.

Conchylis. Species discussed by E. L. Ragonot, Ent. M. M. xii. pp. 87 & 88. Sp. n. ? from Dorpat noticed; F. Sintenis, SB. Ges. Dorp. iv. p. 28. *C. argentilimitana*, *bimaculana*, and *bunteana*, Rob., redescribed; P. C. Zeller, *l. c.* pp. 242–246. *C. zephyrana*, Treitschke, should take the name of *williana*, Brahm: F. J. M. Heylaerts, Tijdschr. Ent. (2) xviii. pp. xcvi. & xcvii.

Mictopsichia hubneriana, Stoll (?), figured by Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxviii. fig. 22.

Eupœcilia geyeriana, H. S., and *manniana*, F. v. Rössl. (= *Argyrolepia luridana*, Gregs.), redescribed; *E. phaleratana*, H. S., = *rupicola*, Curt., *E. vectisana*, Westw., is quite distinct from *affinitana*, Dougl.; and *geyeriana*, v. Hein., *nec* H. S., is a German form of *vectisana*: C. G. Barrett, *l. c.* xi. pp. 191–195, who also mentions several other species. *E. udana*, Guén.; larva described by E. L. Ragonot, *op. cit.* xi. p. 191.

Bactra lanceolana, Hübn., var. *verutana*, from Texas, described, and *B. furfurana*, Haw. (= *scirpana* and *pauperana*, H. S., and *lamana*, Zell.), noticed; P. C. Zeller, *l. c.* pp. 245–248.

Ablabia argentana, Clerck, new to Britain, has occurred at Athole.

Perthshire; F. B. White, Ent. M. M. xii. pp. 85 & 86, and Scot. Nat. iii. p. 160; G. T. Porritt, Naturalist (2) i. p. 26.

Phoxopteris medio-fasciana, Clem., p. 248, pl. viii. fig. 4, *nubeculosa*, Clem., p. 249, pl. viii. fig. 5, and *comptana*, Frön. (= *fragariæ*, Walsh), p. 257, redescribed; P. C. Zeller, *l. c.*

Penthina semifasciana, Haw., and not *scriptana*, Hübn., is probably the true *hartmanniana*, L.; *P. nimbatana*, Clem., is figured and described: *id. l. c.* p. 263, pl. viii. fig. 13.

Tmetocera ocellana, Fab. (*Grapholitha oculana*, Canad. Ent. iii. p. 13, fig. 9), noticed as probably introduced into North America; *id. l. c.* pp. 267 & 268.

Exartema (Clem., = *Eccopsis*, Led.) *nitidanum*, Clem., p. 269, pl. viii. fig. 15, and *permundanum*, Clem., p. 273, redescribed; *id. l. c.*

Phœcasiophora mutabilana, Clem., noticed; *id. l. c.* p. 276.

Sericoris coruscana, Clem. (?), redescribed from New York; *id. l. c.* p. 279.

Grapholitha (*Ephippiphora*) *interstinctana*, Clem. (= *distema*, Grote), redescribed and figured; *id. l. c.* p. 296, pl. ix. fig. 28. *G. cæcimaculana*, Hübn.: larva described; E. L. Ragonot, Bull. Soc. Ent. Fr. (5) v. p. cxxi. *G. gimmerthaliana*, Zell., rediscovered; F. Sintenis, *l. c.* p. 112.

Lozopera, &c. Various species noticed; C. G. Barrett, *l. c.* xi. p. 196.

Stigmonota nitidana, Fabr., and *weirana*, Dougl., contrasted; *id. op. cit.* xii. pp. 7 & 8.

Catoptria aspidiscana, Hübn. Discovery of the supposed larva feeding on golden-rod: J. B. Hodgkinson, *tom. cit.* p. 141.

Pædisca bimaculana, Don. (= *dissimulana*, Tr.), recorded from Cambridge, Massachusetts; P. C. Zeller, *l. c.* p. 302.

New genera and species:—

Cenopis, g. n., P. C. Zeller, Verh. z.-b. Wien, xxv. p. 239. Allied to *Tortrix*, sect. *Heterognomon*; types, *T. pettitana*, Rob. (redescribed), and *C. testulana*, sp. n., p. 241, Texas.

Ecdytolopha, g. n., *id. l. c.* p. 266. Allied to *Penthina*; type, *E. insiticiana*, sp. n., *l. c.* pl. viii. fig. 20, Massachusetts.

Teras malivorana, E. L. Ragonot, Bull. Soc. Ent. Fr. (5) v. p. lxxi. (altered to *T. pyrivorana*, p. cxxv.), Dax; *T. algoana*, Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxvii. fig. 50, South Africa; *T.* (*Rhacodia*) *peculiana*, p. 210, pl. viii. fig. 1, and *variolana*, p. 212, P. C. Zeller, *l. c.* both from Texas.

Rhacodia rureana, Felder & Rogenhofer, *l. c.* pl. cxxxvii. fig. 47, New Zealand.

Tortrix (*Cacœcia*) *infumatana*, Missouri, p. 216, *T.* (*Lozotænia*) *sesculana*, p. 220, Maine, Texas, *T.* (*Idiographis*) *amplexana*, p. 222, pl. viii. fig. 2, New Zealand, *T.* (*Argyrotoxa*) *trifurculana*, p. 226, and *conigerana*, p. 227, pl. viii. fig. 3, United States, *T.* (*Dichelia*) *belfragiana* (? = *sulfureana*, Clem., var.), p. 232, Texas, *T.* (*Platynota*) *labrosana*, p. 237, and *exasperatana*, p. 238, Texas, P. C. Zeller, *l. c.*; *T.* (?) *discana*, Amboina, *T. ropeana*, *taipana*, and *herana*, New Zealand, pl. cxxxvii. figs. 41, 45, 46, & 52, *T.* (?) *sarothrura*, Mexico, *T. mirana*,

and *nuptana*, Venezuela, *leprana*, Bogota, *stapiana*, Amazon, figs. 33, 34, 45–47. *capitana*, figs. 48 & 49, South Africa, pl. cxxxix. and *T.* (?) *insana*, pl. cxl. fig. 33, Australia, Felder & Rogenhofer, *l. c.*; *T. lafauryana*, E. L. Ragonot, *l. c.* p. lxxii. Dax.

Lophoderus (*Tortrix*) *mabilliana*, id. *l. c.* p. lxxii. Corsica.

Conchylis lindigana, pl. cxxxv. fig. 42, Bogota, *trimeni*, pl. cxxxvii. figs. 48 & 51, Cape, and *C.* (?) *galbana*, pl. cxl. fig. 29, Australia, Felder & Rogenhofer, l. c.; *C. vitellinana*, Maine or Massachusetts, *seriatana* and *glauco-fuscana*, Texas, P. C. Zeller, *l. c.* pp. 243–245.

Phoxopteris semi-ovana, p. 250, fig. 6, New York, *burgessana*, p. 252, fig. 7, Massachusetts, *laciniana*, p. 253, fig. 8, *subæquana*, p. 254, fig. 9, Maine or Massachusetts, *angulifasciana*, p. 256, fig. 10, Ohio, Massachusetts, *floridana*, p. 258, Ohio, *amblygona*, p. 259, Washington, and *marcidana*, p 260, Texas, *id. l. c.* pl. viii.

Euchromia hemidesma, id. *l. c.* p. 261, pl. viii. fig. 11, Massachusetts.

Penthina albeolana, p. 262, pl. viii. fig. 12, Massachusetts, *P.* (?) *chionosema*, p. 265, N. America, *id.* l. c.; *P. bryana*, pl. cxxxvii. fig. 54, Ceylon, *asturana*, *P.* (?) *dissimilis*, and *P.* (?) *lugubris*, pl. cxxxviii. figs. 11, 17, & 32, Amazon, Felder & Rogenhofer, *l. c.*

Exartema quadrifidum, p. 268, pl. viii. fig. 14, and *exoletum*, p. 270, Massachusetts, *albo-fasciatum*, p. 272, Ohio, Illinois, and *appendiceum*, p. 275, Massachusetts, P. C. Zeller, *l. c.*

Sericoris argyroclana, p. 277, New York, *constellatana*, p. 279, Ohio, New York, *astrologana*, p. 281, Texas, *poana*, Ohio, Massachusetts, and *campestrana*, fig. 17, Maine or Massachusetts, p. 282, *fuscalbana*, p. 284, fig. 18, Ohio, Maine, or Massachusetts, and *cæsialbana*, p. 285, fig. 19, Massachusetts, *id. l. c.* pl. viii.

Stigmonota erectana, C. G. Barrett, Ent. M. M. xii. p. 8, Norfolk.

Grapholitha vestaliana, p. 286, pl. viii. fig. 21, Texas, *trivittana*, p. 287, fig. 22, United States, *spiculana*, p. 289, fig. 23, Texas, *stercoreana*, p. 290, Maine or Massachusetts, *ræsleri*, p. 291, fig. 24, N. America, *G.* (*Pœcilochroma*) *malachitana*, p. 292, fig. 25, Missouri, *G.* (*P.* ?) *usticana*, p. 293, fig. 26, North America, *submisana*, p. 294, Maine or Massachusetts, *G.* (*Hedya*) *allutana*, p. 295, fig. 27, United States, *G.* (*Ephippiphora*) *eclipsana*, p. 298, fig. 29, *G. perfluana*, p. 299, fig. 30, and *packardi*, p. 300, fig. 31, Texas, P. C. Zeller, *l. c.* pl. ix.; *G.* (?) *voluta*, New Zealand ?, *G. sinana*, Shanghai, *punana* and *xylinana*, New Zealand, *novarana*, Nicobar Islands, *pictoriana*, New Zealand, *nucleana*, locality unknown, pl. cxxxvii. figs. 39, 42–44, 49, 55, 56, *plectana*, *ligneana*, *borbana*, *subtilana*, & *G.* (?) *trabeana*, Amazon, pl. cxxxviii. figs. 5–9, and *G. egregiana*, pl. cxxxix. fig. 40, Amboina, Felder & Rogenhofer, l. c.; *G. adenocarpi*, E. L. Ragonot, *l. c.* pl. lxxiii. Dax.

Pædisca inclinana, p. 301, fig. 32, New York, Texas, *clavana* (Schläger, MS.), p. 303, fig. 33, United States, *quintana*, figs. 34 & 35, *P.* (?) *constrictana*, fig. 36, and *desertana*, fig. 37, pp. 304–306. Texas, *affusana*, fig. 38, N. America, *tripartitana*, fig. 39. Texas, *tephrinana*, Maine or Massachusetts, *vertumnana*, Texas, New York, *dodecana*, fig. 40, Texas, pp. 307–311, *monogrammana*, fig. 41, and *albiguttana*, p. 313, *occipitana*, *comatulana*, and *numerosana*, Texas, pp. 315–317. *P.* [*Grapholitha*, Zell.,

errore ?] *subversana*, p. 318, Texas, Massachusetts, P. C. Zeller, *l. c.* pl. ix.; *P. mahiana*, Felder & Rogenhofer, *l. c.* pl. cxxxvii. fig. 40, New Zealand.

Carpocapsa firmana, iid. *l. c.* pl. cxxxviii. fig. 10, Amazon.

Phthoroblastis amictana, iid. *l. c.* pl. cxxxix. fig. 53, Bogota.

Dichrorhampha coriana, iid. *l. c.* pl. cxxxviii. fig. 18, Amazon; *D. aurisignana*, P. C. Zeller, *l. c.* p. 319, Washington.

Gauris arcigera, *tristis*, *cinctipes*, and *lacunaris*, Felder & Rogenhofer, *l. c.* pl. cxxxviii. figs. 12, 15, 20 & 21, Amazon.

Antwotricha (?) *affinis* and *marmorea*, Amazon, *herilis*, Cayenne, Brazil, *iid. l. c.* figs. 34, 60, & 66.

Mictopsichia superba, iid. *l. c.* fig. 23, Amazon, Venezuela.

Atteria pantherina and *mimica*, iid. *l. c.* pl. cxxxix. figs. 41 & 42, Bogota; *A. rivularis*, A. G. Butler, Ann. N. H. (4) xv. p. 342, Veragua.

Cerace guttana, Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 51, Silhet.

Salobrena (?) *genualis*, iid. *l. c* pl. cxxxvii. fig. 35, Amazon.

Tosale (?) *flatalis* and *decipiens*, iid. *l. c.* figs. 28 & 37, Amazon.

Sciaphila incomptana, C. Berg, Bull. Mosc. xlix. pt. 2, p. 234, Patagonia.

Tineidæ.

Notes on European *Tineina* occurring in the United States; V. T. Chambers, Ent. M. M. xi. pp. 279 & 280.

On *Tineina* from Texas, with descriptions of new species; *id.* Canad. Ent. vii. pp. 7–12, 30–35, 51–56, 73–75, 92–95, 105–108.

On *Tineina* from Canada, with notes on known species, and descriptions of new ones; *id. l. c.* pp. 124–128, 144–147.

H. Frey replies to Chambers' criticisms; S. E. Z. xxxvi. pp. 352–355.

Notes on British *Tineina* observed in 1874; J. E. Fletcher, Ent. M. M. xi. p. 238.

Notes on *Micro-Lepidoptera*, and on the larvæ of *Lepidoptera*; E. L. Ragonot, Pet. Nouv. vii. pp. 460, 461, 463, 492, & 496.

Choreutidæ. The position of this family is discussed, and a table of species given; P. C. T. Snellen, Tidjschr. Ent. xviii. pp. 70–78, pl. vi. figs. 5–7.

Choreutis pretiosana, Dup., recorded from Texas and Ohio, and the name *ohiensis* proposed for the variety from the latter locality; P. C. Zeller. Verh. z.-b. Wien, xxv. p. 320.

Brenthia pavonacella, Clem., redescribed and referred to the *Choreutidæ*; id. *l. c.* p. 323.

Talaporia lapidella, Goeze. Parthenogenesis; A. Foucart, Pet. Nouv. vii. pp. 523 & 524.

Solenobia lichenella, op. cit. p. 533.

Xysmatodoma melanella. W. C. Boyd disputes Harding's conclusions as to its dimorphism; Ent. M. M. xii. p. 163.

Lindera, Blanch., intermediate between *Euplocamus* and *Scardia*, re-characterized; C. Berg, Bull. Mosc. xlix. pt. 2, p. 236.

Tegeticula alba, Zell., = *Pronuba yuccasella*, Riley; P. C. Zeller, *l. c.*

pp. 340–342. Its ovipositing; C. V. Riley, Tr. Ac. St. Louis, iii. pp. 208–210.

Tinea mendicella, Nolck., from Livonia, cannot be Hübner's species, and is probably new; P. C. Zeller, *l. c.* p. 342.

Enæmia psammitis, Zell., = *Mieza subfervens*, Walk.; *E. crassivenella*, Zell., = *M. igninix*, Walk., = *Eustixis pupula*, Grote (? Hübn.): *id. l. c.* pp. 344 & 345.

Hyponomeuta malinella has recently been very destructive to fruit trees in various parts of France, but has met with a check this year, owing to the ravages of the larvæ of *Bombyx neustria* and *Liparis dispar*, which having stripped the trees by the time of the appearance of the *Hyponomeuta* larva, have starved it out to a considerable extent; M. Girard & R. Vallette, Bull. Soc. Ent. Fr. (5) v. pp. cxiv. & cxv. *H. polystigmella*, Feld., figured by Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxxxix. fig. 17.

Zelleria saxifragæ feeds in Switzerland on *Saxifraga aizoon*, and in Scotland on *S. oizoides* and *oppositifolia*; F. B. White, Ent. M. M. xii. pp. 86 & 87.

Psecadia flavitibiella, H. S. Habits; Zeller & Stainton, Ent. M. M. xii. p. 88.

Cryptolechia grandis, Perty, figured by Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 56.

Gelechia distinctella, Zell., and *Argyresthia gœdartella*, Linn.: habits of larvæ noticed; E. L. Ragonot, Bull. Soc. Ent. Fr. (5) v. pp. cxlv. & cxlvi.

[illegible]tella, Staint.: new to France, and destructive to beetroot; Ragonot, *l. c.* pp. cvi. & cvii.

Phora[illegible]xiha (*Lita* ?) *solanella*, Boisd.; E. L. Ragonot, *l. c.* pp. xxxv.–xxxvii. pl. [illegible]

Strobisia venustella, Chamb., = *iridipennella*, Clem.; V. T. Chambers, Canad. Ent. vii. p. 7.

Nothris declaratella, Staud.; E. L. Ragonot, *l. c.* pp. xxv. & xxvi.

Symmoca signatella: larva described, common in France; *id. l. c.* p. cxlv.

Œcophora olivella and *Elachista olivella* destructive to olives, and habits of larvæ noticed; Naudin & Lucas, *op. cit.* p. ccxxii. *Œ. bimaculana*, Don., figured by Felder & Rogenhofer, *l. c.* pl. cxxxviii. fig. 48. *Œ. woodiella*, Curt.; J. Sidebotham, P. Soc. Manch. xiv. p. 80, woodcuts.

Coleophora auro-purpuriella, Chamb., = *C. coruscipennella*, Clem.; V. T. Chambers, *l. c.* p. 124. *C. coryzæ*, Zell., recorded as new to Britain; H. T. Stainton, Ent. M. M. xii. p. 164. *C. nigricella*, Steph., destructive to hawthorn at Vienna; F. Loew, Verh. z.-b. Wien, xxv. SB. pp. 23 & 24.

Cosmopteryx scribaiella, Heyd., new to Switzerland; the larva is [illegible]almost undistinguishable from that of *C. lienigiella*, Zell.: H. Frey, MT. schw. ent. Ges. iv. pp. 191 & 192, & 442, and S. E. Z. xxxvi. pp. 44 & 45.

Aspidisca, Clem., is preoccupied in *Infusoria*, and *Gracilaria* has been used in *Algæ*; V. T. Chambers, *l. c.* p. 8.

Heliozela sericiella. Larva mines in footstalks of oak leaves; W. C. Boyd, P. E. Soc. 1875, p. xxii.

Lithocolletis quercetorum, Frey, figured, fig. 52, and *robiniella*, Clem., redescribed and figured, p. 348, fig. 53; P. C. Zeller, *l. c.* pl. x.

Bucculatrix pomifoliella, Clem., discussed; *id. l. c.* pp. 353 & 354.

New genera and species:—

Setiostoma, P. C. Zeller, Verh. z.-b. Wien, xxv. p. 324 (*Chorentidæ*); types, *S. xanthobasis*, pl. ix. fig. 42, Texas, and *chlorobasis*, Brazil, p. 325. Add *S. flaviceps*, pl. cxxxviii. fig. 1, Amazon, *S.* (?) *hæmitheia*, pl. cxl. fig. 13, Bogota, Felder & Rogenhofer, Reise Nov. Lep. v.

Entomoloma, E. L. Ragonot, Bull. Soc. Ent. Fr. p. xliii. Allied to *Xylopoda* (*Chorentidæ*); types, *nemorana* (= *incisalis*, Tr.) and *pariana*, Clerck.

Embryonopsis (*Gelechiidæ*), A. E. Eaton, Ent. M. M. xii. p. 61. Type, *E. halticella*, ibid. Kerguelen's Land. (*cf.* also *tom. cit.* p. 1).

Glauce, V. T. Chambers, *l. c.* p. 12. Allied to *Gelechia*; type, G. *pectenalæella* [!], l. c. Texas.

Leucophryne, id. *l. c.* p. 210; type, *L. tricristatella*, l. c. p. 211, Canada.

Phætusa, id. *l. c.* p. 105. Allied to *Evippe*; type, *P. plutella*, l. c. p. 106, Texas.

Ætole, id. *l. c.* p. 73. Allied to *Heliozela*; type, *Æ. bella*, ibid. Texas.

Eriphia, id. *l. c.* p. 55. Allied to *Elachista* and *Laverna*; type, *E. concolorella*, ibid. Texas.

Næra, id. *l. c.* p. 9. Allied to *Laverna*; type, *N. fusco-cristatella*, l. c. Canad. Texas. (The genus is pre-occupied, and is renamed *Leuce*, [illegible] the type is redescribed under *Laverna*, p. 34.]

Phigalia [pre-occupied in *Geometridæ*], id. *l. c.* p. 107, and described to *Perittia*; types, *A. albella* and *ochreazulella*, ibid. Texas.

Ithome [too near *Ithomia*], id. *l. c.* p. 93. Allied to *Elachista*, &c.; type, *I. unimaculella*, l. c. p. 94, Texas.

Colletria [? allied to *Badera*]; type, *C. pyrrhocrocis* (Zell., MS.), Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 7, Bogota.

Choregia, iid. *l. c.* [affinities uncertain]; for *C. violacea*, Amazon, and *C. fulgens* (Zell., MS.), Bogota, pl. cxl. figs. 16 & 17.

Chorentis (?) *aneigutta* and *suavis*, Amazon, *ocularis*, Java, and *novaræ*, Nicobar Islands, *iid. l. c.* pl. cxxxviii.

Simaethis (?) *lutescens* and *basalis*, Amboina, *albipes*, Amazon, pl. cxxxviii. figs. 16, 19 & 31, *chalybea*, pl. cxl. fig. 4, Amazon, *iid.* l. c.; *S. auro-fasciana*, p. 74, fig. 7, St. Martin, West Indies, *inscriptana*, p. 76, fig. 6, and *albimaculana*, p. 77, fig. 5, Celebes, P. C. T. Snellen, Tijdschr. Ent. xviii. pl. vi.; *S. rimulalis*, St. Thomas, W. Indies, *vicarialis*, Maine or Massachusetts, P. C. Zeller, *l. c.* pp. 321 & 322.

Atychia querula, pl. cxxxviii. fig. 44, Amazon, *A.* (?) *diabolus*, Amboina, and *quiris*, Cape, pl. cxxxix. figs. 32 & 36, *illita*, pl. cxl. fig. 32, New Zealand, Felder & Rogenhofer, l. c.; *A. confinis*, Saratow, *pusilla* (? = *funebris*, Dup., *nec* auct. al.), Andalusia, J. A. Boisduval, Lép. Hét. i. pp. 484 & 487.

Penestoglossa (new name for *Psilothrix*, Wocke, pre-occ.) *capensis*, Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 31, Knysna.

Scardia (?) *ruderella*, pl. cxxxviii. fig. 46, Amazon, and *S.* (?) *nivosa*, pl. cxxxix. fig. 50, Brazil, *iid. l. c.*

Conœca irrorea, iid. *l. c.* pl. cxxxviii. figs. 39 & 40, Australia.

Blabophanes insularis, Nicobar Islands, and *B. namuella*, New Zealand, *iid. l. c.* pl. cxl. figs. 21 & 44.

Tinea (?) *codrella*, pl. cxxxviii. fig. 33, Australia, *T.* (?) *bivirgella*, pl. cxxxix. fig. 2, Bogota, and *T. clathrata*, pl. cxl. fig. 30, Fiji, *iid.* l. c.; *T. marmorella*, *minutipulvella*, and *marginimaculella*, V. T. Chambers, *l. c.* p. 212, Canada; *T. ursella*, p. 190, *binotatella* and *subæneella*, p. 191, F. Walker, in Melliss's "St. Helena," St. Helena.

Atteva impunctella, C. Ritsema, Pet. Nouv. vii. p. 479, Sumatra.

Adela trigrapha, P. C. Zeller, *l. c.* p. 342, pl. x. fig. 50, California; *A. æthiops*, Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 1, Australia.

Salapola hypotricha, iid. *l. c.* pl. cxxxviii. fig. 30, Amazon, Cayenne.

Badera nobilis, iid. *l. c.* pl. cxxxix. fig. 9, Amboina.

Ochsenheimeria (?) *squamicornis*, iid. *l. c.* pl. xxxix. fig. 6, Fiji and (?) Australia.

Hyponomeuta 5-*punctella* and *apicipunctella*, V. T. Chambers, *l. c.* pp. 7 & 8, Texas.

Argyresthia belangerella, id. *l. c.* p. 145, Canada.

Cerostoma crispulella, C. Berg, Bull. Mosc. xlix. pt. 2, p. 238, Patagonia; *C. anticella*, F. Walker, *l. c.* p. 192, St. Helena.

Ph[illegible]a (?) *monetella*, Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 19, [illegible]. (?) *albapulvella* [!], V. T. Chambers, *l. c.* p. 147, Canada.

Phora[illegible]hia genetta, *crocuta*, and *C.* (?) *cana*, Amazon, *C. cretifera*, *mus*), pl[illegible]*costa*, *flavicosta*, and *fraterna*, Amazon, *diffinis*, Chili, *hos-* remark[illegible]e York, Australia, *fœcosa*, *leprosa*, and *elatior*, Amazon, pl. al[illegible]. figs. 35–38, 41, 47, 51, 54, 57, 64, 65 & 67, *intermedia*, Ceylon, and *Stella*, Amazon, pl. cxxxix. figs. 13 & 24, *galactina*, New Zealand, and *C.* (?) *alveola*, Australia, pl. cxl. figs. 34 & 35, Felder & Rogenhofer, l. c.; *C. atro-picta*, P. C. Zeller, *l. c.* p. 343, pl. x. fig. 51, North America.

Eretmocera (?) *flavipennis*, America, *æneiceps*, Bogota, pl. cxxxviii. figs. 59 & 62, *sesioides*, pl. cxl. fig. 22, Sydney, Felder & Rogenhofer, *l. c.*

Zaratha (?) *macrocera*, Amazon, and *niveiventris*, Bogota, *iid. l. c.* pl. cxl. figs. 18 & 26.

Semioscopis (?) *trigonella*, iid. *l. c.* pl. cxxxix. fig. 39, Knysna.

Pseeadia (?) *sabiella*, pl. cxxxix. fig. 30, South Africa, *P. teras*, pl. cxl. fig. 28, New Zealand, *iid. l. c.*

Ethmia (?) *gnophrina*, iid. *l. c.* pl. cxxxix. fig. 38, Ternate, Amboina.

Trichostibus imitans, iid. *l. c.* fig. 27, Bogota.

Depressaria desertorum, C. Berg, *l. c.* p. 239, Patagonia.

Acrolophus cossoides, Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 35, Brazil.

Gelechia (?) *fuliginosa*, pl. cxxxviii. fig. 43, Amazon, *G. signifera*, pl. cxxxix. fig. 23, Ceylon, *fasciella*, *nuptella*, *albilimbella*, and *pleiadella*, Amazon, *G.* (?) *rostella*, Rio Janeiro, *G.* (?) *niobella*, Amazon, *G. taon-[illegible]a*, New Zealand, pl. cxl. figs. 1, 2, 5, 8, 12, 14 & 45, *iid.* l. c.; *G. albo-[illegible]rulella*, p. 209, *niveo-pulvella*, *bicristatella*, and *belangerella*, p. 210,

V. T. Chambers, *l. c.* Canada ; *G. invenustella* and *ferella*, C. Berg, *l. c.* pp. 240 & 241 ; *G. sanctæ-helenæ* and *ligniferella*, F. Walker, *l. c.* p. 192, St. Helena.

Ergatis (*Gelechia*) *staticella*, P. Millière, Bull. Soc. Ent. Fr. (5) v. p. clxvii. Isle Sainte-Marguerite.

Rhinosia (?) *obydella*, Felder & Rogenhofer, *l. c.* pl. cxxxviii. fig. 29, Amazon.

Hypsolophus (?) *tricolor*, iid. *l. c.* pl. cxxxix. fig. 18, Batavia.

Hypercallia confinella, iid. *l. c.* pl. cxxxviii. fig. 56, Bogota.

Lecithocera (?) *oblitella*, Amazon, *L.* (?) *gratiosa*, and *L.* (?) *brunniceps*, Bogota, *iid. l. c.* pl. cxl. figs. 9, 20 & 25.

Carcina luteola, iid. *l. c.* pl. cxxxviii. figs. 26 & 27, Amazon.

Apiletria (?) *marcida*, Australia, and *A.* (?) *hæmatella*, Mauritius, *iid. l. c.* pl. cxxxviii. figs. 42 & 61.

Symmoca nigro-maculella, E. L. Ragonot, *l. c.* p. cxciv., Coimbra, Portugal ; *S.* (?) *herodiella*, Felder & Rogenhofer, *l. c.* pl. cxl. fig. 31, Australia.

Harpella (?) *crassella*, iid. *l. c.* pl. cxxxix. fig. 22, Ternate.

Œcophora (?) *ambigua*, fig. 4, and *Œ.* (?) *litura*, figs. 24 & 25, pl. cxxxviii. Amazon, *Œ. trabeela*, Amazon, *mentella*, locality unknown, *Œ.* (?) *munda*, *Œ. melinella* and *utuella*, New Zealand, pl. cxl. figs. 7, 19, 38, 41, & 46, *iid.* l. c. ; *Œ. jourdheuillella*, E. L. Ragonot, *l. c.* p. lxxiii., Valais ; *Œ. basqueella*, V. T. Chambers, *l. c.* p. 92, Texas (referred, p. 124, to *Gelechia*).

Glyphipteryx voluptella, Amazon, *nugella*, Bogota, *morangella* and *tungella*, New Zealand, Felder & Rogenhofer, *l. c.* pl. cxl. figs. 3, 15.

Gracilaria belfragella, pp. 8 & 92, Texas, *G. pulchella*, p. 14[illegible] Canad. V. T. Chambers, l. c. ; *G.* (?) *chrysitis*, Felder & Rogenhofer, cxl. fig. 43, New Zealand ; *G.* (*Coriscium*) *quinquistrigella*, [illegible]nd descripbers, *l. c.* p. 73, Texas.

Coleophora bistrigella and *argenti-albella*, p. 75, *alba-costella* a[illegible] *neella*, p. 95, *id. l. c.* Texas ; *C. tripoliella*, J. B. Hodgkinson, Ent &c. ; p. 55, Fleetwood.

Dryope luteo-pulvella, V. T. Chambers, *l. c.* p. 73, Texas.

Laverna anotherœella (sometimes called *lyonetiella* in description), p. 30 (with description of transformations), *unicristatella*, p. 32, *rufocristatella*, *ignotilisella* (corrected to *ignobilisella*, p. 51), and *albo-capitella*, p. 33, *parvicristatella*, and *miscecalonella* (corrected to *miscecolorella*, and amended description given, pp. 51–53), p. 34, and *obscurusella* [!], p. 53, *id. l. c.*, Texas ; *L.* (?) *vividella*, Felder & Rogenhofer, *l. c.* pl. cxl. fig. 6, Australia.

Butalis buristriga, *dorsipallidella*, *immaculatella*, and *plausipennella*, p. 10, and *alba-pennella*, p. 11, V. T. Chambers, *l. c.* Texas ; *B. sinensis*, Felder & Rogenhofer, *l. c.* pl. cxl. fig. 11, Shanghai.

Pancalia (?) *stellaris*, iid. *l c.* fig. 10, Bogota.

Stathmopoda (?) *miniella*, iid. *l. c.* fig. 42, New Zealand.

Elachista (?) *concolorella* [so closely resembling *Eriphia concolorella* that it requires a lens to detect the difference, and yet it receives the same specific name !], p. 55, *parvipulvella*, p. 56, *inornatella*, p. 93, *a* from Texas, *unifasciella*, p. 147, Canada, V. T. Chambers, *l. c.* [illegible]p.

Theisoa multifasciella, id. *l. c.* p. 93, Texas.

Lithocolletis alnivorella, p. lxxiii., Dax, *caudiferella*, Montpellier, and *parvifoliella*, Dax, p. lxxiv., E. L. Ragonot, l. c.; *L. conglomeratella*, p. 346, and *texanella*, p. 349, pl. x. fig. 54, Texas, *atomariella*, p. 350, Cambridge, Massachusetts, and *alternatella*, p. 351, Texas, P. C. Zeller, l. c.; *L. aurifascia*, F. Walker, *l. c.* p. 192, St. Helena.

Tischeria concolor, P. C. Zeller, *l. c.* p. 352, Texas.

Cemiostoma auro-nivea, F. Walker, *l. c.* p. 193, St. Helena.

Bucculatrix niveella, *magnella*, and *immaculatella*, p. 54, Texas, *canadensisella*[!], p. 146, Canada, V. T. Chambers, l. c.; *B. litigiosella*, P. C. Zeller, *l. c.* p. 354, Texas.

Opogona fumiceps, Felder & Rogenhofer, *l. c.* pl. cxxxix. fig. 8, Ceylon.

Nepticula zelleriella, P. C. T. Snellen, Tijdschr. Ent. xviii. pp. 113–117, pl. vii. figs. 1–4, Hague; *N. belfragella*, V. T. Chambers, *l. c.* p. 75, Texas.

Pterophoridæ.

Pterophorus monodactylus, Linn. (= *pergracilidactylus*, Pack., = *cineridactylus*, Fitch), discussed; P. C. Zeller, Verh. z.-b. Wien, xxv. pp. 355 & 356. *P. rhododactylus*: transformations described; G. T. Porritt, Ent. M. M. xii. pp. 88 & 89.

Aciptilia furcatalis, Walk. (?), var. ♀ (?) figured by Felder & Rogenhofer, Reise Nov. Lep. v. pl. cxl. fig. 52, from New Zealand. *A. leucodactylus*, Fabr., redescribed; C. Berg, Bull. Mosc. xlix. pt. 2, p. 243.

Mimæseoptilus zophodactylus, Dup. Larva on *Chlora perfoliata*, possibly when young; Lafaury, Pet. Nouv. vii. p. 532.

Phora[illegible] species :—

mus), pla[illegible] *staticis*, Island of Ste. Marguerite, and *satanas*, Cannes, p. remarks. *in*[*en*]*sis*, p. clxviii., Lérins Islands, near Cannes, P. Millière, also, Soc. Ent. Fr. (5) v.

Stenoptycha lindigi, Felder & Rogenhofer, *l. c.* pl. cxl. fig. 61, Bogota.

Cnemidophorus (?) *alticola*, iid. *l. c.* fig 59, Himalaya.

Platyptilia (?) *stigmatica* and *P. scutellaris*, Bogota, *haasti*, New Zealand, *iid. l. c.* figs. 55, 57 & 58.

Platyptilus subnotatus, F. Walker, in Melliss's "St. Helena," p 193, St. Helena.

Amblytilia taprobanes, Felder & Rogenhofer, *l. c.* pl. cxl. fig. 54, Ceylon.

Oxyptilus languidus, Bogota, *vigens*, New Zealand, and *nubilus*, Bogota, *iid. l. c.* figs. 47, 49 & 53.

Mimæseoptilus bogotanus, *tenuis*, and *posticus*, Bogota, and *sabius*, Caffraria, *iid. l. c.* figs. 48, 50, 51 & 60.

Œdematophorus constanti, E. L. Ragonot, Bull. Soc. Ent. Fr. (5) v. p. ccv. France.

Lioptilus chrysocomæ, id. *l. c.* p. lxxiv. Lardy.

Aciptilia patruelis, Felder & Rogenhofer, *l. c.* pl. cxl. fig. 56, New Zealand.

Alucitidæ.

Alucita eudactyla, Bogota and Brazil, and *capensis*, Knysna, Felder & Rogenhofer, *l. c.* figs. 62 & 63. spp. nn.

DIPTERA.

BY

E. C. Rye, F.Z.S., M.E.S.

The General Subject.

Beling, T. Beitrag zur Metamorphose der zweiflügeligen Insecten. Arch. f. Nat. xli. 1, pp. 31–57.

Describes the larvæ, pupæ, &c., of 15 species of *Xylophagidæ*, *Tabanidæ*, *Empidæ*, *Asilidæ*, *Therevidæ*, *Leptidæ*, *Dolichopodidæ*, and *Syrphidæ* [infrà].

Rondani, C. Muscaria exotica Musei civici Januensis observata et distincta. Fragmentum iii. Ann. Mus. Genov. vii. pp. 421–[illegible]. Canad.

Descriptions of species (including new genera) taken by the [illegible] Doria & Dr. O. Beccari at Sarawak, Borneo, in 1865–1868. O[illegible]nd descrip- parts of some species are given.

[illegible] &c.; Ent.

West Galizia. A. Grzegorzek, Verh. z.-b. Wien, xxv. pp. 7 & 8, [illegible] species of *Campylomyza*, *Catocha*, *Lestremia*, and *Chironomus*, to his list of *Diptera* observed in the Sandez district [Zool. Rec. x. p. 414].

Dalmatia and Tyrol. Species described by J. Palm; Verh. z.-b. Wien, xxv. pp. 411 & 412.

Cordova. Observations by Van der Wulp on a collection, chiefly *Bombyliidæ*, received from Weyenbergh, with indications of new species; Tijdschr. Ent. xviii. Versl. pp. xv.–xviii.

On the question of the transport and inoculation of virus by flies; J. P. Mégnin, Paris: 1875, 8vo, 1 pl. (extr. from J. Anat. Phys., March, 1875). Two cases, reported in the 'Bulletin général de Thérapeutique,' June 15, 1875, discussed by A. Laboulbène, Bull. Soc. Ent. Fr. (5) v. pp. cxxix. & cxxx.

Parasitic *Diptera* found in *Coccidæ*; V. Signoret, Ann. Soc. Ent. Fr. (5) v. pp. 358 & 363 (? *Sphærocera* and *Pipiza*).

Luminous *Diptera* near Lake Aral; Wladimir Alenitzin, Tageblatt [illegible] of the 48th meeting of German Naturalists and Physicians at Gra[illegible] p. 150 (*cf.* also Deutsche E. Z. 1875, p. 432).

A previously unrecorded phase of hermaphroditism; see Loew, *[illegible]chopodidæ*, infrà, p. 473.

Cecidomyiidæ.

Cecidomyia onobrychidis, Br., described in all stages from *Onobrychis*, 3 species of *Medicago*, and 2 of *Astragalus*, pp. 16 & 17; *Asphondylia verbasci*, Vall., from *Astragalus asper* and *Echium vulgare*, pp. 22–25; *Hormomyia millefolii*, H. Lw., ♂ described, p. 26; various observations on galls of *Cecidomyia salicina*, *terminalis* (pl. ii. fig. 2), *heterobia*, and *iteophila*; and on galls on *Viburnum lantana*, *Rosa canina*, *Prunus domestica* (pl. ii. fig. 3), *P. spinosa*, and *Heracleum sphondylium*, caused by unknown species respectively named in anticipation *C. reaumuri* and *rosæ* by Bremi, *rosarum* by Hardy, and *pruni* and *heraclei* by Kaltenbach; also on various deformities in *Lonicera xylosteum* (pl. ii. fig. 4), *Orobus vernus*, *Prunus spinosa* (pl. ii. fig. 5), *Campanula rapunculoides*, *Alnus glutinosa*, *Vicia cracca*, *Pimpinella*, *Torilis*, &c., pp. 27–32. F. Löw, Verh. z.-b. Wien, xxv.

Cecidomyia. Two galls described, from *Salix incana* and *Carpinus betulus* at Munich; Kriechbaumer, Ent. Nachr. i. pp. 157 & 158. Von Bergenstamm, *op. cit.* p. 174, refers the second gall to *C. carpini*, Löw. Observations by Kriechbaumer appended, *l. c.*

Asphondylia ulicis, Traill, fully described, with habits; it occurs also in the South of England. G. H. Verrall, Ent. M. M. xi. p. 224.

Limnophyes, g. n., A. E. Eaton, Ent. M. M. xii. p. 60. For *L. pusillus*, sp. n., *id. ibid.* Kerguelen's Island.

Cecidomyia asperulæ, p. 13, from galls on *Asperula tinctoria*, pl. ii. *Phora...achi*, p. 18, from galls on *Sonchus oleraceus* and *S. arvensis*. F. ...mus), pl... n. z.-b. Wien, xxv. Vienna district; *C. anophila*, G. von Haim- remarks a... *n. cit.* p. 809, figs. 1–3, from galls on vine leaves, Austria. also feeds... fully described, pp. 803–810; *C. ramicola*, p. 239, *floricola*, *toria* ..., *bedeguariformans*, p. 250, F. Rudow, Z. ges. Naturw. (2) xii. Pa...enburg; *C.* (*tiliæ*) *verrucicola*, p. 201, Niagara and Cambridge, Mass., *C.* (*urticæ*) *urnicola*, p. 202, Lake George and Trenton Falls, C. R. Osten-Sacken, Canad. Ent. vii. [trinomial, and described from galls only]; *C. napi*, p. 34, *frauenfeldi*, p. 79, *pruni*, p. 175, *heraclei*, p. 285, *euphrasiæ*, p. 471, *coryli*, p. 637, *iridis*, p. 716, *sambuci*, p. 785, J. H. Kaltenbach, "Die Pflanzenfeinde," Germany: spp. nn.

Diplosis centaureæ, sp. n., F. Löw, *l. c.* p. 20, from *Centaurea scabiosa*, Vienna district.

Asphondylia (*asteris*) *recondita*, sp. n., C. R. Osten-Sacken, *l. c.* p. 202, Long Island, gall only.

Mycetophilidæ.

A. Grzegorzek, Verh. z.-b. Wien, xxv. p. 1, *et seq.*, records the capture of rare species in the district of Alt-Sandez, West Galizia. *Leptomorphus walkeri*, Curt., ♀ described, and wing figured; p. 7.

Boletina nigricoxa, Stäg.; larva and pupa described by T. Beling, Arch. Nat. xli. 1, pp. 56 & 57.

Platyura morio, sp. n., Grzegorzek, *l. c.* p. 1, figs. 1, 1a, Galizia.

Empalia stylifera, sp. n., *id. l. c.* p. 3, fig. 2, Galizia.

Phronia umbricula, p. 4, fig. 3, *aterrima*, p. 6, fig. 4, spp. nn., Grzegorzek, *l. c.* Galizia.

Sciara foliorum, sp. n., F. Rudow, Z. ges. Naturw. (2) xii. p. 241. Mecklenburg.

Bibionidæ.

Plecia tergorata, sp. n., Rondani, Ann. Mus. Genov. vii. p. 462, Borneo.

Chironomidæ.

Chironomus, found near Lake Aral, giving a strong phosphorescent light; W. Alenitzin, Tageblatt of 48th meeting of German Naturalists and Physicians at Graz, p. 150 (*cf.* also Deutsche E. Z. 1875, p. 432).

Chironomus larvæ often found entrapped in bladderwort (*Utricularia*); M. Treat, Am. Nat. ix. pp. 660 & 661.

Ceratopogon agas, sp. n., Rondani, *l. c.* p. 462, Borneo, in head of *Meleagris gallopavo*.

Ptychopteridæ.

Ptychoptera contaminata, L. The muscular, nervous, circulatory, digestional, and sexual organs of the larva elaborately described and figured; C. Grobben, SB. Ak. Wien, lxxii. pt. 1, pp. 433–454, pl.; also in Tageblatt of 48th meeting of German Naturalists, &c., p. 103 (*cf.* Deutsche E. Z. 1875, p. 429).

[illegible] Canad.

Limnobiidæ.

[illegible] descrip-

Limnobia fumipennis, sp. n., A. G. Butler, Cist. Ent. i. p. [illegible] 60 Zealand.

[illegible] &c.;

Tipulidæ.

Tipula oleracea. A. Hammond, Sci. Goss. 1875, pp. 10–15, 171–175, 201–205, figs. 7–15, 107–114, 129–138, in papers on "the anatomy of the larva of the Crane fly," enters with great minuteness upon the microscopic structure of the various organs, treating the subject in a manner similar to that employed by Lowne in discussing the blow-fly. Some peculiar organs are noticed, consisting of minute capsules filled with a granular fluid, and situated in pairs on the dorsal and ventral surfaces of segments 3–10, beneath the skin.

Halir[rh]ytus, g. n., A. E. Eaton, Ent. M. M. xii. p. 60. For *H. amphibius*, sp. n., *id. ibid.* Kerguelen's Island.

Tipula punctifrons, sp. n., Rondani, *l. c.* p. 463, Borneo.

Stratiomyiidæ.

Cyphomyia. Synoptical list of known species; *C. dispar*, Schin., ? = *rubra*, Lw. J. M. F. Bigot, Ann. Soc. Ent. Fr. (5) v. pp. 483–486.

Sargus leoninus and *S.* (?) *brevipennis*, spp. nn., Rondani, *l. c.* p. 4[illegible] Borneo.

Chrysochlora (?) *baccoides*, sp. n., *id. ibid.* Borneo.

Cyphomyia cyanispinis, Amazons, *scalaris*, Mexico, spp. nn., Bigot, *l. c.* p. 487.

Xylophagidæ.

Xylophagus ater, Meig., larva and pupa, pp. 31–34, *X. cinctus*, Dej., pupa, pp. 24 & 35, described by T. Beling, Arch. f. Nat. xli. 1.

Tabanidæ.

C. R. Osten-Sacken, Mem. Bost. Soc. ii. pp. 365–397, publishes a "Prodrome of a monograph of the *Tabanidæ* of the United States," describing the species of *Pangonia* (4), *Chrysops* (24), *Silvius* (1), *Hæmatopota* (1), and *Diabasis* (1). The coloration of the eyes in the American species of *Chrysops* is particularly mentioned, and 3 types of it are figured. *C. mœrens*, Walk., ? = *æstuans*, V. d. Wulp; *C. canifrons*, Walk., ? = *flavidus*, Wied.; *C. fascipennis*, Meq., ? = *univittatus*, Meq.; *C. lineatus*, Jaenn., *areolatus*, Walk., = *vittatus*, Wied.; *C. fuliginosus*, Wied., = *plangens*, Wied., ♂; *Tabanus rondanii*, Bellardi, = *americanus*, Pal. d. B., = *Chrysops convergens* and *approximans*, Walk., = *Diabasis atænia*, Meq., = *D. ferrugata*, F.

Notes on habits and structure of various British species; F. J. Allen & H. M. J. Underhill. Sci. Goss. 1875, pp. 147–150, figs. 92–98.

Tabanus bromius, L., pp. 35–37, and *Hæmatopota pluvialis*, L., pp. [illegible]: larva and pupa described by T. Beling, Arch. f. Nat. xli. 1.

us justorius, p. 455, *albo-scutatus* and *pauper*, p. 456, *ignobilis* *Phora.s*, p. 457, *fulvissimus* and *variegatus*, p. 458, *apicalis*, p. 459, C. *mus*), plac Ann. Mus. Genov. vii. Borneo; *T. propinquus*, J. Palm, Verh. remarks an, xxv. p. 411, Dalmatia; *T. oplus*, A. G. Butler, Cist. Ent. i. also fe; New Zealand: spp. nn.

tori'angonia tranquilla and *pigra*, p. 367, *chrysocoma*, p. 368, C. R. Osten Sacken, *l. c.* N. America; *P. lerda*, p. 355, *adrel*, p. 356, A. G. Butler, Cist. Ent. i. New Zealand: spp. nn.

Silvius trifolium, sp. n., C. R. Osten-Sacken, *l. c.* p. 395, Vancouver Island, Washington Territory.

Chrysops unizonatus, p. 459, *impar* and *alter*, p. 460, C. Rondani, *l. c.* Borneo; *C. atropos* (? = *divisus*, Walk.), p. 372, *mitis* (? = *provocans*, W.), p. 374, *fugax* (? = *carbonarius*, W., pt., ? = *ater*, Meq.), p. 375, *celer* and *sordidus* (= *niger*, W., *nec* Meq.), p. 376, *callidus*, p. 379, *delicatulus*, p. 380, *pudicus*, p. 381, *montanus*, p. 382, *indus*, p. 383, *frigidus*, p. 384, *mœchus*, p. 387, *morosus* (? = 3-*notatus*, Meq.), p. 389, *striatus* (= *vittatus*, Bell., *nec* Wied., ? = *furcatus*, Walk.), and *hilaris*, p. 391, *fallax*, p. 392, C. R. Osten-Sacken, *l. c.* N. America: spp. nn.

Hæmatopota asiatica and *borneana*, C. Rondani, *l. c.* p. 461, Borneo; *H. americana*, C. R. Osten-Sacken, *l. c.* p. 395 (almost identical with *H. pluvialis*), N. America: spp. nn.

Leptidæ.

t
of
an *Leptis*. General observations on the earlier stages, and details of

larvæ and pupæ of *L. scolopacea* and *tingaria*, L., *latipennis*, Lw., and *lineola*, F.; T. Beling, Arch. f. Nat. xli. 1, pp. 48–51.

Chrysopila atrata, Meig.; larva and pupa described, *id. l. c.* pp. 52 & 53.

Therevidæ.

Thereva nobilitata, F. Larva and pupa fully described, and those of *T. oculata*, Egg., and *T. circumscripta*, Lw., compared; *id. l. c.* pp. 43–49.

Bombyliidæ.

Bombylius. Observations on the habits, affinities, and anatomy of the British species; F. J. Allen & H. M. J. Underhill, Sci. Goss. 1875, pp. 79–81, figs. 46–51.

Bombylius niveus, Wied., ♂ & ♀, described from Dalmatia; J. Palm, Verh. z.-b. Wien, xxv. p. 412.

Thevenemya, g. n., J. M. F. Bigot, Bull. Soc. Ent. Fr. (5) v. p. clxxiv. Near *Eclimus*, Loew. For *T. californica*, sp. n., *id. l. c.* p. clxxv. California.

Bombylius capillatus and *flavescens*, spp. nn., J. Palm, *l. c.* p. 413, Dalmatia.

Hyperalonia anomaus, sp. n., Rondani, Ann. Mus. Genov. vii. p. 453, Borneo.

Anthrax carbo, sp. n., *id. ibid.* Borneo.

[illegible] Canad.

[illegible] descrip-
[illegible]tio

Asilidæ.

Leptogaster cylindricus, Dej., p. 41, and *Asilus geniculatus*, L., p. [illegible] &c.; & 43; larva and pupa described by T. Beling, Arch. f. Nat. xli. 1.

Microstylium indutum, p. 446, *vestitum*, p. 447, spp. nn., Rondani, *l. c.* Borneo.

Laphria barbicrura, p. 447, *fulvicrura* and *seticrura*, p. 448, spp. nn., *id. l. c.* Borneo.

Pogonosoma beccarii, sp. n., *id. l. c.* p. 449, Borneo.

Ommatius taniomerus, ibid., *signinipes*, p. 450, *id. l. c.* Borneo; *O. vitreus*, Hayti, *pictipennis*, Pulo Penang, p. 246, *parvus*, Mexico, *fallax*, Caffraria, p. 247, Bigot, Ann. Soc. Ent. Fr. (5) v.: spp. nn.

Lecania tabescens, sp. n., Rondani, *l. c.* p. 451, Borneo.

Asilus (?) *minusculus*, sp. n., *id. ibid.* Borneo.

Trypanea albo-pilosa, sp. n., *id. l. c.* p. 452, Borneo.

Cerdistus albispinus, sp. n., J. Palm, Verh. z.-b. Wien, xxv. p. 414, Dalmatia.

Tolmerus lesinensis, sp. n., *id. l. c.* p. 415, Dalmatia.

Allocotasia vulpina, Celebes, *cothurnata*, Madagascar, spp. nn., Bigot, *l. c.* p. 242.

Emphysomera pilosula, p. 243, *bicolor*, p. 244, Mexico, *femorata*, p. 24[illegible] Ceylon, spp. nn., *id. l. c.*

DOLICHOPODIDÆ.

Notes on rare British species, *Dolichopus latilimbatus*, Meq., *D. punctipennis*, Zett., *Gymnopterus chrysozygus*, W., *G. plagiatus*, Lw., *Syntormon adicnemus*, Lw., and *Xiphandrium auctum*, Lw., being for the first time recorded as indigenous. *Dolichopus montanus*, Lw., = *phæopus*, Walk.; *D. consobrinus*, Zett., *nec* Walk., renamed *maculicornis*. G. H. Verrall, Ent. M. M. xii. pp. 31–35, 142–148.

Dolichopus latilimbatus, Macq.; larva described by T. Beling, Arch. f. Nat. xli. 1, p. 53.

Synarthrus cinereiventris. Head, body, and wings built as in ♀, and legs as in ♂, in a specimen from Texas; Loew, Z. ges. Naturw. (n. f.) x. [1874], pp. 75–79.

Dolichopus mediicornis, pp. 32 & 143, *strigipes*, p. 143, G. H. Verrall, *l. c.* spp. nn., England.

Psilopus villipes, sp. n., Rondani, Ann. Mus. Genov. vii. p. 445, Borneo.

EMPIDÆ.

Empis trigramma, Meig.; larva and pupa described by T. Beling, Arch. f. Nat. xli. 1, pp. 39 & 40.

Hybos brachialis, sp. n., Rondani, *l. c.* p. 446, Borneo.

PHORIDÆ.

Phora. The larva feeding on beetles and *Mollusca* (*Helix* and *Bulimus*), placed in a bottle during an expedition in Algeria; general remarks added. A. Laboulbène, Bull. Soc. Ent. Fr. (5) v. p. cxxxi. It also feeds upon young 'triungulins' from the eggs of *Cantharis vesicatoria*; id. *l. c.* p. clviii.

SYRPHIDÆ.

TRYBOM, FILIP. Bidrag till kännedomen om Syrphusflugornas larfver och puppor. Œfv. Ak. Förh. xxxii. No. 2, pp. 75–89, pl. ii. figs. 1–13.

The minute external anatomy described and figured, chiefly from larvæ and pupæ of *Syrphus arbustorum* and *S. floreus*.

D'HERCULAIS, JULES KÜNCKEL. Recherches sur l'organisation et le développement des Volucelles, Insectes Diptères de la famille des Syrphides. Première partie. Introduction, Historique, Mœurs, Système tégumentaire, Développement du système tégumentaire, Système musculaire, Développement du système musculaire. Paris: 1875, 4to, pp. 1–208, with atlas, pls. i.–xi. *bis*.

The title affords a sufficient indication of the nature and scope of this valuable addition to the literature of insect physiology. The work obtained the first prize in physical science given by the French Academy of Sciences in 1875. *Volucella zonaria*, *pellucens*, *inanis*, and *bombylans* and varieties, are discussed and figured.

Syrphus pyrastri. Larvæ injurious to leaves of pear trees at Monza, with observations on the transformations of the species; V. Trevisan, Rend. Ist. Lomb. (2) viii. pp. 595–599.

Xylota segnis, L.; larva and pupa described by T. Beling, Arch. f. Nat. xli. 1, pp. 54–56.

Eumerus lunulatus, Meig. (*aneus*, Macq.), reared from larvæ feeding in *Narcissus*-bulbs at Antibes; A. Laboulbène, Ann. Soc. Ent. Fr. (5) v. p. 96.

Syrphus infirmus, sp. n., Rondani, Ann. Mus. Genov. vii. p. 423, Borneo.

Volucella trizonata (? = 3-*fasciata*, Wied., var.), *id. l. c.* p. 421, Borneo; *V. jeddona*, p. 472, *japonica*, p. 473, Japan, *nubeculosa*, ? China, *macrorrhina*, Brazil, p. 474, *punctifera*, p. 475, Amazons, *notata*, ibid., *fulvonotata*, p. 476, Monte Video, *castanea*, p. 476, *tricincta* and *purpurifera*, p. 477, Oaxaca, *variegata*, p. 478, *amethystina* and *nigrifacies*, p. 479, *pulchripes*, p. 480, *varians* and *viridula*, p. 481, *tristis*, p. 482, Mexico, J. M. F. Bigot, Ann. Soc. Ent. Fr. (5) v.: spp. nn.

Eristalomyia orientalis, sp. n., Rondani, *l. c.* p. 421, Borneo.

Xylota nigro-æneseens, sp. n., *id. l. c.* p. 422, Borneo.

Syritta vittata, sp. n., J. Portchinsky, Hor. Ent. Ross. xi. p. 27, Astracan.

Sphixea doriæ, Rondani, *l. c.* p. 422, Borneo; *S. fuscicosta*, p. 469, *flavifacies*, p. 471, Sarawak, *circumdata*, p. 471, Colombia, Bigot, *l. c.*: spp. nn.

Conopidæ.

? *Conops* larva from stylopized *Andrena*; Sir S. S. Saunders, Proc. E. Soc. 1875, p. xv.

Muscidæ.

Phasiides.

Hyalomyia helleri, sp. n., J. Palm, Verh. z.-b. Wien, xxv. p. 420, Innsbruck.

Tachinides.

Tachina infesting *Coreus tristis* (*Hemipt.*); Am. Nat. ix. p. 519.

Blepharopeza adusta, Lw., bred from *Spilosoma acrea*; Canad. Ent. vii. p. 72.

Nemoræa fasciata, sp. n., J. Palm, Verh. z.-b. Wien, xxv. p. 416, Dalmatia.

Exorista nigriventris, sp. n., *id. l. c.* p. 417, Dalmatia.

Phorocera (*Doria*) *flavipalpis*, sp. n., *id. l. c.* p. 418, Dalmatia.

Tachina spinicosta, sp. n., *id. l. c.* p. 419, Tyrol.

Megistogaster costatus, sp. n., C. Rondani, Ann. Mus. Genov. vii. p. 423, Borneo.

Rhynchomyia indica, sp. n., *id. l. c.* p. 424, Borneo.

Rhinophora fausti, p. 27, *caucasica*, p. 28, spp. nn., J. Portchinsky, Hor. Ent. Ross. xi. Caucasus.

Sarcophagides.

Sarcophila wohlfarti. J. Portchinsky, Hor. Ent. Ross. xi. pp. 123–160, pls. iii.–v., discusses at great length the illnesses caused in the Russian Government of Mohilew by the larva of this fly, which not only attacks man, but horses, cattle, swine, sheep, dogs, domestic birds, &c. It is described at p. 128, and queried as identical with *S. magnifica*, Schin., the allied *S. meigeni*, Schin., being described at p. 126. The biology of the insect is fully described and figured; its larvæ enter the head, chiefly under the nose and on the upper lip, causing "Tinea capitis" and "Myiasis." The fly never enters houses.

Cynomyia alpina and *fuscipalpis*, Zett., and *C. mortuorum*, L., from Mohilew; *id. l. c.* pp. 37 & 38.

Sarcophaga emigrata, sp. n., C. Rondani, *l. c.* p. 424, Borneo.

Sarcophila maxima, sp. n., J. Portchinsky, *l. c.* p. 131, Ararat.

Cynomyia mohileviana, id. *l. c.* p. 37, Mohilew; *C. fulviventris*, Rondani, *l. c.* p. 425, Borneo: spp. nn.

Muscides.

Mesembrina decipiens, Lw., = *puziloi*, Porch. (Troudy Soc. Ent. Russ. vii. p. 57, pl. ii.), which, with *M. nigrica*, Portch. (*l. c.* p. 59), is re-described; J. Portchinsky, *l. c.* p. 29.

Amalopteryx, g. n., A. E. Eaton, Ent. M. M. xii. p. 58. *A. maritima*, sp. n., *id. ibid.* Kerguelen's Island.

Apetænus, g. n., *id.* ibid. *A. litoralis*, sp. n., *id. ibid.* Kerguelen's Island.

Calycopteryx, g. n., *id. l. c.* p. 59. *C. mosleyi*, sp. n., *id. ibid.* Kerguelen's Island.

Anatalanta, g. n., *id.* ibid. *A. aptera*, sp. n., *id. ibid.* Kerguelen's Island.

Compsomyia, g. n., C. Rondani, Ann. Mus. Genov. vii. p. 425. Allied to *Lucilia*, *Calliphora*, &c., but with the margin of the peristome pubescent or pilose beneath, no setæ, and the facial carinæ not ciliated; the 2nd longitudinal vein considerably produced beyond the transverse intermedian, and the 5th vein angulate, not arcuate. For *Calliphora vomitoria*, L., and *Lucilia flaviceps*, Macq. (1835; *L. flaviceps*, Macq., 1845, being renamed *macquarti*, p. 426 note), and other European species; also (*Lucilia* ?) *dux* and *acincta*, Wied., and *Comps. cæruleo-virens* and *violaceinitens*, spp. nn., p. 426, Borneo.

Plinthomyia, g. n., *id. l. c.* p. 427. Allied to *Ochromyia*, Macq.; lower margins of peristome ciliate, upper sides of face and facial carinæ not setulose, 2nd longitudinal vein not produced beyond the transverse intermedian, and 5th vein widely angulato-rotundate. Type, *P.* [*h*]*emimelania*, sp. n., *id. l. c.* p. 428, Borneo.

Somomyia (recharacterized, and to include *Calliphora erythrocephala*, Meig., &c.) *xanthomera*, sp. n., *id. l. c.* p. 427, Borneo.

Musca scapularis, sp. n., *id. l. c.* p. 428, Borneo.

Stomorrhyna muscina, sp. n., *id. l. c.* p. 429, Borneo.

Anthomyiides.

The British species tabulated and their salient features discussed; R. H. Meade, Ent. M. M. xi. pp. 199, 220.

Axelia. An account of the German species: H. Loew, in "Entomologen Miscellen," p. 5 *et seq.* (published at Breslau by Silesian Entomological Society, on the 47th meeting of the German Naturalists and Physicians; see Deutsche E. Z. 1875, pp. 235–237).

Anthomyia lychnidis, p. 555, *polygoni*, p. 512, spp. nn., J. H. Kaltenbach, "Die Pflanzenfeinde," Germany.

Caricea leptosoma, sp. n., Rondani, *l. c.* p. 429, Borneo.

Agromyzides.

C. Rondani, Bull. Ent. Ital. vii. pp. 166–191, continues his treatment of the "Species Italicæ ordinis Dipterorum" &c., by discussing his "Stirps xxiii. *Agromyzinæ*." It is suggested that *Alticomeras*, Rond., may have to be adopted for the species known as *Odinia 3-notata*.

Cryptochætum, g. n., *id. l. c.* p. 172. Allied to *Thereva*, Meig., but with very ample antennæ, no perceptible arista, and the anterior basal areolet incomplete. Type, *C. grandicorne*, sp. n., *id. ibid.* figs. 1–3, sub-Apennine district of Parma.

Domomyza frontella and *obscuritarsis*, p. 174, *luteitarsis* and *articulata*, p. 175, *anthracipes*, *nigrella*, and *brevinervis*, p. 176, Parma, *parva*, p. 176, Emilia, *id. l. c.*, spp. nn.

Agromyza cirsii, p. 180 (= *pulicaria*, Zett., Schin., *nec* Meig., *nec* Mcq.), *analis*, p. 183, *fronticornis*, p. 184, Parma, *lateritia*, p. 182, Italian Alps, *fulvella*, p. 183, Germany, *lacertella*, p. 185, no locality mentioned, *id.* l. c.; *A. bellidis*, p. 336, *bicornis*, p. 330, *bryoniæ*, p. 255, *chermivora*, p. 761, *echii*, pp. 447, 449, & 451, *hieracii*, p. 403, *potentillæ*, p. 227, *solidaginis*, p. 331, *spirææ*, pp. 238, 241, & 243, *trifolii*, p. 129, *viciæ*, p. 143, and *virgaureæ*, p. 331, J. H. Kaltenbach, "Die Pflanzenfeinde," Germany: spp. nn.

Anthophilina armillaris, sp. n., Rondani, *l. c.* p. 188, Parma.

Ortalidides.

Hemigaster, g. n., Rondani, *l. c.* p. 431. Differs from *Megaglossa*, Rond., in the abdomen having only 2 distinct dorsal segments (figured). *H. albo-vittatus*, sp. n., *id. ibid.* Borneo.

Elachigaster, g. n., *id. l. c.* p. 432. Differs from *Hemigaster* in the non-excavate margin of its epistome, and concealed præ-labrum, and in the anterior abdominal segment being transverse, narrow, and produced at the sides, the posterior segment being conical and convex (fig.). *E. albitarsis*, sp. n., *id. l. c.* p. 432, Borneo.

Ditomogaster, g. n., *id. l. c.* p. 433. Differs from *Elachigaster* in the more distinctly separated 2 abdominal segments, of which the first is not laterally produced, and the 2nd is wide and flat. *D. xanthomera*, sp. n., *id. ibid.* Borneo.

Chelyophora, g. n., *id. ibid.* No affinities mentioned. *C. borneana*, sp. n., *id. l. c.* p. 434, Borneo.

Acanthipeza, g. n., *id. l. c.* p. 437. No affinities mentioned. *A. maculifrons*, sp. n., *id. l. c.* p. 438, Borneo.

Prosyrogaster, g. n., *id. l. c.* p. 438. Section *Adapsiloidæ*: allied to *Adapsilia*, Waga, the abdomen of ♀ ending in a very thick and long

oviduct, constituting a great part of that segment, 2nd joint of antennæ scarcely as long as 3rd joint, scutellum with 6–8 (not 4) marginal setæ, &c. *P. chelyonothus*, sp. n., *id. ibid.* Borneo.

Xenopterina labialis and *zonalis* (wing figured), spp. nn., *id. l. c.* p. 430, Borneo.

Themara (recharacterized) *hirtipes* and *[h]ypsilon*, sp. n., *id. l. c.* p. 435, Borneo.

Rioxa (differentiated) *erebus*, p. 436, and *nox*, p. 437, spp. nn. ? (? = *R. lanceolata*, Walk., varr.), *id. l. c.* Borneo.

Platystoma strix, p. 30, *cana* [*-num*], p. 31, fig. 4, *sororcula*, fig. 1, *bipilosa* [*-sum*], fig. 2, p. 32, *punctiventris*, p. 33, fig. 5, spp. nn., J. Portchinsky, Hor. Ent. Röss. xi. pl. ii. Caucasus.

Trypetides.

Dacus oleæ. Observations on its ravages; H. Lucas, Bull. Soc. Ent. Fr. (5) v. p. ccxxii.

Carphotricha pavonina, sp. n., J. Portchinsky, *l. c.* p. 34, pl. ii. figs. 6 & 7, Astracan.

Oxyna borealis, sp. n., *id. l. c.* p. 35, pl. ii. fig. 8, St. Petersburg.

Tephritis subvalida, sp. n. (?), *id. l. c.* p. 36, Caucasus.

Diopsidides.

Rondani, Ann. Mus. Genov. vii. pp. 442 & 443, institutes this group as a "Stirps, *Diopsidinæ*," distinguished by its lateral ocelliferous peduncles, and subdivided as follows:—A, wings with one elongate basal areolet, and sometimes also with an incomplete anterior one, thorax spined: *a*, antennæ near the eyes; *Teleopsis*, g. n., with 4 thoracic and 2 scutellar spines (type, *Diopsis sykesi*, Gray, also *D. wiedmanni* and *arabica*, Westw., and *erythrocephala*, Kl., and *T. breviscopium*, p. 443, and *longiscopium*, p. 444, spp. nn., Borneo), *Diopsis* proper, with 2 thoracic and 2 scutellar spines, the latter long and stout, with no terminal seta (type, *D. ichneumonea*, L.), *Diasemopsis*, g. n., with the scutellar spines short and slender, ending in a seta, the ocular petiole long and slender (type, *Diopsis æthiopica*, Rond.), and *Hexechopsis*, g. n., with short and stout ocular petioles, and very long setæ to the scutellar spines (type, *D. beccarii*, Rond.); *aa*, antennæ in the middle of the frons, *Sphyracephala*, Say (type, *D. brevicornis*, Wied.); AA, wings with 2 complete basal areolets, thorax unspined; *b*, antennæ near the eyes: *Zygocephala*, g. n., with 2 scutellar spines (type, *Diopsis hearseyana*, Wied.); *bb*, antennæ in the middle of the frons, and scutellum with no spine, *Zygotricha*, Wied., with antennal arista plumose (type, *Achias dispar*, Wied.), *Plagiocephala*, Mcq., with posterior basal margin of wings 3-lobate and naked feet (type, *A. lobularis*, Wied.), and *Achias*, F., with entire margin and setigerous feet (type, *A. oculatus*, F.).

Diopsis latimana, p. 444 (leg figured), and *lativola*, p. 445, spp. nn., *id. l. c.* Borneo.

Tanypezides.

Nothybus, g. n., *id. l. c.* p. 439. No comparative differential characters given. *N. longithorax*, sp. n., *id. ibid.* Borneo.

Tanipoda (recharacterized, and *Calobata calceata*, Fall., given as the type) *caligata*, p. 400, *luteilabris* and *cubitalis*, p. 441, spp. nn., Rondani, *l. c.* Borneo.

Chloropides.

Chlorops lineata swarming in a house, and observations on its habits; Pet. Nouv. (1875) p. 537. *C. læta* swarming; Bull Soc. Ent. Fr. (5) v. p. ccvi.

Gaurax anchora, Lw., bred from *Saturnia cecropia*; Canad. Ent. vii. p. 72.

Sciomyzides.

Sciomyza crassiseta, sp. n., J. H. Kaltenbach, "Die Pflanzenfeinde," p. 770, Germany.

Phytomyzides.

Phytomyza angelicæ, p. 279, *arctii*, p. 370, *chærophylli*, p. 288, *clematidis*, p. 4, *facialis*, p. 274, *glechomæ*, p. 489, *hellebori*, p. 11, *heliosciadii*, p. 264, *heraclei*, p. 284, *linariæ*, pp. 464 & 466, *pisi*, pp. 118 & 146, *populi*, p. 560, *ranunculi*, p. 9, *sedi*, p. 258, *senicionis*, p. 364, *veronicæ*, p. 471, *vitalbæ*, p. 4, spp. nn., *id. l. c.* Germany.

ŒSTRIDÆ.

Œstrus and its larva; A. Léniez, Bull. Soc. L. N. Fr. 1875, pp. 353 & 363.

Œstrus clarki, Shuck., belongs to *Hypoderma*, and the ♂ described, from Cape of Good Hope; F. Brauer, Verh. z.-b. Wien, xxv. p. 75, pl. iv. figs. 1 & 1*a*.

Cephenomyia trompe. Full grown larva from *Cervus tarandus* described; it is not distinguishable from that of *C. stimulator*, Clk., found on *Cervus pygargus*, a climatic var. of the reindeer; *id. l. c.* p. 77.

Hypoderma bonassi, sp. n., *id. l. c.* p. 75, described from the larva only, pl. iv. figs. 2 & 2*a*, found on the American Buffalo.

HIPPOBOSCIDÆ.

Myophthiria, g. n., C. Rondani, Ann. Mus. Genov. vii. p. 464. Head elongate, distinct from thorax, eyes lateral, longitudinally elliptic; antennæ squamiform, very setose; wings half the length of the body, rounded and pilose at apex, with 2 longitudinal veins besides the costal, and an appendiculate basal areolet (figured); legs stout, pilose, with trifid claws. *M. reduvioides*, sp. n., *id. ibid.* Borneo.

(APHANIPTERA.)

Pulex penetrans, L. Article on the "Chique," by Laboulbène, Paris, 1875, 8vo, extr. from the 'Dictionnaire encyclopédique des Sciences médicales,' p. 239. The author adopts *Dermatophilus*, Guér., as slightly

anterior to *Sarcopsyllus*, Westw.; *Rhynchoprion*, Karsten, having been improperly applied to Linnæus's species. *Cf.* J. O. Westwood, Ent. M. M. xi. p. 246, and Laboulbène, Bull. Soc. Ent. Fr. (5) v. p. cxiv.

Fleas inside a rabbit's ear, on neck of fowl, on hedgehog, and marmot; Proc. E. Soc. 1875, pp. iii.–v.

Sarcopsyllus gallinaceus, sp. n., J. O. Westwood, Ent. M. M. xi. p. 246, Ceylon, on domestic fowl.

NEUROPTERA.

BY

ROBERT MCLACHLAN, F.L.S.

THE GENERAL SUBJECT.

BEUTHIN, H. Verzeichniss der Pseudoneuropteren und Neuropteren der Umgegend von Hamburg. Verh. Ver. Hamburg, i. pp. 122–126.

A mere list.

HAGEN, H. A. Report on the *Pseudo-Neuroptera* and *Neuroptera* collected by Lieut. W. L. Carpenter in 1873, in Colorado. Report Geolog. Survey of Territories for 1873 (1875), pp. 571–606.

MCLACHLAN, R. Descriptions de plusieurs Névroptères-Planipennes et Trichoptères nouveaux de l'île de Célébes, et de quelques espèces nouvelles de *Dipseudopsis*, avec considérations sur ce genre. Tijdschr. Ent. xviii. pp. 1–21, pls. i. & ii.

——. In Fedtschenko's Puteshestvie v Turkestan [Travels in Turkestan]; Zoogeographicheskia Izsledovania. *Neuroptera*, pp. 1–60, pls. i.–iv. St. Petersburg and Moscow: 1875, 4to.

In Russian (translated from the author's MSS.), with Latin diagnoses. The *Odonata* are omitted, as they did not come under the author's notice. [*Cf.* Zool. Rec. xi. p. 250.]

——. A sketch of our present knowledge of the Neuropterous Fauna of Japan (excluding *Odonata* and *Trichoptera*). Tr. E. Soc. 1875, pp. 167–190.

About 45 species enumerated, many of which are new, and are here referred to in their proper places.

MEYER-DÜR, L. R. Die Neuropteru-Fauna der Schweiz, bis auf heutige Erfahrung. MT. schw. ent. Ges. iv. pp. 353–364.

Concluded [*cf.* Zool. Rec. xi. p. 450]. This portion contains an enumeration of the *Planipennia* and *Trichoptera*, with copious local indica-

tions, and a synonymic list for all the sections. According to the summary at the end of the work, the Swiss Fauna contains 151 species of *Pseudo-Neuroptera*, 51 *Planipennia*, and 161 (including 42 doubtful) *Trichoptera*, or a total of 363.

Mina'-Palumbo, F. Neurotteri della Sicilia. Bibl. Nat. Sicil., fasc. ix. [1871] pp. 1–28 (omitted in previous Records).

A list of 57 species, excluding *Odonata*. The latter (44 in number) are treated in detail.

Kirby's descriptions in the "Fauna Boreali-Americana" are reproduced by Bethune, Canad. Ent. vii. pp. 130–132.

A short list of species collected chiefly in the neighbourhood of London, Ontario, is given by W. Saunders, *tom. cit.* pp. 152–154.

McLachlan's Instructions for Collecting and Preserving (*cf.* Zool. Rec. x. p. 428) are translated in Ent. Nachr. i. pp. 103–106, 113–116, 118–121, 128 & 129, 136–137, 142–146.

Trichoptera.

Brauer, F. Beschreibung neuer und ungenügend bekannter Phryganiden. Verh. z.-b. Wien, xxv. pp. 69–74, pl. iv.

McLachlan, R. A Monographic Revision and Synopsis of the *Trichoptera* of the European Fauna. Part ii. pp. 47–108, pls. vi.–xi. (May, 1875), part iii. pp. 103–144, pls. xii.–xv. (October, 1875); *cf.* Zool. Rec. xi. p. 450. London & Berlin: 8vo. Reviewed in Ann. N. H. (4) xvi. pp. 432–434.

——. Notes sur une Collection de Types des Phryganides décrites par feu M. F. J. Pictet, existant dans le Musée Royal d'Histoire Naturelle à Leide. Tijdschr. Ent. xviii. pp. 22–32.

The following are the principal points in which these types differ from those sent to Curtis, &c.:—*Phryganea striata* is a ♀ of *Stenophylax hieroglyphicus*, Steph.; *Trichostoma nigricorne* is a ♂ of *Silo fumipennis*, McLach.; *Sericostoma hirtum* is a ♂ of *Lasiocephala basalis*, Kol.; *Rhyacophila vulgaris* is the species known as *R. venusta*, Pict.

Limnophilidæ.

McLachlan in his 'Revision and Synopsis,' parts ii. & iii. continues his descriptions and figures of details of the species of this family belonging to the European Fauna, making the following notes on synonymy, localities, &c.:—

Limnophilus pavidus (Hag.), McLach., = *borealis*, Zett., p. 50.
Phryganea maculata, Costa, = *L. marmoratus*, Curt., p. 54.
Stenophylax flavo-spinosus, Stein, is a *Limnophilus*, p. 59.
Limnophilus borealis, Kol., *nec* Zett., is renamed *xanthodes*, p. 60.
Limnephila flavida, Rambur, = *L. lunatus*, Curt., p. 61.
Limnophilus affinis, Hag., *nec* Curt., is renamed *germanus*, p. 63.
Limnophilus nebulosus, Kirby, occurs in Lapland as well as in N. America.

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Chætotaulius angustatus, Kol., and *Limnophilus cinctus*, Hag., = *L. affinis*, Curt., p. 82.

Limnophilus despectus, Walk., occurs in North Europe as well as in N. America, p. 90.

Limnophilus flavescens, Steph., = *sparsus*, Curt., p. 94.

Stenophylax nigridorsus, Kol., *nec* Pict., is renamed *Limnophilus dispar*, p. 97.

Stenophylax arcticus, Kol., and *Anabolia paludum*, Kol., = *S. cænosus*, Curt.

Limnephila radiata, Ramb., = *S. latipennis*, Curt., p. 130.

Micropterna orophila, Stein, = *testacea*, Pict., p. 138.

Stenophylax pilosus, Pict., *nec* F., is renamed *Micropterna nycterobia*, p. 139.

Stenophylax striatus, Pict., *nec* L., is renamed *M. sequax*, p. 141.

Abnormal absence of an ocellus in *Acrophylax zerberus* noticed by McLachlan, Ent. M. M. xii. p. 65.

Stenophylax rotundipennis, Brauer, occurs at Scarborough in England; *id. ibid.*

New genera and species:—

Arctœcia, R. McLachlan, Revision, &c., p. 107. The ♂ of the form of *Stenophylax* (typically); the superior appendages very large, as in *Anabolia*; the ♀ has the anterior wings angulate and sub-acute at the apex, and is very much smaller than the ♂. Type, *A. dualis*, p. 108, pl. xi. Sweden, Lapland, Finland.

Dicosmœcus, id. *l. c.* p. 112. Allied to *Stenophylax*, but the antennæ are crenulate internally, the wings strongly pubescent, and the anal parts peculiar. Type, *Stenophylax palatus*, McLach.

Anisogamus, id. *l. c.* p. 109, noticed in Zool. Rec. xi. p. 451, is now fully described.

Apatidea, id. Fedtschenko's Turkestan (*Neurop.*), p. 28. Allied to *Apatania*, but with only 1·2·2 spurs. Types, *A. elongata*, id. *l. c.* pl. ii. fig. 3, and *copiosa*, p. 29, pl. ii. fig. 4, Turkestan.

Limnophilus congener, p. 56, pl. viii. North Russia and Finland, *pantodapus* (Wallengr.), p. 70, pl. ix. Lapland and Finland, *picturatus*, p. 78, pl. x. North Russia and Finland, *subnitidus*, p. 85, pl. ix. Samarcand, *miser*, p. 89, pl. ix. Finland and Lapland, *peculiaris*, p. 98, pl. vii. Caucasus, *id.* Revision, &c.

Anabolia soror, id. *l. c.* p. 104, pl. xi. Eastern Europe.

Anisogamus noricanus, id. *l. c.* p. 110, pl. xii. Noric Alps.

Stenophylax fusorius (Wallengr.), p. 116, pl. xii. Lapland, *spinifer*, p. 120, pl. xiii. Pyrenees, *crudus*, p. 121, pl. xiii. Finland, *fissus*, p. 133, pl. xiv. South Europe and Morocco, *speluncarum*, p. 136, pl. xiv. Carniola, *mitis*, l. c. pl. xiii. Carniola, *id.* l. c.; *S. gilvipes*, Hagen, Report Geolog. Survey of Territories for 1873 (1875), p. 601, British Columbia [probably a *Dicosmœcus*].

tions, and a synonymic list for all the sections. According to the summary at the end of the work, the Swiss Fauna contains 151 species of *Pseudo-Neuroptera*, 51 *Planipennia*, and 161 (including 42 doubtful) *Trichoptera*, or a total of 363.

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Platyphylax pallescens, McLachlan, *l. c.* p. 144, pl. xv. Switzerland: *P. atripes*, Hagen, *l. c.* p. 600, Colorado.

Halesus helveticus, p. 393, and *alpinus*, p. 395, Meyer-Dür, MT. schw. ent. Ges. iv. Switzerland.

Drusus nigrescens, id. *l. c.* p. 396, Switzerland.

Colpotaulius asiaticus, McLachlan, Fedtschenko's Turkestan (*Neurop.*), p. 25, pl. ii. fig. 1, Turkestan (*cf.* Zool. Rec. xi. p. 451; *Astratus asiaticus*).

Limnophilus (*Goniotaulius*) *subnitidus*, id. *l. c.* p. 27, pl. ii. fig. 2, Turkestan. (*Vide suprâ.*)

Sericostomatidæ.

Helicopsyche. An insect noticed from Naples that may probably be a European representative of this genus; R. McLachlan, Bull. Ent. Ital. vii. p. 320, and Bull. Soc. Ent. Fr. (5) v. p. lxxvii., followed by remarks by Girard, p. lxxxix., and Mabille, p. xc.

Maniconeura, g. n., McLachlan, Fedtschenko's Turkestan (*Neurop.*) p. 31. Allied to *Mormonia*. Maxillary palpi of ♂ ending in a pencil of long hairs; lower half of anterior wings of ♂ free from neuration, bordered above by a thickened vein. Type, *M. penicillata*, sp. n., *id. l. c.* p. 32, pl. ii. fig. 6, Kokand.

Dinarthrum pugnax, sp. n., id. *l. c.* p. 30, pl. ii. fig 5, Turkestan.

Mormonia (?) *parvula*, sp. n., id. *l. c.* p. 33, pl. iii. fig. 2, Turkestan and Kokand.

Brachycentrus maracandicus, sp. n., id. *l. c.* p. 34, pl. iii. fig. 1, Turkestan.

Leptoceridæ.

Triænodes interna, sp. n., McLachlan, Fedtschenko's Turkestan (*Neurop.*), p. 35, pl. iii. fig. 3, Turkestan and Kokand.

Setodes similis, p. 36, pl. iii. fig. 4, Turkestan and Kokand, *paula*, pl. iii. fig. 5, Turkestan; *S. lanuginosa*, id. Tijdschr. Ent. xviii. p. 12, pl. i. figs. 9–11, Celebes: spp. nn.

Anisocentropus crœsus, p. 8, pl. ii. figs. 1 & 2, and *piepersi*, p. 9, figs. 3 & 4, Celebes, *cretosus*, p. 11, fig. 5, Celebes and Bouru, *id.* Tijdschr. Ent. xviii., spp nn.

Œstropsidæ.

Phanostoma, g. n., Brauer, Verh. z.-b. Wien, p. 69. Spurs 2-4-2. Type, *P. senegalense*, sp. n., *id. l. c.* p. 71, pl. iv. fig. 5, Senegal.

Æthaloptera, g. n., id. *l. c.* p. 71. Spurs (0),3-2. Type, *Æ. dispar*, sp. n., *id. l. c.* p. 72, pl. iv. fig. 4, Senegal.

Œstropsis bipunctata, sp. n., id. *l. c.* p. 73, Blue Nile.

Hydropsychidæ.

Dipseudopsis. McLachlan, Tijdschr. Ent. xviii. p. 14, examines the characters of this genus, and notices a peculiar formation of the internal apical spur of the ♂ anterior tibiæ, differing according to the specie He describes the species known to him as follows:—*infuscatus*, p. 1 N. pl. ii. figs. 6–10, Celebes; *stellatus*, sp. n., p. 16, fig. 11, Shangh *capensis*, Walk., p. 17, fig. 12; *indicus*, sp. n., p. 18, figs. 13 & 14, J

notatus, Fab., is now considered a distinct species, and not identical with *capensis*.

Dipseudopsis fasciata, sp. n., Brauer, Verh. z.-b. Wien, xxv. p. 69, pl. iv. fig. 3, Senegal.

Hydropsyche erythrophthalma, p. 37, Turkestan, *carbonaria*, p. 38, pl. iii. fig. 7, Turkestan and Kokand, *ardens*, p. 39, pl. iv. fig. 1, Turkestan, *straminea*, p. 40, pl. iv. fig. 2, Turkestan and Kokand, McLachlan, Fedtschenko's Turkestan (*Neurop.*), spp. nn.

Psychomyia usitata, sp. n., *id. l. c.* p. 41, pl. iv. fig. 3, Turkestan.

Rhyacophilidæ.

Glossosoma dentatum, sp. n., McLachlan, *l. c.* p. 43, Turkestan.

Agapetus bidens, p. 43, pl. iv. fig. 5, Turkestan and Kokand, *tridens*, p. 44, pl. iv. fig. 6, Turkestan, *cocandicus*, ibid. pl. iv. fig. 7, Kokand, *id. l. c.* spp. nn.

Beræa dira, sp. n., id. *l. c.* p. 45, pl. iv. fig. 8, Turkestan.

Hydroptilidæ.

Agraulea pallidula, sp. n., McLachlan, *l. c.* p. 46, pl. iv. fig. 8, Turkestan.

NEUROPTERA-PLANIPENNIA.

Panorpidæ.

MCLACHLAN, Tr. E. Soc. 1875, pp. 183–191, describes all the species known to him as occurring in Japan, including 7 of *Panorpa*, and describes the following new genera and species:—

Leptopanorpa, p. 187. Differs from *Panorpa* by the extreme slenderness of all its parts; the rostrum exceedingly long, the three terminal segments of abdomen almost thread-like, the cheliferous segment with a long footstalk. *L. ritsemæ*, ibid., and *sieboldi*, p. 188.

Panorpodes, p. 188. Intermediate between *Panorpa* and *Euphania*. Rostrum short; penultimate and antepenultimate ♂ segments not modified; wings more as in *Panorpa*. *P. paradoxa*, p. 189.

Panorpa pryeri, p. 185, and *wormaldi*, p. 186.

Sialidæ.

Corydalis cornuta. A condensed account of the metamorphoses, &c. (with copied figures), given by W. Saunders, Canad. Ent. vii. pp. 64–67.

Ascalaphidæ.

Idricerus sogdianus, sp. n., McLachlan, Fedtschenko's Turkestan (*Neurop.*), p. 11, pl. i. fig. 8, Turkestan.

Ascalaphus kolyvanensis, and a var. from Turkestan, figured by McLachlan, *l. c.* pl. i. figs. 9 & 10.

Ascalaphus ramburi, sp. n., *id.* Tr. E. Soc. p. 177, Japan.

Myrmeleonidæ.

Notes on species occurring in the south-west of France; the most interesting being *Acanthaclisis occitanica* and *Megistopus flavicornis*. M. [illegible]l, Bull. Soc. Ent. Fr. (5) v. p. ccxxi.

Maracanda, g. n., McLachlan, Fedtschenko's Turkestan (*Neurop.*), p. 2. Tibiæ without spurs, antennæ and legs short. Type, *M. amœna*, sp. n., *id. ibid.* pl. i. fig. 1, Turkestan.

Myrmecaelurus major, id. *l. c.* p. 4, pl. i. fig. 2, and *fedtschenkoi*, ibid. pl. i. figs. 3 & 4, Turkestan, spp. nn.

Macronemurus paulus, id. *l. c.* p. 6, pl. i. fig. 5, and *clarus*, p. 7, pl. i. fig. 6, Turkestan, spp. nn.

Myrmeleon ulianini, id. *l. c.* p. 8, pl. i. fig. 7, and *fanaticus*, p. 10, Turkestan; *M. celebensis*, id. Tijdschr. Ent. xviii. p. 5, pl. i. fig. 8, Celebes; *M. micans*, id. Tr. E. Soc. 1875, p. 176, Japan: spp. nn.

Acanthaclisis japonica, sp. n. (Hag.), *id.* Tr. E. Soc. 1875, p. 174, Japan.

Formicaleo contubernalis, sp. n., *id. l. c.* p. 175, Japan.

Osmylidæ.

Osmylus flavicornis, p. 179, *tessellatus* and *pryeri*, p. 180, *hyalinatus*, p. 181, McLachlan, Tr. E. Soc. 1875, Japan, spp. nn.

Chrysopidæ.

Chrysopisca, g. n., McLachlan, Fedtschenko's Turkestan (*Neurop.*), p. 23. Differs from *Chrysopa* in the third cubital cellule in the anterior wing not having a dividing veinlet, only one row of gradate veinlets. Type, *C. minuta*, sp. n., *id. l. c.* pl. 1 fig. 13 (wing), Turkestan.

Apochrysa albardæ, sp. n., *id.* Tijdschr. Ent. xviii. p. 3, pl. i. figs. 5–7, Celebes.

Chrysopa centralis, p. 19, *sogdianica*, p. 20, *sybaritica*, p. 21, *fedtschenkoi*, p. 22, pl. i. fig. 12, Turkestan, *id.* Fedtschenko's Turkestan (*Neurop.*); *C. ruficeps*, id. Tijdschr. Ent. xviii. p. 2, pl. i. figs. 1–4, Celebes; *C. behni*, Beuthin, Verh. Ver. Hamburg, i. p. 126, Hamburg: spp. nn.

Nothochrysa japonica, McLachlan, Tr. E. Soc. 1875, p. 182, Japan; *N. maclachlani*, Wallengren, Œfv. Ak. Förh. xxxii. p. 131, Transvaal: spp. nn.

Hemerobiidæ.

Hemerobius conspurcatus, p. 15, pl. i. fig. 15, Kokand, and *triangularis*, p. 16, pl. i. fig. 14, Turkestan, McLachlan, Fedtschenko's Turkestan (*Neurop.*), spp. nn.

Mantispidæ.

Mantispa scabricollis, McLachlan, *l. c.* p. 13, pl. i fig. 11, Turkestan and Kokand; *M. japonica*, id., Tr. E. Soc. 1875, p. 178, Japan; *M. burquei*, Provancher, Nat. Canad. vii. p. 247, St. Hyacinthe: spp. nn.

Pseudo-Neuroptera.

Thysanura.

Parona, C. Delle Podturidi e specialement di quelle raccolte a Pavia. Annuario sci. Ist. tecn. Pavia, 1875.

A local list, preceded by anatomical remarks. [Not seen by me. Vide N. Recorder.]

Tullberg, Tycho. Sveriges Podurider. Sv. Ak. Handl. (n.f.) x. No. 10, pp. 1–70, pls. 1–12 [1871].

A monograph of the Swedish species, of which an abstract, embodying descriptions of most of the new species, &c., has appeared in Œfv. Ak. Forh. [*Cf.* Zool. Rec. viii. p. 404] Commences with a bibliographical account extending from 1673 to date; following which is an analysis of the classifications and positions assigned to these creatures, and most extensive details. All the Swedish species are included in one family—*Poduridæ*—which is subdivided into three sub-families, viz.:—(1) *Sminthurinæ*, comprising the genera *Sminthurus* and *Papirius*; (2) *Templetoniinæ*, including *Macrotoma*, *Cyphoderus*, *Lepidocyrtus*, *Degeeria*, *Sira* (*Seira*, Lch.), *Orchesella*, *Templetonia*, and *Isotoma*; (3) *Lipurinæ*, in which are *Podura*, *Xenylla*, *Anurophus*, *Lipura*, *Anurida*, *Triæna*, *Pseudachorutes*, and *Anura*. The plates, for the most part, are occupied by anatomical details, and relate to the following species:—*Sminthurus fuscus*, pls. i. & ii., *viridis*, pls. ii. & iii., var. *cinereo-viridis* (Tullbg.), *flaviceps*, 9-*lineatus*, *bilineatus*, *prainosus*, *cinctus*, *luteus*, *pallipes*, *albifrons*, *niger*, 4-*lineatus*, *cæcus*, *Papirius ater*, *flavo-signatus*, pl. iv., *Macrotoma vulgaris*, pl. vi., *M. flavescens*, *plumbea*, and *tridentifera*, pl. vi., *Lepidocyrtus lanuginosus* and *cyaneus*, *Cyphoderus albinus*, and *Sira elongata*, pl. vii., *Degeeria marginata*, *muscorum*, *nivalis*, *multifasciata*, *arborea*, *Orchesella cincta* and *bifasciata*, pl. viii., *Orchesella spectabilis* and *rufescens*, and *Templetonia nitida*, pl. ix., *Isotoma palustris*, *olivacea*, *maritima*, *tigrina*, *crassicauda*, *cinerea*, *minuta*, 4-*oculata*, and *fimetaria*, pl. x., *Podura aquatica*, *Achorutes viaticus*, *manubrialis*, *armatus*, and *rufescens*, pl. xi., *A. purpurascens* and *uni-unguiculatus*, *Xenylla maritima*, *brevicauda* and *nitida*, *Lipura ambulans*, pl. xii., *Anurophorus laricis*, *Triæna mirabilis*, *Pseudachorutes subcrassus*, *Anurida granaria*, and *Anura muscorum*. The author describes *Sminthurus viridis* (L.), var. n. *nigro-maculatus*, p. 30, pl. iii. fig. 5, and *S. lubbocki*, p. 33, *Macrotoma tridentifera*, p. 37, pl. v. figs. 17 & 18, spp. nn. His views as to synonymy differ in many cases very considerably from those of Lubbock, hence the nomenclature also differs.

Lepisma myrmecophila, Luc., and *L. aurea*, Duf. Notes on the localities, &c., for these ants'-nest species; Lucas, Ann. Soc. Ent. Fr. (5) v. p. 250.

Podura aquatica. On its occurrence in prodigious quantities in the plains of Gennevilliers, France, after an inundation; *id. tom. cit.* p. lxi.

Termitidæ.

Müller, Fritz. Beiträge zur Kenntniss der Termiten. (No. iv.) Jen. Z. Nat. ix. pp. 241–264, pls. x.–xiii. [*Cf.* Zool. Rec. x. p. 433.]

A continuation of this valuable series of papers. The present portion concerns the larvæ of *Calotermes rugosus*, Hag., with full account of their development and anatomy, which the author thinks is the same in all species of the genus. One curious observation should be noted, viz. that the antennæ appear to acquire an additional joint at each

Termopsis angusticollis. Small examples from Nevada noticed as var. *nevadensis*; Hagen, Rep. Geol. Survey of Territories for 1873, p. 571. *T. occidentis* is now considered as certainly distinct, but the imago is still unknown; *id. l. c.* p. 572.

Termes tenuis. Melliss, in his work on St. Helena, pp. 171–176, enters at length into the enormous destruction occasioned in the island by this insect. It is said to have been introduced in 1840 in a captured slave-ship, and damage estimated at £60,000 has been caused by it.

An impression of a wing from the coal formation of Belgium is doubtfully referred by De Borre as representing a fossil species of this family. CR. Ent. Belg. xviii. p. xli. pl. v. fig. 3.

Perlidæ.

Acroneuria abnormis. Varieties, &c., described; Hagen, Rep. Geol. Survey of Territories, 1873, p. 574.

Pteronarcys regularis, Nevada, *badia*, Wyoming, Utah, and Colorado, *id. l. c.* p. 573, spp. nn.

Dictyopteryx signata, id. *l. c.* p. 575, Colorado; *D. olgæ*, McLachlan, Fedtschenko's Turkestan (*Neurop.*), p. 49, pl. iv. fig. 10, Turkestan: spp. nn.

Isogenus elongatus, sp. n., Hagen, *l. c.* p. 576, Colorado and Utah.

Perla sobria and *ebria*, id. *l. c.* p. 577, Colorado; *P. cocandica*, p. 50, pl. iv. fig. 11, Kokand, *cadaverosa*, fig. 12, *immersa*, fig. 13, p. 51, Turkestan, McLachlan, l. c.; *P. tinctipennis*, p. 171, *niponensis* and *lugubris*, p. 172, Japan, id. Tr. E. Soc. 1875: spp. nn.

Isopteryx curta, sp. n., *id.* Fedtschenko's Turkestan, p. 53, Kokand.

Taeniopteryx maracandica, sp. n., *id. l. c.* p. 54, pl. iv. fig. 15, Turkestan.

Nemoura ornata, sp. n., *id. l. c.* p. 55, pl. iv. fig. 14, Kokand.

Ephemeridæ.

Joly, N. & E. Nouvelles Recherches tendant à établir que le prétendu Crustacé décrit par Latreille sous le nom de *Prosopistoma* est un véritable insecte de la tribu des Éphémérines. Rev. Sci. Nat. ii., separate, pp. 1–15, pl.

Treats especially upon the form and functions of five pairs of false gills hidden under the carapace. The paper concludes by a translation of the Recorder's article on *Oniscigaster wakefieldi*, and his figures are copied on the plate.

Ephemera decora, *guttulata*, and *natata* redescribed, and synonymy rectified; Hagen, Report Geolog. Survey of Territories for 1873, pp. 578–580.

Heptagenia pudica redescribed; *id. l. c.* p. 581.

Dipteromimus, g. n., McLachlan, Tr. E. Soc. 1875, p. 170. Probably N. allied to *Siphlurus*; remarkable for its tipuliform anterior wings, the posterior minute and very narrow; eyes of ♂ probably simple; two tails. Type, *D. tipuliformis*, sp. n., *id. ibid.* Japan.

Ephemera compar, Hagen, *l. c.*, p. 578, Colorado; *E. orientalis*, p. 168, and *japonica*, p. 169, McLachlan, Tr. E. Soc. 1875, Japan: spp. nn.

Heptagenia brunnea, sp. n., Hagen, *l. c.* p. 581, Nevada.

Leptophlebia pallipes, id. *l. c.* p. 582, Nevada and Colorado; *L. elongatula*, McLachlan *l. c.* p. 169, Japan: spp. nn.

Odonata.

Hagen, H. A. Synopsis of the *Odonata* of America. P. Bost. Soc. xviii. pp. 20–96.

A systematic synonymic list of the known species, excluding the *Agrionina*. 468 species are enumerated and named, but many of those from South America have never been described.

Selys-Longchamps, E. de. Notes on *Odonata* from Newfoundland, collected in 1874 by Mr. John Milne. Ent. M. M. xi. pp. 241–243.

Libellulina.

Diplax atripes, Yellowstone, *decisa*, Colorado, p. 588, *pallipes*, p. 589, Colorado, Hagen, Report Geolog. Survey of Territories for 1873, spp. nn.

Libellula nodisticta, *forensis*, *saturata*, and *croceipennis* redescribed; *id. l. c.* pp. 583–586.

Corduliina.

Epitheca semicircularis redescribed; *id. l. c.* p. 590. *E. cingulata*, ♂ described; De Selys, Ent. M. M. xi. p. 241.

Æschnina.

Æschna hudsonica, De Selys, Ent. M. M. xi. p. 242, Newfoundland and Canada; *Æ. yamaskanensis*, Provancher, Nat. Canad. vii. p. 248, St. Hyacinthe: spp. nn.

Gomphina.

Ophiogomphus colubrinus, p. 592, *rupinsulensis*, p. 594, *mainensis*, p. 595, & *Gomphus olivaceus*, p. 597, redescribed; Hagen, Report Geolog. Survey of Territories for 1873.

Ophiogomphus severus, sp. n., *id. l. c.*, p. 591, Colorado, &c.

Gomphus sp. from Newfoundland mentioned by De Selys, Ent. M. M. xi. p. 242.

Agrionina.

Ænallagma boreale, sp. n., De Selys, *ibid.*, Newfoundland.

ORTHOPTERA.

BY

ROBERT MCLACHLAN, F.L.S.

THE GENERAL SUBJECT.

COSTA, A. Fauna del Regno di Napoli. Ortotteri (Locustidea).

A half-sheet, with the press-mark 'Gennaro, 1871,' has not appeared in previous Records. A table is given of the genera occurring in southern Italy. *Saga italica*, ♀, is figured on pl. xii. fig. 1.

GRABER, V. Kurzer Bericht über eine grossere, die sogenannten Gehörorgane der Geradflügler betreffende Arbeit. MT. Ver. Steirm., 1874, pp. 21–31.

SCHMIDT, OSCAR. Die Gehörorgane der Heuschrecken. Arch. mikr. Anat. xi. pp. 195–215, pls. x.–xii.

Concerns the *Acrydiidæ* and *Locustidæ*, with remarks on the homologies of the stridulating organs in these two groups, after microscopic examination of prepared fresh examples.

SCUDDER, S. H. Notes on *Orthoptera* from Northern Peru, collected by Professor James Orton. P. Bost. Soc. xvii. pp. 257–282.

——. A Century of *Orthoptera*. *Tom. cit.* Decade ii., *Locustariæ*, pp. 454–462; iii., *Acrydii* (*Pezotettix*, *Caloptenus*), pp. 472–478; iv., *Acrydii*, pp. 510–517.

STÅL, C. Recensio Orthopterorum. Revue critique des Orthoptères décrits par Linné, De Geer, et Thunberg. Pt. iii. Stockholm, 1875, 8vo, pp. 1–10 & 1–105. [*Cf.* Zool. Rec. x. p. 439, xi. p. 459.]

Concludes the series; principally occupied by *Phasmidæ*, which see.

The species occurring in St. Helena are enumerated in Melliss' "St. Helena," pp. 164 & 165.

Kirby's descriptions of North American species, in the "Fauna Boreali-Americana," are reproduced by C. J. S. Bethune; Canad. Ent. vii. pp. 129–130.

Fifteen species (including 4 new) are recorded from the boundary line between British North America and the United States, chiefly from the district of the Souris River. *Caloptenus spretus* swarmed in July. SCUDDER, in Dawson's Report on Geology and Resources of 49th parallel (Montreal: 1875), appendix, pp. 343–345.

Scudder, P. Bost. Soc. xviii. p. 113, notices some insect remains (chiefly *Blattidæ*) from carboniferous shale at Cape Breton.

The results of a critical examination of the sound-producing organs in *Œdipoda cærulescens* are given by J. Ranke, Z. wiss. Zool. xxv. pp. 143–145, pl. x. (noticed in Z. ges. Naturw. xlv. pp. 89 & 90). A longitudinal section of the body revealed the drum-skin over the base of the third pair of legs. Details given of the special organ. The author concludes that in the *Acrydiidæ* it is of the most simple nature in comparison with that found in some other *Orthoptera*.

Forficulariæ.

Neolobophora, g. n., Scudder, P. Bost. Soc. xvii. p. 281. Represents *Lobophora* in the New World, differs in its broadened abdomen, and slender cylindrical forceps. Type, *N. bogotensis*, sp. n., *id. l. c.*, p. 282, Bogota.

Thermastris dohrni, sp. n., *id. l. c.* p. 280, Peruvian Andes.

Blattidæ.

Stål, C. Recherches sur le Système des Blattaires. Sv. Ak. Handl., Bihang ii. No. 13, pp. 1–18.

A generic revision of the family. The following new genera are proposed :—

Cyrtilia, p. 11, for *Blatta convexa*, Thbg.
Molytria, p. 12, for *Epilampra inquinata*, Stål.
Melanozosteria, p. 13, for *Polyzosteria nitida*, Brunner.
Zonioploca, ibid. for *Z. alutacea*, sp. n., Australia.
Cosmozosteria, ibid., for *Polyzosteria ligata*, Brun.
Eurycotis, ibid., for *Polyzosteria rufo-vittata*, Brun.
Homalosilpha, ibid., for *Periplaneta ustulata*, Brun.
Phœtalia, p. 17, for *Nauphœta lævigata*, Palisot.
Byrsotria, p. 18, for *Blabera thunbergi*, Guérin.
Blaptica, ibid., includes *Blab. claraziana*, Sauss., and *Blatta bipustulata*, Thbg.

Periplaneta orientalis. Note on the salivary glands. T. C. White, J. Quek. Club, iii. pp. 1–3.

Euthyrrapha sancta-helenæ, sp. n., Walker, in Melliss' "St. Helena," p. 165, St. Helena.

Epilampra signatura, sp. n., *id. l. c.* p. 166, St. Helena.

Blatta bicincta, sp. n., *id. ibid.*, St. Helena.

Polyzosteria oniscoides,, sp. n., *id. l. c.* p. 167, St. Helena.

Panchlora signifera, sp. n., Scudder, P. Bost. Soc. xvii. p. 280, Peruvian Andes.

Phasmidæ.

Stål, C. Recherches sur le Système des Phasmides. Sv. Ak. Handl. Bihang ii. No. 17, pp. 1–19.

Commences with a critique of the works of preceding authors with

an examination of the value of existing genera, many of which are greatly subdivided. The introductory portion is followed by a dichotomous table of genera according to the author's views. As this paper is referred to in the "Recensio Orthopterorum," Part iii., it was probably published previously to that work.

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Hoploclonia (type, *Acanthoderus gecko*) and *Acanthodonia* (type, *Acanthoderus tisiphone*), p. 8, separated from *Acanthoderus*.

Arrhidæus, p. 15; type, *Necroscia styxius*, Westw. [and *infrà*].

Orobia, p. 16; type, *O. nigro-lineata*, p. 17, Madagascar.

Stål has also devoted the greater portion of Part iii. of his "Recensio Orthopterorum" to a consideration of this group. The introduction, pp. 1–10, is occupied by remarks on classification, and pp. 4–105, to systematic arrangement, with an elaborate dichotomous table, occupying 58 pages. The following new genera and species are characterized (it is impossible to give characters for the genera without mainly reproducing the table) :—

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Promachus, p. 17. Type, *Acanthoderus wallacii*, Westw.
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Caulonia, p. 20. Types, *Ceroys rabdota*, Westw., and *C. bifolia*, p. 74, Antioquia.
Libethra, p. 20. Includes *L. nisseri*, p. 74, Antioquia, and *sutoria*, p. 75, Bogotá, also *Bacteria strigiventris* and *Ceroys ignavus*, Westw.
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Calvisia, p. 42. Includes *Necroscia sangarius* and *medora*, Westw.
Sosibia, ibid. Type, *S. nigrispina*, p. 87, Malacca.
Orxines, p. 43. Includes *Lopaphus macklotti*, Haan, and *Anophelepis ziphias*, Westw.
Candaules, ibid. Type, *C. sparnius*, p. 87, Malacca.
Sadyattes, p. 44. Type, *S. borrii*, p. 88, patr. ignot.
Hermarchus, p. 45. Type, *Phibalosoma pythonius*, Westw., ♀.
Asprenas, ibid. Type, *A. femoratus*, p. 89, New Caledonia.
Neanthes, p. 45. Type, *N. brunneri*, p. 90, New Caledonia.
Canachus, p. 47. Types, *C. crocodilus*, p. 90, and *salamandra*, p. 91, New Caledonia.
Obrimus, p. 49. Type, *Acanthoderus bufo*, Westw.
Tisamenus, p. 50. Type, *T. serratorius*, p. 92, Philippines.
Pylæmenes, p. 54. Type, *Acanthoderus coronatus*, Haan.
Datames, ibid. Type, *Acanthoderus oileus*, Westw.
Dares, ibid. Type, *D. validispinus*, p. 93, Borneo.
Canuleius, p. 53. Type, *Acanthoderus euterpinus*, Westw.
Agathemera, p. 56. Types, *Anisomorpha pardalina*, Westw., and *claraziana*, Sauss.
Autolyca, ibid. Types, *Anisomorpha bogotensis*, Westw., and *A. pallidicornis*, p. 95.
Charmides, p. 56 (foot note). Type, *Anisomorpha cerberus*, Westw.
Decidia, p. 57. Type, *Phasma soranus*, Westw.
Stratodes, ibid. Type, *S. cinctipes*, p. 96, Panama.
Phocylides, p. 57. Type, *P. bicarinatus*, p. 96, Columbia; includes also *Phasma lineolatum*, Serv., and *tithonus*, Gray.
Prexaspes, p. 59. Includes *Metriotes servillii*, Gray, *dictys*, Westw., than *Phasma ambiguum*, Westw.
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Graffea (Brunn.), p. 40. Type, *Lopaphus coccophagus*, Westw.
Calvisia, p. 42. Includes *Necroscia sangarius* and *medora*, Westw.
Sosibia, ibid. Type, *S. nigrispina*, p. 87, Malacca.
Orxines, p. 43. Includes *Lopaphus macklotti*, Haan, and *Anophelepis* [illegible], Westw.
Cand[illegible] ibid. Type, *C. sparnius*, p. 87. Malacca.
Sadyates [illegible] Type, *S. horridus*, p. [illegible], patr. ignot.
Hermarchus, p. 45. Type, *Phibalosoma pythonius*, Westw., ♀.
Asprenas, ibid. Type, *A. femoratus*, p. 89, New Caledonia.
Neanthes, p. 45. Type, *N. brunneri*, p. 90, New Caledonia.
Canachus, p. 47. Types, *C. crocodilus*, p. 90, and *salamandra*, p. 91, New Caledonia.
Obrimus, p. 49. Type, *Acanthoderus bufo*, Westw.
Tisamenus, p. 50. Type, *T. serratorius*, p. 92, Philippines.
Pylæmenes, p. 54. Type, *Acanthoderus coronatus*, Haan.
Datames, ibid. Type, *Acanthoderus oileus*, Westw.
Dares, ibid. Type, *D. validispinus*, p. 93, Borneo.
Canuleius, p. 53. Type, *Acanthoderus euterpinus*, Westw.
Agathemera, p. 56. Types, *Anisomorpha pardalina*, Westw., and *claraziana*, Sauss.
Autolyca, ibid. Types, *Anisomorpha bogotensis*, Westw., and *A. pallidicornis*, p. 95.
Charmides, p. 56 (foot note). Type, *Anisomorpha cerberus*, Westw.
Decidia, p. 57. Type, *Phasma soranus*, Westw.
Stratodes, ibid. Type, *S. cinctipes*, p. 96, Panama.
Phocylides, p. 57. Type, *P. bicarinatus*, p. 96, Columbia; includes also *Phasma lineolatum*, Serv., and *tithonus*, Gray.
Prexaspes, p. 59. Includes *Metriotes servillii*, Gray, *dictys*, Westw., with *Phasma ambiguum*, Westw.
[illegible] Type, *Metriotes obscura*, Westw.

an examination of the value of existing genera, many of which are greatly subdivided. The introductory portion is followed by a dichotomous table of genera according to the author's views. As this paper is referred to in the "Recensio Orthopterorum," Part iii., it was probably published previously to that work.

The following new genera and species are characterized :—

Clonaria, p. 5. for *Bacillus natalis* and *gracilipes*, Westw., and *gracilis*, Burm.

Echetlus, p. 6, also part of *Bacillus*, Westw., with *B. peristhenes* and *peridromus*, Westw., indicated as types.

Clonistria, ibid., placed among the sub-divisions of *Bacteria*, Westw. *C. bartholomæa*, p. 16, St. Bartholomew.

Bostra, p. 6, also of the group of *Bacteria*; type, *Bacteria turgida*, Westw. [and *infrà*].

Donusa, p. 7, for *D. prolixa*, p. 18, Valparaiso.

Phryganistria, ibid.; type, *Lonchodes sarmentosus*, Westw.

Hoploclonia (type, *Acanthoderus gecko*) and *Acanthodonia* (type, *Acanthoderus tisiphone*), p. 8, separated from *Acanthoderus*.

Arrhidæus, p. 15; type, *Necroscia styxius*, Westw. [and *infrà*].

Orobia, p. 16; type, *O. nigro-lineata*, p. 17, Madagascar.

STÅL has also devoted the greater portion of Part iii. of his "Recensio Orthopterorum" to a consideration of this group. The introduction, pp. 1–10, is occupied by remarks on classification, and pp. 4–105, to systematic arrangement, with an elaborate dichotomous table, occupying 58 pages. The following new genera and species are characterized (it is impossible to give characters for the genera without mainly reproducing the table) :—

Myronides, p. 8. Types, *Lonchodes pfeifferæ*, Westw., and *M. kaupi*, p. 63, Moluccas.

Phraortes, p. 8. Type, *Phasma elongata*, Thbg. (= *Lonchodes niponensis*, Westw.), p. 64.

Carausias, p. 8. Types, *C. strumosus*, p. 64, Java, and *macer*, p. 65, Samarang.

Dixippus, p. 9. Includes *Phasma crawangense*, Haan, *nodosum*, var. *a*, Haan, and *Lonchodes uniformis*, Westw.

Clitumnus, ibid. Includes *Lonchodes nematodes*, Haan, *stilpnus*, Westw., *pseudoporus*, Westw., *russelli*, Bates, &c.

Hyrtacus, p. 10. Type, *H. tuberculatus*, p. 67, Australia. *Bacteria eutrachelia*, Westw., should be also referred to the genus.

Sthnebœa, p. 10. Divided into *Sthnebœa* (p. 68), which includes *S.* (*S.*) *malaya*, p. 68, Malacca, and *Medaura* (p. 69), including *S.* (*M.*) *brunneri*, p. 69, Silhet, and *Lonchodes praon*, Westw.

Candovia, p. 12. Type, *Bacteria cœnosa* ?, Westw.

Macella, p. 13. Types, *Bacillus souchongia*, Westw., and *M. dentata*, p. 70, Cochin China.

Gratidia, p. 14. Type, *G. sansibara*, p. 70, Zanzibar.

Entoria, p. 15. Types, *E. denticornis*, Philippines, and *spinicornis*, Silhet, p. 72.

Promachus, p. 17. Type, *Acanthoderus wallacii*, Westw.

Oxyartes, p. 18. Type, *Phasma despectum*, Westw.

Menexenus, ibid. Type, *Acanthoderus lacertinus*, Westw.

Lamponius, p. 19. Type, *Pygirrhynchus guerini*, Sauss.

Caulonia, p. 20. Types, *Ceroys rabdota*, Westw., and *C. bifolia*, p. 74, Antioquia.

Libethra, p. 20. Includes *L. nisseri*, p. 74, Antioquia, and *sutoria*, p. 75, Bogotá, also *Bacteria strigiventris* and *Ceroys ignavus*, Westw.

Sermyle, p. 23. Types, *Ceroys mexicanus*, Sauss., and *S. saussurii*, p. 77, Mexico.

Dyme, p. 24. Type, *D. bifrons*, p. 77, Peru.

Calynda, p. 24. Type, C. *bicuspis*, p. 78, Chiriqui.

Phanocles, p. 28. Type, *Bacteria burkarti*, Sauss., and *ætolus*, Westw.

Hirtuleius, p. 29. Type, *H. læviceps*, p. 81, Brazil.

Clitarchus, p. 34. Type, *C. læviuscula*, p. 82. New Zealand; also includes *Bacillus hookeri*, &c.

Anchiale, p. 36. Type, *Cyphocrania maculata*, Westw.

Vetilia, ibid. Type, *Cyphocrania enceladus*, Westw.

Arphax, p. 37. Type, *Bacillus australis*, Westw.

Græffea (Brunn.), p. 40. Type, *Lopaphus coccophagus*, Westw.

Calvisia, p. 42. Includes *Necroscia sangarius* and *medora*, Westw.

Sosibia, ibid. Type, *S. nigrispina*, p. 87, Malacca.

Orxines, p. 43. Includes *Lopaphus macklotti*, Haan, and *Anophelepis typhias*, Westw.

Candiules, ibid. Type, *C. sparnius*, p. 87, Malacca.

Sadyattes, p. 44. Type, *S. horrii*, p. 88, patr. ignot.

Hermarchus, p. 45. Type, *Phibalosoma pythonius*, Westw., ♀.

Asprenas, ibid. Type, *A. femoratus*, p. 89, New Caledonia.

Neanthes, p. 45. Type, *N. brunneri*, p. 90, New Caledonia.

Canachus, p. 47. Types, *C. crocodilus*, p. 90, and *salamandra*, p. 91, New Caledonia.

Obrimus, p. 49. Type, *Acanthoderus bufo*, Westw.

Tisamenus, p. 50. Type, *T. serratorius*, p. 92, Philippines.

Pylæmenes, p. 54. Type, *Acanthoderus coronatus*, Haan.

Datames, ibid. Type, *Acanthoderus oileus*, Westw.

Dares, ibid. Type, *D. validispinus*, p. 93, Borneo.

Canuleius, p. 53. Type, *Acanthoderus euterpinus*, Westw.

Agathemera, p. 56. Types, *Anisomorpha pardalina*, Westw., and *claraziana*, Sauss.

Autolyca, ibid. Types, *Anisomorpha bogotensis*, Westw., and *A. pallidicornis*, p. 95.

Charmides, p. 56 (foot note). Type, *Anisomorpha cerberus*, Westw.

Decidia, p. 57. Type, *Phasma soranus*, Westw.

Stratodes, ibid. Type, *S. cinctipes*, p. 96, Panama.

Phocylides, p. 57. Type, *P. bicarinatus*, p. 96, Columbia; includes also *Phasma lineolatum*, Serv., and *tithonus*, Gray.

Prexaspes, p. 59. Includes *Metriotes servillii*, Gray, *dictys*, Westw., and *Phasma ambiguum*, Westw.

with the first two Type, *Metriotes obscura*, Westw.

Planudes, p. 59. Types, *P. perillus*, p. 98, patr. ignot., and *Bacteria molorcha*, Westw.

Damasippus, p. 60. Type, *D. westwoodi*, p. 101, Panama.

Leosthenes, ibid. Type, *L. aquatilis*, p. 102, New Caledonia.

Phalces, p. 62. Type, *Bacillus coccyx*, Westw.

Macynia, ibid. Includes *Bacillus gramineus*, Bates, *B. annulatus*, Westw., *Mantis labiata*, Thbg., and *M. trilineata*, p. 103, Transvaal.

Chitoniscus, p. 62. Type, *Phyllium lobiventre*, Blanch.

Bostra dorsuaria, Chiriqui, and *podagrica*, Panama, p. 79.

Ctenomorpha nigro-varia, p. 83, Cape York.

Diura virginea, p. 84, Cape York.

Rhaphiderus alliaceus, p. 85, India.

Arrhidæus vittipennis, p. 85, and *viridinervis*, p. 86, Philippines.

Anisomorpha dentata, p. 95, Santa Catharina.

Xerosma senticosa, p. 99, Bahia.

Metriotes agathodes, p. 100, Australia ?

Wood-Mason, James. On new or little-known species of *Phasmidæ*, with a brief preliminary notice of the occurrence of a clasping apparatus in the males throughout the family. J. A. S. B. (n.s.), xliv. 2, pp. 215–220, pls. xvi. & xvii.

The author describes *Lonchodes westwoodi*, Wood-Mason, ♂, p. 216, *Lopaphus iolas*, Westw., ♀ p. 217, and *Phyllium celebicum*, Haan, p. 218, pl. xvi. and is of opinion that *P. siccifolium* is confined to Mauritius and adjacent islands, and does not occur in the Eastern Archipelago. He also describes the following spp. nn.:—*Lonchodes cuslani* and *Phibalosoma westwoodi*, p. 216, from Assam, and *Phyllium westwoodi*, p. 218, pl. xvii. South Andaman and Birmah.

Bacteria nigripes and *exigua*, Scudder, P. Bost. Soc. xvii. p. 278, Peruvian Andes, spp. nn.

Phasma radiatum, sp. n., *id. l. c.* p. 279, Peruvian Marañon.

Gryllidæ.

Stål, "Recensio Orthopterorum," pt. iii. pp. 1–4, places in their modern genera the species described by Linné, De Geer, and Thunberg. *Gryllus campestris*, L., Mus. Lud. Ulr. (*nec* Syst. Nat.) = *bimaculatus*, De Geer, = *capensis*, F., and *lugubris*, Stål, is a variety of it, p. 2.

Gryllotalpa vulgaris. Paolo Riccardi has commenced a popular account of habits, &c.; Ann. Soc. Mod. (2) ix. pp. 70–80.

The sound produced by *G. borealis* analysed by Scudder, "Psyche," i. p. 18.

Gryllotalpa maranona, sp. n., Scudder, P. Bost. Soc. xvii. p. 257, North Peru.

Zaora bifasciata, sp. n., Walker, in Melliss' "St. Helena," p. 168, St Helena.

LOCUSTIDÆ.

DEWITZ, H. Bau und Entwickelung der Legescheide bei *Locusta viridissima*. Z. wiss. Zool. xxv. pp. 176–183, pl. xii.

Cyclophyllum concavum. A too-familiar figure appears in Rep. Soc. Ont. 1874 (1875), fig. 32. The sound produced by this insect analysed; Scudder, "Psyche," i. p. 93.

SCUDDER, P. Bost. Soc. xvii., describes the following new genera and species:—

Steirodonopis, p. 259. Allied to *Phylloptera*; type, *S. bilobata*, p. 260, N. Peru.

Anallomes, p. 261. Allied to *Phaneroptera*; for *A. unipunctata* and *maranona*, p. 262, N. Peru.

Calophyllum, p. 263 (affinities not stated). Type, *C. simplex*, ibid. N. Peru.

Stălia, p. 454. *Phyllophoridæ*; evidently allied to *Hetrodes*. Type, *S. foliata*, p. 457, pl., figs. 3–5, Old Calabar.

Lirometopum p. 457. *Conocephalidæ*; but not closely allied to any known gene .. Type, *L. coronatum*, p. 458, pl., figs. 1 & 2, New Granada.

Belocephalus, p. 458. Allied to *Conocephalus*; type, *B. subapterus*, p. 459, Florida.

Orophus peruvianus, p. 260, N. Peru.

Phylloptera tripunctata, p. 261, N. Peru.

Meroncidius transvittatus, p. 264, N. Peru.

Leptotettix tessellata, ibid., N. Peru.

Conocephalus infuscatus, p. 265, N. Peru.

Orchelimum ortoni, ibid., N. Peru, *nigripes*, p. 459, Texas.

Xiphidium strictum, Texas, *antipodum*, New Zealand, *meridionale*, Brazil, p. 460, *ictum*, p. 461, Guatemala, *gossypii*, ibid. Texas, Mississippi, Arkansas (injurious to the cotton plant), *nemorale*, p. 462, Texas.

ACRYDIIDÆ.

Tragocephala, Harr., revised; it includes *Acridium viridifasciatum*, De Geer (the variations in which are discussed), *T. pacifica*, Thomas, and two new species: S. H. Scudder, P. Bost. Soc. xvii. pp. 480–485.

Caloptenus spretus. C. V. Riley, Rep. Ins. Mo. vii. pp. 121–196, gives a very exhaustive account of this insect and its ravages in Missouri, &c., with woodcuts, and a map of Missouri, illustrating the extent of the "Locust invasion" of 1874. Species easily confounded with the true "Rocky Mountain Locust" are figured, such as *Caloptenus femur-rubrum* and *C. differentialis*. The insect has occurred in Massachusetts; Packard, Am. Nat. ix. p. 73. A compiled account of its ravages, with figures; Bethune, Rep. Soc. Ont. 1874 (1875), pp. 30–42. In Canad. Ent. vii. pp. 133–135, Dodge notices that it is double brooded. Hatching in Texas, &c., early in spring, the first brood flies northward, but not further than the south of Nebraska; the second brood in August goes south with the first favourable wind, reaching Texas in September; depositing

eggs that lie over the winter. But eggs are also deposited by the spring brood *en route*. The insect always leaves its hatching grounds without depositing eggs; entomologists have therefore wrongly concluded that the broods reared on the plains are barren.

A great flight of "grasshoppers" is noticed by Willcox, P. Ac. Philad. 1875, p. 361.

Invasion by "Sauterelles" in Algeria, summer of 1874; H. Brocaud, CR. lxxx. p. 276.

New genera and species:—

Pachytylopsis (foss.), De Borre, CR. Ent. Belg. xviii. p. xl.; for *P. persenairii*, ibid. (pl. v. fig. 1), coal-measures of Belgium. [Another fossil described as *P. borniensis* (p. xli.) is subsequently (pp. lvi.–lx.) considered Lepidopterous.]

Scudder, P. Bost. Soc. xvii., characterizes the following:—

Spharagemon, pp. 467–471. *Œdipodidæ*, to receive certain insects hitherto placed in *Œdipoda*, the type being *Gryllus æqualis*, Say; also *S. bolli*, Texas, Vermont, Massachusetts, Maryland, Iowa, *balteatum*, New Jersey, Maine, Vermont, Maryland, Texas, p. 469, *cristatum*, p. 470, Texas.

Encoptolophus, p. 478. Differs from *Tragocephala* in the flatter disk of the pronotum, with its slight but abrupt median carina, and almost equally distinct lateral carinæ. Includes *Œ. sordida*, Burm., *Œ. costalis*, Scudder, and *E. parvus*, p. 480, Texas.

Psoloessa, p. 512. Allied to *Tragocephala*; for *P. texana*, ibid., *ferruginea* and *maculipennis*, p. 513, Texas.

Phlibostroma, p. 516. Somewhat allied to *Psinidia*; for *Phlib. pictum*, p. 517, Nebraska.

Hippacris, p. 267. Belongs to the *Truxalidæ*, in some respects resembles *Rhomalea*, in others *Tropinotus* Type, *H. crassa*, p. 268, N. Peru.

Pror[*r*]*hachis*, p. 269. Allied to *Procolpia*. Type, *P. granulosa*, ibid., N. Peru.

Aplatacris, p. 271. Allied to *Lophacris*. Type, *A. colorata*, ibid., N. Peru.

Euparnops, p. 275. Allied to *Oxya*. Type, *E. cæruleum*, ibid., N. Peru.

Cornops, p. 276. Allied to the preceding. Type, *C. bivittatum*, ibid., N. Peru.

Tragocephala brevipennis, California, *cubensis*, Cuba, p. 483.

Chloealtis brunnea, p. 510, Texas.

Amblytropidia subhyalina, p. 511, Texas.

Gomphocerus virgatus, ibid. Texas.

Arphia simplex and *conspersa*, p. 514, *luteola*, p. 515, Texas.

Astroma hastata, p. 266, N. Peru.

Mastax nigra, N. Peru, and *gundlachi*, Cuba, *ibid.*

Zonocerus ? *bilineatus*, p. 268, N. Peru.

Macherocera nigro-marginata, N. Peru.

Elaochlora brunneri, p. 270, N. Peru

Ommatolampis leucoptera, p. 272, *aptera* and *nigro-guttata*, p. 273, Peru.

Phaoparia curtipennis, p. 274, N. Peru.
Acridium (*Osmilia*) *saussurii*, ibid., N. Peru.
Coelopterna stali, p. 277, N. Peru.
Tettigidea cuspidata, ibid., N. Peru.
Pezotettix olivacea and *acutipennis*, p. 472, Texas.
Calóptenus ponderosus and *robustus*, p. 473, Texas, *devorator*, p. 474 Texas, *deletor*, p. 475, Texas, *helluo* and *glaucipes*, p. 476, Texas, *fasciatus*, p. 477, Texas & Nebraska, *minor*, p. 478, Nebraska.

Pezotettix dawsoni, Scudder in Dawson's Report, &c., p. 343, Souris River, British N. America.
Gomphocerus clepsydra, id. p. 344, Souris River.
Arphia frigida, id. ibid. Souris River and Alaska.
Tettigidea gracilis, id. p. 345, Lake of the Woods.
Eremobia magna, Thomas, "Field and Forest," i. p. 4, Arizona.
Œdipoda obumbrata, Walker, in Melliss' "St. Helena," p. 168, St. Helena.
Stenobothrus viridipes and *annulicornis*, p. 169, and *undulifer* and *vittifer*, p. 170, *id. l. c.* St. Helena.

RHYNCHOTA.

BY

E. C. Rye, F.Z.S., M.E.S.

Puton, A. Catalogue des Hémiptères (Hétéroptères, Cicadines, et Psyllides) d'Europe et du bassin de la Méditerranée. 2e Édition. Paris : 1875, 8vo, pp. 1–87.

This edition is in every way a great improvement upon the first one, and contains much original synonymy. The works of various modern authors upon separate groups are utilized and acknowledged. In the *Heteroptera*, 372 genera and 1577 species are recorded, and in the *Homoptera* (not including the *Aphididæ* and *Coccidæ*), 128 genera and 500 species. In the latter, the usual family termination of *idæ* is entirely dropped, and it is used for *sub*-families in the *Heteroptera*, the families ending in *-ides*. For review, *cf.* L. Lethierry, Pet. Nouv. (1875) p. 542 ; and for corrections, O. M. Reuter, *l. c.* p. 547, especially as to including Siberian species, and on the classification employed.

Reuter, O. M. Bidrag till Kännedom om några Hemipterers Dimorphism. Œfv. Ak. Förh. xxxii. No. 5, pp. 49–58.

Instances of dimorphism recorded in *Berytus minor*, H. S., *Scolopothrus pilosus*, Reut. (*affinis*, Thoms., *nec* Schill.), *Orthostira platychila*, than *nigrina*, Fall., *macrophthalma*, Fieb., *parvula*, Fall., and *gracilis*, with the first [illegible] *minor*, Reut., *flavo-marginatus*, Scholtz, and *limbatus*,

Dahlb., *Salda littoralis*, L., *flavipes*, F., *riparia*, Fall., *bifasciata*, Thoms., *orthochila*, Fieb., *fucicola*, J. Sahlb., and *saltatoria*, L., *Miris holsatus*, F., *Teratocoris*, *Hydrometra aspera*, Schum., *Deltocephalus abdominalis*, F., *Euides speciosa*, Boh., *Liburnia lugubrina*, Boh., and *L. venosa*, Germ.

(Reuter, O. M.) Remarques sur le Polymorphisme des Hémiptères. Ann. Soc. Ent. Fr. (5) v. pp. 225–236.

Discusses polymorphism of the wings, styled by the author *Pterygo polymorphismus*. After an investigation of former observations on this subject, the following conclusions are deduced :—1, the macropterous form is the primitive one, brachypterous forms being produced by natural selection at a more advanced period, and the rare occurrence of macropterous individuals of a dimorphic species being a reversion ; 2, abbreviation of wings is possibly produced by different causes, in species living with ants it arises from the manner of life of those insects, and is a case of imitation or mimicry ; 3, species living in localities where the wings are not much needed and the legs are important, gradually undergo an atrophy of the former and development of the latter ; 4, the active ♂, more obliged to use his wings, frequently has them developed by heredity, when the ♀ is brachypterous. The author himself raises the objection that there are brachypterous species with no proportionate development of legs, and that mere climate evidently influences the question. The following classification is proposed :—

1. Species pterygo-trimorphæ (macropt., interme d., brachypt.).
2. „ pterygo dimorphæ (macropt. and brachypt.).

2 *a*. Species pterygo-gynæco-dimorphæ (♀ only dimorphous).

b. „ pterygo-holo-dimorphæ (♂ & ♀ dimorphous).

aa. Species pterygo-hetero-dimorphæ (♂ dimorphous in a different way to ♀).

bb. „ pterygo-homo dimorphæ (♂ & ♀ equally dimorphous : the majority).

Insects with different degrees of wing abbreviation are termed Species pterygo-crypto-dimorphæ, and S. p.-phanero-dimorphæ.

Uhler, P. R. List of *Hemiptera* of the Region west of the Mississippi River, including those collected during the Hayden explorations of 1873. In Bulletin of the U. S. Geological and Geographical Survey of the Territories, F. V. Hayden in charge, 1874 & 1875, i., Washington : 1875, 8vo, pp. 267–361, pls. xix.–xxi.

Contains descriptions of new genera and species. In spite of the dates given, it is very doubtful whether this portion was not published until 1876. The plates are very rough, and contain figures of various previously known N. American species.

List of Mediterranean species ; G. C. Champion, Ent. M. M. xii. p. 79.

S. Africa. 93 species (including some new) enumerated by H. D. J. Wallengren, Insecta Transvaaliensia, iii., Hemiptera, Œfv. Ak. Förh. xxxii. No. 1, pp. 132–137.

Northern Peru. P. R. Uhler, P. Bost. Soc. xvii. pp. 282–286, gives a list of species (2 new) obtained by Prof. James Orton.

HEMIPTERA—HETEROPTERA.

Bertolini, Stefano de. Contribuzione alla Fauna Italiana degli Emitteri Eterotteri. Bull. Ent. Ital. vii. pp. 38-60.

A list, with localities, of species known as yet to occur in the Trentino.

Jacovlev [or Jakowleff], B. Polujestkokruilia (Hemiptera Heteroptera) Astrachanskago Kraia. Bull. Mosc. xlix. 2, pp. 145–174.

Further observations, in Russian [Zool. Rec. xi. p. 467] on the species known from the Astracan district. Two new genera and some new species are characterized, with German diagnoses.

——. Polujestkokruilia (Hemiptera Heteroptera) Russkoi Faunoi. *Tom. cit.* pp. 248–270, pl. i.

Descriptions, as above, of Russian species. Two new genera and some new species are characterized.

Reuter, O. M. Genera Cimicidarum Europæ disposuit —. Bihang till Sv. Ak. Handl. iii. Häfte 1, No. 1, pp. 1–66.

The author adopts 4 sub-families for the family *Cimicidæ* of Stål, viz., *Capsina* (with divisions *Teratodellaria*, *Miraria*, *Miridiaria*, *Loparia*, *Dyoncaria*, *Phytocoraria*, *Capsaria*, *Bryocoraria*, *Cyllocoraria*, *Oncotylaria*, *Plagiognatharia*, and *Isometoparia*), *Anthocorina* (with divisions *Microphysaria* and *Anthocoraria*), *Cimicina* (for *Cimex*, L.), and *Ceratocombina*. The characters of the genera comprised in these groups, and of various new species, are given in a series of dichotomous tables. A rather different arrangement is used by this author in his slightly more recent "Revisio critica Capsinarum" [posteà, *Capsidæ*], in which he divides Stål's *Cimicidæ* into *Capsina*, with no perceptible ocelli, and *Isometopina*, *Anthocorina*, *Cimicina*, and *Ceratocombina*, in which ocelli are present.

Sahlberg, John. Synopsis Amphibicorisarum et Hydrocorisarum Fenniæ. Not. Fenn. (n.s.) xi. [= xiv. of the whole work], pp. 241–301.

Thirty-eight species of *Hydrometridæ*, *Nepidæ*, and *Corixidæ*, are here associated. All are fully described, with bibliographical references, localities, &c.

Saunders, E. Synopsis of British Hemiptera-Heteroptera. Tr. E. Soc. 1875, pt. 1, pp. 117–159, pt. ii. pp. 245–309.

Reaches to the *Capsidæ* inclusively. An analytical supplement to Douglas & Scott's "British Hemiptera," with tables, and very concise descriptions. Many changes are made in the nomenclature adopted by those authors.

Captures in England; J. W. Douglas, Ent. M. M. xii. p. 15.

A comparison of species found in the Netherlands, and not in Great

Britain, and *vice versâ*; Snellen van Vollenhoven, Verslag v. d. buitengewone Vergad. d. Ned. Ent. Ver. (Tijdschr. Ent. xix.), p. cx.

Lists, with observations on dates of occurrence, localities, &c., of species observed in the Åland and Åbo districts, and on the distribution and periods of appearance of various species in S. W. Finland. O. M. Reuter, Not. Fenn. (n.s.) xi. pp. 334–344.

Austria. An enumeration of 112 species (4 new) found by J. A. Palmén, in May and August, 1870; O. M. Reuter, Verh. z.-b. Wien, xxv. pp. 83–88.

On Signoret's collection; Pet. Nouv. (1875) p. 483.

Pachycoridæ.

Callidea dregii, Germ.: ? var., from the Transvaal, described by H. D. J. Wallengren, Œfv. Ak. Förh. xxxii. No. 1, p. 132.

Pachycoris discrepans, sp. n., P. H. Uhler, P. Bost. Soc. xvii. p. 2 N. Peru.

Homæmus consors, sp. n., *id.* Bull. U. S. Geol. and Geogr. Survey Terr. i. p. 272 (? California).

Aulacostethus simulans, sp. n., *id. ibid.* San Francisco.

Zophoessa consocia, sp. n., *id. l. c.* p. 274, Arizona.

Odontoscelidæ.

Irochrotus caspius, p. 146, Sarepta, *caucasicus*, p. 249, Caucasus, Jakowleff, Bull. Mosc. xlix. 2, spp. nn.

Corimelæna ciliata, cyanea, anthracina, spp. nn., P. R. Uhler, in Bull. U. S. Geol. and Geogr. Survey of Terr. i. p. 270, California.

Cydnidæ.

Æthus lævis, Dougl. & Sc., = *Geotomus punctulatus*, Costa; E. Saunders, Ent. M. M. xi. p. 233. *Cf.* J. W. Douglas, *tom. cit.* p. 234.

Schirus picipes, Fall., from England; E. Saunders, *op. cit.* xii. p. 154.

Brachypelta aterrima, Forst., var. n. *sareptana*; Jakowleff, Bull. Mosc. xlix. 2, p. 148, Sarepta.

Microporus, g. n., P. R. Uhler, *l. c.* p. 275. Facies of *Cydnus*: no differential characters given. *M. obliquus*, Uhl., and *M. testudinatus*, sp. n., *id. l. c.* p. 276, California.

Trichocoris, g. n., *id. l. c.* p. 277. No differential characters given. *T. conformis*, sp. n., *id. ibid.* California.

Macroporus, g. n., *id. l. c.* p. 278. No differential characters given. *M. repetitus*, sp. n., *id. l. c.* p. 279, San Francisco and Baltimore.

Melanæthus, g. n., *id. l. c.* p. 280. No differential characters given. *M. elongatus*, sp. n., *id. ibid.* California.

Amnestus pusillus, sp. n., *id. l. c.* p. 278, Eastern United States south of Cape Cod.

Pentatomidæ.

Ælia acuminata in S. of England ; W. A. Forbes, Ent. M. M. xi. p. 209.

Eusarcoris sahlbergi, Stål, = *Rubiconia intermedia*, Wolff, var. ; *Strachia picturata*, St., = *gebleri*, Kol. : O. M. Reuter, Pet. Nouv. (1875) p. 527.

Cyrtochilus, g. n., Jakowleff, Bull. Mosc. xlix. 2, p. 252. Allied to *Carpocoris*. Type, *Cyrt. flavo-lineatus*, sp. n., *id. l. c.* p. 254, pl. i. fig. 4, Ararat.

Pentatoma planiuscula, sp. n., O. M. Reuter, Not. Fenn. (n.s.) xi. p. 328, Finland.

Chlorochroa congrua, sp. n., P. R. Uhler, *l. c.* p. 288, Colorado.

Mictidæ.

n.,
Cl*ozena obtusa*, sp. n., *id. l. c.* p. 296, Texas, New Mexico.

Alydidæ.

Megalotomus sareptanus, Baer, = *ornaticeps*, Stål, var. ; O. M. Reuter, Pet. Nouv. (1875) p. 527.

Coreidæ.

Platymelus [*-la*, Baly, *Coleoptera*, 1856], g. n., Jakowleff, Bull. Mosc. xlix. 2, p. 150. Allied to *Verlusia* and *Gonocerus*. For *P. christophi*, fork, *id. l. c.* p. 151, pl. i. fig. 9 [script. "*Blatimalus christophi*" !], *anthoc*,

Lygoco
Agnoco

Berytidæ.

Fall. *s commutatus*, D. & S., = *minor*, H. Sch. ; J. W. Douglas & J. Ment. M. M. xi. p. 184. *B. signoreti*, D. & S., queried as distinct from Fieber's species of that name; E. Saunders, *tom. cit.* p. 233. Saunders' insect ? = *B. pygmæus*, Leth., and *B. signoreti*, D. & S., was named by Fieber himself ; J. W. Douglas, *l. c.* p. 234. *Berytus pygmæus*, Reut., Leth., is quite distinct from *B. geniculatus*, Fieb. ; *B. striola*, Ferr., = *signoreti*, Fieb., var. : O. M. Reuter, Pet Nouv. (1875) p. 527.

Cardopostethus lineatus, p. 152, Astracan, *fulvus*, p. 155, Sarepta, spp. nn., Jakowleff, Bull. Mosc. xlix. 2.

Berytus pilipes, sp. n., A. Puton, Pet. Nouv. (1875) p. 495, Algeria.

Pyrrhocoridæ.

Dermatinus notatus, sp. n., H. D. J. Wallengren, Œfv. Ak. Förh. xxxii. No. 1, p. 134, Waterberg, Transvaal.

Lygæidæ.

Horváth, Géza. Monographia Lygæidarum Hungariæ. Magyarország Bodobácsféléinek Magánrajza. Budapest : 1875, 4to, pp. 1–109, pl.

In Hungarian, with Latin diagnoses. 100 species, including 3 new, are described. In the introductory part, a table of the geographical

distribution of these species is given, as regards the 4 divisions of Hungary and other European and neighbouring Asian and African countries; and (pp. 10 & 11) a bibliographical account of authors who have written on the subject, including papers in Term. Közl. and other Hungarian unintelligible and inaccessible publications, by the author himself in 1870 and 1874, Otto Herman in 1871, J. Torsk and J. Frivaldszky in 1872, S. Mocsary in 1873, and E. Mery in 1874. In addition to the new species, the following are figured :—*Lygæus equestris*, with detail, figs. 1–4, 6 & 7, *Heterogaster urticæ*, fig. 5, *Dimorphopterus spinolæ*, fig. 8, *Blissus doriæ*, fig. 9, *Icus angularis*, Fieb., var. *hungaricus*, Horv., fig. 10, *Plinthisus longipennis*, fig. 11, *Eremocoris icaunensis*, fig. 15, *Nysius gracilis*, Scott [S. E. Z. xxxi. 1870, p. 98 ; omitted from Zool. Rec. vii.], = *thymi*, Wolff.

Nysius pubescens, J. Sahlb., = *punctipennis*, H. Sch. ; *N. punctipe* H, J. Sahlb. & Reut., = *Heterogaster ericæ*, Boh., = *N. helveticus*, H. S ne der- *Lygæus pilosulus*, Thoms., = *Stygnocoris pygmæus*, F. Sahlb.: O. the Reuter, Pet. Nouv. (1875) p. 527. *Plinthisus latus*, Reut., ? = *pusil* ed Scholz, ♀, forma macropt.; *id. l. c.* p. 547 s

Nysius scotti, Saund., and ? *helveticus*, Frey-G., and *obsoletus*, Fieb., = *brunneus*, Fieb. ; E. Saunders, Ent. M. M. xi. p. 233.

Drymus latus, D. & S., = *pilicornis*, Muls. ; *Lamproplax sharpi*, D. & S., = *piceus*, Flor; *Stethotropis incana*, Fieb., = *Stygnocoris rusticus*, Fall., forma macropt., and Fieber's genus does not stand ; *Hypnophil* D. & S., 1865, is renamed *Hypnobius*, on account of *Hypnophila*, 1859 ; *Pachymerus*, St. F., 1827, *nec* Thunberg, 1805, *nec* Lat Jakow- cannot be employed for *Rhyparochromus*, Curt.: J. W. Do Scott, Ent. M. M. xi. pp. 184 & 185. , in Bull.

Lygæus melanocerus, Thoms., = *Scolopostethus ericetorum*, differentiated from *S. affinis*, Schill., and recorded from England ; *erraticus*, F., ex. typ., = *Eremocoris podagricus*, F. ; *L. podagricus* .. *decoratus*, Thoms., Leth., = *Scolopostethus adjunctus*, D. & S. : *S. crassicornis*, D. & S., = *Notochilus limbatus*, Fieb., var. ; *Rhyparochromus sabulicola*, Thoms., from England ; *R. chiragra*, F., var. n. *nigricornis*, (p. 267) ; *Peritrechus puncticeps*, Thoms., and *nubilus*, Fall., differentiated, and both recorded from England: J. W. Douglas, *l. c.* pp. 263–267.

Trapezonotus distinguendus, Flor. Notes on the characters and synonymy of this and 3 allied forms ; *id. op. cit.* xii. p. 136.

Micropus leucopterus, Say, "the chinch bug." A full account of its economy, parasites, and ravages; in one year it has done damage to wheat, corn, and oats, to the extent of 19,000,000 dollars in Missouri alone, from Government returns. C. V. Riley, Rep. Ins. Mo. vii. pp. 19–71, figs. 1–11.

Pezocoris, g. n., Jakowleff, Bull. Mosc. xlix. 2, p. 158. Allied to *Trapezonotus*. For *P. villosus*, sp. n., *id. l. c.* p. 160, pl. i. fig. 3, Sarepta.

Jakowleffia, g. n., A. Puton, Pet. Nouv. (1875) p. 512. *Oxycareni* : approaching *Cymus* in its head, pronotum, and scutellum, and somewhat near *Macropterna* in the structure of the membrane, but neither of these

has so considerable a development of that portion, with so great a reduction of the corium. For *Anomaloptera setulosa*, Jak.

Helonotus, g. n., P. R. Uhler, Bull. U. S. Geol. & Geogr. Survey of Terr. i. p. 312. Facies of *Henestaris*; no differential characters given, *Hel. abbreviatus*, sp. n., *id. l. c.* p. 313, Canada, and 9 of the N. American States.

Lygæus (*Melanocoryphus*) *affinis*, sp. n., Jakowleff, *l. c.* p. 257, pl. i. fig. 1, Caucasus.

Blissus putoni, sp. n., *id. l. c.* p. 156, pl. i. fig. 6, Bogdo and Ryn-Pesky, Astracan.

Proderus crassicornis, sp. n., *id. l. c.* p. 260, pl. i. fig. 2, Derbent.

Plinthisus hungaricus, sp. n., G. Horváth, *l. c.* p. 60, fig. 12, Hungary.

Pachymerus validus, sp. n., *id. l. c.* p. 72, fig. 13, Hungary.

Dieuches ragusæ, sp. n., A. Puton, Bull. Ent. Ital. vii. p. 255, I. of n. ntellaria.

Cl *Emblethis ciliatus*, sp. n., G. Horváth, *l. c.* p. 81, fig. 14, Hungary.

Phygadicus behrensi, sp. n., P. R. Uhler, *l. c.* p. 312, California.

Anthocoridæ.

Piezostethus formicetorum, Boh., from Scotland; J. W. Douglas & J. Scott, Ent. M. M. xi. p. 174.

Acompocoris, g. n., O. M. Reuter, Bihang till Sv. Ak. Handl. iii. No. 1, fork, . For *Anthocoris alpinus*, Zett., inedit. (described, *ibid.*, and Verh. *antho* Vien, xxv. p. 88, Semmering), = *Temnosthus pygmæus*, var. *b*, Reut., ed *T. lucorum*, Fall., = *A. pygmæus*, Fall.

Lygoco ethus crassicornis, sp. n., *id. l. c.* p. 64, Algeria.

Agnocor ethus flavipes, sp. n., *id. l. c.* p. 65, Biskra.

Fall.

Me ocoris sibiricus, sp. n., *id.* Pet. Nouv. (1875) p. 545, Siberia.

ac hycoleus rufescens, sp. n., J. Sahlberg, Not. Fenn. (n.s.) xi. p. 305, Finland.

Capsidæ.

Reuter, O. M. Revisio critica Capsinarum, præcipue Scandinaviæ et Fenniæ. Försök till de Europäiska Capsinernas naturenliga Upställning jämte kritisk Öfversigt af de Skandinaviskt finska Arterna. Akademisk Afhandling, presented to the Philosophical Faculty of the R. Alexander's University in Finland, May 27, 1875. Helsingfors: 1875, 8vo, pp. 1–101 (introductory), 1–190 (descriptive, referring only to the Scandinavian species, with synonymy, localities, &c.).

The author adds to the dichotomous difficulties of his treatment by introducing the Darwinian hypothesis, classifying [cf. *antea*, p. 496] various members of the group under the general heading of "Pterygopolymorphæ," with various sub-divisions (*e. g.*, "species pterygo-gynæcodimorphæ," *Leptopterna dolobrata*, L., and others). After a general introduction, a list is given of the various plants frequented by the species discussed, which are respectively named in connection with them.

followed by another referring to the localities in which they occur. Special observations are made on the Scandinavian species, which are compared with those of other North European countries. After a historical account of the *Capsina*, the author arranges its genera under the same divisions as those employed in his "Genera Cimicidarum Europæ" [*anteà*, p. 497], except that the *Isometoparia* are now removed from it.

Reuter, O. M. Capsinæ ex America boreali in Museo Holmiensi asservatæ, descriptæ ab —. Œfv. Ak. Förh. xxxii. No. 9, pp. 59–92.

The following observations occur :—*Capsus oblineatus*, Say, ? = *Lygus pratensis*, L., which occurs in S. Carolina, &c. ; *Monalocoris filicis*, L., from New Jersey, scarcely differs from European examples ; *Eccritotarsus*, Stål, is referred to *Bryocoraria*. Many new genera and species are described.

S. C. Snellen van Vollenhoven, Tijdschr. Ent. xviii. pp. 150–1[illegible]er-pls. viii.–x., in the 5th part of his "Inlandsche Hemipteren," commenc[illegible] the a descriptive account of the Netherlands' species, figuring various know[illegible]ed species of *Monalocoris*, *Pithanus*, *Miris*, *Leptopterna*, *Oncognathus*, *Allæotomus*, *Lopus*, *Capsus*, *Heterotoma*, *Halticus*, and *Camaronotus*.

Teratocoris flori, J. Sahlb., = *saundersi*, D. & S. ; *Tytthus flaveolus*, Reut., = *insignis*, D. & S.; *Conostethus griseus*, D. & S., = *salinus*, J. Sahlb.; *Litosoma bicolor*, D. & S., *chloropterus*, Kschb. ; *Macrocoleus hardii*, Bold., = *molliculus*, Fall.: J. W. Douglas & J. Scott, Ent. xi. p. 185.

Macrocoleus tanaceti, Fall., *nec* Fieb., ♀, described from En[illegible] Jakow-Saunders, Ent. M. M. xii. p. 131.

Phytocoris marmoratus, D. & S., = *tiliæ*, F., var. ; *id. op. cit.* xi[illegible] in Bull. & 255. This opinion repudiated ; J. Scott, *tom. cit.* p. 235.

Atractotomus pini, D. & S., *nec* Fieb., = *Agalliastes obscurellus*, Fall., and is dubiously referred to an undefined new genus ; E. Saunders, *l. c.* p. 234. The insect = *pityophilus*, Flor, = *Phytocoris obscurellus*, Fall., *sec.* Reuter, 1873 ; J. Scott, *l. c.* p. 235.

Tinicephalus obsoletus, Fieb., D. & S., must be removed to some other genus, ? *Litosoma*; E. Saunders, *l. c.* pp. 234 & 255. Fieber himself places it in his own genus *Tinicephalus* ; J. Scott, *l. c.* p. 235.

Psallus dilutus, D. & S., ? Fieb., = *alni*, F. ; E. Saunders, *l. c.* pp. 234 & 255. This opinion not accepted ; J. Scott, *l. c.* p. 235.

Phytocoris dubius, D. & S., = *dimidiatus*, Kirschb., *P. artemisiæ*, Ferr., = *obliquus*, Costa, *P. putoni*, Fieb., = *juniperi*, Frey-G. ; O. M. Reuter, Pet. Nouv. (1875) p. 527. *Atractotomus debilicornis*, Reut., ? = *Capsus kolenatii*, Flor, *Neocoris scotti*, Fieb., and *putoni*, Reut., = *nigritulus*, Zett., varr. ; *id. l. c.* p. 547.

Ischnocoris hemipterus should be referred to Schilling and not to Sahlberg ; *id. l. c.* p. 540.

Plagiorhamma suturalis, H. Sch., ♀ brachypterous form from Italy, p. 26 ; *Hoplomachus bilineatus*, H. S., *nec* Fall., renamed *herrichi*, p. 39 ; *Capsus pityophilus*, Flor, *Atractotomus pini*, D. & S., *Agalliastes meyeri*,

Fieb., and ? *Phytocoris impurus*, Boh., = *Psallus* (*Apocremnus*) *obscurellus*, Fall. : *id.*, Bihang till Sv. Ak. Handl. iii. No. 1.

Stiphrosoma atrocæruleum, Fieb., = *nigrum*, Herrich Schäffer, and *Halticus intricatus*, Fieb., = *pusillus*, H. S. (both as *Capsus*) ; G. von Horváth, Pet. Nouv. (1875) p. 480.

Acetropis seticulosa, Fieb., = *gimmerthali*, Flor. ; A. Puton, Pet. Nouv. (1875) p. 511.

Lopus sulcatus, Fieb., locally known as 'la grisette,' injurious to vines in Lower Burgundy ; Populus, Pet. Nouv. (1875) p. 507.

Phytocoris gothicus. An allied species, injurious to vines, Loir-et-Cher ; De Vibraye, C. R. lxxx. p. 1407.

Capsus capillaris and *Heterotoma*, placed in a tube, observed to exhale an ether, resembling certain fruit-essences ; this produced anæsthesia in the insects, which recovered on ordinary air being admitted. The experiment repeated with acetic ether, and with the like result. E. Pierret, CR. Ent. Belg. xviii. p. lxxxviii.

New genera and species :—

O. M. Reuter, in his "Genera Cimicidarum Europæ," describes the following genera and subgenera, apparently new, though not stated to be so (all of which are also discussed in the 'Revisio critica Capsinarum') :—

Teratodella, p. 7. Forms a separate division, *Teratodellaria*, having no arolia, the hemelytra only veined at the base of the corium, no cubital fork, head horizontal, much produced before the eyes, &c. Type, *T. anthocoroides*, sp. n., p. 8, Rouen (? imported from Senegal).

Lygocoris, p. 16, subg. of *Lygus* ; type, *L. pabulinus*, L.

Agnocoris, p. 19, subg. of *Cyphodema* ; type, *Hadrodema rubicundum*, Fall.

Merotrichæa, p. 24, subg. of *Labops* ; type, *Orthocephalus freyi*, Fieb.

Euryopocoris, ibid. ; type, *Orthocephalus nitidus*, Mey.

Dryophilocoris, p. 30, subg. of *Globiceps* ; type, *G. flavo-notatus*, Boh. = *flavo-quadrimaculatus*, Deg.

Melanotrichus, p. 35, subg. of *Orthotylus* ; type, *O. flavo-sparsus*, C. Sahlb.

Solenoxyphus, p. 38, *Oncotylaria* ; type, *Macrocoleus lepidus*, Fieb.

Icodema, p. 45. *Plagiognatharia* ; type, *Orthotylus pallidus*, Mey., = *Plagionathus infuscatus*, Fieb.

Plesiodema, ibid. ; type, *Plagiognathus pallidipennis*, J. Sahlb., = *Agalliastes lugubris*, Fieb., = *A. pinetellus*, Zett.

Tuponia, p. 53, subg. of *Megalodactylus* ; type, *Psallus tamarisci*, Perris, also *Oncotylus hippophaes*, Mey., and *M.* (*T.*) *lethierrii*, sp. n., *ibid.*, Biskra.

Phœnicocoris, p. 55, subg. of *Plagiognathus* ; type, *Agalliastes modestus*, Mey., also *P. major*, sp. n., *ibid.*, France.

Atomoscelis, p. 57, subg. of *Plagiognathus* ; type, *Agalliastes verbasci*, H. S., *A. onustus*, and ? *A. punctatus*, Fieb., also *At. concinnus*, sp. n., *ibid.*, Biskra.

Colpochilus, p. 60. *Plagiognatharia* : apical margin of pronotum

deeply emarginate, disc exceedingly convexo-declivous in front, with distant calli. Membrane uni-areolate. *C. tenuicornis*, sp. n., *ibid.*, Alsace.

Platypsallus, J. Sahlberg, Not. Fenn. (n.s.) xi. [= xiv. of the whole series] p. 307 (*cf.* also O. M. Reuter, Rev. crit. Caps. p. 24). Short, wide, with a very dilated abdomen, suggestive of *Microphysa*. Type, *P. acanthioides*, J. Sahlberg, described, p. 308, but with a reference to Not. Fenn. xi. [of the whole series], p. 465, and to a figure in Act. Fenn. i. pl. i.; from the most eastern part of Russian Lapland.

Reuteria, A. Puton, Pet. Nouv. (1875) p. 519. Between *Camptotylus* and *Orthotylus*; posterior angles of pronotum obliquely truncate. *R. marqueti*, id. *ibid.* Toulouse, on oak.

Thermocoris, id. *ibid.* Between *Hadrophyes* and *Hoplomachus*; head wider than in the former, rostrum longer, especially the first joint, antennæ thicker. *T. munieri*, id. *ibid.* Algeria.

Orectoderus, P. R. Uhler, Bull. U. S. Geol. & Geogr. Survey of Terr. i. p. 319. Next *Agalliastes*; no differential characters given. *O. obliquus*, id. *l. c.* p. 320, Northern States and Canada.

O. M. Reuter, Œfv. Ak. Förh. xxxii. No. 9, describes the following:—

Callimiris, allied to *Teratocoris* in membrane-structure; for *C. uhleri*, N. America, and *tarsalis*, Wisconsin, Texas, p. 60.

Trachelomiris, for *T. oculatus*, Texas and New York, and *Miris scenicus*, Stål, p. 61.

Pallacocoris, differing from *Miridius* in the head and tarsi; for *P. suavis*, Texas, p. 62.

Clivinema, type of a new division, *Clivinemaria*, p. 62; for *C. villosa*, Texas, p. 63.

Callichila, subg. of *Resthenia*, Spin., p. 64; for *R. grandis*, Blanch., *plagigera* and *picticollis*, Stål.

Onceromelopus, allied to *Resthenia*, p. 65; for *O. nigriclavus* and *ruber*, Texas, p. 66.

Lomatopleura, type, *L. cæsar*, Pennsylvania, p. 67.

Neurocolpus, near *Phytocoris*, p. 69; type, *Capsus nubilus*, Say.

Compsocerocoris, also allied to *Phytocoris*, but with more elongate body; type, *C. annulicornis*, Texas, p. 70.

Pœcilocapsus, near *Liocoris*, p. 73, with subg. *Pœcilocapsus* proper, for *Capsus 4-vittatus*, Say, = *lineatus*, F., and *C. alacer*, *nigriger*, and *ornatulus*, Stål, and subg. *Metriorrhynchus*, p. 74, for *P.* (*M.*) *affinis*, ibid., New Jersey, and *marginalis*, p. 75, New York, also *Capsus goniphorus*, Say, of which varr. from Wisconsin described.

Callicapsus, for *C. histrio*, Texas, Carolina, p. 75.

Euarmosus, near *Allæotomus*, Fieb.; type, *E. sayi*, Texas, p. 76.

Sixconotus, allied to *Monalocoris*, p. 77; type, *S. insignis*, p. 78, Texas, New Jersey, New York.

Cyrtocapsus, allied to the preceding, p. 78; for *Capsus caligineus*, Stål.

Sericophanes, near *Mimocoris*, Scott; for *S. ocellatus*, Texas, p. 79.

Semium, ? near *Orthocephalus*; for *S. hirtum*, Texas, p. 80.

Cyrtopeltocoris, ? near *Systellonotus*; for *C. albo-fasciatus*, Texas, p. 81.

Trichia, p. 81, very near *Eroticoris*, D. & S., but shining, punctured, with basal margin of pronotum truncate, and scutellum covered at the base. Type, *T. punctulata*, and 3 varr., Texas, p. 82.

Engytatus, allied to and resembling *Dicyphus*, Fieb., p. 82; for *E. geniculatus*, Texas, p. 83.

Hyaliodes, near *Cyllecoris*, Hahn, and *Dicyphus*, p. 83; for ? *Capsus vitripennis*, Say.

Parthenicus, near *Camptotylus* and *Orthotylus*, Fieb., p. 84; for *P. psalliodes*, Texas, p. 85.

Ilnacora, between *Chlamydatus*, Curt., and *Orthotylus*, p. 85; with subg. *Ilnacora* proper, type, *I.* (*I.*) *divisa*, Texas, and *Corinala*, type, *I.* (*C.*) *stali*, Texas and New York, p. 86.

Ceratocapsus, with antennæ as long as the body; for *C. lutescens*, Texas, and *punctulatus*, Cuba, p. 87.

Strongylotes, between *Atractotomus*, Fieb., and *Colpochilus*, Reut.; for *S. saliens*, Texas, p. 88.

Rhinacloa, near *Atractotomus*, p. 88; for *R. forticornis*, Texas, p. 89.

Episcopus, next *Psallus*; for *E. ornatus*, Texas, p. 90.

Miris (*Lobostethus*) *affinis*, p. 59, Wisconsin, Pennsylvania, New Jersey.

Trigonotylus pulcher, ibid., Texas.

Resthenia atripennis and *maculicollis*, Texas, *nigricollis*, New Jersey, p. 65.

[illegible]hytocoris eximius, p. 67, *breviusculus* and *tibialis*, p. 68, Texas, *puella*, New York, *pallidicornis*, Wisconsin, p. 69.

Lyg[illegible] belfragii, New York, *vitticollis*, Texas, *carolinæ*, Carolina, p. 71, *prasinus*, Texas, *fasciatus*, S. Carolina, *convexicollis*, California, p. 72.

Systra[illegible]tiotus americanus, p. 73, Texas.

Pæcil[illegible]oscytus basalis, ibid., Texas.

Psall[illegible]s guttulosus, p. 89, Texas.

Phan[illegible]coris pubescens, p. 90, Texas.

Play[illegible]gnathus grandis, p. 91, Texas.

Atom[illegible]scelis seriatus, ibid., Texas.

Agal[illegible]astes suavis, p. 92, Texas.

Acet[illegible]pis longirostris, A. Puton, Pet. Nouv. (1875) p. 511, Sarepta.

Mir[illegible]instabilis, P. R. Uhler, Bull. U. S. Geol. & Geogr. Survey of Terr. [illegible]. 316, Colorado.

Brac[illegible]tropis australis, H. D. J. Wallengren, Œfv. Ak. Förh. xxxii. No. [illegible] 135, Transvaal.

Phy[illegible]coris obscurus, p. 331, Landes, *flammula*, p. 332, Corsica, O. M. Reuter, Not. Fenn. (n.s.) xi.

Calocoris henkii, p. 165, Astracan, *fasciatus*, p. 167, Sarepta, Jakowleff, Bull. Mosc. xlix. pt. 2; *C. tenebrosus*, O M. Reuter, Pet. Nouv. (1875) p. 544, Siberia; *C.* (*Pycnopterna*) *palmeni*, id. Bihang till Sv. Ak. Handl. iii. No. 1, p. 14, and Verh. z.-b. Wien, xxv. p. 86, Noric Alps, Salzburg.

Lygus distinguendus, id. Pet. Nouv. (1875) p. 544, Siberia; *L.* (*Orthops*) *purcatus*, id. Bihang &c., p. 18, Biskra, Algiers.

Sur[illegible]

Cyphodema oberthuri, A. Puton, Bull. Soc. Ent. Fr. (5) v. p. clvi. Lambassa, Algeria.

Pilophorus perplexus, J. W. Douglas & J. Scott, Ent. M. M. xii. p. 101, England (= *Camaronotus clavatus*, D. & S., *nec* L.).

Stiphrosoma steganoides, J. Sahlberg, Not. Fenn. (n.s.) xi. p. 306, Russian Lapland.

Orthocephalus bilineatus, p. 169, Sarepta, *opacus*, p. 170, Sarepta, Bogdo, Astracan, Jakowleff, Bull. Mosc. xlix. pt. 2.

Orthotylus fuscescens, Reuter, Bihang &c., p. 33, Switzerland, France (? = *Capsus fuscescens*, Kirschbm.; subsequently described by Reuter, in Pet. Nouv. No. 138, p. 551, from France only, as *O. obscurus*,—*O. fuscescens*, Kirschb., being from Switzerland).

Allocotus curvipennis, p. 36, *lethierrii*, p. 37, Biskra, *salsolæ*, p. 37, France, Reuter, Bihang &c.

Oncotylus putoni, id. *l. c.* p. 41, France.

Macrocoleus reiberi, p. 540, Vosges, *soror*, p. 544, Siberia, *id.* Pet. Nouv. (1875).

Atractotomus debilicornis, id. Rev. crit. Caps. pt. 2, p. 158, Yläne; *A. fuscinervis*, Corsica, *apicalis*, Austria, *id.* Bihang &c., p. 46; *A. apicalis*, id. Verh. z.-b. Wien, xxv. p. 87, Laibach.

Psallus rubricatus, Jakowleff, *l. c.* p. 171, Bogdo; *P. corsicus*, A. Puton, Pet. Nouv. (1875) p. 523, Corsica; *P. convexus*, O. M. Reuter, Pet. Nouv. (1875) p 540, Corsica; *P.* (*Apocremnus*) *siculus*, id. *l. c.* p. 539, Sicily, and *laricis* (Frey-Gessner, MS.), *id.* Bihang &c., p. 48, Switzerland.

Plagiognathus alpinus, Reuter, Verh. z.-b. Wien, xxv. p. 88, and Bihang &c., p. 56, Tyrol; *P. flavipes*, p. 57, Corsica, and *P.* (*Neocor* *putoni* (Fieber, MS.), p. 59, Dunkirk, *id.* Bihang &c.

Criocoris fulvus, id. Bihang &c., p. 54, France.

Agalliastes lanuginosus, Jakowleff, *l. c.* p. 172, Sarepta.

Tingididæ.

Orthostira macrophthalma, Fieb., from England; J. W. Douglas & J. Scott, Ent. M. M. xi. p. 173. ? = *nigrina*, Fall.; E. Saunders, *l. c.* p. 232.

Acalypta, Westw., 1840, substituted by Stål for *Orthostira*, Fieb., 1844, cannot stand, on account of *Acalyptus*, Schön., 1836; J. W. Douglas & J. Scott, *l. c.* p. 185.

Campylostira verna, D. & S., *nec* Fall., *nec* Fieb., = *brachycera* Fieb.; E. Saunders, *l. c.* pp. 253 & 255. It is the true *verna*, Fall.; J. W. Douglas, *l. c.* p. 235.

Tingis perspicuus, sp. n., Jakowleff, Bull. Mosc. xlix. 2, p. 162, pl. fig. 7, Sarepta.

Aradidæ.

Aradus simillimus, p. 328, *lævicusculus*, p. 329, O. M. Reuter, N. Fenn. (n.s.) xi. Finland; *A. reuterianus*, A. Puton, Pet. Nouv. (1) p. 81.

p. 483, France, Corsica; *A. ampliatus*, p. 321, California, *debilis*, p. 322, Vancouver's Island, *inornatus*, p. 323, Nebraska, &c., P. R. Uhler, Bull. U. S. Geol. & Geogr. Survey of Terr. i.: spp. nn.

Brachyrrhynchus simplex, sp. n., *id. l. c.* p. 323, Texas and other States.

Reduviidæ.

Nabis rugosus, L., described from England; J. W. Douglas, Ent. M. M. xii. p. 154.

Corsicus flavo-marginatus, var. n. *sibiricus*, from Siberia; O. M. Reuter, Pet. Nouv. (1875) p. 545.

Callidema [Guérin, 1843, Agassiz, 1848, amending Laporte & Gory, 1837, and *-mum*, Blanchard, 1854, *Coleoptera*], g. n., Jakowleff, Bull. Mosc. xlix. 2, p. 264. Compared with *Harpactor*. For *C. lygæiformis*, sp. n., *id. l. c.* p. 266, pl. i. fig. 5, Derbent.

Phanerocoris, g. n., *id. l. c.* p. 267. Also compared with *Harpactor*, but, like the preceding genus, with the facies of a *Lygæus* or *Verlusia*. For *P. cornutus*, sp. n., *id. l. c.* p. 269, pl. i. fig. 8, Ararat.

Holoptilus lupus, sp. n., H. D. J. Wallengren, Œfv. Ak. Förh. xxxii. No. 1, p. 135, Transvaal.

Oncocephalus stali, sp. n., *id. l. c.* p. 136, Transvaal.

Apiomerus repletus, sp. n., P. R. Uhler, Bull. U. S. Geol. & Geog. Survey of Terr. i. p. 329, California.

Saldidæ.

Acanthia, F., cannot be used for *Salda*, F., as proposed by Stål, the type of the former genus being *lectularia*, L.; J. W. Douglas & J. Scott, Ent. M. M. xi. p. 186.

Salda pallipes, F., and *S. pilosella*, Thoms., differentiated, from British examples; J. W. Douglas, *op. cit* xii. p. 29.

Salda sericans, Stål, = *Acanthia pilosa*, Fall., var. *borealis*, Reut.; O. M. Reuter, Pet. Nouv. (1875) p. 527.

Salda sahlbergi, sp. n., *id.* Not. Fenn. (n.s.) xi. p. 330, Finland.

Hydrometridæ.

Mesovelia furcata, Muls., in the south of England; J. Scott, Ent. M. M. xii. p. 79. On its larva; J. W. Douglas, *tom. cit.* p. 115.

Fieberia lacustris, Jakow., ? = *Mesovelia furcata*; A. Puton, Pet. Nouv. (1875) p. 502.

Mesovelia parra, sp. n., J. Sahlberg, Not. Fenn. (n.s.) xi. [= xiv. of the whole work] p. 260, Finland and Russian Karelia, apterous form only (described as a larva; *id. op. cit.* 1870, p. 303, and also 1874, p. 481).

Pelogonidæ.

Pelogonus americanus, sp. n., P. R. Uhler, Bull. U. S. Geol. & Geogr. Survey of Terr. i. p. 335, Texas, Pennsylvania, &c., and Cuba.

Notonectidæ.

Observations on the act of depositing ova in *Notonecta*, &c. by M. Régimbart, Ann. Soc. Ent. Fr. (5) v. pp. 204 & 205, pl. iv. No. iii. fig. 5

Corixidæ.

Corixa fieberi and *vaga*, Wallengren, = *hieroglyphica*, Duf.; *C. intricata*, D. & S., = *variegata*, Wall.; J. W. Douglas, Ent. M. M. xii. p. 137. *C. dentipes*, Thoms., = *geoffroyi*, Leach. (*nec* Thoms.); *C. undulata*, Fall., ? = *sahlbergi*, Fieb.; *C. socia*, D. & S., = *præusta*, Fieb., var.; *C. lævipennis*, J. Sahlb., = *semistriata*, Fieb., var.; *C. nigro-lineata*, Fieb., *nec* Thoms., and ? *decora* and *dubia*, D. & S., = *abdominalis*, Fieb., *nec* Say, = *fabricii*, Fieb.; *C. sharpi*, D. & S., = *cognata*, Fieb., = *carinata*, Sahlb.: J. Sahlberg, Not. Fenn. (2) xi. pp. 278–294. Sahlberg's observations criticised; *C. decora* and *whitii*, D. & S., = *perplexa*, D. & S., *C. dubia*, D. & S., = *nigro-lineata*, Fieb.: J. W. Douglas, *tom. cit.* p. 137.

Corixa intermedia, J. Sahlberg, *l. c.* p. 282, Russian Lapland; *C. meridionalis*, H. D. J. Wallengren, Œfv. Ak. Förh. xxxii. No. 1, p. 136, Christiana, Transvaal; *C. sutilis*, P. R. Uhler, *l. c.* p. 339, Colorado: spp. nn.

HEMIPTERA-HOMOPTERA.

Fieber, Franz Xavier. Les Cicadines d'Europe d'après les originaux et les publications les plus récentes. Première partie: comprenant les familles des Membracida, Cicadaea, Fulgorida, Cercopida, Ulopida, Paropida, Scarida, disposées selon la méthode analytique. Traduit de l'Allemand par Ferd. Reiber. R. Z. (3) iii. pp. 288–416, pls. x.–xiii.

The late Dr. Fieber's incomplete MSS. have been purchased of his widow by the translator, with MM. Puton & Lethierry, who for some time had become the possessors of Fieber's drawings. The missing genera are to be monographed by the two latter authors. A general introduction is given, with description of external anatomy, observations on peculiarities, economic value, collecting, preserving, and examining, and bibliography. The families of the *Cicadina* as a whole, are those enumerated in the title (with the addition of the *Iassida*, apparently omitted by accident), and their genera are characterized in a tabular form, with no mention of type or other species. The following appear to be not before characterized:—Cicadaea, *Triglena*, p. 337; Fulgorida, *Trigonocranus*, p. 349, *Ommatissus*, p. 353; Iassida, *Strongylocephalus* [? Flor], p. 398, *Cephalius* and *Psegmatus*, p. 402, *Rhyti*[*do*]*stylus*, p. 404, *Allygus*, p. 410; *Alebra* (= *Compsus*, Fieb., *nec* Schön.), p. 412, *Chlorita* (= *Chloria*, Fieb., *nec* Shiner), p. 414. The plates represent in outline (from Fieber's drawings) portions of the external anatomy of various genera.

Captures in England. J. W. Douglas, Ent. M. M. xii. pp. 15 & 115. Schleswig: B. Beuthin, Verh. Ver. Hamb. 1871–1874 [1875], p. 105.

On association of certain *Homoptera* with ants, see Delpino, *Formicidæ*, suprà, p. 391.

Cicadidæ.

Cicada gigas: notes on habits in island of Taboga, Panama; G. F. Mathew, Ent. M. M. xi. p. 175.

Cicada. Notes on 8 Canadian species; L. Provancher, Nat. Canad. vii. p. 288. Observations on the song of *C. septendecim*; F. C. Clark, Am. Nat. ix. pp. 70–74.

Cicada hesperia, sp. n., P. R. Uhler, Bull. U. S. Geol. & Geogr. Survey of Terr. i. p. 342, Denver, Colorado.

Carineta socia, sp. n., *id.* P. Bost. Soc. xvii. p. 285, Lower Amazons.

Cercopidæ.

Philænus lineatus and *spumarius* in various N. American States; P. R. Uhler, Bull. U. S. Geol. & Geogr. Survey of Terr. i. p. 347.

Aphrophora permutata, sp. n., *id. l. c.* p. 345, Colorado, California.

Philænus abjectus, sp. n., *id. l. c.* p. 346, Colorado.

Lepyronia angulifera, sp. n., *id. l. c.* p. 348, Florida, Mexico, &c.

Clastoptera delicata, sp. n., *id. ibid.*, Colorado, Utah.

Membracidæ.

Publilia modesta, sp. n., *id. l. c.* p. 314, Colorado, &c.

Iassidæ.

Idiocerus heydeni, Kirschb., described, from Britain; J. Scott, Ent. M. M. xi. p. 228.

Tettigonia sanguinea. A fungus developed on its larva; G. Bertoloni, Mem. Ac. Bologn., Feb. 1875.

Cicadula: generic characters and affinities discussed, and British species described; J. Scott, *l. c.* pp. 229–233. *Thamnotettix*: id. *op. cit.* xii. pp. 21–25 & 91. *Graphocræus*: id. *l. c.* p. 25. *Athysanus*: id. *l. c.* pp. 93–100 & 168. *Thamnotettix intermedia*, Boh., *preyssleri*, Schäff., and *nigricornis*, J. Sahlb., *Graphocræus ventralis*, Fall., *Athysanus sordidus*, Zett., *obsoletus* and *dilutior*, Krschb., *obscurellus* and *plebeius*, Fall., described from Britain. *Athysanus cognatus*, D. & S., = *validinervis*, Krschb., ♀, = *griseseens*, Zett. *Thamnotettix corniculus*, Marshall, = *Athysanus striatulus*, Fall.

Thamnotettix lunulifrons, J. Sahlb., = *intermedia*, Boh.; O. M. Reuter, Pet. Nouv. (1875) p. 547.

Typhlocybides. J. W. Douglas, Ent. M. M. xi. p. 198, discusses the various opinions on the affinities and definitions of this group, noting the alteration by Fieber in his 'Katalog,' 1872, of *Compsus*, Fieb., to *Alebra*,

and *Chloria*, Fieb., to *Chlorita*. *Dicranoneura citrinella*, Zett., *D. mollicula*, Boh., *Typhlocyba gratiosa*, Boh., *lactea*, Leth., *alneti*, Dahlb., *rosea*, Flor, and *tiliæ*, Geoffr., described from Britain; *id. op. cit.* xii. pp. 27 & 28, 76–79. *T. hyperici*: note on habits; *id. l. c.* p. 138.

Cochlor[r]hinus, g. n., P. R. Uhler, *l. c.* p. 358. Form of *Rhaphi-[dor]rhinus*, "mimics the Tettigonias of the group of *T. brevis*." *C. pluto*, sp. n., *id. ibid.* California.

Bythoscopus siccifolius, sp. n., *id. l. c.* p. 359, Colorado, Texas, Canada, &c.

Iassus lætus, sp. n., *id. l. c.* p. 360, Colorado.

Cicadula frontalis, sp. n., J. Scott, Ent. M. M. xi. p. 231, England.

Athysanus verralli, id. *l. c.* p. 268, England; *A. depressus*, p. 95, Scotland, *irroratus*, p. 96, *piceus*, p. 97, England, *id. op. cit.* xii.: spp. nn.

Deltocephalus debilis, sp. n., P. R. Uhler, *l. c.* p. 360, Colorado.

Typhlocyba auro-vittata, sp. n., J. W. Douglas, *op. cit.* xii. p. 76, England.

Fulgoridæ.

Hemisphærius. A list of the 42 known species of this Coccinelliform genus, including 7 new, the tegmina of 22 spp. being figured; A. G. Butler, Ann. N. H. (4) xvi. pp. 92–100, pl. iv. "*H. chilocoroides* (sic, nec chilocorides), Walker," is renamed *walkeri*, p. 100, on account of the prior user of the name by the same author [the altered name being however correctly formed].

Dictyonissus, g. n., P. R. Uhler, *l. c.* p. 355. Facies of *Mycterodus*; at once signalized by the obliteration of the longitudinal nervures of the hemelytra, and the rounded form of the areoles. *D. griphus*, sp. n., *id. l. c.* p. 356, Texas.

Aphelonema, g. n., *id. l. c.* p. 356. No differential characters given. *A. simplex*, sp. n., *id. ibid.* Dakota.

Eurybregma, g. n., J. Scott, Ent. M. M. xii. p. 92. *Delphacides*: near *Eurysa*, Fieb., but with broader head, side margins of face between the eyes concave, and genitalia different. *E. nigro-lineata*, sp. n., *id. ibid.* England.

Hemisphærius subapicalis, p. 94, fig. 10, Ceram & Dorey, and var. from Amboina, *flavus*, p. 95, Mysol, *dubius*, p. 97, fig. 17, Ceylon (? = *bipustulatus*, Walk., var., of which *H. schaumi*, Stål, may also be a var.), *recurrens*, fig. 20, China, *variabilis*, fig. 21, Japan, p. 98, *cruentatus*, p. 99, locality unknown, *bacculinus*, p. 100, Borneo, spp. nn., A. G. Butler, *l. c.*

Scelops hesperius, p. 350, S. Colorado, *grossus*, Texas, *angustatus*, Nebraska, &c., p. 350, spp. nn., P. R. Uhler, *l. c.*

Liburnia vittatifrons, sp. n., *id. l. c.* p. 351, Dakota, &c.

Issus aurorcus, p. 352, Texas, *aciculatus*, p. 353, Florida, Texas, spp. nn., *id. l. c.*

Tylana ustulata, p. 354, Colorado, Arizona, *ustulipunctata*, p. 355, Cuba, Mexico, spp. nn., *id. l. c.*

PSYLLIDÆ.

RUDOW, F. Zur Kenntniss der Psylloden Norddeutschlands. 'Programm' of the Realschule of Neustadt Eberswalds: 1875, 4to, pp. 1–14.

A concise account of the structure and habits of the group, and brief descriptions of 2 species of *Livilla*, 2 of *Arytæna*, 41 of *Psylla*, 28 of *Trioza*, 11 of *Aphalara*, 2 of *Rhinocola*, and 1 of *Livia*; including some new species.

THOMAS, F. Durch Psylloden erzeugte Cecidien an *Ægopodium* und andern Pflanzen. Z. ges. Naturw. (2) xii. pp. 438–446.

The abnormal growth termed Cecidium by the author is quite independent of the life of the larva, and is exclusively caused by the deposit of the egg. This growth, attributed to the early stage of *Psylla*, under the name of 'Cecidozoon,' is described in *Ægopodium podagraria*, *Chrysanthemum leucanthemum*, *Aposeris fœtida*, *Leontodon hastile*, *Rhamnus catharticus*, *Laserpitium siler*, and *Cerastium semidecandrum*. No perfect insect is referred to.

Livilla callunæ, sp. n., Rudow, *l. c.* p. 7, N. Germany (on *Calluna vulgaris*).

Psylla olivacea (on *Lythrum salicaria*) and *frontalis* (on *Vinca major*), p. 8, *nigricornis* (on *Populus tremula*), *sulfurea* (on *Evonymus*), and *geniculata* (on *Salix*), p. 9, *id. l. c.* N. Germany; *P. vittipennella*, O. M. [illegible]er, Not. Fenn. (n.s.) xi. p. 333, Carniolia: spp. nn.

3. [illegible]*oza punctinervis* (on *Acer campestre*) and *lepidoptera* (on *Alnus*), pp[illegible]p. nn., Rudow, *l. c.* N. Germany.

4. ——[illegible]*ra crassinervis*, sp. n., *id. l. c.* p. 13, N. Germany (on *Eupatorium* [illegible]*um*).

5. —P[illegible]

APHIDIDÆ.

[illegible]ac[illegible]tio[illegible]p. ?, from America, on roots of *Abies balsamica* and *A. fraseri*; [illegible] by [illegible]er, C. R. lxxx. p. 961. It has the same economy as *Phylloxera*; Pa[illegible]ing v[illegible] (at leas[illegible]tenstein, *tom. cit.* p. 1022 [Zool. Rec. xi. p. 486].

ch[illegible] *Aphis carotæ*. Epitome of a manuscript by Graëlls, containing description of this new species, with observations on *Phylloxera*; J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. ccxviii.

Adelges, Vallot. V. Signoret, Bull. Soc. Ent. Fr. (5) v. p. cxxxix., proposes to adopt this name for *Chermes*, to avoid confusion.

Holzneria, g. n., J. Lichtenstein, Bull. Soc. Ent. Fr. (5) v. p. lxxvi. Attacks roots; differs from *Tychea*, Koch, by having a slight anal prolongation, and in the length of its rostrum, which reaches beyond the abdomen in young individuals. For *Pemphigus poschingeri*, Holzner [Zool. Rec. xi. p. 486]. V. Signoret, *l. c.* p. lxxxviii., considers Holzner's species may really be a *Pemphigus*, to which every Aphidian belongs which has 6 joints to its antennæ and 4 nervures to the wings, and there is no restriction in that genus to galls. Lichtenstein, *l. c.* p. cvi., replies [*cf.* posteà, p. 513]. Signoret, *l. c.* p. cciii., adheres to his opinion; as does Lichtenstein to his, *l. c.* p. cciv.

Aphis amenticola, p. 586, *geranii*, p. 81, *loti*, p. 131, *luzulæ*, p. 725, spp. nn., J. H. Kaltenbach, "Die Planzenfeinde," Germany.

Pemphigus glandiformis, p. 247, *tortuosus*, p. 248, spp. nn., F. Rudow, Z. ges. Naturw. (2) xii., Mecklenburg.

Stagona vesicalis, sp. n., *id. l. c.* p. 248, Mecklenburg.

Schizoneura passerinii, sp. n., V. Signoret, *l. c.* p. ccii. near Paris.

Phylloxera.

Targioni-Tozzetti, A. Del Pidocchio o della Fillossera della Vite, e delle specie del genere *Phylloxera* in Europa e in America. Bull. Ent. Ital. vii. pp. 266–319, pl. i.

After an introductory history, and an account of the spread of the insect in Europe, the author discusses the various generations of it, and the allied species, describing at full length, with bibliographical references, synonymy, and exclusive synonymy, the different stages of the following members of his "Tribu" *Phylloxerites* (= *Dactylosphæridæ*, Shimer):—

Phylloxera florentina, sp. n., p. 287, pl. i. figs. 1–11, Florence, Pisa, on *Quercus suber*.

Phylloxera quercûs, Fonscol. (*lichtensteini*, Balb., and *balbianii*, Licht.).

Phylloxera coccinea, Kalt., Amiot, Heyd., Hart.

Phylloxera signoreti, sp. n., p. 302, figs. 20–22, Florence, Pisa, on *Q. sessiliflora*.

Phylloxera corticalis, Kalt. (*nec* Licht.), fig. 14.

Phylloxera spinulosa, sp. n., p. 308, figs. 12, 13, 15–19, Florence, Alps, on *Q. cerris*.

Sixteen American species, headed by *P. vastatrix*, are also m[illegible]; at with synonymy, after Riley; and observations on some unknow[n] of the certain species, with a table giving the relative measuremen[ts] n., *id.* bodies and appendages of 6 known species, in millimetres an[d] fractions of millimetres, conclude the work. [illegible]s given.

Acanthochermes quercûs, Kollar, is different from *Phylloxera* q[uercus] near with which Signoret has associated it; it may prove generically distinct and is provisionally named "*Phylloxera acanthochermes*, Kollar" [Lichtenstein !]. *P. scutifera*, Sign., is probably identical with it. This insect associates *Phylloxera* rather with the *Coccidæ* than the *Aphididæ*. J. Lichtenstein, C. R. lxxx. p. 386.

On the migrations of *P. quercus* from *Quercus coccifera* to *Q. pedunculata*, and on its different phases (12 forms, of which 5 are double, are recognized); *id. l. c.* pp. 1302–1304. This species and *P. coccinea*, Heyden, differentiated, with observations on economy. They change from *Quercus coccifera* to *Q. pubescens*, and similar migratory habits in others of the genus are referred to. *Id. op. cit.* lxxxi. pp. 527–529.

Phylloxera rileyi, *vastatrix*, *quercûs*, and *balbianii*. Observations on their economy; an apterous brood, simultaneous with the winged one, has resulted in sexual pupæ, which have produced winter eggs, both free and encysted. *Id. op. cit.* lxxx. pp. 1223 & 1224.

Lichtenstein, J. Zur biologie der Gattung *Phylloxera*. S. E. Z. xxxvi. pp. 355–360.

The author is inclined to refer this genus to the *Coccidæ*. Twenty-one forms are described from the winter egg to the sexed individual. Five species are known to the author; *Phylloxera vastatrix*, Planchon (*Pemphigus vitifoliæ*, Fitch, *Dactylosphæra vitifoliæ*, Shimer, *Peritymbia vitisana*, Westw.), *P. quercûs*, Fonsc. (*Vaccuna coccinea*, Heyd., *P. coccinea*, Kalt.), *P. rileyi*, Licht. (*P. corticalis*, Kalt., *P. lichtensteini*, Balb.), *P. balbianii*, Licht., and *P. acanthochermes*, Licht. (*Acanthochermes quercûs*, Koll.). *Cf.* also the same author's observations in Bull. Soc. Ent. Fr. (5) v. pp. xxxiv. & xxxv., and pp. cxi.–cxiii. In the latter place, alternative migrations of *P. quercûs* are recorded, and *P. rileyi*, *lichtensteini*, *balbianii*, *coccinea*, and *acanthochermes*, are provisionally referred to *P. quercûs* as different stages.

Targioni-Tozzetti, A. Della Malattia del Pidocchio (*Phylloxera vastatrix*, Planch.) nella Vite, secondo gli studii fatti in Europa ed in America. Roma: 1875, pp. 1–158, pl. (From the Annali del R. Ministero di Agricoltura, Industria, e Commercio: Parte 1a, Agricoltura).

C. V. Riley, Rep. Ins. Mo. vii. pp. 117 & 118, gives a synopsis (with bibliographical references and brief notices of galls) of American species. It is doubtful whether the American oak species occurs in [illegible]pe; *id. l. c.* p. 119, note. A supplement to former reports; *id. l. c.* [illegible]–117. A table of the different forms of *P. vastatrix* is given.

3. [illegible] author, Bull. Soc. Ent. Fr. (5) v. pp. cxli.–cxliv., recounts the [illegible]pp. [illegible]ained at Montpellier by the introduction of American vines
4. ——; resisting the *Phylloxera*. He follows Lichtenstein in the [illegible]plu[illegible]hism of *P. quercûs*, but thinks *P. rileyi* a good species, and
5. ——[illegible]m that author's opinion as to *Phylloxera* being more correctly [illegible]ac to the *Coccidæ*. Lichtenstein, *tom. cit.* pp. clvi. & clvii., defends [illegible] by [illegible]tion, relying on the oviparous reproduction of *Phylloxera*, as, [illegible]ar[illegible]ing with Walsh, he classes *Homoptera* under the heads "viviparous" (at least in summer), *Aphididæ*, and "always oviparous," *Coccidæ*. Minor characters are also discussed.

Riley, Tr. Ac. St. Louis, iii. pp. 281–287, records experiments showing that the winged agamous female deposits her eggs in crevices round the base of the vine, but more often on the leaves, and from these eggs he has reared the progeny artificially. *P. vastatrix*, ♀, and *P. caryæcaulis*, ♂, are figured (fig. 22). The knowledge of the nidus of the winged ♀ is of no practical use; the impregnated egg probably hatches in the same season that it is laid; and Lichtenstein's term "pupa" for the sexed eggs is unwarranted.

? *Phylloxera caryæcaulis*, Fitch. A magnified figure of the male; *id.* Rep. Ins. Mo. vii. p. 99, fig. 19.

Phylloxera rileyi (Licht.), Riley. Fully described, and ♂ figured, with detail; *id. l. c.* pp. 118–121, fig. 22.

V. Fatio gives detailed observations on the last degree of development

of the fertile unimpregnated larva (or parthenogenetic form), and the first stage of transformation of the insect passing from the state of apterous larva to the winged condition (or pupa). Arch. Sci. Nat. (2) liii. pp. 319–330, pl. ii.

The insect observed to deposit its eggs on the lower surface of vine leaves, either in the angles or along the nervures, or in the pubescence of the leaf; Boiteau, in "L'Intérêt public," Libourne, 2nd, 9th, and 16th Sept., 1875; C. R. lxxxi. pp. 581, note.

On sexual individuals and winter eggs; Balbiani, C. R. lxxxi. pp. 581–588.

Hibernating specimens exposed to 6 and 10 degrees below zero, without harm; M. Girard, C. R. lxxx. p. 436. Nevertheless, uncovering the roots of vines in January, so as to kill the insects by cold, is recommended by De St. Trivier, *tom. cit.* p. 637.

In dry weather, the insect goes down; in wet, it ascends the vines. Villedieu, C. R. lxxx. p. 1348.

On the presence of galls spontaneously developed on European vines; Max Cornu, C. R. lxxxi. pp. 327–330. On alterations in vines caused by the insect; *id. l. c.* p. 737. On the formation, structure, and decomposition of abnormal growths caused by it; *id. l.* c. p. 950.

General accounts of economy, &c.:—J. Lichtenstein, Feuil. Nat. v. pp. 105–108, pl. iv.; Canad. Ent. vii. p. 35 *et seq.*; Gerstäcker, SB. nat. Fr. 1874, pp. 117–130; Ent. Nachr. i. p. 21 *et seq*; Wittmack, Die Reblaus, Phylloxera vastatrix, Berlin, 1875, 8vo, figs.; O. Dietzsch, Die Reblaus, Zurich, 1875; A. Blankenhorn & J. Moritz, Die Wurzeln des Weinstockes, Heidelberg, 1875; Dor, MT. Ges. Bern, 1874 [1 Abh. p. 134; J. B. Schnetzler, Bull. Soc. Vaud. (2) xiii. pp. 0[illegible]; at A. J. Cook, Munroe, Michigan, 1875, 8vo, pp. 1–10, cuts. [illegible]s of the M. Girard: Les découvertes récentes sur le Phylloxera (v. n., *id.* from Bull. Soc. Agriculteurs de France); and summary of rece[illegible] vations, especially by Balbiani, in Pet. Nouv. (1875) p. 535. [illegible]given.

The publications of the 'Association viticole de l'arrondisse[illegible] Libourne pour l'étude du Phylloxera et des moyens de le com[illegible]ear 1875,' have not been seen by the Recorder.

Trimoulet: Quatrième mémoire sur la maladie de la vigne, 1874, 8vo (extr. from Mém. Soc. Lin. Bordeaux).

Duclaux: Études sur la nouvelle maladie de la vigne dans le sud-es de la France. Paris; 1875, 4to, 9 maps (extr. from Mém. Ac. Sci.).

Reference to a plate containing figures of various stages, and tran tion of a letter by Marchal, printed in 'La Gironde'; C. Kesselma- Ann. Soc. Mod. (2) ix. pp. 215–217. [illegible]rc-

L. Roesler, Beitrag zur Beantwortung der heute in Frankreich [illegible]en, ders ventilirten Fragen über Phylloxera vastatrix, auf Grund de- Klosterneuburg u.s.w. Heidelberg: 1875.

P. Guérin, Le Phylloxera et les vignes de l'avenir. Paris: 1875.

P. Mouillefert, Le Phylloxera vastatrix et la nouvelle maladie de l vigne; C. R. lxxx. p. 1259.

Leuckart, Die Vortpflanzung der Blatt und Rindenlause, mit Be[illegible] kungen über die Reblaus, 1875.

The following observations occur in the publication of the result of the Commission du Phylloxera, 1875 (Institut de France) :—by Balbiani, on reproduction of the *Phylloxera*, p. 3; Cornu, general observations, p. 16; Boutin, chemical analysis of sound and affected vines, p. 18; Millardet, on American vines resisting the insect, p. 21; Girard, general observations, p. 27; Roumier, treatment of diseased vines with coal-tar, p. 31; Mouillefert, results of experiments at Cognac, p. 35.

Report of results of Commission in the department of Hérault in 1874; H. Marès, C. R. lxxx. pp. 1044–1048.

On its origin in France at Cognac, and not from the extreme south; P. Mouillefert, C. R. lxxx. pp. 1344–1346. On its extension in the French districts attacked in 1874; Duclaux, *tom. cit.* p. 1085. In Auvergne; Julien, *l. c.* p. 1347. In the department of La Gironde; Azam, *op. cit.* lxxxi. pp. 36–38.

On its occurrence on American vines near Bonn; L. Roesler, C. R. lxxx. p. 29.

On its ravages in Klosterneuburg; A. Makowsky, Verh. Ver. Brünn, xii. (SB.) pp. 52–59.

On its occurrence in Switzerland. F. A. Forel, Bull. Soc. Vaud. (2) xiii. pp. 661–683; V. Fatio, in 'Journal de Genève,' July 21, 1875; Forel, Le Phylloxera à Pregny (Gazette de Lausanne), Journal de Genève, August 12, 1875; Risler, L'Arrachage et le traitement des vignes phylloxerées de Pregny, 1875; Le Phylloxera dans le Canton de Genève, de Mai à Août, 1875, C. R. lxxx. p. 957; in the north of Switzerland, lants supposed to be indigenous, J. B. Schnetzler, C. R. lxxx. p. 312 proved to be of American introduction, p. 637).

3. H[illegible]IES. Coal-ash recommended; J. Boll, Deutsche E. Z. 1875, pp. 336 (*cf.* G. Kraatz, *ibid.*), and S. E. Z. xxxvi. pp. 360–362.

4. ——ized wire to be passed through the vineyard, near the root of plant, and charges of electricity to be sent through the communi-

5. —— Beckensteiner, Ann. Soc. L. Lyon (n.s.) xxi. pp. 421 & 422, pl. ...ano-carbonate of potash strewed on the ground and washed in the ... by rain destroys the insect and does not injure the vines; Dumas, in Paris 'Figaro,' quoted in Nature, xii. p. 54.

Duclaux, Ann. Soc. Agric. Lyon (4) vii. pp. 15–24, proposes to arrest the progress of the insect by keeping an uncultivated strip of land between the southern and northern points of its attack, and vigorously watching this, destroying every Phylloxera on it.

Remedies of various natures suggested in C. R. lxxx. by H. Marès, p. 1048, Dumas, p. 1049, Pellet & Villedieu, p. 1226, Godet & Monastier, p. 1227, P. Zoeller & A. Grete, p. 1347, Reymonet, p. 1349, Gueyraud & Rousseau, p. 1596; *op. cit.* lxxxi. by M. Girard, p. 626, Petit, p. 679, Aubergier, p. 785, Dumas, p. 788, Duclaux, p. 829, Boggio, p. 883, and various others in both vols., of whose propositions merely the titles are given.

Phylloxera corticalis, J. H. Kaltenbach, "Die Pflanzenfeinde," p. 677, Germany; *P. caryæ-gummosa*, *caryæ-ren*, and *caryæ-fallax*, C. V. Riley, Rep. Ins. Mo. vii. p. 118. N. America: spp. nn.

Coccidæ.

V. Signoret, Ann. Soc. Ent. Fr. (5) v. pp. 15–40 (pt. xiv.), pp. 305–345 (pt. xv.), pp. 346–373 (pt. xvi.), and pp. 374–394 (pt. xvii.), pls. 2, 6–11 (pp. 313–428, and pls. xv.–xxi. of the treatise as a whole), concludes his "Essai sur les Cochenilles ou Gallinsectes," discussing the following three groups:—Acanthococcites, new group, comprising *Nidularia*, Targ., removed from the 'Lécanites,' for *Coccus pulvinatus*, Planch., pl. 2, fig. 1; *Gossyparia*, g. n., p. 20, pl. 2, fig. 2, with antennæ in all stages, for *Coccus ulmi*, Geoffr. (= *alni* and *spurius*, Mod., *farinosus*, Deg., *lanigera*, Gmel.), and *C. gramunti*, Planch., & *manniparus*, Klug & Ehr.; *Antonina*, g. n., p. 24, pl. 2, fig. 3, apodal in the adult, with a cottony tail, for *A. purpurea*, sp. n., p. 25, found on grass; *Capulinia*, g. n., p. 27, pl. 2, fig. 4, with hind legs only in the adult, and exuding a long flattened secretion, for *C. sallæi*, sp. n., p. 28, on a plant called 'Capulino,' Mexico; *Eriococcus*, Targ., pl. 2, figs. 5 & 6, including *E. buxi*, Fonsc., *ericæ*, sp. n., p. 31, Cannes, *thymi*, Schrank, and *rorismarinus*, Fonsc.; *Acanthococcus*, g. n., p. 34, pl. 2, fig. 7, forming a sac acuminate at each end, for *A. aceris*, sp. n., p. 35, Savoy and Vienna; and *Rhizococcus*, g. n., p. 36, with no sac, for *R. gnidii*, sp. n., p. 37, near Cannes. Dactylopites, with a visible genito-anal ring, comprising *Dactylopius*, as restricted, for *D. adonidum*, auctt., of which a type is selected from *Musa*, Luxembourg, pl. 6, fig. 1, *alaterni*, sp. n., p. 309, no locality given, *bromeliæ*, Bouché (*nec* Kerner, and also *nec* Bouché!), *ceratoniæ*, sp. n., p. 311, Alpes Maritimes, *citri*, Boisd., pl. 6, fig. 2, *cyperi*, sp. n., pl. 6, fig. 3, no locality given, *ficus*, sp. n., p. 315, Hyères, Nic[illegible]*lus*; at *hoyæ*, Cannes, and *indicus*, Nice, spp. nn., p. 317, *lavandulæ*, sp. n., [illegible]s of the S. France, *lilacearum* and *mamillariæ*, Bouché, *pteridis*, sp. n., [illegible]. n., *id.* pl. 6, fig. 4, no locality given, *robiniæ*, sp. n., p. 322, Hyères, &c., *tuliparum*, Bouché, *viburni*, sp. n., p. 323, pl. 6, fig. 5, Hyè[illegible] given. Nied., pl. 6, fig. 6, and *zamiæ*, Luc.; *Pseudococcus*, Westw., for *P.* auctt., *æsculi*, sp. n., p. 330, no locality given, *brunnitarsis*, Alpes Maritimes, and *hederæ*, Montpellier, spp. nn., p. 332, *mespili*, Geoffr., and *platani*, sp. n., p. 334, Savoy; *Ripersia* [Zool. Rec. xi. p. 488], p. 335, now characterized, with 6 joints to the antennæ in the embryonal larva and adult ♀, and 7 in the ♂ larva, for *R. corynephori*, sp. n., *ibid.* pl. 7, fig. 1, no locality given; *Westwoodia* [*l. c.*], p. 337, with 8 joints to the antennæ of adult ♀ & ♂ larva, and 6 to ♀ larva, for *W. perrisi*, sp. n., *ibid.* pl. 7, fig. 2, Mont-de-Marsan, Hyères; *Boisduvalia* [‖], g. n., p. 338, with 4 setæ at apex of abdomen in ♂, for *Coccus lauri*, Boisd., *B. 4-caudata*, sp. n., p. 339, pl. 7, fig. 3, Nice; *Putonia* [‖ Stål, *Hemiptera*, 1872; renamed *Puto* by Signoret, *l. c.* p. 394, "ce qui latinisera suffisamment le nom de notre cher collègue": a proper name, however, requires modifying as well as translating to be appropriate for a generic term. For instance, to call a genus of insects "Smith" would be absurd], p. 341, with prominent eyes in the ♀, 12 eyes (4 large, and 8 ocelli) in the ♂, &c., for *P. antennata*, sp. n., *ibid.* pl. 7, fig. 4, Briançon, Chambery. Monophlébites, with 11 joints to the antennæ in the ♀ & 10 in

the ♂, comprising *Icerya* [Zool. Rec. xi. p. 488], p. 351, now characterized and withdrawn from the *Dactylopites*, with long pubescence, for *Coccus sacchari*, Guér., pl. 8, fig. 2; *Drosicha*, Walk., pl. 8, fig. 3, for *D. contrahens*, Walk.; *Guerinia* (Targ. Tozz., Cat.), g. n., p. 356, scarcely different from *Monophlebius*, for *G. serratulæ*, F., pl. 8, fig. 4, pl. 9, fig. 1 (= *picridis*, Fonsc., *fabæ*, Guér., and *tinctoria*, Tozz.; *hirticornis*, Fonsc., being queried as its ♂); *Leachia*, g. n., p. 359, pl. 7, fig. 5, with tubercular lobes at the apex of the abdomen in ♂, for *Monophlebus braziliensis*, Walk., pl. 9, fig. 2, and *M. fuscipennis*, Burm., pl. 9, fig. 4; *Monophlebus*, Leach, for *M. atripennis*, Klug, *burmeisteri*, *fabricii*, *illigeri*, *leachi* (pl. 9, fig. 5), *raddoni* and *saundersi* (pl. 9, fig. 3), Westw.; *Ortonia*, g. n., p. 367, no precise characters, ♂ unknown, for *O. bouvari*, sp. n., p. 368, Guatemala, and *uhleri*, sp. n., p. 369, Ecuador.

Besides these groups, the author, after describing *Coccus* as now restricted, p. 346, pl. 8, fig. 1, with a description of *Coccus cacti*, auctt., discusses the following isolated forms:—*Llaveia*, g. n., p. 370, erected on the description of *Coccus axinus*, Hernandez, from Mexico [which Signoret himself apparently considers valueless]; *Callipappus westwoodi*, Guér., pl. 10, fig. 1; *Porphyrophora*, Brandt, with *P. gallica*, p. 380, pl. 10, fig. 4, France, and *perrisi*, p. 381, pl. 10, fig. 2, Mont-de-Marsan, spp. nn., *P. hameli*, Brandt, and *Coccus polonicus*, Linn., pl. 10, fig. 3; *Margarodes formicarum*, Guild.; *Orthezia*, p. 386, pl. 11, fig. 1, eight supposed species being referred to *O. urticæ*, L.; and *Walkeriana*, g. n., p. 390, pl. 11, fig. 2, for *W. floriger* (Walker).

After thus concluding his voluminous and somewhat rambling work,

3. Ht.-thor, whilst disclaiming any intention of writing additional notes,
pp. 5 another part, to be consecrated to Schrader's Australian species,

4. ——. ole covering the whole.
pp.

is ulmi. The ♂ is apterous; J. Lichtenstein, Bull. Soc. Ent. Fr.

5. ——. lxxvi.

ctylopus bromeliæ, sp. n., Signoret, Pet. Nouv. (1875), p. 499, Zanzibar.

Chermes (? *Lecanium*) *myrtilli*, p. 420, and *C.* (?) *fraxini*, p. 433, spp. nn., J. H. Kaltenbach, "Die Pflanzenfeinde," Germany.

VERMES.

BY

C. F. LÜTKEN, PH.D., F.R.D.A., &c.

I. ROTATORIA.

1. CUBBITS, C. Remarks on the homological position of members constituting the thecated section of the class *Rotatoria*. M. Micr. J. viii. pp. 5–12, pls. xxiii. & xxiv.
2. DAVIS, H. A new *Callidina*, with the result of experiments on the desiccation of Rotifers. *Op. cit.* ix. pp. 201–209, pl. xiv. (*cf.* pp. 241–243 & 286–288) [Zool. Rec. x. p. 466].
3. HUDSON, C. T. On *Euchlanis triquetra* and *E. dilatata*. Op. cit. viii. pp. 97–100, pl. xxviii.
4. ——. Is *Pedalion* a Rotifer? *Op. cit.* pp. 209–216, pl. xxiii. (*cf.* pp. 249 & 250).
5. ——. Remarks on Mr. H. Davis' paper on the desiccation of Rotifers. *Op. cit.* ix. pp. 274–276.
6. ——. On some male Rotifers. *Op. cit.* xiii. pp. 45–54, pl. xci. (abstr. Q. J. Micr. Sci. xv. p. 402).
7. ——. On *Cephalosiphon* and a new Infusorian. *Op. cit.* xiv. pp. 165–170, pl. cxvii.
8. ——. On a new *Melicerta*. Tom. cit. pp. 225–231, pl. cxix.
9. PEIRCE, C. Remarks on *Stephanoceros*. P. Ac. Philad. 1875, pp. 121–123.

A paper by C. HUDSON, "British Rotifers, their haunts and habits" (P. Bristol Soc. i. 2) has not been seen by the Recorder. Of Hudson's new classification of the *Rotatoria* a sketch is given in the Proceedings of the British Association, reported in Nature, xii. p. 413 (*Cf.* Rep. Br. Ass. 1875, pp. 161 & 162).

SEMPER'S paper on *Trochosphæra* [Zool. Rec. ix. p. 420] is translated, M. Micr. J. xiv. pp. 237–245, pls. cxx.-cxxii.

CUBBITS (1) describes the thecal covering and the alimentary system

in the tube-forming "*Rotatoria thecata*," *Floscularia* and *Melicerta*, and points out the difference of structure between these two types; *F. campanulata* and *M. pilula* are figured. The latter builds its tube of its own fecal pellets, while *M. tyro*, Huds. (hardly a *Tubicolaria*, Ehrbg. [8]), has a gelatinous one. The characters of *Euchlanis* are rectified, with special reference to the vibratile disc and the lorica, by Hudson (3); the 2 species named above are figured. The same author (4) discusses the relations of *Rotatoria* with *Arthropoda* through *Pedalion* and other forms [*cf.* Zool. Rec. ix. p. 419], and (6) describes and figures the males of *Floscularia campanulata*, *Lacinularia socialis*, and *Asplanchna* sp. n., and both sexes of *Notommata brachionus*; out of 5 families of Rotifers, therefore, 4 are dicœcious with "atrophied" males, the *Philodinea* being the only one of which males are still unknown. The male of a *Melicerta* (*tyro* ?) is also figured (8). *Cephalosiphon limnias* (7) is, in spite of its single dorsal antenna, which it uses in hooking or hoisting itself partially out of its tube, "a genuine Melicertan, forming a tube from early youth, and not a temporarily enclosed Philodine."

Callidina vaga, sp. n., Davis (2). According to this observer, Rotifers owe their faculty of reviving, after having been artificially dried up, to a gelatinous secretion hardening into a thin shell and protecting them against absolute desiccation.

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1. Ludwig, H. Ueber die Ordnung *Gastrotricha*, Metschn. Z. wiss. Zool. xxvi. pp. 193–225. pl. xiv.
2. Pagenstecher, H. A. *Echinoderes sieboldii*. Op. cit. xxv. (Su pp. 117–123, pl. vii.
3. Parfitt, E. On *Anchisteus plumosus*. M. Micr. J. ix. pp. 2 pl. xv.

Echinoderes (2) is more nearly allied to *Arthropoda* than to *Nematoda*, and in certain respects comparable to *Rotatoria* (*E. sieboldi*, *l. c.*, Balearic Islands). Ludwig (1) is led to similar results concerning the *Gastrotricha* (e.g., *Ichthydium podura* and *I. lens*, the 2 species examined by the author), as intermediate between *Rotatoria* and *Nematoda*. The order is thus characterized, "worm-shaped animals with a distinct ventral surface; alimentary tube straight, running from fore and aft, divided into an anterior muscular and a posterior celluligerous portion; mouth and vent ventral; body invested with a cuticle, supporting various appendicular organs; cilia commonly on the ventral surface only, rarely on the entire head; posterior extremity commonly furcate; no distinct nervous system; hermaphrodite; propagation without metamorphosis, through summer and winter eggs." 13 species are known, distributed into 5 genera: *Ichthydium* (= *Chætonotus*), *Chætura*, *Cephalidium*, *Turbinella*, and *Dasydites*.

Anchisteus, a worm-like animalcule, found in the mucous matter surrounding *Hæmatococcus*; skin wrinkled, with many plumose and brush-shaped spines; six pairs of bundles of single spines anteriorly, and

5 pairs of curved furcate spines posteriorly; digestive tube divided into
pearan[illegible] and intestine mouth; lateral (?). Perhaps allied to *Chætogaster*.
Novem[illegible]*sus*, Parfitt, *l. c.* (3).
appare[illegible]
the time[illegible]
trade-wi[illegible]

II. CHÆTOPODA.

seen abo[illegible] E. Bemerkungen über die Familie der Aphroditeen (Gruppe *Palolo* ap[illegible]*onea* und *Sigalionina*). JB. schles. Ges. lii. pp. 57–79.

[illegible]ISH, W. C. (A.) On a new example of the *Opheliidæ* (*Lino-*[illegible]*ie apogon*) from Shetland. P. R. Soc. Edinb. 1873 & 1874, pp. 390. (B.) Note on *Linotrypane apogon*. Ann. N. H. (4) xvi. Som369 & 370.

been s[illegible]ENZELLER, E. VON. Zur Kenntniss der adriatischen Anneliden. xi. pp Beitrag (Polynoinen, Hesioneen, Syllideen). SB. Ak Wien, the fe[illegible]ii. 1, pp. 129–171, pls. i.–iv.
organ[illegible]
pouch[illegible]ION, A. F. Sur les espèces méditerranéennes du genre *Eusyllis*. [illegible]. R. lxxx. pp. 498 & 499; Ann. N. H. (4) xv. pp. 307 & 308 (Abstr. R. Z. [3] iii. p. x.)

5. —— & BOBRETZKY, —. Étude des Annélides du golfe de Marseille. Ann. Sci. Nat. (6) ii. i. 106 pp. xii. pls. (Abstr. J. Zool. v. pp. 83–85.)*

6. MOSELEY, H. N. On the structure and development of *Peripatus* [illegible]*capensis*. Phil. Tr. clxiv. pp. 757–782, pls. lxxii.–lxxv. [*cf.* Zool. *teri*Rec. xi. p. 238].
to the[illegible]US, K. Vermes (Jahresbericht der Kommission zur wissen-
secreting[illegible]tlichen Untersuchung der deutschen Meere in Kiel, f. d. Jahre
and its[illegible]–73. Berlin: 1875) pp. 153–170, pl. iii. (Abstr. Z. ges. Naturw.
instan[illegible] pp. 173–181).
the [illegible]
its v[illegible]NCERI, P. Catalogo degli Annelidi, Gefyrei e Turbellarie d'Italia.
tici[illegible]Atti Soc. Ital. xviii. 2 & 3, pp. 1–53.
of ——. La luce e gli organi luminosi di alcuni Annelidi. Atti Acc. Nap.
fr vii. pp. 1–20, pls. i.–iii. (Abstr. J. Zool. v. pp. 94–96; a note by
[illegible] A. DE QUATREFAGES, C. R. lxxx. pp. 229 & 230).

9. PERRIER, E. (A.) Sur le *Tubifex umbellifer* (R. Lank.). (B.) Note sur l'accouplement des Lombrics. Arch. Z. expér. iv. pp. vi.–viii. xiii.–xv. (C.) Sur les vers de terre des îles Philippines et de la Cochinchine. C. R. lxxxi. pp. 1043–1046.

11. ——. Sur un nouveau type intermédiaire du sousrègne des vers (*Polygordius*, Schn. ?). C. R. lxxx. pp. 1101–1105; Ann. N. H. (4) xvi. pp. 295–298 (Abstr. R. Z. [3] iii. p. xviii).

12. SELENKA, E. Das Gefässsystem der *Aphrodita aculeata*. Niederl. A[illegible]. Zool. ii. pp. 33–47, pls. iii. & iv.

[illegible] In this paper is cited another [Russian] by BOBRETZKY "On *Saccocirrus* [illegible]*llocercus*, type of a new family of Annelids," in the Memoirs of the Society of [illegible]ralists in Kiew, 1871.—C. F. L.
sy[illegible]

Distribution, &c.

Möbius (7) enumerates the *Chætopoda* (76), *Turbellaria* (3 tube *phyrea* (6), *Sagittæ* (2), and *Malacobdellæ* (1) dredged during t *olaria*, of the "Pommerania" in 1872, in the Danish Seas and Skag *nis* are the Norwegian and British shores and in the North Sea. Mo rica, by are "eurythermous"; 23 have a very wide geographical di author The Dogger Bank appears to be the boundary between the no *Peda*- southern species. The localities, their depth and the natures and bottom, the abundance or scarcity of the individuals are noted; s, and scriptive or synonymical remarks are sometimes appended, certain at of species (*cf.* below) cancelled, &c. The lists of the *Annelida*, ales, derms, *Cœlenterata*, and Sponges of St. Andrews [Zool. Rec. xi. wn. are reprinted in the "Marine Invertebrates and Fishes of St. An *nias* (Edinburgh and London: 1875), by W. C. McIntosh. In the king ductory chapter on the *Annelida*, their occurrence, habitats, phm- rescence, &c., are spoken of. A. E. Verrill, "Results of dre " expeditions off the New England coast in 1874" (Am. J. Sci. [3] ix pp. 411–415, and x. pp. 32–36, 196–192). The *Annelida*, *Bdellodea*, *Gephyrea*, *Turbellaria*, *Echinodermata*, *Acalephæ*, and *Anthozoa* new to Southern New England, are enumerated, pp. 39–43; among them are several new species. The total number of *Chætopoda* known from the Gulf of Marseilles, according to Marion & Bobretzky (5) [Zool. Rec. xi. p. 493], is now 96. Panceri (8) enumerates the *Gymnocopa*, *Chætopoda*, *Hirudi* *Gephyrea*, and *Turbellaria* of the Mediterranean; a few are new (*vid* *frà*). An abstract of Ehlers' paper on the bathymetrical distrib *us*; at the *Chætopoda* [Zool. Rec. xi. p. 493], is contributed to Arch. Z. pp. xlix.–liii.; *cf.* also Nature, xiii. p. 74, and Arch. Sci. Nat. lii. p f the A few remarks by R. v. Willemoës-Suhm, of the "Challenger E *id.* tion," on the *Annelida* of the deeper portions of the Pacific Sea (*Gly* *Aphroditacea*, *Opheliidæ*, *Clymenidæ*, *Myriochele*, *Sternaspis*, and n. pelagic surface species (*Alciope*); Z. wiss. Zool. xxv. pp. xxxii.–xxxvii. revised list of the *Annulata*, *Discophora*, *Gephyrea*, &c., of Greenland been compiled by the Recorder for the "Manual of the Natural Histo &c., of Greenland and the neighbouring regions, prepared for the use the Arctic Expedition of 1875," edited by T. Rupert Jones, London 1875, pp. 167–178. Möbius's Guide to the Collecting of Invertebrate Animals (G. Neumayer, Anleitung zu wissenschaftlichen Beobachtungen auf Reisen, Berlin: 1875, pp. 418–432), with special remarks on Worms, Echinoderms, Polyps and Jelly-fishes, Sponges, and Rhizopods, may also be conveniently cited here. Perrier records (10, A) the occurrence in the subterranean water reservoir of the "Jardin des Plantes," in the com pany of *Dreissena* and *Cordylophora*, of *Tubifex umbellifer* (Kessl.) (first discovered in Lake Onega, afterwards in the Thames). A note by S. J. Whitmee (P. Z. S. 1875, pp. 496–502) "On the habits of *Palolo viridis*" shows, that the regular re-appearance of the "Palolo" on t coral reefs of the Fiji Islands is for the purpose of propagating. brown (male) and green (female) worms break spontaneously in pi

discolouring the sea with their sexual products. They make their appearance precisely on the day of the moon's last quarter, in October and November (with intervals of 12, but every 3rd year of 13, lunations; apparently also with a further intercalation about every 30th year), at the time of commencement of the rainy season and the change of the trade-wind from N.E. to S.E. "The tenth morning on which the moon is seen above the western horizon at dawn is the morning on which the *Palolo* appear."

Anatomy, Physiology, &c.

Some of the species studied by Marion & Bobretzky (5) have also been subjected to anatomical investigation, e.g., *Saccocirrus* [Zool. Rec. xi. pp. 493 & 494]; the segmental organs of the sexual segments are in the females transformed into oviducts, in the males into copulatory organs; the females are moreover provided with a pair of copulatory pouches and vaginæ on the ventral surface of each sexual segment.

Möbius (7), p. 161, pl. iii. figs. 21–23; Ann. N. H. (4) xiii. p. 260, observes that *Scolecolepis cirrata* carries her eggs in external pouches, communicating with the body cavity, and placed between the lower feet on the posterior portion of the body.

Panceri (9) has studied the luminous organs in several worms: *Chætopterus vario-pedatus*, *Polycirrus aurantiacus* and *medusa*, *Odontosyllis ctenostoma*, *Polynoe turcica* and *lunulata*, *Pholoe brevicornis*, *Lumbricus terrestris* and *Balanoglossus minutus*. The luminosity is generally due to the presence, in the phosphorescent parts, of unicellular glands secreting a luminous matter, analogous, through its physical characters and its solubility in ether and alcohol, to the fatty substances. In some instances, these elements are dispersed over the whole epidermis of the animal, which therefore is more or less strongly luminous over its whole surface; in others, they are limited to and concentrated in particular places. In *Polynoina*, the cell-like terminations of the nerves of the elytra, in producing the phosphorescence, perform a similar function to that performed by the terminal organs of the nerves in *Phyllirhoe*.

Perrier (10, b) has observed the copulation of *Lumbricus fœtidus*. The copulating worms are kept together by a double membranous ring, occupying the length of the 2 "girdles." The segments enclosed by these rings are precisely those on which the orifices of the copulatory pouches and in the interior of which the testes are placed. The spermatozoa, which come from the male orifices (sometimes more than 10 segments distant), are accumulated under this covering, of which the worms get rid, when the copulation is finished, by pushing it towards the tail by the means of peristaltic movements. These rings are probably formed by a secretion from the "girdles;" perhaps the egg-capsules are formed in a similar way, the "capsuligenous glands" only secreting the albuminous substance in which the eggs are floating.

Selenka (12) has described and illustrated the (often denied) vascular system in *Aphrodite*. There exists, in fact, a median longitudinal

dorsal and ventral vessel, which partially almost rest on the intestine and communicate through vascular plexuses with the numerous annular vessels of the intestinal tube; delicate "retia mirabilia" are diffused in the septa and spun around the ramifications of the intestine and the segmental organs, close to each of which there exists a vascular dilatation. The eggs are developed on the external surface of the free portions of the vascular net, the cellular peritoneal investment of the vessels forming the membranous covering, through the rupture of which the eggs are set free, floating in the abdominal cavity.

Perrier (11) discovered at Roscoff a remarkable worm partaking of the characters of *Annulata* and *Nemertea*, which he describes as *Polygordius* (?) *villoti*. It is thin, thread-like, very lively and fragile, without bristles or external annulation, also almost deprived of external vibratile cilia; it has a very simple digestive tube, but a distinct internal septation, segmentary organs, a dorsal and ventral (?) vessel, connected by lateral loops in each segment. The anterior extremity terminates in 2 small, horn-like bifurcations, and has a vibratile pit on each side. The sexes are separate, and the sexual elements are developed in all the rings behind the first 4 or 5, on the internal surface of the body-wall and on the longitudinal dissepiments. A very similar, perhaps identical, type was described some time before by McIntosh (2, a), after specimens dredged in Bressay Sound, and provisionally placed in the vicinity of the *Opheliidæ*. The existence of 2 eyes in *Linotrypane apogon* and the want of circular muscular fibres are the most striking differences between the published preliminary descriptions. Certain new *Opheliidæ* with very minute or almost invisible bristles are thought to offer the nearest passage between the new genus and the typical *Chætopoda*.

S. L. Schenk, "Entwickelungsvorgänge im Eichen von *Serpula* nach der künstlichen Befruchtung," SB. Ak. Wien, lxx. 3, pp. 287–300, pl.

Genera and Species.

Grube (1) reviews critically the genera and species of *Hermionea* and *Sigalionina*. The following genera are acknowledged:—*Hermionea*: *Aphrodite*, *Lætmonice*, *Aphrogenia*, *Pontogenia*, and *Hermione*; *Sigalionina*: *Pholoe*, *Eulepis*, *Sigalion*, *Psammolyce*, *Sthenelais*, *Leanira*, and *Conconia*.

Milnesia nuda, Qtrf., is probably the young of *Aphrodite aculeata*; Panceri (8), p. 12.

Aphrodite sondaica, sp. n., Grube (1), p. 64 (Borneo).

Lætmonice violascens, sp. n., *id.* (1) (China Sea).

Hermione bicolor (Red Sea), *H. malleata*, p. 68 (Philippines), *id. l. c.* spp. nn.

Pontogenia indica, sp. n., *id. l. c.* (Singapore, Bohol); *P. chrysocoma* (Baird) (*Aphrodite echinus*, Qu.), Marion & Bobretzky (5), p. 3.

Polynoe grubiana, Cl., Marion & Bobretzky (5), p. 5 (*P. dorsalis*, Qu.), according to Marenzeller (3), p. 129, = *Lepidonotus clava*, Mont., *P. scutellata*, Risso, *Eumolpe squamata*, D. Ch., *P. clypeata*, Gr., and *P. modesta*, Qu.; *P. turcica*, sp. n., Panceri (9), p. 15, pl. iii. figs. 7–12, and pl. iv.

figs. 1–5 (Naples); *P. lunulata*, D. Ch., *id. l. c.* pl. iii. figs. 1–3; *P. areolata*, Gr., *id. l. c.* pl. iii. fig. 6.

Lagisca extenuata (Gr.), Marenzeller (3), p. 133, pl. i. fig. 1 (= *P. cirrata*, Gr., *longisetis*, Gr., *chlersi*, Malmgr.).

Lepidasthenia elegans (Gr.), Marenzeller (3), p. 139.

Hermadion fragile, Cl., Marion & Bobretzky (5), p. 6, described by Marenzeller (*l. c.* p. 141) as *H. pellucidum* (Ehl.).

Acholoe astericola, D. Ch., Panceri (9), pl. iii. figs. 4 & 5.

Pholoe synophthalmica, Cl., Marion & Bobretzky (5), p. 7 (= *P. ocellata*, Bobr.); *P. brevicornis*, sp. n., Panceri (9), pp. 14 & 16, pls. iii. figs. 13–15, iv. figs. 6–8 (Naples).

Eulepis, g. n., Grube. 3 short antennæ, the paired at the margin of the front, the unpaired further back; bristles simple, those of the upper quiver of 2 kinds. In the anterior portion of the body leaf-shaped cirrus-like organs alternating with true elytra; in the posterior elytra on all the segments. *E. hamifera*, sp. n., *id. l. c.* p. 71 (Philippines).

Sigalion antillarum, sp. n., *id. l. c.* p. 73.

Sthenelais muelleri, sp. n., *id. l. c.* p. 77 (Desterro); *longipinnis*, sp. n., *id. ibid.* (Red Sea); *trivittata*, sp. n., *id. ibid.* (Valparaiso); *diplocirrus*, sp. n., *id. ibid.* (Upolu); *luxuriosa*, sp. n., *id. l. c.* p. 78 (Philippines). *Leanira tetragona* and *yhleni*, *Sigalion limicola*, *boa*, and *idunæ*, belong to this genus; for critical remarks on it and on other species of *Hermionea* and *Sigalionina*, cf. Grube (1).

Leanira tenera (Fiji), *festiva*, (Philippines), *id. l. c.* spp. nn.

Chrysopetalum fragile, Ehl. (*Palmyra cvelinæ*, Cl.), Marion & Bobretzky (5) p. 9.

Euphrosyne audouini (Costa) (*mediterranea*, Gr., *racemosa*, Ehl.), *iid. l. c.* p. 10.

Onuphis tubicola, (Müll.) (*sicula*, Qu.), *iid. ibid.*

Eunice vittata, D. Ch. (*rissoi*, *laurillardi*, Qu., pt.; *rubro-cincta*, *limosa*, Ehl.), *iid. ibid.* p. 11; *E. harassi*, A. E. (*Leodice punctata*, R.), *iid. ibid.*; *claparedii*, Qu. (*L. fasciata*, R.; *E. laurillardi*, Qu., pt., *torquata*, Qu., *harassi*, Gr., Cl.), *iid. ibid.*; *siciliensis*, Gr. (*ebranchiata*, Qu., *adriatica*, Schmd., *tænia*, Cl.), *iid. ibid.* p. 12.

Marphysa sanguinea, Mont., *iid.* ibid.; *fallax*, sp. n., *iid. l. c.* p. 13, pl. i. fig. 1 (Marseilles).

Lysidice ninetta, A. E. (*tri-antennata*, R.), *iid. l. c.* p. 15.

Lumbriconereis latreillii, A. E. (*nardonis*, Gr.), *iid.* ibid.; *acuta*, sp. n., Verrill, Am. J. Sci. (3) x. p. 39, pl. iii. fig. 5 (off Block Island, New England).

Notocirrus geniculatus, Cl., Marion & Bobretzky (5), p. 15, pl. i. fig. 2.

Nereis chlersiana, Cl. (*costæ*, Gr.), *iid. l. c.* p. 17.

Nephthys ciliata, Müll., *assimilis*, Oerst., and *incisa*, Mgr., not different from *N. cæca*, Fabr.; Möbius (7), p. 169.

Syllis aurita, Cl., Marion & Bobretzky (5), p. 17, pl. i. fig. 3; *krohni*, Cl., *iid. l. c.* p. 18, pl. i. fig. 4; *sex-oculata*, Ehl., *iid. l. c.* p. 20 (genus *Ehlersia* rejected); *torquata*, sp. n., *iid. l. c.* p. 20, pl. i. fig. 5, ii. fig. 5; *variegata*, Gr. (*hexagonifera*, Cl.), *iid. l. c.* p. 22; Marenzeller (3), p. 147, pl. ii. fig. 2; *gracilis*, Gr., Marion & Bobretzky (5), p. 23, pl. ii. fig. 6 (= *mixto-setosa*, Bobr.

?) ; *spongicola*, Gr. (*hamata*, Cl., *oligochæta*, Bobr.), *iid. l. c.* p. 24, pl. ii. fig. 7; *pallida*, sp. n., Verrill, Am. J. Sci. (3) x. p. 39, pl. iii. fig. 6 (Noank Harbour, New England) ; *hyalina*, Gr. (*pellucida*, Ehl.), Marenzeller (3), p. 150 ; *ochracea*, sp. n., *id. l. c.* p. 155, pl. iii. fig. 1 (Lussin piccolo).

Xenosyllis, g. n., Marion & Bobretzky. Proboscis unarmed ; body-rings few, broad ; palpi well developed, reaching beyond the cephalic lobe, on the back of which 3 antennæ are placed ; buccal segments with 2 pairs of annulate tentacular cirri, analogous to the dorsal cirri ; ventral cirri reduced to small "languettes," which do not reach beyond the tubercles of the feet. *X. scabra* (Ehl.), *iid.* (5), p. 26 ; described by Marenzeller, *l. c.* p. 153, as *S. brevipennis* (Grube).

Eurysyllis tuberculata, Ehl., Marion & Bobretzky (5), p. 27 (*E. paradoxa*, Cl. ?, *lenta*, Qu. ?).

Anoplosyllis fulva, sp. n., *iid. l. c.* p. 28, pls. ii. & iii. fig. 8 (Marseilles).

Syllides pulliger (Kr. ?), *iid. l. c.* p. 31 (*longicirrata*, Oerst.).

Eusyllis lamelligera, sp. n., *iid. l. c.* p. 33, pl. iii. fig. 9 (Marseilles); *lucifera*, sp. n., Verrill, Am. J. Sci. (3) x. p. 39 (Noank) ; *moniliformis*, Malmgr., Marion (4) ; *assimilis*, sp. n., Marenzeller (3) p. 158, pl. iii. fig. 2 (Lussin piccolo).

Trypanosyllis krohni, Cl., Marion & Bobretzky (5), p. 35 ; *cœliaca*, Cl., *iid. l. c.* p. 37.

Odontosyllis gibba, Cl., *iid. l. c.* p. 38, pls. iii. & iv. fig. 10 ; *fulgurans*, Cl., *iid. l. c.* p. 40, pl. iv. fig. 11 (*dugesiana*, Cl. ?) ; *ctenostoma*, Cl., *iid. l. c.* p. 42, pl. iv. fig. 12 ; Panceri (9) pl. ii. figs. 8–11 ; *brevicornis* (Gr.) Marenzeller (3), p. 160, pl. iv. fig. 1.

Pterosyllis lineolata (Costa) (*Nicotia*, Costa, *Amblyosyllis lineata*, Gr. ?), Marion & Bobretzky (5), p. 43, pls. iv. & v. fig. 13.

Sphærosyllis hystrix, Cl. (= *pirifera*, ?), *iid. l. c.* p. 44.

Autolytus (*Procerœa*) *ornatus*, sp. n., *iid. ibid.* pl. v. fig. 14 ; Marenzeller (3), p. 165, gives a new diagnosis of *Procerœa*, Ehl. (*Sylline*, Gr. ?), describing *P. macrophthalma*, sp. n., pl. iv. fig. 2 (Lussin piccolo).

Fallacia sicula (D. Ch.) (*Hesione savignii*, Costa, *pantherina*, Gr.; *Telamone sicula*, Cl.), Marion & Bobretzky (5), p. 46, pl. xii. fig. 28.

Podarce (str.) *viridescens*, Ehl., *iid. l. c.* p. 49 (*albo-cincta*, Ehl. ?) (*Stephania*, Cl., = *Ophiodromus*, Sars, = *Podarce*, Ehl. ?).

Gyptis, g. n., *iid. l. c.* [Zool. Rec. xi. p. 496]. *Hesionidæ*, with unarmed proboscis, 2 palpi, 3 antennæ, 8 pairs of tentacular cirri, feet biremous. (*Oxydromus*, Gr., ? pt.) *G. propinqua*, iid. *l. c.* p. 51, pls. v. & vi. fig. 15 (Marseilles).

Oxydromus fuscescens, sp. n., Marenzeller (3), p. 143, pl. ii. fig. 1 (Trieste).

Magalia, g. n., Marion & Bobretzky [Zool. Rec. *l. c.*]. *Hesionidæ*, with proboscis armed with a stylet and 2 maxillæ ; 2 palpi and 2 antennæ ; 12 tentacular cirri ; feet uniremous. *M. perarmata*, sp. n., *iid. l. c.* p. 54, pls. vi. & vii. fig. 16 (Marseilles).

Lacydonia, g. n., *iid.* [Zool. Rec. *l. c.*], allied to *Phyllodoce* and *Alciope*. *L. miranda*, sp. n., *iid. l. c.* p. 57, pls. vii. & viii. fig. 17 (Marseilles).

Phyllodoce paretti, Blv. (*pancerina*, Cl.), *iid. l. c.* p. 61.

Eteone picta, Qu. (*armata*, Cl.), *iid. l. c.* p. 62.

Eulalia virens, Ehl. (*guttata*, Cl.), *iid. l. c.* p. 63.

Ophelia denticulata, sp. n., Verrill, Am. J. Sci. (3), p. 39 (off Block Island, New England).

Heterocirrus frontifilis, Gr., Marion & Bobretzky (5), p. 64, pls. viii. & ix. fig. 18; *saxicola*, Gr., *iid. l. c.* p. 67.

Cirratulus longisetis, sp. n., Möbius (7), p. 160, pl. iii. figs. 18–20 (Bukenfjord).

Scolecolepis cirrata, Sars, *id. l. c.* p. 161, pl. iii. figs. 21–24.

Aricia œrstedi, Cl., Marion & Bobretzky, *l. c.* p. 68.

Saccocirrus papillocercus, Bobr., *iid. l. c.* p. 69, pls. ix. & x. fig. 19.

Polydora agassizi, Cl., *iid. l. c.* p. 83.

Prionospio malmgreni, Cl., *iid. l. c.* p. 84, pls. x. & xi. fig. 20.

Chætopterus vario-pedatus (Ren.) (= *pergamentaceus*, auctt., *leuckarti*, Qu., *brevis*, Lesp.), *iid. l. c.* p. 86; Panceri (9), pl. i.

Amphicteis sundevalli, Mgr., not different from *A. gunneri*; Möbius, *l. c.* p. 164.

Octobranchus, g. n., Marion & Bobretzky (fam. *Trichobranchidæ*). Vermiform, attenuated behind; cephalic lobe with numerous grooved tentacles of various size; anterior segments with membranous collar-like expansions, covering the ventral surface; gills filiform, 4 pairs; bundles of hair-like bristles on 16 rings, from the 4th (3rd branchiferous); tori uncinigeri begin on the 7th (4th setigerous); uncini of anterior tori rostrate, supported on a long shaft; the comb-like plates of the posterior "languettes" with 3 teeth. *O. giardi*, sp. n., *iid. l. c.* p. 87, pls. x. & xi. fig. 21 (Marseilles).

Sabella (*Potamilla*) *reniformis* (Müll.) (*aspersa* and *oculata*, Kr., *saxicola*, Gr., *saxicava*, Qu.), *iid. l. c.* p. 91, pl. xi. fig. 22; *stichophthalmus*, Gr., *iid. l. c.* p. 92, pl. xi. fig. 23.

Leptochone œsthetica, Cl., *iid. l. c.* p. 94.

Apomatus ampulliferus, Phil., *iid. l. c.* p. 95, pl. xi. & xii. fig. 24; *similis*, sp. n., *iid. l. c.* p. 97, pl. xii. fig. 25 (Marseilles).

Vermilia infundibulum, Phil., *iid. l. c.* p. 98, pl. xii. fig. 26 (*galeata*, Gr.?).

Spirorbis cornu-arietis, Phil., *iid. l. c.* p. 99, pl. xii. fig. 27.

Fossil species of *Serpula*: Geinitz, "das Elbthalgebirge in Sachsen" (Paleontographica, xx. 1, pp. 282–287, pl. xiii. figs. 2-24; xx. 2, pp. 200–202, pl. xxxvii. figs. 2–13); P. de Loriol & E. Pellat, "Monographie des étages supérieures de la formation jurassique des environs de Boulogne-sur-mer," Mém. Soc. Phys. Genèv. xxiii. pp. 262–265, pl. i. figs. 2–8.

Perichæta bicincta, *luzonica*, *cærulea*, *biserialis*, spp. nn., Perrier (10, c) (Philippines); *juliani*, sp. n., *id. ibid.* (Saïgon).

III. DISCOPHORA.

In McIntosh's "Marine Invertebrates," &c. (*anteà*, p. 522), the following species are figured (pl. v. figs. 1–6):—

Pontobdella muricata, *Piscicola geometra*, and *Pontobdella littoralis* (the two last from *Cottus bubalis*).

?) ; *spongicola*, Gr. (*hamata*, Cl., *oligochæta*, Bobr.), *iid. l. c.* p. 24, pl. ii. fig. 7; *pallida*, sp. n., Verrill, Am. J. Sci. (3) x. p. 39, pl. iii. fig. 6 (Noank Harbour, New England) ; *hyalina*, Gr. (*pellucida*, Ehl.), Marenzeller (3), p. 150 ; *ochracea*, sp. n., *id. l. c.* p. 155, pl. iii. fig. 1 (Lussin piccolo).

Xenosyllis, g. n., Marion & Bobretzky. Proboscis unarmed ; body-rings few, broad ; palpi well developed, reaching beyond the cephalic lobe, on the back of which 3 antennæ are placed ; buccal segments with 2 pairs of annulate tentacular cirri, analogous to the dorsal cirri ; ventral cirri reduced to small "languettes," which do not reach beyond the tubercles of the feet. *X. scabra* (Ehl.), *iid.* (5), p. 26 ; described by Marenzeller, *l. c.* p. 153, as *S. brevipennis* (Grube).

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Anoplosyllis fulva, sp. n., *iid. l. c.* p. 28, pls. ii. & iii. fig. 8 (Marseilles).

Syllides pulliger (Kr. ?), *iid. l. c.* p. 31 (*longicirrata*, Oerst.).

Eusyllis lamelligera, sp. n., *iid. l. c.* p. 33, pl. iii. fig. 9 (Marseilles); *lucifera*, sp. n., Verrill, Am. J. Sci. (3) x. p. 39 (Noank) ; *moniliformis*, Malmgr., Marion (4) ; *assimilis*, sp. n., Marenzeller (3) p. 158, pl. iii. fig. 2 (Lussin piccolo).

Trypanosyllis krohni, Cl., Marion & Bobretzky (5), p. 35 ; *cœliaca*, Cl., *iid. l. c.* p. 37.

Odontosyllis gibba, Cl., *iid. l. c.* p. 38, pls. iii. & iv. fig. 10 ; *fulgurans*, Cl., *iid. l. c.* p. 40, pl. iv. fig. 11 (*dugesiana*, Cl. ?) ; *ctenostoma*, Cl., *iid. l. c.* p. 42, pl. iv. fig. 12 ; Panceri (9) pl. ii. figs. 8–11 ; *brevicornis* (Gr.), Marenzeller (3), p. 160, pl. iv. fig. 1.

Pterosyllis linearis (Costa) (*Nicotia*, Costa, *Amblyosyllis lineata*, Gr. ?), Marion & Bobretzky (5), p. 43, pls. iv. & v. fig. 13.

Sphærosyllis hystrix, Cl. (= *pirifera*, ?), *iid. l. c.* p. 44.

Autolytus (*Procerœa*) *ornatus*, sp. n., *iid. ibid.* pl. v. fig. 14 ; Marenzeller (3), p. 165, gives a new diagnosis of *Procerœa*, Ehl. (*Sylline*, Gr. ?), describing *P. macrophthalma*, sp. n., pl. iv. fig. 2 (Lussin piccolo).

Fallacia sicula (D. Ch.) (*Hesione savignii*, Costa, *pantherina*, Gr.; *Telamone sicula*, Cl.), Marion & Bobretzky (5), p. 46, pl. xii. fig. 28.

Podarce (str.) *viridescens*, Ehl., *iid. l. c.* p. 49 (*albo-cincta*, Ehl. ?) (*Stephania*, Cl., = *Ophiodromus*, Sars, = *Podarce*, Ehl. ?).

Gyptis, g. n., *iid. l. c.* [Zool. Rec. xi. p. 496]. *Hesionidæ*, with unarmed proboscis, 2 palpi, 3 antennæ, 8 pairs of tentacular cirri, feet biremous. (*Oxydromus*, Gr., ? pt.) *G. propinqua*, iid. *l. c.* p. 51, pls. v. & vi. fig. 15 (Marseilles).

Oxydromus fuscescens, sp. n., Marenzeller (3), p. 143, pl. ii. fig. 1 (Trieste).

Magalia, g. n., Marion & Bobretzky [Zool. Rec. *l. c.*]. *Hesionidæ*, with proboscis armed with a stylet and 2 maxillæ ; 2 palpi and 2 antennæ ; 12 tentacular cirri ; feet uniremous. *M. perarmata*, sp. n., *iid. l. c.* p. 54, pls. vi. & vii. fig. 16 (Marseilles).

Lacydonia, g. n., *iid.* [Zool. Rec. *l. c.*], allied to *Phyllodoce* and *Alciope*. *L. miranda*, sp. n., *iid. l. c.* p. 57, pls. vii. & viii. fig. 17 (Marseilles).

Phyllodoce paretti, Blv. (*panceri*, Cl.), *iid. l. c.* p. 61.

Eteone picta, Qu. (*armata*, Cl.), *iid. l. c.* p. 62.

Eulalia virens, Ehl. (*guttata*, Cl.), *iid. l. c.* p. 63.

Ophelia denticulata, sp. n., Verrill, Am. J. Sci. (3), p. 39 (off Block Island, New England).

Heterocirrus frontifilis, Gr., Marion & Bobretzky (5), p. 64, pls. viii. & ix. fig. 18; *saxicola*, Gr., *iid. l. c.* p. 67.

Cirratulus longisetis, sp. n., Möbius (7), p. 160, pl. iii. figs. 18–20 (Bukenfjord).

Scolecolepis cirrata, Sars, *id. l. c.* p. 161, pl. iii. figs. 21–24.

Aricia œrstedi, Cl., Marion & Bobretzky, *l. c.* p. 68.

Saccocirrus papillocercus, Bobr., *iid. l. c.* p. 69, pls. ix. & x. fig. 19.

Polydora agassizi, Cl., *iid. l. c.* p. 83.

Prionospio malmgreni, Cl., *iid. l. c.* p. 84, pls. x. & xi. fig. 20.

Chætopterus vario-pedatus (Ren.) (= *pergamentaceus*, auctt., *leuckarti*, Qu., *brevis*, Lesp.), *iid. l. c.* p. 86; Panceri (9), pl. i.

Amphicteis sundevalli, Mgr., not different from *A. gunneri*; Möbius, *l. c.* p. 164.

Octobranchus, g. n., Marion & Bobretzky (fam. *Trichobranchidæ*). Vermiform, attenuated behind; cephalic lobe with numerous grooved tentacles of various size; anterior segments with membranous collar-like expansions, covering the ventral surface; gills filiform, 4 pairs; bundles of hair-like bristles on 16 rings, from the 4th (3rd branchiferous); tori uncinigeri begin on the 7th (4th setigerous); uncini of anterior tori rostrate, supported on a long shaft; the comb-like plates of the posterior "languettes" with 3 teeth. *O. giardi*, sp. n., *iid. l. c.* p. 87, pls. x. & xi. fig. 21 (Marseilles).

Sabella (*Potamilla*) *reniformis* (Müll.) (*aspersa* and *oculata*, Kr., *saxicola*, Gr., *saxicava*, Qu.), *iid. l. c.* p. 91, pl. xi. fig. 22; *stichophthalmus*, Gr., *iid. l. c.* p. 92, pl. xi. fig. 23.

Leptochone æsthetica, Cl., *iid. l. c.* p. 94.

Apomatus ampulliferus, Phil., *iid. l. c.* p. 95, pl. xi. & xii. fig. 24; *similis*, sp. n., *iid. l. c.* p. 97, pl. xii. fig. 25 (Marseilles).

Vermilia infundibulum, Phil., *iid. l. c.* p. 98, pl. xii. fig. 26 (*galeata*, Gr.?).

Spirorbis cornu-arietis, Phil., *iid. l. c.* p. 99, pl. xii. fig. 27.

Fossil species of *Serpula*: Geinitz, "das Elbthalgebirge in Sachsen" (Paleontographica, xx. 1, pp. 282–287, pl. xiii. figs. 2-24; xx. 2, pp. 200–202, pl. xxxvii. figs. 2–13); P. de Loriol & E. Pellat, "Monographie des étages supérieures de la formation jurassique des environs de Boulogne-sur-mer," Mém. Soc. Phys. Genèv. xxiii. pp. 262–265, pl. i. figs. 2–8.

Perichæta bicincta, *luzonica*, *cærulea*, *biserialis*, spp. nn., Perrier (10, c) (Philippines); *juliani*, sp. n., *id. ibid.* (Saïgon).

III. DISCOPHORA.

In McIntosh's "Marine Invertebrates," &c. (*anteà*, p. 522), the following species are figured (pl. v. figs. 1–6):—

Pontobdella muricata, *Piscicola geometra*, and *Pontobdella littoralis* (the two last from *Cottus bubalis*).

J. Ranke has examined the structure of the eyes in the medicinal leech (Z. wiss. Zool. xxv. pp. 152–162, pl. x. figs. 1–12) ; abstr. in Nature, xiii. p. 75. Leydig's observations are confirmed. The "eyes" are probably not only organs of vision, but also of touch and taste, almost neutral organs of sense, acting occasionally in various manners ; their structure is completely analogous to that of the cup-shaped sense organs occurring on the upper lip and elsewhere.

The following work is known to the Recorder from the title only :—

Hermann, E. Das Centralnervensystem von *Hirudo medicinalis*. Eine anatomische Untersuchung. München : 1875, 119 pp. 18 pls.

IV. TURBELLARIA.

1. Barrois, J. Des phénomènes généraux de l'embryogénie des Némertiens. C. R. lxxx. pp. 270–273 ; Ann. N. H. (4) xv. pp. 301–304 ; abstr. R. Z. (3) iii. p. v.

2. Graff, L. Neue Mittheilungen über Turbellarien. Z. wiss. Zool. xxv. pp. 407–425, pls. xxvii. & xxviii.

3. ——. Ueber die systematische Stellung des *Vortex Lemani*, du Plessis. Z. wiss. Zool. xxv. (suppl.) pp. 335–342, pl. xxiii.

4. Hubrecht, A. A. W. Untersuchungen über Nemertinen aus dem Golf von Neapel. Niederl. Arch. Zool. ii. pp. 98–135, pls. ix.–xi. [a revised edition of the dissertation noticed in Zool. Rec. xi. pp. 500–501].

5. ——. Some remarks about the minute anatomy of Mediterranean Nemerteans. Q. J. Micr. Sci. xv. pp. 249–256, pl. xiii. figs. 6–8.

6. McIntosh, W. C. A monograph of the British Annelids. Pt. i. (continued, pp. 97–213*d*, pls. xi.–xxiii.) London (Ray Society): 1874.

7. ——. On *Amphiporus spectabilis*, Qu., and other Nemerteans. Q. J. Micr. Sci. xv. pp. 277–293, pls. xiv. & xv.

8. ——. On *Valencinia Armandi*, a new Nemertean. Tr. Linn. Soc. (2) i. pp. 73–81, pl. xvi.

9. Marion, A. F. Recherches sur les animaux inférieurs du golfe de Marseille. 3me art. Remarques complémentaires sur le *Borlasia kefersteinii*.* Ann. Sci. Nat. (6) i. pp. 19–30, pl. ii. fig. 3.

10. ——. Anatomie d'un type remarquable du groupe des Némertiens (*Drepanophorus spectabilis*). C. R. lxxx. pp. 893–895 ; Ann. N. H. (4) xv. pp. 371 & 372 ; abstr. R. Z. (3) iii. p. xvi.

11. Moseley, H. N. On the anatomy and histology of the Land-Planarians of Ceylon, with some account of their habits, and a description of two new species, and with notes on the anatomy of some European aquatic species. Phil. Tr. 1874, pp. 105–171, pls x.–xv.

* Here is cited a paper by Ulianin on the *Turbellaria* of Sebastopol Bay ("extrait des travaux presentés a la 3me réunion des naturalistes russes à Moscou") ; a *Borlasia viridara* is described in the paper cited, p. 10, pl. vii figs. 6–8.

(12. Moseley, H. N.) [A] On *Pelagonemertes Rollestoni*. Ann. N. H. (4) xv. pp. 165–168, pl. xv. B. [B] On a young specimen of *Pelagonemertes Rollestoni*. Op. cit. xvi. pp. 377–383, pl. xi.

Anatomy and Physiology.

McIntosh's Monograph of the British Nemerteans (6) treats separately of the anatomy of the *Enopla* (pp. 43–94) and *Anopla* (pp. 95–124), elucidating for each division the cutaneous system, the body wall, the proboscidian sheath, chamber, and aperture, the proboscis, its different regions and special organs in the *Enopla*, its diversity of structure in different genera and species, and its reproduction; also the digestive, vascular, and nervous systems, the eye-specks, cephalic furrows and sacs; the male and female generative organs, the mode of deposition of the ova and spermatozoa, and the developmental history of the *Enopla* and *Anopla*. Special chapters are devoted to the reproduction of lost parts, or of the entire organism from fragments, and to the parasites of Nemerteans. The "homologies" with *Bipalium* and *Balanoglossus* are also discussed in special paragraphs, from the author's own examination of both types.

It is impossible to reproduce here an abstract or sketch of Nemertean structure as it is expounded in this work, the most complete of all hitherto published on the group. It may be pointed out, however, that though the anatomical account is apparently almost exhaustive, the physiological value of important organs or structural peculiarities is still almost unknown:—e. g., the use of the cephalic slits and sacs, of the proboscis (which has never been seen used for any purpose, such as seizing the prey), and is very unfit for this use, and of the central stylet and the lateral stylet sacs in the *Enopla*, though it is certain that the sacs cannot have the object of replacing the central stylet; and there is no observation on record confirming the poisonous nature of the fluid in the reservoir and posterior chamber of the proboscis in the *Enopla*. Otoliths were never observed, nor were lenses or capsular structures discovered in the eyes. The numerous genital pores are placed above the lateral nerve trunks; in some genera, the eggs are deposited in mucous masses secreted by the whole surface of the body. The viviparous and oviparous forms are connected by species, in which some of the eggs are deposited in the normal manner, while the remainder are developed in the slowly decaying maternal body. Some species show an acid, others an alkaline, reaction, when tested with litmus paper. The floating or swimming of certain Nemerteans is not due to the action of cilia.

Hubrecht (5) draws attention to some discrepancies between the results arrived at by himself (4) and by McIntosh, who takes up the subject again in an anatomical account (7) of *Amphiporus spectabilis* (= *Drepanophorus*, H.). The "cephalic sacs" are considered by Hubrecht as "a special respiratory apparatus providing the hæmoglobin of the cephalic ganglia with fresh supplies of oxygen," while McIntosh regards them as special organs of sense. The latter terminates his paper with critical remarks on the papers of Willemoës-Suhm [Zool. Rec. xi. p. 500], Marion (9), and Moseley (11 & 12).

BARROIS, in a preliminary note (1) describes the evolution of "*Nemertes communis*, V. Ben." [*Lineus sanguineus*, McI.] as intermediate between the complex metamorphosis of the "*Pilidium*"-type, and the simple evolution of the "Desorian" larva.

According to MARION (9), the embryos of *Borlasia kefersteini* are set free in May, developed into worms in June and July; in October they are still asexual or provided only with spermatic vesicles, which in December are found in all specimens; but as they advance in size, the female elements begin to appear in February, becoming successively equally abundant or ultimately predominating. The eggs are deposited in hyaline sheaths attached to the walls of the gill cavity of their ascidian host.

GRAFF (2) has contributed observations on fissiparity in some *Microstomum* and on several points of the anatomy of various *Turbellaria*, which are named below.

MOSELEY has studied (11) in great detail the anatomy and histology of some Ceylonese Land-Planarians, extending his researches comparatively to some European marine and freshwater forms. An analysis of the paper being out of the question, as in the case of other works of similar scope and importance, a few points only may here briefly be alluded to; e. g., the discovery of a row of papillæ and ciliated pits in the anterior border of the head in *Bipalium*, which is often protruded in tentacle-like fashion; the analogies in structure between Leeches and terrestrial Planarians; the anterior position and reduced number (two) of ovaries compared with the serial arrangement and large number of testes in *Bipalium* and *Rhynchodemus*, the numerous widely dispersed eye- in the former genus, the 2 more developed and forward placed ranean the latter; the great difference in the form of the mouth in these 6–8. the homology between the "primitive vascular system" in Plan- t. i. and the body-cavity in Embryo-Leeches, and in *Branchiobdella*. -4. ganglionated nerve strings described by Blanchard and Schmarda hav no existence, ovaries and testes having been mistaken for ganglia.

CLASSIFICATION: GENERA AND SPECIES.

The following review of the genera and species of British Nemerteans described by MCINTOSH (6) will afford at the same time a condensed account of the more important anatomical characters, distinguishing the suborder and its divisions, families, genera, &c.

"*Nemertinea*. Worms with more or less elongated, soft, ciliated bodies, furnished with a thick glandular cutis, beneath which the body wall is composed of several strong, specially disposed muscular layers; nervous system composed of 2 conspicuous ganglia, connected by a double commissure, and 2 main lateral trunks running backwards to the end of the body. Through the centre of the body cavity, and entirely beneath the nerve commissures in front, passes the digestive system, a ciliated canal with 2 well marked divisions, and 2 apertures, an oral anteriorly, and an anal posteriorly. Circulatory system consisting of a series of closed contractile vessels. The complicated proboscis is placed along the

median line of the back, surrounded by a special muscular sheath, within which it glides in a highly organized corpuscular fluid, passing in front between the commissures of the ganglia, while the digestive tract is placed inferiorly. Sexes separate in the majority, oviparous or ovo-viviparous; sexual organs in the form of sacs placed between the muscular wall of the body and the digestive canal."

A. *Enopla.* Proboscis furnished with stylets. Blood-vessels more differentiated than in the *Anopla.* The young, as far as is known, do not undergo any noteworthy metamorphosis during their growth.

I. *Amphiporidæ.* Nerve-ganglia rather rounded, somewhat double; lateral nerve-trunks placed *within* the proper muscular walls of the body; mouth opening on the ventral surface of the snout in front of the commissures of the ganglia.

a. *Amphiporinæ.* Proboscis proportionally large. These animals as a whole have comparatively short and thick bodies, 2 muscular layers in the body wall, an external circular and an internal longitudinal; the proboscis is composed of 3 divisions, the anterior having 7 coats, the middle bearing the stylets, the posterior forming a long sac with 2 muscular coats; 3 great longitudinal vascular trunks, 2 lateral and 1 median, besides a cephalic arch; the cephalic sacs or glands are accompanied by long tubes or ducts.

1. *Amphiphorus*, Ehrbg. Eyes more or less numerous and large, but never arranged in a square. Body rather short, sometimes flattened; *A. lactifloreus*, Johnst., p. 156, pl. i. figs. 1 & 2; *A. pulcher*, J., p. 158, pl. i. fig. 3, & xiv. fig. 11; *spectabilis*, Qu., p. 160, pl. iii. figs. 2, 7 & 8; *hasoffer*, p. 162, pl. viii. fig. 2, and *bi-oculatus*, p. 163, pl. viii. fig. 3, spp. nn. roots (nd).

Tetrastemma, Ehr. Eyes 4, arranged so as to indicate a square or
Amp. *T. melanocephala*, J., p. 165, pl. ii. fig. 1; *robertiana*, sp. n., *capito*, pl. iii. fig. 1; *candida*, Müll., p. 167, pl. ii. figs. 2 & 3; *vermicula*, Qu., p. 169, pl. iii. fig. 3; *flavida*, Ehr., p. 170, pl. iv. fig. 1; *dorsalis*, Abgd., p. 172, pl. i. fig. 4, & iii. fig. 4.

3. *Prosorrhochmus*, Kef. Eyes 4, not forming a square; snout dimpled and furnished with a transverse superior lobe; ovo-viviparous. *C. claparedii*, Kef., p. 174, pl. ii. fig. 4.

b. *Nemertinea.* Proboscis proportionally small, the anterior region especially being shortened, so as to cause the stylet to approach the ganglia. Body more or less elongated; in other respects with the characters of the *Amphiporinæ.*

4. *Nemertes*, Cuv. *N. gracilis*, J., p. 176, pl. ii. fig. 5; *neesi*, Örst., p. 178, pl. iii. fig. 6, and pl. vii. fig. 6; *carcinophila*, Köll., p. 180, pl. i. fig. 5.

B. *Anopla.* Proboscis without stylets. Nerve trunks generally placed *between* the muscular layers of the body wall. The mouth opens on the ventral surface behind the commissures of the ganglia. The blood-vessels are somewhat less differentiated than in the *Enopla.* The young in the most conspicuous families undergo a remarkable metamorphosis.

II. *Lineidæ.* Ganglia more or less elongated; muscular layers of the

body walls 3 (external-longitudinal, circular, and internal-longitudinal); proboscis with 5 coats, viz., external-elastic, longitudinal and accessory bands, circular, basement, and glandular (in *Borlasia*, 4); snout with a deep lateral fissure on each side in connection with the cephalic sac, which is rounded and devoid of long tubes or ducts posteriorly. Circulatory system consisting of 3 great longitudinal trunks, 2 lateral, and a dorsal, which frequently anastomose by transverse branches, form a rete mirabile in the œsophageal region, and unite in lacunæ behind the ganglia.

5. *Lineus*, Sow. Body more or less elongated, rounded or somewhat flattened, and tapered posteriorly; head distinct, spathulate, and generally truncate in front; eyes numerous, arranged along the side of the snout anteriorly, rarely absent. Mouth in the form of a conspicuous longitudinal slit on the ventral surface. *L. marinus*, Mont., p. 181, pl. ix. & xviii. figs. 1–3; *gesserensis*, Müll., p. 185, pl. iv. fig. 2, and pl. v. fig. 10; *sanguineus*, Rthk., p. 188, pl. v. fig. 2; *lacteus*, Mont. (MS.), p. 190, pl. v. fig. 3; *bilineatus*, D. Ch., p. 191, pl. vi. fig. 1.

6. *Borlasia*, Ok. (emend). Body round and massive, not tapered posteriorly; snout acutely pointed; the proboscis extremely slender and having only 4 coats (elastic-external, longitudinal, circular, and glandular); muscles and circulatory fluid tinted reddish. *B. elisabethæ*, sp. n., p. 193, pl. vii. figs. 1 & 2 (Herm).

7. *Cerebratulus*, Ren. Body generally flattened and thinned at the margins; snout pointed; eyes in the usual position, but obscure; proboscis with a cross of fibres at each pole in transverse section. *C. angulatus*, Müll., p. 195.

8. *Micrura*, Ehrbg. Body not much elongated; head distinctly marked; snout truncated. Other characters as in *Lineus*; a large form caudal process, capable of attachment. *M. fusca*, sp. n. [illegible]ranean pl. vi. fig. 3 (Shetland, Herm, off Portugal); *fasciolata*, Ehr., [illegible]8. pl. vi. fig. 2; *purpurea*, Dal., p. 200, pl. vii. fig. 3; *aurantiaca*, Gr., p. [illegible]i. pl. vii. fig. 4.

9. *Meckelia*, Leuck. (emend.). Structure of the rounded body-wall as in *Lineus*. Cephalic fissures absent; proboscis furnished with only 3 coats (external-spiral, longitudinal, and glandular). *M. asulcata*, sp. n., p. 202 (Shetland, Herm).

III. *Carinellidæ*. Lateral nerves placed between the basement layer of the cutis and the external (circular) muscular coat of the body-wall (in *Carinella*), or in the substance of the longitudinal layer close to the circular (in *Valencinia*); only 2 muscular coats; 3 layers in the proboscis; no cephalic fissures; circulatory system consisting of 2 great lateral trunks.

10. *Carinella*, Johnst. Body elongated, tapering from the front backwards; snout wider than the rest of the body, bluntly rounded in front; mouth sometimes small. *C. annulata*, Mont., p. 203, pl. vii. fig. 5, and pl. viii.; *linearis*, Mont. (MS.), p. 206 (South of England, Hebrides).

11. *Valencinia*, Qu. (emend.). Snout shaped as in *Lineus lacteus*, with a row of eyes on each side; mouth forming a distinct fissure a considerable distance behind the ganglia. *V. line[i]formis*, sp. n., p. 207, (Shetland). *V. armandi*, sp. n., McIntosh (8), Southport.

IV. *Cephalothricidæ*. Commissures of the ganglia separated by a distinct antero-posterior interval. Lateral nerves placed between the longitudinal muscular coat, and an isolated inner band of fibres having the same direction. Proboscis with 3 layers (an external circular or elastic, an internal longitudinal, and a glandular layer supplied with acicular papillæ). Circulatory system composed of 2 great longitudinal trunks, communicating behind the ganglia and at the tail. Oviparous; the young undergo no distinct metamorphosis, though they have eyes, whereas the complete animal is generally eyeless.

12. *Cephalothrix*, Örst. Head nearly cylindrical, slightly tapered in front; eyeless, or with a few obscure pigment-specks; cephalic fissures and sacs absent; mouth situated a considerable distance behind the snout. *C. linearis*, Rthke., p. 208, pl. iv. figs. 4 & 5.

(The number of reduced nominal species, referred to as synonymic, is in several species so large, that no account could be given of them here).

Marion (10) doubts the validity of the species of *Drepanophorus* established by Hubrecht [Zool. Rec. xi. p. 501]; *D. spectabilis* (Quatref.) = *Borlasia splendida*, Kef. Marion's description of the armature of the proboscis appears incompatible with that of Hubrecht. Marion describes a recurved, granular, yellowish plate borne upon a hyaline mass, and furnished with 2 bundles of special muscles; 9–20 points are inserted upon the keel of this plate; on each side of the bulb are 8–10 styligerous vesicles, &c. According to the same author (9), the hermaphrodite Nemertean occurring in the gill cavity of *Phallusia mamillata* and *gelatinosa* [Zool. Rec. x. p. 481] does not differ specifically, though offering some minor differences, from that found among the *Posidonia* roots (*Borlasia kefersteini*).

Tetrastemma elegans (Gir.), Verrill, Am. J. Sci. (3) x. p. 40.

Amphiporus pulcher (Müll.), *Mesostomum bifidum*, McI., and *Vortex capitata*, (Örst.), are figured in "Marine Invertebrates of St. Andrews," pl. iv. fig. 3, and pl. viii. figs. 3–10.

Moseley's (12) new family *Pelagonemertidæ* is a link between *Nemertea* and *Planaria dendrocœla* (as *Prostomea* between *Nemertea* and *Pl. rhabdocœla*). "Animal free swimming, pelagic; body gelatinous, hyaline, broad, and flattened (leaf shaped); proboscis unarmed; no ciliated sacs or special sense organs; digestive tract dendrocœlous." *Pelagonemertes*, g. n., Moseley, "Anterior extremity broad and abrupt, the posterior narrowed to a point; digestive canal with 13 pairs of lateral ramifications. Integument thin, with a thin muscular tunic immediately beneath it, consisting of external circular and internal longitudinal fibres." *P. rollestoni*, sp. n., only found twice in deep-sea trawling, at 50° S., 123° E., 1800 fath., and at 34° 58′ N., 139° 30′ E., between 155 and 420 fath. In the proboscis and its sheath, and the nervous and vascular systems, *Pelagonemertes* agrees with the Nemerteans; the sexes are distinct, and the ovaries placed along the lateral vessels; the ramifications of the intestine are developed successively, from before backwards, not planned out at once as in young dendrocœlous Planarians. [Lesson's *Pterosoma planum* is evidently something closely allied, but with a pair of eyes and unbranched digestive tube.]

Vortex lemani, Du Pless. [Zool. Rec. xi. p. 501] (rediscovered in the Starnberger Lake in Bavaria), is most nearly allied to the freshwater Planarians, and is named by GRAFF (3), provisionally, *Planaria lemani*. It probably will be the type of a separate family; with the *Rhabdocœla* it has no relationship, though it has not the ramified intestine of the *Dendrocœla*. The same author (2) describes anatomically several new *Turbellaria*; *Planaria quadri-oculata*, Gr., p. 419, pl. xxviii. figs. 21–23 (Lake Starnberg), *Mesostomum banaticum*, Gr., p. 418, *ib.* figs. 19 & 20 (Panczova), *M. montanum*, Gr., p. 417, *ib.* figs. 12–18 (Mummelsee, Schwarzwald), *Prostomum banaticum*, Gr., p. 415, pl. xxvii. fig. 11 (Panczova); also *Stenostomum leucops*, Schm., and *Microstomum lineare*, Örst.

MOSELEY (11) characterizes the *Geoplanidæ* thus: "Corpus elongatum, depressum vel depressiusculum, subtus pede sat distincto; caput continuum vel discretum; ocelli duo vel plurimi in capite solum aut etiam passim in corpore dispositi; os postmediale; œsophagus protractilis, campanulatus, margine sæpius sinuoso, aut doliiformis; apertura genitalis pone os." The known species of *Geoplana*, *Bipalium* (= *Sphyrocephalus*, Schmd.), and *Rhynchodemus* ("*Planaria terrestris*") are enumerated, biological observations recorded, and 2 new species described, viz., *Bipalium ceres*, p. 109, pl. x. figs. 1 & 2, and *Rhynchodemus thwaitesi*, p. 111, pl. x. fig. 4, both from Ceylon; a young *B. diana*, Humb., is also figured (pl. x. fig. 3). *Bipalium* uses a thread of its tough investing slime for suspension in air, and lets itself down to the ground from a twig, in this manner.

MCINTOSH (6) has examined 2 species of *Balanoglossus* (pp. 144–150), and institutes an interesting comparison between this type and the *Nemertinea*. The most marked differences are in the nervous system, and in the want of the true Nemertean "proboscis."

HELMINTHOLOGY GENERALLY.

1. CHATIN, J. Études sur des Helminthes nouveaux ou peu connus. Ann. Sci. Nat. (6) i. 18 pp. 2 pls.
2. LINSTOW, — VON. Beobachtungen an neuen und bekannten Helminthen. Arch. f. Nat. (2) xli. pp. 183–207, pls. ii.–iv.
3. VILLOT, A. Recherches sur les Helminthes libres ou parasites des côtes de la Brétagne. Arch. Z. expér. iv. pp. 450–482, pls. xi.–xiv.; preliminary abstract in C. R. lxxx. pp. 679–681, & 1098–1101; Ann. N. H. (4) xvi. pp. 146–148.

A list of the *Entozoa* of Greenland (chiefly after Krabbe) is contributed to the Arctic Manual [*suprà*, p. 522], pp. 179–183.

On Helminthology and Helminthopathology generally, may be consulted the articles by PONFICK and BOLLINGER (Thierische Parasiten) in JB. Leist. Forts. Medicin. x. 1, pp. 375 & 644–650. The following papers may be cited here:—LEMOINE: "Des parasites animaux, &c., de l'organe de la vue," Paris, 1874. Several notes in the "Veterinarian," xlviii. by T. S. COBBOLD: "On the destruction of elephants by parasites, with remarks on 2 new species of *Entozoa*," l. c. p. 733–743. "Further

remarks on parasites from the horse and elephant, with a notice of a new Amphistome from the ox," *l. c.* pp. 817–821. "On deadly epizootics among the Wallabys in Australia, possibly introduced with the sheep," *l. c.* p. 124.

V. TREMATODA.

4. Badcock, J. Some remarks on *Bucephalus polymorphus* (with translations of papers on *B. polymorphus* and *haimeanus*, by H. J. Slack). M. Micr. J. xiii. pp. 141–146, pl. xcviii.

5. Grimm, O. Nachtrag zum Artikel des Hrn. Dr. Salensky ueber den Bau und die Entwickelungsgeschichte der *Amphilina*, G. Wagn. Z. wiss. Zool. xxv. pp. 214–216.

6. McConnell, J. E. P. Remarks on the anatomy and pathological relations of a new species of liver-fluke. Lancet, 1875, pp. 271–274; Veterinarian, xlviii. pp. 772–781.

7. Stewart, C. Notes on *Bucephalus polymorphus*. M. Micr. J. xiv. pp. 1 & 2, pl. cvii.

8. Villot, A. Sur les migrations et les métamorphoses des Trematodes endoparasites marins. C. R. lxxi. pp. 475–477; Ann. N. H. (4) xvi. pp. 362–364; abst. R. Z. (3) xiii. p. lv.

9. Wood-Mason, J. Note on the geographical distribution of the *Temnocephala chilensis* of Blanchard. Ann. N. H. (4) xv. pp. 336 & 337.

An abstract of Zeller's paper on *Leucochloridium* [Zool. Rec. xi. p. 502] is given in Ann. N. H. (4) xv. pp. 162–164; Giard's paper on *Bucephalus haimeanus* [Zool. Rec. *l. c.*] is reprinted in M. Micr. J. xii. pp. 276–278.

Temnocephala chilensis (9) occurs in the north-eastern border region of India; also at New Zealand (on the freshwater Crustacean *Paranephrops setosus*).

According to Grimm (5), *Amphilina* is not a Cestoid [Zool. Rec. xi. p. 503], but a fluke, allied to *Gyrodactylus* and *Amphiptyches*. *A. neritina*, Sal., is based upon morbid specimens of *A. foliacea*. Some doubtful points in the anatomy of *Amphilina* are briefly discussed (a Russian paper of 1873, on the same subject, by the author, is cited).

On a trematodous larva encysted in Nemerteans (*Amphiporus*), cf. McIntosh [6, *suprà*, p. 528], p. 130, pl. xvii. figs. 11–14; in the same author's "Marine Invertebrates" [*suprà*, p. 522], pl. viii. figs. 1 & 2, a *Distomum*, from the flesh of *Cottus bubalis* is figured. *Tristoma laeva* [*-re*] and *cornutum*, spp. nn., the first in the mouth, the second on the gills of *Tetrapturus albidus*; Verrill, Am. J. Sci. (3) x. p. 40.

Linstow (2), pp. 189–192, describes as new *Distomum vitellatum* and *macrophallus* (pl. ii. figs. 12 & 13), both from *Totanus hypoleucus*; *D. cœlebs*, sp. n. (*ib.* p. 192, pl. iii. fig. 15) (*Fringilla cœlebs*); *Cercaria stylosa*, sp. n. (*ib.* p. 193, pl. iii. figs. 16 & 17) (from *Planorbis vortex*). Also notes on *Distomum putorii*, Mol. (p. 192, pl. ii. fig. 14), and *Dactylogyrus dujardinianus*, Dies. (p. 195, pl. iii. figs. 18 & 19). Villot enu-

merates (3), p. 479, the known species of marine *Cercariæ*, and describes as new, *C. hymenocerca*, pl. xiv. figs. 5–7 (from *Calyptræa sinensis*), and *C. fascicularis*, pl. xiv. fig. 4 (from *Nassa reticulata*). According to the same author (8), the *Cercaria* of *Distomum leptosomum* occurs encysted in *Scrobicularia tenuis*, that of *D. brachysomum* in *Anthura gracilis*; both species of flukes are found as adult in *Tringa alpina*, and may be found encysted and undeveloped in the gizzard of that bird.

The rediscovery of a new *Amphistomum* (*A. hawkesi*, Cobb.) in the Indian elephant (intestine), of another in the ox (*A. tuberculatum*, Cobb.), and of one or two species in the colon of horses in India (*A. collinsi*, *stanleyi*, C.) is announced, Veterinarian, xlviii. pp. 733–743, 817–821.

Distomum campanulatum, sp. n., Ercolani (14) (liver of the dog); *D. sinense*, sp. n., Cobbold (6), in the liver (biliary ducts) of man (Chinese) in India.

Amphibdella, g. n., Chatin. "Corpus elongatum depressum, antice attenuatum; caput corpori continuum; os parvum et glandulæ duæ laterales; tractus intestinalis bifurcatus; aperturæ genitalium antrorsum sitæ, approximatæ; penis cordiformis; testes multi laterales; ovaria duo ramosa lateralia; bursa terminalis cum 4 uncis." *A. torpedinis*, sp. n. (1), pl. ii. figs. 3–14 (on the gills of *Torpedo marmorata*).

The systematic position of *Myzostomum* being still unsettled, this may be the proper place to record the observation by R. v. Willemoës-Suhm, on *Myzostoma* encysted in pairs, a larger and a smaller individual, in swellings on the arms of deep sea Antedons in the South Pacific (Z. wiss. Zool. xxv. p. xxx.), and on the *Myzostoma* of the *Pentacrini* (2 or 3 specimens of equal size, in each cyst of the arms) in the western Pacific Ocean; also *Myzostoma* on *Hyocrinus* and *Bathycrinus* (op. cit. xxvi. p. lxxix.), and tropical Antedons.

VI. CESTOIDA.

10. Maddox, R. L. On an Entozoon with ova found encysted in the muscles of a sheep. M. Micr. J. ix. pp. 245–253, pls. xviii. & xix. [*cf.* Zool. Rec. x. p. 489].

11. Welsh, F. H. Observations on the anatomy of *Tænia mediocannellata*. Q. J. Micr. Sci. xv. pp. 1–23, pls. i. & ii.

T. S. Cobbold, "Revised list of *Entozoa*, with notes and references," continued. Veterinarian, xlviii. pp. 102–106 (*Cysticercus ovis*, C., is perhaps the nurse of *Tænia tenella*, Cobb.).

Several papers of a more or less practical bearing are cited (mostly unknown to the Recorder): — E. Perroncito, "Communicazione sopra un caso di *Cœnurus* riconstrato nella cavitá abdominale di un coniglio" (Ann. Agric. Tor. xvii.), and "Brevi osservazioni sul *Cysticercus tenuicollis* e sulla sua membrana avventizia" (Gazetta medico-veterinaria). C. Giacomini, "Sul *Cysticercus cellulosæ* hominis, e sulla *Tænia medio-cannellata*, contributo allo studio dei Cestoidi parasiti dell' Uomi." R. Ihlo, "Ein Fall von *Cysticercus cellulosæ* sub-retinalis," Königsbg. 32 pp. C. Lauenstein, "Ueber das Vorkom-

men von *Echinococcus* in der Mamma," Göttingen, 16 pp. WILDE, "Zwei Fälle von *Echinococcus*-invasion" (Deutsch. Zeitschr. f. Chirurgie, vi. 3, pp. 215–222). SIEDAMGROTZKY, "*Echinococcus*-Blasen in der Leber einer kuh" (Bericht üb. das Veterinärwesen im Kön. Sachsen, xix. p. 29). FINDEISEN, "Echinococcen in der Lunge" Repertorium f. Thierheilk., p. 48). STÖHR, "Hydatide im Herzen" (Mittheil. a. d. thierärztl. Pr. im Preuss. St. xxii. p. 159). GLOKKE, "Finnen im Gehirn" [of the Hog] (*tom. cit.* p. 153). O. BOLLINGER, "*Echinococcus multilocularis* in der Leber des Rindes" (Deutsch. Zeitschr. f. Thiermed. ii. p. 109). SCHWARZMEIER, "Die Trepanation des Rindes bei *Cœnurus cerebralis*" (Wochenschr. f. Thierheilk. xix. p. 295). A. BRUNET, "Relation de nombreux cas de tournis sur les agneaux, pour servir à l'histoire générale de cette maladie" (Rec. Méd. Vét. 6me sér. ii. p. 33). L. CHAPOT, "Du *Tænia* ou ver solitaire, de ses espèces et de ses variétés ; coup d'œil sur l'histoire naturelle et médicale de cet Entozoaire," Paris, 63 pp. A. DUMAS, "Six cas de *Tænia* à la suite de l'usage de la viande crue ; fréquence rélative de ce ver à Cette" (Montpellier, Ann. Clin.). T. S. CORBOLD, "A lecture on hydatic diseases," Lancet, 1875, p. 850. *Id.* "Further experimental researches with the eggs of the beef-tapeworm," Veterinarian, *l. c.* pp. 561–565 (*Cysticercus tæniæ medio-cannellatæ* may be developed also in the liver and lung of cattle ; when vainly sought for in the flesh, the experiment may nevertheless have been successful). A note on successful experiments with the same parasite and the goat in Wochenschr. f. Thierheilk. 1874, p. 30, and Oesterr. Vierteljahrschr. f. wiss. Veterinärzt. xliii. pp. 140 & 141. J. RUSSELL, "On a case of hydatid cyst of the brain" (Med. Times and Gazette, 1875, i. p. 197). GONZALES, "On *Cysticerci* in the brain in paralysis of the insane" (Gazz. Med. Lomb.). A note by SCHIEFFERDECKER on pathological malformations of the mucous membrane of the intestine of dogs through *Tænia cucumerina* (Arch. f. pathol. An. & Phys. p. 475 ; Oesterr. Vierteljahrschr. f. wiss. Veterinärzt. xliii. pp. 119 & 120). ANNACKER, "Entozoen in der Bauchhöhle (*Ligula*)" (Thierarzt, 1875, p. 2).

Scolex of *Tetrarrhynchus* (encysted in the stomach of *Cancer pagurus*), McIntosh, Marine Invert. pl. vii. figs. 16 & 17. LINSTOW (2) has published notes on the following species:—*Tænia globifera*, Batsch. (from *Buteo vulgaris*) p. 183 ; *T. macrocephala*, Cr. (*Anguilla vulgaris*) ; *T. osculata*, Goeze (*Silurus glanis*), p. 184, pl. ii. fig. 11 ; *T. longicollis*, Rud. (*Osmerus eperlanus*) ; *T. ocellata*, Rud. (*Perca fluviatilis*) ; *T. attenuata*, Duj., pl. ii. figs. 7 & 8 (*Fringilla cœlebs*) ; *T. puncta*, Linst., p. 185 (*Corvus corone*) ; *T. constricta*, Molin (*C. corone*, *Turdus iliacus*, *T. musicus*) ; *T. acuta*, Rud., pl. ii. figs. 4 & 5 (*Vesperugo noctula* and *serôtinus*) ; *T. polygramma*, sp. n., p. 186, pl. ii. figs. 9 & 10 (*Parus major*) ; *T. fringillarum*, R., = *nasuta*, R. (*Fringilla montifringilla*) ; *T. depressa*, Sieb., p. 187, pl. ii. figs. 1–3 (*Hirundo urbica*). The known *Cysticerci* of birds' tape-worms are enumerated, p. 189.

Tænia bipapillosa, sp. n., Leidy, Pr. Ac. Philad. 1875, p. 16 (Australian wombat). A note on *T. exilis*, Duj., from the fowl, by ARLOING, Rec. Méd. Vét. (6) ii. pp. 427–431.

Echinococci from the muscles of the horse are figured by MEGNIN, *tom. cit.* p. 421, 2 pls.

Villot (3) describes and figures the following species of tapeworms from water-birds:—*Tænia crassirostris*, Kr., p. 474, pl. xii. fig. 9 (*Charadrius hiaticula*); *T. filum*, Goeze, p. 475, pl. xii. fig. 10 (*Tringa alpina*); *T. inversa*, Rud., pl. xii. fig. 8 (*Sterna fissipes*); *T. ericetorum*, Kr., p. 476, pl. xii. fig. 7 (*Pluvialis apricarius*); *T. retirostris*, Kr., pl. xii. fig. 3 (*Strepsilas interpres*); *T. nymphæa*, Schr., pl. xii. fig. 4 (*Numenius phæopus*); *T. nitida*, Kr., p. 477, pl. xii. fig. 5 (*Tringa alpina*); *T. paradoxa*, Rud., pl. xii. fig. 11 (*Scolopax gallinago*); *Ophryocotyle proteus*, Fr., pl. xii. fig. 1 (*Tringa alpina*, *Calidris arenaria*, *Charadrius hiaticula*); *O. lacazii*, sp. n., p. 478, pl. xii. fig. 2 (*Limosa rufa*).

VII. NEMATODA (and Chætognatha).

12. Bütschli, O. Vorläufige Mittheilung über Untersuchungen betreffend die ersten Entwickelungsvorgänge im befruchteten Ei von Nematoden. Z. wiss. Zool. xxv. pp. 201–213 (abstr. Arch. Z. expér. iv. pp. xxviii.–xxx.).

13. ——. Zur Entwickelungsgeschichte des *Cucullanus elegans*, Zed. Z. wiss. Zool. xxvi. pp. 103–111, pl. v. (abstr. Arch. Z. expér. iv. pp. lix.–lxi,).

14. Ercolani, G. B. Osservazioni elmintologiche sulla dimorfobiosi nei Nematodi, sulla *Filaria immitis* e sopra una nuova specie di *Distoma* dei cani. Mem. Ac. Bologn. v. pp. 391–441, pl.; Rendic. 1874–75, pp. 73–80 (abstr. Oesterr. Vierteljahrschr. f. wiss. Veterinärzt. xliv. pp. 89 & 90; JB. Leist. Forts. Medicin, x. 1, p. 379; J. Zool. iv. pp. 254 & 255.)

15. Giard, A., & Barrois, J. Note sur un Chætosome et un *Sagitta*, suivie de quelques reflexions sur la convergence des types par la vie pélagique. Rev. sci. Nat. iii. pp. 513–532, pl. ix. (J. Zool. iv. pp. 436 & 437; Ann. N. H. 4, xvi. pp. 81–90).

16. Lewis, T. R. On nematoid *Hæmatozoa* in the dog. Q. J. Micr. Sci. xv. pp. 268–277, pl. xiii. figs. 1–5.

17. Marion, A. F. Révision des Nématoides du Golfe de Marseille. C. R. lxxx. pp. 499–501; Ann. N. H. (4) xv. pp. 306 & 307.

18. Perrier, E. Un dangereux parasite des oiseaux de basse-cour (le *Syngamus trachealis*, v. S.). Paris, 10 pp. [Not seen by the Recorder.]

19. Villot, A. Sur le système nerveux periphérique des Nématoides marines. C. R. lxxx. pp. 400–402; Ann. N. H. (4) xv. pp. 235 & 236. Abstr. R. Z. (3) iii. pp. vi. & vii.

20. Welsh, F. H. A. Description of the thread-worm, *Filaria immitis*, occasionally infesting the vascular system of the dog, and remarks on the same relative to *Hæmatozoa* in general and the *Filaria* in the human blood. M. Micr. J. x. pp. 157–170, pls. xxx.–xxxii.; amended anatomical details, *ibid.* xii. pp. 224 & 225 [*cf.* Zool. Rec. ix. p. 491].

Villot's researches on *Gordius* [Zool. Rec. xi. pp. 504–506] are briefly re-

ported upon in Q. J. Micr. Sci. xv. pp. 82 & 83. Loew's paper on *Tylenchus millefolii* [Zool. Rec. xi. p. 504] is translated in Ann. N. H. (4) xv. pp. 342–349. E. Bugnion, "Sur la pneumonie vermineuse des animaux domestiques" (C. R. de la réun. de la Soc. Helvét. ; Andermatt). Zahn, "Lungenwürmer beim Reh" (Oesterr. Vierteljahrschr. f. w. V. xliii. p. 125). A note by Borell & Virchow on minute Nematoids [*Filaria attenuata*, Bolling.] in the blood, bile, *humor aqueus* and *corpus vitreum* of a raven (Arch. pathol. Anat. Phys. lxv. pp. 399–400). Several notes on *Hæmatozoa* in man and dog, Veterinarian, xlviii. pp. 114 & 209; on Nematoids and other *Entozoa* in relation to colic in horses, *l. c.* pp. 120 & 121, 192–194, 582–585. T. S. Cobbold, "Epizooty in the horse, more especially in relation to the ravage produced by *Strongylus tetracanthus*," l. c. pp. 237–250 (Oesterr. Vierteljahrschr. f. w. V. xliv. pp. 69 & 70). *Id.*, "Record of preliminary experiments with the eggs and embryos of the husk-producing Strongyle of the calf" (*l. c.* p. 888–901). (*Strongylus micrurus* probably takes its first abode temporarily in earth worms, but afterwards lives free, &c.) Several guides to Trichinoscopy published in Germany by R. Long, Tiemann, Wolff, & Flitner. Maclagan (P. R. Soc. Edinb., 1873–74, pp. 378 & 379) attests that the grouse disease may be due to the exuberant presence of *Strongylus pergracilis* in the cœca (e. g., 4800 in one specimen); *Tænia calva* is not the cause of the disease; the worst cases occur when both parasites are plentiful. The contrary opinion, that the *Strongylus* is not the cause of the disease, is advocated by R. Farquharson, Burdon Sanderson, & A. Wilson (Edinb. Med. Journ. pp. 223 & 911, Brit. Med. J. p. 683).

Trichina spiralis in the wild boar in Saxony (Wochenschr. f. Thierheilk. xix. p. 104; Oesterr. Vierteljahrschr. f. w. V. xliii. p. 33). The occurrence of *Trichocephalus affinis* in the intestine of the llama; Chapman, P. Ac. Philad. 1875, p. 440: that of *Ascaris mystax* [*lepotera*] in the tiger and in the American wild cat; *l. c.* pp. 14 & 17. *Trichonema arcuatum*, Cobb., is only the young state of *Strongylus tetracanthus*; Veterinarian (*l. c.*).

Filaria spelæa, sp. n., Leidy, *l. c.* p. 17 (Australian wallaby, abdominal cavity).

Cyathostoma tadornæ, sp. n., Chatin (*Anas tadorna*, in the trachea) (1), pl. i. figs. 1–11; *Sclerostoma pelecani*, sp. n., *id. l. c.* pl. i. fig. 12, and pl. ii. figs. 1 & 2, encysted in the cellular tissue below the skin (agamous), and in the air-sacs (fertile) of *Pelecanus onocrotalus*.

Linstow (2) has published notes on *Sphærularia bombi*, D. (p. 198), *Trichosoma totani* (sp. inquir.), p. 200 (from *Totanus hypoleucus*), *Angiostoma entomelas*, Duj., pl. iii. figs. 26 & 27, and *A. macrostoma*, sp. n., pl. iv. fig. 28 (*Anguis fragilis*); *Ascaris cornicis*, Gm., p. 202, pl. iv. fig. 32 & c (*Corvus corone*); *A. spiralis*, Z. (*Bubo maximus*), p. 203, pl. iv. figs. 30 & 31 & a; *A. depressa*, Rud., p. 204, pl. iv. fig. 29 & b (*Buteo vulgaris*, *Falco tinnunculus*). As new are described:—*Filaria stomoxeos*, p. 195, pl. iii. figs. 20–22 (proboscis of *Stomoxys calcitrans*,—not *Habronema muscæ*); *F. gruis*, p. 197, pl. iii. figs. 23 & 24 (*Ciconia alba*, *Grus cinerea*, encysted); *Trichosoma trilobum*, p. 198, pl. iii. fig. 25 (*Vanellus cristatus*).

Villot (3) has noticed some species found in marine birds at Roscoff,

and described an unnamed species found between the skin and the flesh of *Delphinus delphis* (p. 467, pl. xiii. figs. 1–8). He has further studied the free Nematoids of the same locality, describing as new *Leptosomatum roscovianum*, p. 458, pl. xi. fig. 1, *L. magnum* (pl. xi. fig. 2), *minutum* (pl. xi. fig. 3), *Enoplus acutus*, p. 460, pl. xi. fig. 6, *Phanoderma parvum*, p. 462, pl. xi. fig. 7, *Anticoma tenuicaudata*, pl. xi. fig. 8, *A. obtusa*, p. 463, pl. xi. fig. 9, *Spira schneideri*, p. 464, pl. xi. fig. 11, *Chromadora cincta*, pl. xi. fig. 12. *Enoplus communii*, Bast., figured, pl. xi. fig. 4. Several of MARION's species are referred (17) to Bastian's genera and species.

Discophora, g. n., Villot, *l. c.* Buccal armature consists of 2 lateral discs. *D. cirrhata* (Eberth.), p. 463, pl. xi. fig. 10.

Chætosoma armatum, sp. n., Barrois (15), Roscoff.

The so-termed "free Nematoids" are, according to Villot (3), semiparasitic, affecting the vicinity of *Mollusca*, *Ascidiæ*, *Molgulæ*, and *Annulata*, and living on their slime. They cannot be systematically separated from the parasitical forms [*cf.* Zool. Rec. xi. p. 506].

BÜTSCHLI has published a preliminary account of his researches [which, if confirmed, will probably profoundly influence the theory of segmentation of the egg] on the processes going on in the eggs of the *Nematoda* during the first stages of their evolution, with suggestive comparisons between the "Richtungskörper" and the "Nucleolus" ("seminal vesicle") in *Infusoria* (12). The primordial embryo of *Cucullanus* has the shape of a plate, composed of 2 cell-layers; the embryonal worm is formed through a plication and coalescence of this plate, one of the layers of which becomes the endoderm, the other the ectoderm (13).

According to VILLOT (19), the subcuticular granular layer in *Nematoda* contains a network of ganglionic cells, furnishing nervous threads to the organs of touch and vision, and communicating with the central nervous system, as in *Gordius* [Zool. Rec. xi. p. 505], by means of a plexus, traversing the muscular layer on the ventral face.

On a *Gordius*-like animal, free at great depths in the South Pacific; also parasitical in shrimps: R. v. WILLEMOËS-SUHM, Z. wiss. Zool. xxv. p. xxvii. On *Mermis acuminata*; LEIDY, P. Ac. Philad. 1875, pp. 15 & 406.

CHÆTOGNATHA.

The affinity of the *Chætognatha* to the *Nematoda* is doubted by BÜTSCHLI (13) & GIARD (15).

Sagitta batziana, sp. n., Giard (15) (Roscoff); *S. hamata*, sp. n., Möbius, Vermes [*suprà*, p. 521], p. 158, pl. iii. figs. 13–16 (North Sea).

VIII. ACANTHOCEPHALA.

VILLOT (3) describes 4 species of *Echinorrhynchus* from the marine birds of Roscoff:—*E. inflatus*, Cr., p. 471, pl. xiii. fig. 11 (*Charadrius hiaticula*, *Tringa alpina*); *polymorphus*, Br., p. 472, pl. xiii. fig. 12 (*Anas* sp., *Tringa alpina* ?); *crassicollis*, sp. n., pl. xiii. figs. 9 & 10 (*Calidris*

arenaria); *longicollis*, sp. n., pl. xiii. fig. 13 (*Strepsilas interpres*, *Larus ridibundus*); *striatus*, G., p. 473, pl. xiii. fig. 13 (*Carbo cormoranus*). *E. strumosus*, Rud., figured in McIntosh's "Mar. Inv. St. Andrews," pl. vii. fig. 18.

IX. GEPHYREA.

1. Graff, L. Anatomie des *Chætoderma nitidulum*, Lovén. Z. wiss Zool. xxvi. pp. 166–192, pls. xi.–xiii.

2. Koren, J., & Danielssen, D. C. Bidrag til de norske Gephyreers Naturhistorie. N. Mag. Naturv. xxi. pp. 108–138.

3. Selenka, E. Eifurchung und Larvenbildung von *Phascolosoma elongatum*, Kef. Z. wiss. Zool. xxv. pp. 442–450, pls. xxix. & xxx. (abstr. Arch. Z. expér. iv. pp. lv.–lviii.).

4. Théel, H. Recherches sur le *Phascolion* (*Phascolosoma*) *strombi* (Mont.) Sommaire. Bihang till Sv. Ak. Handl. iii. No. 3, pp. 1–7; J. Zool. iv. pp. 318–324.

5. ——. Études sur les Géphyriens inermes des mers de la Scandinavie, du Spitzberg et du Groënland. *L. c.* No. 6, pp. 1–30, pls. i.–iv.; J. Zool. iv. pp. 366–390, 474–488, pl. xiv.

Anatomy, Evolution, &c.

Koren & Danielssen (2) have ascertained several important facts in the anatomy of *Sipunculidæ* (especially *Phascolosoma*). The "dermal corpuscles" are slime-secreting organs. The vascular system (which is wanting, with the tentacles, in *Onchnesoma* and *Tylosoma*) is homologous with the aquiferous system in the *Holothuriidæ*. The segmental organs have no internal orifice and are secretory organs ("primordial kidneys"). Eggs and spermatozoa are developed in peculiar organs, 2 cœca, which afterwards, when the evolution of the sexual products is at an end, disappear completely, but detached portions of the ovaries, &c., may be found floating in the body cavity and develop their eggs there; in *Sipunculus*, the eggs may be pressed into the channels of the skin through the slits, by the means of which these channels communicate with the body cavity, a circumstance which probably has misled former observers. Males are much rarer than females. Compare also the special anatomical account of *Phascolion strombi*, by Théel (4).

Graff (1) has made an anatomical investigation, by means of numerous transverse sections, of *Chætoderma*. This genus (considered, with Théel (5), as the type of a special family) agrees with *Priapulus* in its short proboscis, straight (not convoluted) intestinal tube and terminal vent, and in the wanting oral tentacles and segmental organs. The deposition of carbonate of lime in its dermal spines recalls the Echinoderms, while the arrangement of the muscles is suggestive of the *Nematoda*, and the nervous system of the *Turbellaria*; the retractile terminal gills and the mode of formation of the eggs are also peculiar. There is a large anterior dorsal ganglion, from which proceed 4 longitudinal nerve-stems; these posteriorly first coalesce into 2 and afterwards ter-

minate in the branchial ganglion, in the hindmost section of the body. Besides a coat of circular muscles, there are 4 longitudinal bands and special muscles for the proboscis, the intestine, the oviduct and the gills. The eggs are formed in the connective tissue (germs and yelk separately), and further developed in the uterine portion of the oviduct, which probably opens in the proboscis.

Selenka (3) describes the first stages in the evolution of *Phascolosoma elongatum*, pointing out their general agreement with those of Chætopodous Annelids. The elongate larva is provided with a double (præ-oral and post-oral) vibratile ring, 2 (afterwards 3) pairs of bristles; 2 red eye-specks on the cephalic lobe, &c. The first row of hooklets of the trunk is also formed at this early stage.

H. C. Sorby, "On the colouring matter of *Bonellia viridis*," Q. J. Micr. Sci. xv. pp. 166–172.

Genera and Species, Distribution, &c.

Koren & Danielssen (2) distinguish the following species of *Phascolosoma* from Norway:—*P. loveni*, sp. n. (Bergensfjord, 50 fath.); *squamatum*, sp. n.) = *olivaceum*, S., pt.) (Hardangerfjord, Korsfjord, 100–300 fath.); *abyssorum*, sp. n., (Bergensfjord, in *Lima* shells, excavated by sponges, 200–300 fath.); *pallidum*, sp. n. (Bergensfjord, 200 fath. in the tube of *Amphictene auricoma*); *eremita*, S. (*boreale*, Kef.); *margaritaceum*, S. (*ærstedi*, Kef.); *harveyi*, Forb. (*margaritaceum*, Kef., *nec* Sars, *Sip. obscurus*, Qu.); *papillosum*, Forb.; *vulgare*, Blv. (*elongatum*, Kef.), and *strombi*, Mont. The identity of *P. vulgare* and *elongatum* is also advocated by Möbius (Bericht &c. p. 156), who states the occurrence of *P. minutum*, Kef., at Lindesnæs (Norway), and describes *P. procerum*, sp. n. (*l. c.* p. 157, pl. iii. figs. 1–5), from the Bass Rock. *P. strombi* is made the type of a separate genus by Théel (4 & 5): *Phascolion*, "Digestive tube not spiral, making only 2 convolutions, fixed to the body-wall through numerous radiating muscles; 2 retractors, dorsal and ventral; 1 segmental organ." According to a note by Gervais, J. Zool. iv. p. 379, Cuvier's *Lithodermus* (*L. cinereus*, C.; *L. pustulosus*, Gerv., from the Mediterranean) is closely allied to or hardly different from *Phascolion*. 2 new species are added: *Phascolion tuberculosum*, Théel (5), p. 15, pl. i. fig. 1, pl. iii. fig. 16, and p. 383, pl. xiv. fig. 1 (Kosterfjord, Sweden, 25–35 mètres), and *P. spetsbergense*, id. *l. c.* p. 16, pl. 1, figs. 2 & 3, and p. 385, pl. xiv. fig. 10. [Some species of *Phascolosoma* described by Koren & Danielssen have also but one segmental organ, e. g., *P. pallidum*, perhaps identical with *Phascolion tuberculosum*; *Phascolosoma squamatum*, moreover, has but a single retractor.] Théel (5) further describes and figures *Phascolosoma luteum*, sp. n., p. 5, pls. ii. fig. 7, and iii. fig. 17, and p. 369, fig. 5 (= *margaritaceum*, Kef., ?) (Gullmaren, Sweden); *dubium*, sp. n., p. 6, pls. ii. fig. 8, and iii. fig. 19, and p. 370, fig. 7 (Gullmaren, Väderöarne); *validum*, sp. n., p. 7, pls. i. fig. 5, iii. fig. 18, and iv. fig. 20, and p. 371, fig. 4 (Gullmaren); *albidum*, sp. n., p. 8, pl. ii. fig. 10, and p. 372, fig. 6 (Finmark); *fulgens*, sp. n., *ibid.* pl. ii. fig. 11, and p. 373, fig. 8 (Green-

land); *ærstedi*, Kef.; *boreale*, Kef.; *digitatum*, sp n., p. 11, pl. ii. fig. 9, and v. fig. 21, and p. 377, fig. 9 (Finmark, Greenland); *pyriforme* [nec Dan.], p. 12, pls. i. fig. 4, and iv. fig. 22, and p. 378, fig. 2 (Norway, Sweden, 25–90 mètres).

The true "*Sipunculus pyriformis*," Dan., is now made the type of *Onchnesoma*, g. n., Koren & Danielssen (2, p. 133). "Body small, pear-shaped; proboscis long; vent a little before the base of the proboscis; no tentacles and no vascular system; a single retractor." *O. steenstrupi*, K. & D. (*S. pyriformis*, D., *Phascolosoma pusillum*, Sars, MS.; *O. sarsi*, K. & D. (*P. lævissimum*, Sars, MS.) (Lofton, 2–300 fath.) [*P. pyriforme* of Théel has 2 retractors, 20 long filiform tentacles, 1 vessel with numerous ramifications, &c.].

Sipunculus norvegicus, D., K. & D., l. c.; *S. priapuloides*, sp. n., *iid. ibid.* (Korsfjord and Söndfjord, 100–150 fath.).

Tylosoma, g. n., *iid. l. c.* p. 134. "Body cylindrical, closely covered with papillæ; the small round prominent mouth is situated on the broad, obtuse, shield-shaped portion of the body; the vent immediately behind; back part of the body pointed, conical; no proboscis, no tentacles, and no vascular system." The typical species. *T. luetkeni*, sp. n., *id. ibid.* (Dalsfjord, Herlöfjord, 50–80 fath.), has a single segmental organ and cannot be identified with the following species :—

Aspidosiphon mirabilis, sp. n., Théel (5) [*nec* Linn.], p. 17, pls. i. fig. 6, pl. iii. figs. 12–15, and p. 386, pl. xiv. fig. 15 (Gullmaren).

Priapulus glandifer and *brevicaudatus*, Ehl., are enumerated as distinct species by Théel (*l. c.*), the last-named species as occurring at Spitzbergen and Greenland, 800 mètres; while Koren & Danielssen (2) unite them with *P. caudatus*, Lmk., having convinced themselves of the instability of the characters. *Halicryptus spinulosus*, Sieb., occurs at Spitzbergen and in the Baltic, from Bråviken to Ystad; *P. caudatus* likewise in the Baltic, the most northern point being 58° 6′ N. L.: Théel, l. c. *P. bicaudatus*, Dan., is made the type of a new genus, *Priapulopsis*, Koren & Danielssen, *l. c.* p. 135: "proboscis formed by the anterior portion of the body; mouth provided with teeth; vent posterior, on each side of it a long, cylindrical, vesiculate appendix (gill ?); genital pores obliquely placed below the vent." *P. typica*, K. & D. (*P. bicaudata*, D.).

Chrystallophrisson nitens, g. & sp. nn., Möbius (Bericht, &c., p. 157, pl. iii. figs. 5–12), is [as acknowledged by the author in a letter to the Recorder] identical with *Chætoderma nitidulum*.

A note on the rediscovery of *Chætoderma* during the deep-sea researches of the "Challenger" Expedition at great depths in the West Indies, near Nova Scotia, and at the Philippines, by R. v. Willemoës-Suhm, Z. wiss. Zool. xxvi. p. liv. Also a note on a new genus intermediate between *Echiurus* and *Thalassema*, l. c. pl. liii.

Echiurus vulgaris, Sav., *luetkeni*, Dies. ?, and *Bonellia viridis*, Rol.; this species occurs in Bergensfjord and Korsfjord., 50–100 fath. Koren & Danielssen (*l. c.* p. 137).

In "Marine Invertebrata of St. Andrew's," pl. iv. figs. 1 & 2, *Priapulus caudatus* and *Echiurus vulgaris* are figured from life.

TULLBERG, T. *Neomenia*, a new genus of invertebrate animals. Bihang till Sv. Ak. Handl. iii. No. 13, 12 pp. 2 pls.; abstr. Arch. Z. expér. v. pp. i.–iv.

A very enigmatical creature, *N. carinata*, presenting obscure analogies with worms and snails (therefore considered by Ihering as forming, with *Chætoderma* and *Chiton*, the connecting links between *Vermes* and *Gastropoda*), dredged in the fjords of West Sweden. Body oblong, without any trace of articulation; mouth and vent terminal; a ventral furrow; skin thick, velvety, from warts and spines of carbonate of lime; a protrusile "pharynx" without "radula"; body cavity almost filled by a spacious stomach, the walls of which are transversely lamellated; rectum short; one supra-œsophageal and two sub-œsophageal ganglia, giving off 4 longitudinal nerve-trunks, 2 ventral and 2 lateral, without ganglia; a large ovary (structure laminated) fills the space between the wide stomachal tube and the thick skin of the back; eggs in a special bag above and behind the rectum; a pair of glands, the effluent ducts of which are connected with a "mushroom-like" protrusile (?) organ, perhaps represent the male organs, &c. (According to later investigations by Koren and Danielssen, *Neomenia* = *Solenagus*, Sars, and a true Gasteropod though without 'radula.')

ECHINODERMATA.

BY

C. F. Lütken, Ph.D., F.R.D.A.

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1. Hoffmann, C. K. Zur Anatomie der Asteriden. Niederl. Arch. Zool. ii. pp. 1–32, pls. i. & ii. [*cf.* Zool. Rec. xi. pp. 511 & 512].

2. Lovén, S. Études sur les Échinoidées. Sv. Ak. Handl. xi. No. 7, 53 pls. (abstr. J. Zool. v. pp. 102–105).

3. Ludwig, H. [*a*] Beiträge zur Kenntniss der Holothurien. [*b*] *Thyonidium occidentale*, sp. n. Arb. Inst. Würzb. iii. pp. 77–120; abstr. Z. ges. Naturw. (2) xi. pp. 346 & 347.

[illegible]yman, T. Zoological Results of the Hassler Expedition. II. spe[illegible]*ophiuridæ* and *Astrophytidæ*. Cat. Mus. C. Z. viii. 34 pp. 5 pls.

Gro[illegible]tosh, H. W. Researches on the structure of the spines of [illegible]pls. *Diadematidæ* (Pet.). Tr. R. Irish Ac. xxv. pp. 519–558, pls. die [illegible]–xxxiii.

zoisc[illegible] On a malformed corona of *Echinus esculentus*. P. R. Irish Ac. Obser[illegible]ii. pp. 206–208, pls. xxi. & xxii. [*Med*[illegible]

[illegible]Marenzeller, E. von. Revision adriatischer Seesterne. Verh. z.-b. Wien, xxv. pp. 1–14.

8. Möbius, K., & Bütschli, O. *Echinodermata*. Bericht d. Komm. z. Unters. d. deutsch. Meere, Kiel, ii. pp. 143–151; abstr. Z. ges. Naturw. (2) xii. pp. 173–181.

9. Perrier, E. Recherches sur l'appareil circulatoire des oursins. Arch. Z. expér. iv. pp. 604–643, pls. xxiii. & xxiv.; abstr. in Ann. N. H. (4) xv. pp. 84–87, after C. R. lxxix.

10. ——. [*a*] Révision de la collection de Stellérides du Muséum d'histoire naturelle de Paris. Arch. Z. expér. iv. pp. 265–450. [*b*] Sur la classification et la synonymie des Stellérides. C. R. lxxxi. pp. 1271–1273.

11. Sars, G. O. I. On some remarkable forms of animal life from the great deeps off the Norwegian coast. II. Researches on the struc-

ture and affinities of the genus *Brisinga*, based on the study of a new species, *B. coronata*. Christiania (University thesis) : 111 pp. 7 pls.

12. Selenka, E. [*a*] Zur Entwickelung von *Holothuria tubulosa* SB. Soc. Erlang. i. pp. 1–5. [*b*] Beobachtungen über die Embryologie von *Cucumaria doliolum*, zugleich ein Beitrag zur Keimblättertheorie. *L. c.* pp. 85–92. (Preliminary accounts.)

13. Stewart, C. Note on the calcareous parts of the sucking feet of an *Echinus* (*Podophora atrata*). M. Micr. J. ix. pp. 55 & 56, pl. vii.

14. Thomson, C. Wyville. On the *Echinoidea* of the "Porcupine" deep-sea dredging expeditions. Phil. Tr. clxiv. pp. 719–756, pls. lix.–lxxi. [*cf.* Zool. Rec. ix. p. 443].

A revised list of the *Echinodermata* from Greenland, known as such in the Copenhagen Museum, is contributed to the "Arctic Manual," [*anteà*, p. 522], pp. 184 & 185, by the Recorder.

Short notes on the occurrence of *Echinodermata* (*Calveria*, *Phormosoma*, *Pourtalesia*, *Brissus*, *Caudina*, *Myriotrochus*, *Hyocrinus*, *Pentacrinus*, *Cribella*, *Archaster*, *Solaster*, *Brisinga*, *Porocidaris*, *Hymenaster*, *Coryphaster*) at great depths in the Indo-Pacific Ocean are given by R. v. Willemoës-Suhm, in his letters from the Challenger Expedition. Z. wiss. Zool. xxv. pp. xxviii.–xlvi. ; xxvi. pp. lxxiv., lxxix.–lxxxi.

Holothuriidæ.

Synapta inhærens (Müll.) and *Cucumaria lactea*, Forb. & Goods. Intosh, Invert. of St. Andrews, pl. iv. figs. 4 & 5.

The following new genera and species, &c., are described b[y] wig (3) :—

Synapta bankensis, p. 78, pl. vi. fig. 1, *asymmetrica*, ib. pl. vi and *incerta*, p. 79, pl. vi. fig. 3 (Banka). ; *innominata*, ib. pl. v (Philippines) ; *polii*, ib. p. 80, pl. vi. fig. 5 (Barbados) ; *Chiri torta*, ib. pl. vi. fig. 6 (hab. ?).

Cucumaria ignava, p. 81 (Gulf St. Vincent) ; *punctata*, p. 82, pl. fig. 8 (Barbados) ; *nobilis*, ib. pl. vi. fig. 14, and *perspicua*, p. 83, pl. vi. fig. 13 (Norway) ; *parva*, ib. pl. vi. fig. 12 (Chili) ; *exigua*, p. 84, pl. vi. figs. 9 & 11 (China Sea, Chili) ; *improvisa*, p. 85, pl. vi. fig. 10 (Algoa Bay) ; *salmini*, p. 86, and *tenuis*, ib. pl. vi. fig. 7 (Celebes) ; *fallax*, p. 87 (Alaska) ; *syracusana*, Gr., var., p. 113, pl. vii. fig. 52 (Calabar).

Colochirus tristis, ib. (Zanzibar) ; *australis*, p. 88 (Bowen, Sydney) ; *minutus*, p. 89, pl. vi. fig. 16 (Bowen).

Pseudocucumis. 10 larger and 10 smaller tentacles, placed alternately in pairs, commonly ; the smaller partly in the same circle with the larger, partly more inwards ; ambulacral feet disposed in rows on the radii. *P. acicula* (Semp.), p. 90, pl. vi. fig. 17.

Actinocucumis. 18–20 tentacles of different size and irregularly disposed ; the two ventral always the smallest ; ambulacral feet disposed in several rows on the radii ; ambulacral papilli in the dorsal inter-radii. *A. typica*, p. 91, pl. vi. fig. 24 (Bowen).

Thyone suspecta, p. 92, pl. vi. fig. 19 (Barbados); *mirabilis* (subg. *Stolus*), p. 93, pl. vi. fig. 18 (Bowen).

Thyonidium schmeltzi, p. 94, pl. vi. fig. 20 (Bowen, Gulf St. Vincent); *occidentale*, p. 119 (Surinam).

Orcula tenera, p. 95, pl. vi. fig. 21 (Upolu, Samoa).

Phyllophorus frauenfeldi, pl. vi. fig. 22 (Red Sea); *holothurioides*, p. 96, pl. vi. fig. 23 (hab. ?).

Stichopus errans, p. 97 (Barbados); *fuscus*, ib. (Patagonia).

Muelleria excellens, p. 98, pl. vii. fig. 32 (Samoa).

Labidodemas dubiosum, ib. pl. vii. fig. 25 (Tahiti).

Holothuria signata, p. 99, pl. vii. fig. 36 (Tahiti); *pertinax*, p. 100, pl. vii. fig. 50 (Samoa); *kubarii*, ib. pl. vii. fig. 48 (Pelew); *mexicana*, p. 101, pl. vii. fig. 47 (Mexico); *sulcata*, id. pl. vii. fig. 46 (West Indies); *notabilis*, p. 102, pl. vii. fig. 43, and *lineata*, p. 103, pl. vii. fig. 42 (Bowen); *cæsarea*, ib. pl. vii. fig. 39 (Samoa); *occidentalis*, p. 104, pl. vii. fig. 35 (West Indies); *cubana*, ib. pl. vii. fig. 34 (Cuba); *dietrichi*, p. 105, pl. vii. fig. 31 (Bowen, Hong Kong); *peregrina*, ib. pl. vii. fig. 30 (Bowen, Samoa); *insignis*, p. 106, pl. vii. fig. 28 (Bowen); *modesta*, ib. pl. vii. fig. 26 (Cape York); *clemens*, p. 107, pl. vii. fig. 49 (Samoa); *captiva*, p. 108, pl. vii. fig. 45 (Barbados); *depressa*, ib. pl. vii. fig. 44 (Tahiti, Pelew, Philippines); *imitans*, p. 109, pl. vii. fig. 41, *samoana*, ib. pl. vii. fig. 38, and *rugosa*, p. 110, pl. vii. fig. 33 (Samoa); *curiosa*, ib. pl. vii. fig. 29, and *bowen[en]sis*, p. 111, pl. vii. fig. 37 (Bowen); *surinamensis*, ib. pl. vii. fig. 27 (Surinam); *impatiens*, Forsk., var., p. 112, pl. vii. fig. 51 (Tahiti); *vagabunda*, Sel., var., *ib.* pl. vii. fig. 40 (Samoa, Bowen).

ECHINIDÆ.

Prof. Jeffrey Bell (6) has examined the structure of the spines of *Diadema setosum*, *Centrostephanus rodgersi*, *Echinothrix calamaris*, *Astropyga radiata*, and *Asthenosoma varium*. An analysis of genera and species of this family, according to the differences in the structure of the spines, is given, p. 551. It is suggested from the structure of the spines, that *Garelia* ought to be regarded as a genus, and *D. antillarum* as a species. The same author gives enlarged notes on the spines of *Echinometra*, *Stomopneustes*, *Parasalenia*, *Tetrapygus*, *Echinocyamus*, *Echinocrepis*, *Echinocorys*, *Echinolampas*, *Echinoneus*, *Echinocardium*, *Spatangus*, *Brissopsis*, *Schizaster*, *Hemiaster*, *Maretia*, *Micraster*, *Cardiaster*, *Ananchytes*, *Holaster*, *Echinoconus*, *Conulus*, *Pygaulus*, *Echinolampas*, *Echinocyamus*, *Echinocrepis*, *Echinocorys

the circulatory system communicate *inter se* through the vascular ring encircling the œsophagus and reposing on the "lantern"; the buccal feet communicate with the ambulacral vessels, the external branchiæ only with the body cavity. There is no heart and no vascular net in the genital glands. The "madreporite" is chiefly an excretory apparatus, the presumed "heart" accolent to the sand-canal and abutting on the madreporite, a gland. The body-cavity is completely closed, and receives the sea water through absorption only [*cf.* Zool. Rec. xi. p. 511]. From these investigations, the author is inclined to doubt the truth of the interpretation given by Greeff and Hoffmann to certain features of the anatomy of the *Asteridæ*, which he thinks it necessary to accept with reserve until ultimate confirmation. Thus the anal vascular ring of the *Asteridæ* and its branches communicating with the genital glands, correspond apparently entirely to the ano-genital ring and the excretory canals of the ovaries and spermaries of the Sea-Urchins, which have nothing to do with the vascular system, &c.

It is impossible here to do justice to the profound comparative investigations illustrated by a long series of analyses of the utmost accuracy, of the structure, homologies, laws of composition and growth, of the shell of Sea-Urchins and its parts, which are laid down in Lovén's "Études" (2). The first chapter is devoted to the peculiar organs (of taste ?) discovered by Lovén, the *Sphæridia* (only wanting in *Cidaris*), their structure, arrangement, occurrence, &c. They are always placed on the ambulacra, in the peristomial portion, but very variable in number and position, according to genera and species, being sometim inclosed or hidden in small cavities in the surface of the test, especi when the spines, tentacles, &c., cannot afford them a sufficient prote The antero-posterior axis in the regular *Echinidæ* is determined position of the "madreporite," which is typically developed central plate of the apical system, this plate being however o connected with or altogether merged in the *right anterior* geni which therefore is commonly designated as the "madreporite," serve as a means of orientation in the composition of the echi (*Echinometra* is oblique, but *Heterocentrus* and *Colobocentrus* syn?, pl. The modifications in the arrangement and development of the ele pl. vi. the shell, successively introduced in the different genera of *Ect* vi. *edentata*, especially the *Spatangidæ*, as they made their appearance in t course of time (*e.g.*, the development of labrum and sternum), ar traced in every detail, and worked out with sagacious penetration. In recent *Spatangidæ* (with a single exception), the posterior genital plates are separated by the prolongation backwards of the "madreporite," as are also the posterior ocular plates; in the older Spatangoid genera, the "madreporite" is separated from the impair inter-radium through th meeting in the median line of the genital and ocular plates. In *S. adeta* and *prymnadeta*, the number of ambulacral plates in the ventral portion of the bivium is variable; but in *S. prymnadesmia* (the predominating recent type) the number is constant, the plates from the 6th to the 8th or 12th of the inner series in the bivium being elongated transversely in a peculiar manner, towards the median line, and having their ambu-

lacral pores transposed, that they may be enclosed by the sub-anal fasciole. Another organo-genetical law discovered by Lovén, and traced minutely through all divisions, is the remarkable asymmetry (especially distinct in the peristomial portion of the ambulacra of the trivium), pointing perhaps to a yet unknown relation between the axes of the young Sea-Urchin and its plutean larva. In connection with this investigation, the transformations undergone by the elements and organs of the shell during growth, are traced and shown to be subjected as strictly to unfailing laws. There is a profound diversity between the *Cidaridæ* and all other *Echinidæ* in the manner in which the peristomial ambulacral plates are in the former successively detached from the ambulacra and form the imbricate covering of the peristomial membrane. The palæozoic *Echinidæ* are not yet sufficiently known to be tested as to the laws of asymmetry, &c., established for the mesozoic and recent types; but in some recent *Spatangidæ*, a few traces of an (originally ?) imbricated arrangement of the plates may still be found. Highly suggestive as is the analysis of the part played by the dislocation of the vent in the various types and genera, through the course of geological times, showing the path that should be followed in a rational investigation of the successive modification of types, it yields in general morphological importance to the demonstration of the homology of the "apical system" of the *Echinidæ* with the "calyx" of the *Crinoidæ*; e.g., the "ocular" plates corresponding to the "radialia," the "genital" plates to the "costalia," the central ("sur-anal") disc to the "basale" in *Marsupites*. The homology is equally close between the "calyx" of the Sea-Urchins and the dorsal skeleton of the young Starfish, before the appearance of the perisomatic skeleton; even the madreporite and the vent making their appearance in Group y corresponding places. The two great fundamental divisions of pls. *Echinida* are the *E. dentata* and *edentata*.

The KEEPING proposes the following arrangement of the *Echinoidea* zoisch Soc. xxxii. p. 40).

Obser *choechinida* (more than 2 rows of plates in the inter-ambulacral [*Medu* areas)—

centr *Tessellata* (plates non-imbricating).

Ech *Lepi* [*do*] *dermata* (plates imbricating).

st *Echinida* (2 rows of plates in each area)—

Echinothuridæ (plates imbricating, test flexible).

Stereodermata (plates not imbricating, test rigid).

Endocyclica (vent surrounded by the apical plates).

Exocyclica (vent not surrounded by the apical plates).

In WYVILLE THOMSON'S account (14) of the *Echinidæ* collected during the deep-sea expeditions of 1868–70, from the Færö Islands to the Straits of Gibraltar, and from 500–2435 fathoms [*cf.* Zool. Rec ix. p. 440, as to the general results], full characteristics are given of the families *Cidaridæ* and *Echinothuridæ*, and of the genera *Cidaris*, *Porocidaris*, *Phormosoma*, *Calveria*, *Neolampas*, and *Pourtalesia*. The following species are described and copiously illustrated in 13 excellent plates:—*Cidaris papillata*, Leske (= *hystrix*, Blv.), p. 722, pl. lix. figs. 1–13; *affinis*, Phil.

p. 726, pl. lx.; *Porocidaris purpurata*, W. T., p. 728, pl. lxi. & lix. figs. 14 & 15; *Phormosoma placenta*, W. T., p. 732, pls. lxii. & lxiii. figs. 1–8; *Calveria hystrix*, W. T., p. 738, pls. lxiv. & lxv.; *fenestrata*, W. T., p. 741, pls. lxiii. figs. 9 & 10, lxvi. & lxvii.; *Echinus flemingi*, Ball., p. 744, pl. lxviii. fig. 14; *elegans*, D. K., *ib.* figs. 11–13; *microstoma*, W. T., *ib.* figs. 1–10; *Neolampas rostellata*, Ag., p. 745, pl. lxix.; *Pourtalesia jeffreysi*, W. T., p. 747, pl. lxx. figs. 1–10, & lxxi.; *phyale*, W. T., p. 749, pl. lxx. fig. 11.

The following new deep sea genus and species are described by Lovén (2):—

Hemiaster expergitus, p. 13, pl. xiii. figs. 114–120 (970 faths., 38° 7′ Lat. N., 9° 18′ Long. W., Atlantic Ocean).

Palæotropus (*Spatangidæ*), for *P. josephinæ*, p. 17, pl. xiii. figs. 108–113 (Sea of Azores, 500 mètres). Ovoid, convex; ambulacra not depressed, "à fleur de test," entirely apetalous; periproct posterior; mouth bilabiate; a sub-anal fasciole only; 2 genital pores.

Salenia goesiana, p. 27, pl. xix. figs. 159–165 (Sea of Antilles, 360 mètres).

The existence of a minute *Pygaster* (*P. relictus*) from the same locality is announced (p. 79).

Also a *Cassidulus eugeniæ* (p. 6) from the Galapagos.

New diagnoses of *Arachnoides placenta* and *zelandiæ* (p. 34).

Asteridæ.

Monstrosities (through reproduction) of *Asterias rubens*; McIntos Invert. St. Andr. pl. iv. figs. 1–3.

On the differences and characters of *Goniaster placenta*, M. Tr *centiformis*, Heller) and *G. acutus*, Hell., on those of *Astropecten nosus*, Otto, and *platyacanthus*, Phil.; and on the identity of *Astro spinulosus*, Phil., and *johnstoni*, D. Ch.; Marenzeller (7).

In the first portion of a critical review of the genera and sp Starfishes, which is of special importance because it settles ti doubtful questions of difference or identity, arising chiefly fr pl. imperfect descriptions of the late Dr. J. E. Gray, or from the unc vi. use of the manuscript names of the Museum of Paris, and is based u vi. the study of types in the British Museum and of some in that of Copen hagen, compared with the species in the "Jardin des Plantes," Perrier (10) acknowledges 7 families and 45 genera:

A. Pédicellaires pédonculés, droits ou croisés. Tubes ambulacraires ordinairement quadrisériés.

I. *Asteriadæ* (*Asterias, Heliaster, Pycnopodia, Stichaster, Calvasterias*, g. n., *Anasterias*, g. n., *Labidiaster, Pedicellaster*).

B. Pédicellaires sessiles, en pince ou valvulaires. Tubes ambulacraires ordinairement bisériés.

1. Squelette dorsal réticulé. II. *Echinasteridæ* (*Acanthaster, Solaster, Echinaster, Cribrella, Valvaster*, g. n., *Mithrodia*).

2. Squelette dorsal formé d'ossicules arrondis ou quadrangulaires,

disposés en séries longitudinales, au moins sur la face ventrale ; peau généralement granuleuse. III. *Linckiidæ* (*Ophidiaster*, *Linckia*, *Scytaster*, *Ferdina*, *Fromia* = *Metrodira*).

3. Squelette formé, au moins à la face ventrale, d'ossicules disposés de manière à constituer une sorte de pavage. Des plaques marginales, dorsales et ventrales très distinctes. IV. *Goniasteridæ* (*Pentagonaster*, *Goniodiscus*, *Hippasterias*, *Goniaster*, *Anthenea*, *Nidorellia*, *Pentacerus*, *Culcita*, *Asterodiscus*, *Choriaster*, *Gymnasterias*, *Porania*, *Asteropsis*, *Patricia*, *Dermasterias*, g. n.).

4. Ossicules du squelette imbriqués et portant des épines sur leur bord libre, ou arrondis et complètement couverts de petits piquants disposés en brosse, ou complètement disjoints. V. *Asterinidæ* (*Patiria*, *Palmipes*, *Asterina*, *Nepenthia*, *Ganeria*, *Disasterina*, g. n.).

5. Squelette formé de paxilles. VI. *Astropectinidæ* (*Chætaster*, *Luidia*, *Astropecten*, *Archaster*, *Ctenodiscus*).

6. Revêtement dermique supporté par des piquants rayonnants autour d'ossicules saillants du squelette. VII. *Pterasteridæ* (*Pteraster*).

Genera not comprised in this review, because of imperfect knowledge : — *Liaster*, Pet., *Mediaster*, Stps., *Lepidaster* and *Amphiaster*, Verr., *Hymenaster*, *Corethraster*, and *Zoroaster*, Wyv.-Th., and *Brisinga*, Asbj.

The following are the new genera and species and the most important identifications and rectifications of synonymy in the first three families, which are discussed in this first part of Perrier's paper : — *Asterias rodolphi*, sp. n., p. 305, allied to *A. glacialis* (Kermadec Isl.) ; *[illegible]ghennesii*, p. 311 (Madagascar) ; *fabricii*, Ag., p. 320 (Labrador) ; *[illegible]calis*, p. 323 (Labrador) ; *borbonica*, sp. n., p. 325 (Bourbon) ; *rari[illegible]* sp. n., p. 327 (Cape) ; *vancouveri*, sp. n., p. 328 (Vancouver's [illegible]) ; *brachiata*, sp. n., p. 329 ; *douglasi*, sp. n., p. 333 (Labrador ?) ; [illegible] sp. n., p. 335 (Torres Strait) ; *capensis*, sp. n., p. 337 (South Africa) ; [illegible] *ra*, sp. n., p. 337 (New Holland) ; *sinusoida*, sp. n., p. 338 (Tas[illegible] ; *cunninghami*, sp. n., p. 339 (Magelhaens Straits) ; *meridionalis*, [illegible] *bid.* (Antarctic). *Asterias novæboracensis*, P., is referred to *A.* [illegible] *la*, and *A. lacazii* reduced to a variety. The genera *Margaraster*, [*Meduhora*, Gr., and *Coscinasterias*, Verr., are not recognized as distinct [illegible] *Asterias*.

Ec[illegible]nasterias, g. n. Dorsal skeleton rudimentary, almost undeveloped. *A. minuta*, sp. n., p. 345 (locality unknown).

Cœlasterias australis, Verr., is referred to *Stichaster*, M. Tr. Also *Stephanasterias*, Verr., and *Tonia*, Gr.

Calvasterias, g. n. Dorsal skeleton formed of imbricated plates, equally long and large, covered with a naked skin. (Analogy with *Asterina*.). *C. asterinoides*, sp. n., p. 348 (Torres Straits).

Crossaster, Gr., is not generically distinct from *Solaster*.

Heliaster canopus, Val., p. 352 (Juan Fernandez).

In *Acanthaster*, Gerv. (*Echinites*, M. Tr.), 2 species are distinguished : *echinites* and *ellisi*.

Othilia and *Rhopia*, Gr., are merged in *Echinaster* ; *O. spinosa*, Gr., and *O. crassispina*, Verr., = *Echinaster echinophorus* (Lmk.) ; *E. affinis*,

P., = *eridanella*; *E. clouei*, P., = *gracilis*, M. Tr.; "*Ophidiaster*" (?) *vestitus* is also an *Echinaster*, while *E. ornata* belongs to *Cribella* (*Henricia*, Gr.), which genus also occurs at New Zealand and Campbell Island.

Valvaster, g. n. Spines isolated; arms bordered by a row of large valvulate pedicellaria. *V. striatus* (Lmk.)

In *Mithrodia*, Gr., (*Heresaster*, M. Tr.), only one species is acknowledged: *M. clavigera*, Lmk. (= *spinulosa*, Gr., *echinulata*, M. Tr., *papillosa*, Mich.).

Liaster coriaceus, Pet., is identified with *Ophidiaster leachi*, Gr., *O. flacida*, Ltk., with *guildingi*, Gr., *asperulus*, Ltk., with *cylindricus*, Lmk., *granifer*, Ltk., with *pusillus*, M. Tr. *Tamaria*, *Cistina*, and *Dactylosaster*, Gr., are merged into *Ophidiaster*. *O. chinensis*, sp. n., p. 387 (Canton); *germani*, sp. n., p. 394 (New Caledonia).

Linckia nicobarica, Ltk., = *pacifica*, Gr.; *O. ornithopus*, Val., = *L. guildingi*, Gr. (also from the Cape Verde Islands); *O. suturalis*, M. Tr., *L. bifascialis*, Gr., = *L. unifascialis*, Gr.; *L. typus* and *leachi*, Gr., = *L. multifora*, Lmk. *L. bouvieri*, sp. n., p. 414 (Cape Verde Islands); *L. nodosa*, sp. n., p. 417 (hab. unknown).

Scytaster zodiacalis and "*Oreaster*" *desjardinsi*, Mich., = *S. ægyptiacus* (Gr.); *Narcissia teneriffæ*, Gr., = *S. canariensis*, D'Orb.; *Narcissia* and *Nardoa*, Gr. (= *Gomophia*, Gr.) are retained as sections of *Scytaster*. *S. novæ-caledoniæ*, p. 426, and *S. gomophia*, p. 431, spp. nn., (New Caledonia); *S. obtusus*, sp. n., p. 433 (Philippines). *S. pistorius*, M. Tr., = *Fromia milleporella*, Lmk.; *S. milleporellus*, M. Tr., = *F. monilis*, Val. *S. indicus* also is a *Fromia*, and *S. subtilis*, Ltk., a *Metrodira*. *F. balansæ*, sp. n., p. 442 (New Caledonia).

Sars's monograph of *Brisinga coronota* (11) is a very complete, excellently illustrated descriptive and anatomical account of this and remarkable type of Starfishes. After a general description of external physiognomy, the different systems of organs are dis- ("organology"); the ambulacral skeleton of the arms and of the pl. the cuticular system (with the spines and the extremely nu pl. vi. minute pedicellariæ, which are found profusely and in every degree of vi. development on the soft investment of the brachial spines), the ambulacral vessels and feet, the madreporic body, and the "stone-canal" connecting the former with the vascular ring; the muscular and ner- ZR vous system with the blood-carrying sinuses; the problematic "heart," S which possibly connects the circular sinus with the perivisceral cavity, which contains the true, water-mixed blood (sanguiferous vessels, arteries, &c., were not found, and their existence in starfishes is doubted); the organ of sense (smell ?), a modified unpaired ambulacral foot at the tip of each arm, protected in a peculiar manner by plates and spines (no eyes are present); the radial cœca, filled with an oily chyle, and the closed digestive cavity; the dorsal pore is (probably also in other starfishes) no true vent, only a pore leading into a secretory organ (rectal gland); the spermaries, or ovaries, are placed in the thickened portion of the arms, and communicate with the exterior

through an orifice on each side of the basal portion of the arms. A shorter chapter is devoted to the "topography" or general arrangement of the various systems; the 5th, "physiology," to the vital functions; there are no special respiratory organs, and the function of the pedicellariæ (by the adherence of which to the "hempen tangles" the animal is easily caught) is chiefly the capture of food; the regenerative faculty is great, and the tranquil abyssal life, at a depth of 200–800 fathoms, contrasted with the abundant evidence of re-generation, suggests the hypothesis (hitherto not supported by other facts) that *Brisinga* throws off its arms voluntarily for propagating purposes; and that the detached arms might have the faculty (as in some other starfishes) of re-generating the whole animal. The examination of some young and one very minute specimen made it possible to introduce some interesting observations ("ontogeny") on the development of the ambulacral skeleton, the spines, pedicellariæ, &c. The 7th chapter is devoted to the "chorology," viz., the horizontal and vertical distribution and special occurrence of *Brisinga*. The concluding "remarks on homology and affinity ('philosophy')," discusses such suggestive topics as "the scientific significance of the genus *Brisinga*, considered from the standpoint of the Darwinian theory"; "the fundamental form of Echinoderms and their morphological individuality;" "the phylogenetic relationship of the Echinoderms to other types, and the genealogical relation of the several groups of Echinoderms to each other;" "the relation of *Brisinga* to extinct starfishes," &c. It is impossible here to reproduce the author's ideas, more startling perhaps than original, founded upon the conceptions that *Brisinga* is one of the oldest and less altered types of starfishes nearest allied to *Solaster* [?], that the *Asteridæ* themselves are the oldest, most primitive Group of Echinoderms, and to be regarded as compound worm-like animals, &c. [This portion of the monograph is evidently the least satisfactory from a scientific point of view, though it contains interesting suggestions, *e.g.*, as to the homology of pedicellariæ in *Echinidæ* and *Asteridæ*.] Finally, the characters of the *Brisingidæ*, of the genus *Brisinga*, and of the two known species are given. *Brisingæ*, after all, are very anomalous, starfishes; their analogy with the *Ophiuridæ* is relatively insignificant. Their nearest allies are *Asterias*, *Solaster*, *Pedicellaster* [*Labidiaster*, especially].

OPHIURIDÆ.

On the identity of *Ophiura grubii*, Hell., with *Ophioglypha affinis*, Ltk., and the synonymy of *Ophiothrix echinata* and *alopecurus*, M. Tr.; MARENZELLER (7).

LYMAN (4) enumerates 76 species of *Ophiuridæ* collected during the "Hassler" expedition and by Dr. Stimpson in the American seas from the littoral zone to 424 fathoms; 19 species and 2 genera are new. The new species and those described or figured are enumerated below. An analytical synopsis of the unbranched simple-armed *Euryalidæ* (6 genera), and another of the species of *Astroschema* (5 species, *Astromorpha* being merged in *Astroschema*) are given. A special plate

illustrates the mouth-angles, mouth-shields, and under-arm-plates of 25 species of *Amphiura* (and *Amphipholis*, *A. anomala* making the passage between the two). The following species and genera, &c., are described by Lyman :—

Ophiomusium acuferum, sp. n., p. 7, pl. i. figs. 1–5 (Barbados, Florida, 42–100 fath.); *testudo*, sp. n., p. 8, pl. i. figs. 6–8 (Barbados, 100 fath.) ; *Ophiozona nivea*, sp. n., p. 9 (Barbados, Cuba, 100–424 fath.) ; *Ophioceramis albida* (Lgm.), p. 10, pl. iii. figs. 29–31 ; *Ophiocomet papillosa*, sp. n., p. 11 (California); *Ophiacantha stellata*, sp. n., p. 11 pl. ii. figs. 16–18 (Barbados, 100 fath.) ; *hirsuta*, sp. n., p. 12, pl. ii. figs. 21–23 (Barbados, Florida, 100–240 fath.) ; *marsupialis*, sp. n., p. 13, pl. i. figs. 9 & 10 (Juan Fernandez, 240 fath., viviparous) ; *Ophiomitra cervicornis*, sp. n., p. 14, pl. ii. figs. 19 & 20 (Cuba ?, deep water ?) ; *Amphiura anomala*, sp. n., p. 15, pl. iii. figs. 26–28 (Juan Fernandez, 220 fath.) ; *squamata* (D. Ch.) (Talcahuano Bay) ; *barbarœ*, sp. n., p. 17, pl. iii. figs. 33 & 34 (California) ; *flexuosa*, Lgm. ?, p. 17, pl. iii. figs. 35–37, pl. v. fig. 68 (Florida, Barbados, 100 fath.); *repens*, sp. n., p. 18, pl. iii. figs. 38–40 (Florida) ; *magellanica*, Lgm., p. 19 (Patagonia, viviparous) ; *duplicata*, sp. n., p. 19, pl. v. fig. 78 (Barbados, 100 fath., Brazil ?) ; *chilensis*, M. Tr., p. 20, pl. v. fig. 77 (Talcahuano) ; *Ophiocnida filigranea*, sp. n., p. 20 (Florida). *Ophiophragmus wudemanni*, var. ?, p. 21 (Florida). *Ophioscolex stimpsoni*, sp. n., p. 23, pl. i. figs. 11–15 (Florida, 240 fath.). *Astroschema tenue*, sp. n., p. 27 (Barbados, 100 fath.). *Astrophyton pourtalesi*, sp. n., p. 28, pl. iv. figs. 41–43 (Patagonia, 55 fath.) ; *spinosum*, sp. n., p. 29, pl. iv. figs. 44–46 (Panama).

Ophioplax, g. n. (near *Ophiocnida*). Teeth ; no tooth-papillæ; *numerous mouth-papillæ*. Scaling of disc beset with granulation. Ar long and rather stiff. Arm-spines few and smooth, arrange the ridges of the side arm-plates. *One very large tentacle-scale* et side arm-plate, and *others*, *minute*, on the under arm-plate. Two genital openings in each inter-brachial space. *O. ljungmanni*, s p. 22, pl. ii. figs. 24 & 25 (Barbados, 100 fath.).

Astrotoma, g. n. (simple-armed *Euryalæ*). Disc and arms gra Radial ribs low and narrow, running to centre of disc. Arms and traversed by annular ridges bearing microscopic spines. T spines stout, erect, standing by all the pores except those close mouth. No mouth-papillæ. Teeth and tooth-papillæ similar and sp form, arranged in a clump at the inner points of the mouth angle. Two genital openings lying at the outer corners of each inter-brachial space." *A. agassizi*, sp. n., p. 24, pl. iv. figs. 52–56 (Magelhaens Straits, 135 fath.).

Crinoidæ.

Pourtalés' description of *Holopus rangii* [Zool. Rec. xi. p. 516] is translated in J. Zool. iv. pp. 42–44, also the chapters on Crinoids in Wyville-Thomson's "Depths of the Sea," *tom. cit.* pp. 54–59. Carpenter has contributed the results of his studies on the nervous and generative systems of *Comatula* to the British Association ; Nature, xii. p. 441.

Fossil Echinodermata.

G. Cotteau, Échinides nouveaux ou peu connus, Nos. 97–103 (R. Z. 3, iii. pp. 417–428, pls. xiv. & xv.) ; *id.*, Note sur les Échinides irréguliers du terrain jurassique de France (Bull. Soc. Géol. Fr. 3, ii. p. 433); *id.*, Note sur les Échinides crétacés de la province du Hainaut (*l. c.* pp. 638–660, pls. xix. & xx.) ; *id.*, Paléontologie Française, Terrain jurassique, Échinides réguliers, feuilles 1–9, pls. cxliii.–clxxviii. G. Cotteau, A. Péron, & V. Gauthier, Échinides fossiles de l'Algérie, 2me partie (Ann. Sci. Geol. vi., art. 4, 96 pp. pls. viii.–xv.) [*Infraclypeus*, g. n., Gauth.]. P. de Loriol, Échinologie helvétique, description des Oursins fossiles de la Suisse, iii. Échinides de la période tertiaire (Mém. Soc. Paléont. Suisse, ii. pp. 142, 23 pls.); *id.*, Coup d'œil d'ensemble sur la faune échinitique fossile de la Suisse (Arch. sci. nat. lii. pp. 94–105) ; *id.*, Note sur l'*Holaster lævis* (De Luc.), Ag. (Bull. Soc. Géol. Fr. 3, iii. pp 555–567). P. de Loriol & E. Pellat, Monographie paléontologique et géologique des étages supérieurs de la formation jurassique des environs de Boulogne-sur-Mer, pp. 400–455, pls. xxv. & xxvi. (Mém. Soc. Phys. Genèv. xxiii.) [*Pictetocrinus*, g. n., Lor.]. Tournouer, Considérations sur les Échinodermes du calcaire à Astéries (Bull. Soc. Géol. Fr. 3, iii. p. 484). E. Hébert, Description de deux espèces d'*Hemipneustes* de la craie supérieure des Pyrénées (*tom. cit.* pp. 592–595, pls. xix. & xx.). G. R. Credner, On *Salenia texana* (Z. ges. Naturw. 2, xii. pp. 111–116, pl: v. figs. 1–6). F. A. Quenstedt, Petrefaktenkunde Deutschlands (*Echinodermata*), 1ste Abth., iv., Asteriden und Encriniden (727 pp. pls. xc.–cxiv.). J. Hall, Description of new species of *Crinoidea* from strata of the age of the Hudson River Group and Trenton limestone (Rep. N. York Mus. xxiv. pp. 206–219, pls. v.–vii.) [new genera, *Lichenocrinus*, *Cytaster*]. E. Keyser, Ueber die Billingsche Gattung *Pasceolus* und ihrer Verbreitung in palæozoischen Ablagerungen (Z. geol. Ges. 1875, p. 776, pl. xx.). T. Austin, Observations on the genus *Platycrinus* (Ann. N. H: 4, xvi. pp. 90–91) [*Medusacrinus*, g. n.; proboscis or anal tube lateral, eccentric, not central as in the true *Platycrini*]. W. Keeping, Notes on the palæozoic *Echini* (J. G. Soc. xxxii. pp. 35–42, pl. iii.) [*Rhoechinus*, g. n.]. A special chapter is devoted to the *Echinoidea tessellata*, in Lovén's "Études," with a revision of all the genera, pp. 39–44. W. H. Baily, Remarks on the palæozoic *Echinidæ*, *Palæchinus* and *Archæocidaris* (J. R. G. Soc. Irel. xiv. pp. 40–43, pls. iii. & iv. ; abst., Z. ges. Naturw. 2, xi. p. 337). J. McCoy describes 2 silurian starfishes (*Pteraster* and *Urasterella*) from Victoria, Australia (Prodromus of the Palæontology of Victoria, Dec. 1). R. Etheridge, Jr., Description of a new species of the genus *Hemipatagus*, Desor, from the tertiary rocks of Victoria, Australia, with notes on some previously described species from South Australia (J. G. Soc. xxx. pp. 444–450, pl. xxi.). T. Wright, On the occurrence of the genus *Cotyloderma* in the middle lias of Dorsetshire (Geol. Mag. 2, ii. pp. 505 & 506 ; *cf.* a note by C. Moore, *tom. cit.* pp. 626 & 627.); *id.*, Cretaceous *Echinodermata* (Pal. Soc. 1874–75, pp. 185–264, pls. lxv.–lxii.).

CŒLENTERATA.

BY

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ANTHOZOA.

1. DUNCAN, P. M. On the nervous system of *Actinia*. M. Micr. J. xii. pp. 65–79, pls. lxix. & lxx.; P. R. S. xxii. pp. 263–276, pls. ii. & iii.
2. FISCHER, P. Recherches sur les Actinies des côtes océaniques de la France. N. Arch. Mus. x. pp. 193–244. The preliminary abstract, noticed in Zool. Rec. xi. p. 519, is translated in Ann. N. H. (4) xv. pp. 373–376.
3. FISHER, W. J. On a new species of Alcyonoid polype. P. Cal. Ac. v. p. 418.
4. LECONTE, J. Rate of growth of Corals. Am. J. Sci. (3) x. pp. 34–36.
5. HÄCKEL, E. Arabische Korallen. Ein Ausflug nach den Korallenbänken des rothen Meeres und ein Blick in das Leben der Korallenthiere (Populäre Vorlesung mit wissenschaftlichen Erläuterungen). Berlin: 1875 [1876], 48 pp. vi. pls.
6. KOWALEWSKY, A. Contributions à l'histoire du developpement des Actinies (trad. par Giard.). Rev. Montp. iv.; J. Zool. iv. pp. 303–313.
7. LUDWIG, H. Ueber das Röttekensche Auge der Aktinien. Nachr. Ges. Götting, 1875, pp. 491–500.
8. POURTALÉS, L. F. DE. Corals at the Galapagos Islands. Am. J. Sci. (3) x. pp. 282 & 283; Ann. N. H. (4) xvi. p. 374.
9. WILLEMOËS-SUHM, R. VON. Notes on some young stages of *Umbellularia* and on its geographical distribution. Ann. N. H. (4) xv. pp. 312–315, pl. xviii.A; abstr. Am. J. Sci. (3) x. pp. 397 & 398.

An abstract of LINDAHL's paper on *Umbellula* [Zool. Rec. xi. p. 518] is given in J. Zool. iv. pp. 440–442, pl. xiii. R. E. C. STEARNS (P. Cal. Ac. v. p. 283) made further remarks "suggested by Dr. J. E. Gray's paper on the stick-fish in Nature, Nov. 6, 1873."

Anatomy, Evolution, &c.

The annual growth of Madrepore branches in the Florida Gulf is only 3½–4 inches per annum; Leconte (4).

Duncan (1) confirms, in the main, Rötteken's investigations of the "bourses marginales," or coloured eye-like bodies of *Actinia mesembryanthemum*, after the examination of living specimens; and, having discovered beneath them a reticulate tissue, probably corresponding to a *plexus nervosus*, he interprets these organs as imperfect organs of vision, which do not give a distinct image of the objects, but conduct the sense of light more intensively to a greater depth into the body and nearer to the presumed nervous tissue than is possible when these peculiarly differentiated organs are wanting. This reticulate nerve-like tissue was also found in the foot of *Actiniæ*. Ludwig (7), on the other hand, emphatically denies the truth of these interpretations; Rötteken's presumed nervous tissue is only the "filaments of the connective tissue," the "Rötteken-bodies" urticating cells, the "lenses" or "Haimean bodies" probably nuclei of epithelial cells, the external rod-like layer cilia [!], the chromatophores only modified tentacles; their histological structure not essentially different from that of the ordinary skin. Häckel (5), p. 7, also rejects the interpretation of these bodies as organs of sense.

Fischer (2) has observed spontaneous fission or marginal gemmation in *Anemonia sulcata*, and *Sagartia pellucida* and *ignea*. In 20 European species of *Actinidæ*, the number of tentacles in each cycle is 6, or a multiple of 6; in 11, 8 is the typical number; there are 10 and 11 each in a single species; and in a few others the numbers are either apparently combinations of two formulæ or undetermined.

From his observations on the embryology of *Actiniæ*, Kowalewsky (6) draws the conclusion that they are developed after two different types; in the one, the endoderm and the body-cavity are formed through an invagination of the blastoderm; in the other, the endoderm is formed through a division of the blastodermic cells, and the body-cavity from the cavity of segmentation. All species of *Actinia* are not viviparous; in *A. parasitica*, e. g. (in which species the whole process of segmentation was observed), the egg is fertilized outside the body of the mother.

The evolution of *Monoxenia* is sketched by Häckel (5), pp. 11 & 12.

Willemoës-Suhm (9) figures some young stages of an antarctic *Umbellularia*, with 3 and 4 polypites.

Faunæ, Genera, and Species.

Cavelier de Cavenille, "La pêche du corail sur les côtes de l'Algérie." Nancy: 71 pp.

Seven species of Corals were collected by the "Hassler" Expedition at the Galapagos Islands (8), mostly identical with those found at Panama (*Ulangia*, *Pavonia*, *Astropsammia*, *Pocillopora*, *Porites*), mostly reef-builders, but probably here living isolated.

A beautiful picture of a living coral-reef is published by Häckel (5).

pl. iii.; on the frontispiece 10 soft Anthozoa from the Red Sea are figured: — *Discosoma album*, *Ceratactis clavata*, *Phyllactis cichoracea*, *Thalassianthus aster*, *Palythoaster* (g. n. ?) *savignii*, *Hyalopathes corticata*, *Sympodium fuliginosum*, *Xenia umbellata*, *Ammothea virescens*, and *Sarcophytum pulmo*.

Actinoloba dianthus, Ell., *Edwardsia callimorpha*, Gosse, *allmanni* and *goodsiri*, McIn., *Peachia hastata*, G., and *Alcyonium digitatum* are figured from nature in McIntosh's Mar. Invert. St. Andr. pls. i.–iii. & vii.

F. E. Schulze [*vide infrà*, p. 560] enumerates the *Actiniæ* and other *Anthozoa* observed on the cruise of the "Pommerania" in 1872, figuring (pl. ii. fig. 1) *Cophobelemnon leuckarti*, Köll., and (fig. 2) a young *Cophobelemnon* (*stelliferum* ?). Notes on the localities, depth, nature of the bottom, &c., are given for each species in the usual manner.

The Greenland *Actiniæ* and other *Anthozoa* are enumerated in the "Arctic Manual," p. 186. [No. 11 ought to be cancelled as identical with No. 10.]

Fischer (2) enumerates the *Actinidæ* observed on the western shores of France, with remarks on their characters, synonymy, habits, colours, and bathymetrical distribution. They are only found in the littoral, laminarian (0–28 mètres), and nulliporan (28–72 mètres) zones; in the next zone (72–184 mètres) their place is taken by a few Corals and Gorgonians.

Umbellulariæ were found, on the Challenger Expedition, at 8 different stations in the Atlantic, in the Antarctic, and in the Pacific Sea, at depths from 1375–2600 fathoms; Willemoës-Suhm (9).

Virgularia ornata, sp. n., Fisher (3) (Japan).

A note on *Wrightella* (*Elisella* ?) *coccinea* (= *chrysanthos* ?) by W. M. A. Wright, Q. J. Micr. Sci. xv. p. 533.

Chitonactis, g. n., Fischer (2). *Bunodes* with epidermis, the upper part of the body tuberculous. Type, *B. coronata*, Gosse.

Sagartia ignea, Fischer (2), p. 219, and *S. erythrochila*, id. *l. c.* p. 220 (Arcachon), spp. nn.

Bunodes biscayensis, sp. n., *id. l. c.* p. 229 (Arcachon).

Carambactis, g. n. (*Phyllactinidæ*), Häckel. Body low, cylindrical; several rows of numerous, delicate, frizzled, leaf-shaped tentacles nearest to the mouth, encircled below by several rows of thick fusiform tentacles of the ordinary shape. *C. arabica*, sp. n., Häckel (5), p. 9 (Red Sea, on coral reefs).

Palythoa savignii, Aud., is the type of Häckel's (5) genus *Palythoaster*. Solitary *Zoanthidæ*, tentacles short, biseriate, the inner oviform, the outer fusiform.

Monoxenia, g. n., Häckel. Single *Octactiniæ*, differing from *Haimea* and *Hartea* by the total absence of spicula or sclerites, and by the octo-radiate, not bi-labiate mouth. *M. darwini*, sp. n., *id. l. c.* p. 8 (in a dead *Cidaris*-shell, Red Sea).

Fossil Corals.

J. Thomson: On the family *Cyathophyllidæ*, tribe *Aspidophyllacea*, genus *Aspidophyllum*. Glasgow. H. A. Nicholson: On the mode of

growth and increase among the corals of the palæozoic period (P. R. Soc. Edinb. viii. p. 498; Tr. R. Soc. Edinb. xxvii. p. 237). *Id.*, On *Favistella stellata* and *F. calicina*, with notes on the affinities of *Favistella* and allied genera (Rep. Brit. Ass. 1874, pp. 89 & 90). *Id.*, Descriptions of new species of *Cystiphyllum* from the Devonian rocks of North America (*l. c.* p. 91; Geol. Mag. 2, ii. pp. 30–33, pl. i.). *Id.*, On some of the massive forms of *Chætetes* from the lower Silurian (Geol. Mag. *l. c.* pp. 175–177). J. Thomson & H. A. Nicholson: Contributions to the study of the chief generic types of the palæozoic Corals (Ann. N. H. 4, xvi. pp. 305–309, 424–429, pl. xii.). P. M. Duncan: On some fossil *Alcyonaria* from the Australian tertiary deposits; on some fossil *Alcyonaria* from the tertiary deposits of New Zealand; on some fossil Corals from the Tasmanian tertiary deposits (J. Geol. Soc. xxxi. pp. 637–678, pl. xxxviii.). R. Etheridge: Notes on fossil Corals from the conglomerate of Habbie's Howe, Pentland Hills (P. Phys Soc. Edinb. 1874–75, pp. 150–152). L. F. Pourtalés, List of fossil Corals collected by W. M. Gabb in St. Domingo (Geol. Mag. 2, ii. pp. 544 & 545). F. v. Horen: Polypiers nouveaux du terrain dévonien de Belgique (Ann. mal. Belg. viii. p. 134). E. Becker & C. Milaskewitsch: Die Korellen der Nattheimer Schichten (Palæontographica, xxi: pp. 121–244, pls. xxxvi.–li.) [new genera, *Plesiosmilia*, *Epistreptophyllum*, *Phegmatoseris*, *Haplaræa*, and *Diplaræa*, Mil.]. G. Dolfuss: Observations critiques sur la classification des Polypiers paléozoiques (C. R. lxxx. pp. 681–683). *Id.*, Note sur des empreintes attribuables à une Actinie (? *Palæactis vetula*) dans les schistes cambriens des Moitiers d'Allone (Mém. Soc. Cherb. 2, ix. pp. 224–232, pl. iii.). D'Achiardi, Coralli eocenici del Friuli (Atti Soc. Tosc. i. pp. 70–86, 115–124, 147–222, pls. i. & ii., vi.–xix.; new genera, *Reussastræa*, *Hydnophorabacia*, *Pironastræa*). J. Hall & R. P. Whitfield: Descriptions of new species of fossils from the Devonian rocks of Iowa (Rep. N. York Mus. xxiii. pp. 226–236, pls. ix. & x.). J. Hall: Descriptions of Corals of the Lower Helderberg Group (*op. cit.* xxvi. pp. 110–115).

Amplexus biseptatus, sp. n., Maur., JB. f. Mineral. 1875, p. 610, pl. xiv. fig. 2 (Devonian). Species of *Clisiophyllum* and *Stenopora*, from Spitzbergen: F. Toula, *tom. cit.* pp. 245–247, pl. x.

HYDROZOA.*

1. Allman, G. J. On the structure and development of *Myriothela*. P. R. Soc. xxiii. 250–254; Nature, xi. p. 337; Ann. N. H. (4) xv. pp. 297–300.

   [Almost *verbatim* identical with the paper in Ann. N. H. 4, xiv.]

2. ——. On the structure and systematic position of *Stephanoscyphus mirabilis*, the type of a new order of *Hydrozoa*. Tr. L. S. (2) i. pp. 61–66, pl. xiv. [*cf.* Zool. Rec. xi. pp. 528 & 529].

* Through an overlooked typographical mistake, the paper 5, p. 524 of Zool. Rec. xi. (1874), is given as written by E. van Beneden in the place of C. Claus, of whose paper, No. 6, it is a preliminary account. *Cf. l. c.* p. 529.—C. F. L.

3. Claus, C. Ueber die Structur der Muskelcellen und über den Körperbau von *Mnestra parasites*, Kr. Verh. z.-b. Wien, xxv. pp. 9–12, pl. i.

4. Gräffe, E. (a) Solla comparsa delle *Lucernaria* presso Trieste; Boll. Soc. Adriat. i. p. 191. (b) Ueber die Erscheinungszeiten der pelagischen Hydromedusen und Akalephen im Meerbusen der Adria bei Triest; *l. c.* pp. 303–306.

5. Harting, P. Notices zoologiques faites pendant un sejour à Schéveningen du 29 Juin ou 29 Juillet, 1874. Niederl. Arch. Zool. ii. pp. 1–7, pl. i. figs. 1–5 (Abstr. J. Zool. iv. pp. 187–190, v. pp. 87–89; Arch. Z. expér. v. pp. xix.–xxi.; Arch. sci. nat. liv. pp. 434 & 435).

6. Korotneff, A. de. Sur l'anatomie et l'histologie de la Lucernaire C. R. lxxxi. p. 827 (abstr. R. Z. 3, iii. pp. lxi. & lxxii.).

7. Schulze, F. E. Coelenteraten. Jahresbericht der Commission zur wissenschaftlichen Untersuchung der deutschen Meere für die Jahre 1872–73 (Berlin: 1875), pp. 121–142, pl. ii. (abstr. Z. ges. Naturw. xiii. pp. 173–181).

8. ——. Ueber die Cuninen-Knospenähren im Magen von Geryonien. MT. Ver. Steierm. 1875, pp. 1–36, pl. i. (abstr. Z. ges. Naturw. xii. pp. 494 & 495).

9. Ulianin, B. Ueber die Knospung der Cuninen im Magen der Geryoniden, eine vorläufige Mittheilung. Arch. f. Nat. xli. pp. 333–337.

Anatomy, Evolution, &c.

Harting (5) observes, that the eggs of *Cyanea* are not naked, but provided with a relatively thick vitelline membrane, which is perforated by delicate canaliculi. The crystalline otoliths of *Cyanea* and *Chrysaora* are not composed of carbonate, but perhaps of phosphate of lime. Also remarks on the nervous system and marginal sense-organs of *Eucope* (*Campanularia gelatinosa*).

Schulze (8) has studied the presumed "Allæogenesis" (Heckel), or "Heterogenesis" (Leuckart) in *Geryonia hexaphylla*, Pér. It is, as suggested by Steenstrup, simply a case of pseudo-parasitism, or commensalism. The claviform "stolones," or hollow tubes, on the external surface of which the *Cunina*-buds are formed through evagination in the usual manner, are not structurally continuous with the "tongue" of the *Geryonia*, but foreign organisms, without any genetic relation to their host, only attached, in varying number, to the inner surface of its stomach. The observations by McCrady and others, which throw light on the subject, are adduced. Ulianin (9), who has examined *Carmarina hastata*, arrives at similar results, and shows that the gemmiparous tubiform polypite, which is not always fixed to the inner wall of the stomach of the jelly fish, sometimes to the subumbrella, behind the velum, originates from a ciliated larva, which may be found free floating in the sea, or established in the stomach or in the radial channels of the *Carmarina*.

Claus (3) has contributed some details on the remarkable medusiform parasite of *Phyllirhoe*.

A short abstract of Metschnikoff's paper on *Medusæ* and *Siphonophora* [Zool. Rec. xi. pp. 525 & 526] is given in Q. J. Micr. Sci. xv. pp. 79 & 80; of Van Beneden's on *Hydractinia* [Zool. Rec. xi. p. 525], *tom. cit.* pp. 80–82.

Local Lists, Genera, and Species.

A list of the *Calycozoa*, *Ctenophora*, *Discophora*, and *Hydrozoa*, known from Greenland, is contributed to the "Arctic Manual" (pp. 186–190) by the Recorder.

Clark, Am. J. Sci. (3) x. p. 42, describes 5 new species of *Hydrozoa* from New England: *Gonothyræa tenuis*, *Obelia bidentata* (pl. iv. fig. 10), *bicuspidata* (fig. 11), *Opercularella pumila* (figs. 7–9), and *Halecium articulosum*. The following are figured:—*Clytia johnstoni* (fig. 1), *noliformis* (McCr.) (fig. 2), *Calycella syringa*, Hincks (figs. 3–5), and *Campanularia calceolifera*, Hincks (fig. 6).

F. E. Schulze (7) enumerates the *Hydroidæ*, *Medusæ*, *Diphyidæ*, and *Ctenophora*, observed during the cruise of the "Pommerania," with remarks on the specimens examined, and notes on localities, depths, &c. One new species is described: *Aglaophenia* (*Lytocarpia*) *mœbii*, p. 135, pl. ii. figs. 3–5 (Korsfjord). Figures of 2 species of *Tima* are also given (figs. 6 & 7).

A. M. Norman enumerates 10 species attached to the Falmouth-Lisbon cable ("Submarine-cable Fauna," by J. Gwyn-Jeffreys, and the Rev. A. M. N.), Ann. N. H. (4) xv. pp. 172–174. Two new genera are established, viz.:—

Acryptolaria, Norman. "Zoophyte ramose, irregularly branched, branches composed of several tubes; hydrothecæ rather distant, subopposite or alternately arranged, tubular, not contracted at the base and prolonged into the branch itself; mouth somewhat patulous." *A. exserta* (Busk), p. 172, pl. xii. figs. 1 & 2 (allied to *Grammaria abietina*, Sars, which is not *Salacia*, Lam.).

Scapus, Norman. "Zoophyte in the form of a spongious mass rolled in cylindrical form round the stems of branching *Hydrozoa*, and consisting of a series of somewhat closely packed subquadrate hydrothecæ, closed in above, except at the centre, where the hydrotheca projects in the form of a short simple cylindrical horny tube. *S. tubulifer*, sp. n., p. 173, pl. xii. figs. 1 & 3 (on *Acryptolaria exserta*; comparable with *Coppinia*).

Wyville-Thomson describes a gigantic (7 feet 4 inches high) *Monocaulus* dredged in the North Pacific, 34° 37″ lat. N., 140° 32″ E., depth 1875 fath., and 37° 41″ lat. N., 177° 4′ W., depth 2900 fath.; Nature, xii. pp. 555 & 556.

The occurrence of *Lucernasia* (*Calvadosia*) *campanulata*, Lmx., in the Adriatic near Trieste, is noticed by Gräffe (4, A). *L. auricula*, Fabr. [= *octo-radiata*, Lmk., nec *L. auricula*, Fabr.] is figured in McIntosh's Mar. Invertebr. of St. Andr. pl. iii. figs. 11 & 12. Gräffe (4, B) enumerates for each month the species of *Beroidæ*, *Acalephæ*, and

Siphonophora observed at Trieste ; the richest harvest is made in the winter, the poorest in the summer months.

The characters of the *Thecomedusæ* [Zool. Rec. xi. p. 529] are given by Allman (2) thus : "Animal composite, zooids medusiform, with circular and radiating canals, and included in a chitinous rooted perisac, which forms thecæ, within which they are retractile." And of the genus *Stephanoscyphus* : " Terminal orifice surrounded by a single circlet of simple filiform contractile tentacula ; 4 longitudinal canals ; velum and manubrium undeveloped ; generative elements formed in the walls of the longitudinal canals?" The presence of 4 (8) septa in the lower part of the hydrotheca may also be noticed.

Graptolithes.

H. A. Nicholson : On a new genus and some new species of Graptolites from the Skiddaw Slates (Ann. N. H. 4, xvi. pp. 269–273). J. Hopkinson : On some Graptolites from the upper Arenig rocks of Ramsey Island, St. David's (P. Liverp. Geol. Soc. 1873–74, p. 47). J. Hopkinson & C. Lapworth : Descriptions of the Graptolites of the Arenig and Llandeilo rocks of St. David's (J. G. Soc. xxxi. pp. 631–672, pls. xxxiii.–xxxvii.) [*Clematograptus*, g. n.]. C. Lapworth : Note on the Graptolites found at Habbie's Howe, Logan Burn (Tr. Geol. Soc. Edinb. ii. p. 375). F. McCoy : Geological Survey of Victoria ; Prodromus of the Palæontology of Victoria, Dec. 1 (Melbourne : 1874). G. Stache : Die Graptolithen- Schiefer am Osternig Berge in Kärnten (JB. geol. Reichsanst. xxiii. p. 175).

PROTOZOA.

BY

C. F. LÜTKEN, PH.D., F.R.D.A.

SPONGOZOA.

1. BOWERBANK, J. S. A monograph of the British *Spongiadæ*. III. London: 1874 (printed for the Ray Society), 384 pp. 92 pls.

2. ——. A monograph of the siliceo-fibrous Sponges. III.–V. P. Z. S. 1875, pp. 272–281, 503–509, & 558–565, pls. xxxix. & xl., lvi. & lvii., & lxi. & lxii.

3. ——. Further observations on *Alcyoncellum speciosum*, Quoy & Gaimard, and *Hyalonema mirabilis*, Gray. *L. c.* pp. 607–610.

4. ——. Contributions to a general history of the *Spongiadæ*. VII. *L. c.* pp. 281–296.

5. CARTER, H. J. On the genus *Rossella* (a hexactinellid sponge) with descriptions of three species. Ann. N. H. (4) xv. pp. 113–122, pl. x.

6. ——. Notes introductory to the study and classification of the *Spongida*. Pt. I. Anatomy and physiology. Part II. Proposed classification of the *Spongida*. *Op. cit.* xvi. pp. 1–40, 126–145, 177–200, pl. iii.

7. CLARK, H. J. The American *Spongilla*, a craspedote flagellate Infusorian. M. Micr. J. vii. (1872) pp. 104–114, pl. xi.

8. EHLEL, G. Nuove communicazione sopra le Spugne. Boll. Soc. Adriat. i. p. 100.

9. HIGGIN, T. Sponges, their anatomy, physiology, and classification. P. Liverp. Soc. xxix. pp. 193–216, pls. i.–iii.

10. ——. On two hexactinellid Sponges from the Philippine Islands in the Liverpool Free Museum. With Remarks by H. J. CARTER. Ann. N. H. (4) xv. pp. 377–389, pls. xxi. & xxii.

11. ——. On a new sponge of the genus *Luffaria*, from Yucatan, in the Liverpool Free Museum. *Op. cit.* xvi. pp. 223–227, pl. vi.

12. Hyatt, A. Revision of the North American *Poriferæ*, with remarks upon foreign species. Pt. I. Mem. Bost. Soc. ii. pp. 1–10, pl. xiii. (Preliminary note in P. Bost. Soc. xiii. pp. 204 & 205.)

13. Küstermann, H. *Hyalonema sieboldi*, Gr. Arch. mikr. Anat. xi. pp. 286–291, pl. xvi.

14. Marshall, W. Untersuchungen über Hexactinelliden. Z. wiss. Zool. xxv. (suppl.) pp. 142–243, pls. xi.–xvii.

15. Meyen, A. B. On *Hyalonema cebuense*, with a note by Mr. Higgin. Ann. N. H. (4) xvi. pp. 76 & 77.

16. Schmidt, O. Spongien. JB. Comm. zur wiss. Untersuch. der deutsch. Meere, ii. & iii., pp. 115–120, pl. i. (abst. Z. ges. Naturw. xii. pp. 173–181).

17. ——. Zur Orientirung über die Entwickelung der Spongien. Z. wiss. Zool. xxv. (suppl.) pp. 247–280, pls. xviii.–xxi.

18. Schulze, F. E. Ueber den Bau und die Entwickelung von *Sycandra raphanus*, Häckel. Z. wiss. Zool. xxv. (suppl.) pp. 247–280, pls. xviii.–xxi.

19. Wright, P. Report on the structure and mode of life of *Hyalonema lusitanicum*, Bocage. P. R. Irish Ac. (2) i. pp. 549–552.

Anatomy, Evolution.

Through Schulze's studies of the anatomy of *Sycandra* (18), the prevailing ideas on the histo-morphology of sponges are once more modified. He distinguishes, as in *Cœlenterata*, 1, a single layer of flagellate *endodermal* cells, investing the cavities of the radial tubes; ated mesodermal hyaline layer, with imbedded stelliform and amœboid ce ry- in this layer the spicular skeleton is formed, and here also—not from i e. endoderm—the eggs are formed, probably from the amœboid cells ; 3, ... *ectodermal* unicellular plate-epithelium, investing the external and internal surfaces, and the intercanaline cavities.

Schmidt (17) confirms some of Metschnikoff's [Zool. Rec. xi. p. 532 ; Q. J. Micr. Sc. xv. pp. 78 & 79] observations on the evolution of *Calcispongiæ*; the *Sycandra*-larva is composed of 2 portions, an anterior, formed of prismato-conical flagellate cells, and a posterior, of large not flagellate globules. There is a small central cavity, but no mouth, and the body-wall is only formed of a single cell layer. "Therefore there is no "*Gastrula*," and the presumed importance of this stage breaks down with all the beautiful theoretical conclusions." According to Schmidt's observations on other genera of sponges, generalizations are still premature, the observations contradicting each other ; the "planogastrular" larva of *Ascetta* is formed of a single ciliated cell-layer, &c. Schulze (18) however shows that Häckel's ideas are somewhat nearer the truth ; he pursued the egg through all stages of transformation and cell multiplication down to the stage observed by Schmidt and Metschnikoff ; a "*Gastrula*" is really formed through the invagination of the posterior, non-ciliated portion of the larval body, the large

globular cells of which become the endoderm, while the ectoderm is made up of the flagellate cells. Between both, the intermediate hyaline layer is developed. *Cf.* the remarks of Häckel in his paper on the "*Gastrula*" (Jen. Z. Nat. ix. p. 499, postscript).

Marshall (14) has found advanced embryos of *Hyalonema* in the larger cavities of the body, and describes (p. 234) their structure. Schmidt (17) has observed the formation of gemmules in the substance of decaying sponges. A note by H. C. Sorby, "On the chromatological relations of *Spongilla fluviatilis*"; Q. J. Micr. Sci. xv. pp. 47–52. Another by Parfitt, "Does *Cliona* burrow"; M. Micr. J. vii. pp. 186–188.

Distribution, Classification, Genera, and Species.

The *Spongozoa* of Greenland are registered after Häckel and Oscar Schmidt, in the "Arctic Manual," pp. 190 & 191.

Carter (6) divides the *Spongida* into 8 orders, 22 families, and a great number of subordinate groups (excluding the "*Calcarea*"). The characters of "orders" and "families" are given thus:—

I. Carnosa. Without evident skeleton.

1. *Halisarcida.* No spicules.

2. *Gumminida.* Spicules present.

II. Ceratina. Skeleton composed of horny fibre with a granular, chiefly hollow, core, containing for the most part no foreign bodies.

3. *Luffarida.* Rigid fibre, with opaque, white, granular core, mostly hollow.

4. *Aphysinida.* Subrigid or flaccid fibre, with wide hollow granular core.

5. *Pseudoceratida.* Fibres of (3) or (4) sparsely cored with foreign bodies, or passing into a dermal layer of foreign bodies, or of "proper" spicules.

III. Psammonemata. Skeleton composed of solid fibre more or less cored with foreign bodies.

6. *Bibulida.* Solid fibre, chiefly without core of foreign objects.

7. *Hircinida.* Solid fibre, chiefly cored with foreign objects.

8. *Pseudohircinida.* Solid fibre cored with foreign objects and "proper" spicules, sometimes also echinated with "proper" spicules.

IV. Rhaphidonemata. Skeleton composed of horny fibre, with a core of "proper" spicules; spicules chiefly acerate and confined to the interior of the fibre.

9. *Chalinida.* Digitations solid, vertical, or procumbent.

10. *Cavochalinida.* Tubular, vasiform, aculeated, patulous, or compressed flabellately; plane and frondose, or dactyloid.

11. *Acervochalinida.* Massive clathrous, or compact and isodictyal.

12. *Pseudochalinida.* Digitiferous, composed of fibre cored with "proper" spicules and foreign objects.

V. Echinonemata. Skeleton composed of horny fibre cored with "proper" spicules internally, and echinated with "proper" spicules externally; spicules chiefly acerate.

13. *Ectyonida.* Echinated with "proper" spicules *on* the fibre.

14. *Axinellida.* Echinated with "proper" spicules projecting from the *interior* of the fibre.

VI. HOLORHAPHIDOTA. Fibres of the skeleton almost entirely composed of "proper" spicules bound together by a minimum of sarcode; form of spicules variable.

15. *Renierida.* Spicules more or less arranged in a fibrous form; structure yielding to pressure like the crumb of bread.

16. *Suberitida.* Tissue chiefly cork-like; spicules matted felt-like cancellous and crushable, or radiated compact and hard; spicule chiefly pin-like, with the sharp ends projecting from the velvet-like surface.

17. *Pachytragida.* More or less corticate, with a cancellous, more or less radiated structure, internally well differentiated.

18. *Pachastrellida.* No cortex; densely spiculiferous, even to stony hardness; structure confused, no fibre.

19. *Potamospongida.* Fragile freshwater sponges, bearing seed-like statoblasts.

VII. HEXACTINELLIDA. Skeleton charged with proper spicules of the sexradiate type.

20. *Vitreo-hexactinellida.* Fibre vitreous spiculiferous.

21. *Sarco-hexactinellida.* Sarco-spiculiferous.

22. *Sarco-vitreohexactinellida.* Partly fibro-vitreous, partly sarco-spiculiferous.

VIII. CALCAREA. Calcareous spicules only.

In the introduction to the 3rd volume of the "British Sponges" (1), BOWERBANK communicates the results of his examination of some type specimens of Oscar Schmidt's genera and species of Adriatic sponges. *Suberites massa, S. domunculus,* "*Taguilla*" *nigricans,* and "*Tapiliated suberea* (?), belong to *Hymeniciadon*; *Stelletta discophora* and *Cami-vulcani* to *Pachymatisma*; *Reniera digitata, aquæductus,* and *nigrescens* i.e. and *Axinella verrucosa* are *Halichondriæ*; *Reniera semitubulosa* (?), *palmata, Axinella polypoides,* "*Stegrella*"* *saccea,* and *Cribrella hamigera* are *Isodictyæ*; *Reniera dura* (*densa*) belongs to *Desmacidon*; *Esperia tunicata* and *bowerbanki* to *Raphiodesma*; *Cacospongia mollior, Spongia nitens, Spongelia pallescens,* and *Sarcotragus spinulosus* are true *Spongiæ,* while *Cacospongia scalaris* and *Aplysina aerophoba,* are referred to *Verongia, Stelletta pumex* to *Tethea, Clathria oroides* and *coralloides* to *Ophlitaspongia, Hircinia variabilis* to *Stematumenia. Gummina* is "apparently not a sponge."

In the first 70 plates, and in some of the following of this work (1), figures are given of a great number of species described in vol. ii. Some species are now referred to other genera, e.g., *Hymeniacidon lingua* and *floridum* to *Raphiodesma*, g. n., *H. jecusculum* and *plumosum* to *Microciona, H. bucklandi* to *Battersbyia*, g. n., *Halichondria hyndmanni* to *Isodictya, Chalina seriata* to *Ophlitaspongia.* A few are withdrawn (*Microciona carnosa* = *M. plumosa, Isodictya robusta* = *Desmacidon jef-*

* The Recorder is unable to find such names as *Taguilla, Tapiliata,* or *Stegrella,* in Oscar Schmidt's monographs of the sponges; perhaps *Papilina* and *Stelletta* are intended.

freysi). In the supplement, the following new species are described and figured:—

Hymeniacidon foliatus, p. 182, pl. lxxi. figs. 1 & 2 (Shetland); *firmus*, p. 186, pl. lxxii. figs. 1 & 2, and *radiosa* [*-us*], p. 187, pl. lxxii. figs. 3 & 4 (Jersey); *placentula*, p. 189, pl. lxxii. figs. 5–9 (Hebrides); *plumiger*, p. 191, pl. lxxii. figs. 10 & 11 (Guernsey); *tegeticula*, p. 216, pl. lxxiv. figs. 16 & 17 (Jersey); *medius*, p. 291, pl. lxxxv. figs. 11–13 (Plymouth); *aldousi*, p. 347, pl. xcii. figs. 3–11 (Torquay).

Polymastia conigera, p. 192, pl. lxxii. figs. 13–16 (Shetland).

Halichondria foliata, p. 198, pl. lxxiii. figs. 1–5 (Shetland, Scarborough); *edusa*, p. 201, pl. lxxiii. figs. 6–9 (Jersey); *regularis*, p. 202, pl. lxxiii. figs. 10 & 11 (Sark); *couchi*, p. 203, pl. lxxiii. figs. 12–15 (Cornwall); *falcula*, p. 208, pl. lxxiv. figs. 1–3, and *mutula*, p. 209, pl. lxxiv. figs. 4–8 (Shetland); *expansa*, p. 212, pl. lxxiv. figs. 9–13 (Sky); *ambigua*, p. 213, pl. lxxiv. (Jersey); *macintoshi*, p. 340, pl. xci. figs. 18 & 19 (St. Andrews).

Isodictya laciniosa, p. 219, pl. lxxv. (Shetland); *obscura*, p. 224, pl. lxxvi. figs. 1 & 2, pl. lxxxvii. fig. 11 (Hastings, Jersey); *imitata*, p. 226, pl. lxxvi. figs. 3–6 (Belfast); *coriacea*, p. 228, pl. lxxvii. figs. 7–12 (Strangford Lough); *ingalli*, p. 241, pl. lxxviii. figs. 1–4 (Southport); *filamenta*, p. 286, pl. lxxxv.; *luteosa*, p. 288, pl. lxxxv. figs. 5–7 (Portanferry, Strangford Lough); *invalida*, p. 289, pl. lxxxv. figs. 8–10 (Plymouth); *incerta*, p. 314, pl. lxxxix. figs. 3 & 4 (Mull); *dubia*, p. 325, pl. xc. figs. 4–7 (Clew Bay); *rugosa*, p. 332, pl. xci. figs. 1–5 (Hastings); *tumulosa*, p. 344, pl. xcii. figs. 1–7 (Torquay); *funalis*, Ann. N. H. (4) xv. p. 176 (on a cable, 150 miles from Land's End).

Raphiodesma (g. n.) *sordida* [*-dum*] (1) p. 230, pl. lxxvi. figs. 13–19 (Jersey, Ramsgate); *simplicissima* [*-mum*, p. 323, pl. xc. figs. 1–3 (Mull).

Desmacidon columbella, p. 241, pl. lxxviii. figs. 6–8 (Exmouth); *copiosa* [*-sus*], p. 265, pl. lxxxii. figs. 2–8 (Jersey); *cavernula*, pl. lxxxii. figs. 9–12 (Shetland); *incognitus*, p. 292, pl. lxxxv. figs. 14–16 (Fowey Harbour); *pannosus*, p. 312, pl. lxxxix. figs. 1 & 2 (Jersey); *similaris*, p. 319, pl. lxxxix. figs. 14–20 (Jersey); *rotalis*, p. 327, pl. xc. figs. 8–14 (Hastings).

Hymeraphia coronula, p. 246, pl. lxxix. figs. 1–4, and *simplex*, p. 255, pl. lxxx. figs. 2 & 3 (Shetland).

Hymedesmia occulta, p. 250, pl. lxxix. figs. 9–11, *inflata*, p. 248, pl. lxxix. figs. 5–8, *simplici* [*ssi*] *ma*, p. 253, pl. lxxx. fig. 1, and *indistincta*, p. 304, pl. lxxxvii. figs. 1–10 (Shetland).

Normania (g. n.) *crassa*, p. 258, pl. lxxxi. (Shetland).

Ecionemia coactura, p. 269, pl. lxxxii. figs. 13–19 (Guernsey).

Microciona fraudator, p. 275, pl. lxxxiii. figs. 7–11 (Polperro, Fowey Harbour); *kentii*, p. 317, pl. lxxxix. figs. 9–13 (Jersey, Strangford Lough); *simplici* [*ssi*] *ma*, p. 204, pl. lxxiii. figs. 16–19 (Shetland).

Ciocalypta leei, p. 296, pl. lxxxvi. figs. 1–4 (Ilfracombe).

Dysidea coriacea, p. 341, pl. xci. fig. 20 (Hastings).

Chalina inornata, pp. 277 & 359, pl. lxxxiii. figs. 12–16 (Mounts Bay).

Tethea spinosa, p. 279, pl. lxxxiii. figs. 17–22 (Fowey Harbour).

Dictyocylindrus rectangulus, p. 281, pl. lxxxiv. (Shetland).

Spongilla parfitti, p. 298, pl. lxxxvi. figs. 5–14 (River Exe); *sceptrifera*, p. 300, pl. lxxxvi. figs. 15–17 (Exeter).

Leuconia somesii, p. 334, pl. xci. figs. 16 & 17 (Brighton Aquarium).

The 3 new genera are characterized as follows:—

Normania [name proposed in 1866 by BRADY for a genus of *Crustacea* = *Loxoconcha*, Sars]. "Skeleton composed at the external surface of short fasciculi of siliceous spicules, in the interior of an irregular siliceo-spicular net-work; dermis furnished with ternate connecting spicula; ovaria membranous, aspiculous?" Type, *N. crassa* (allied to *Pachymatisma*).

Battersbyia. "Skeleton a somewhat regular complication of spiculated tri-radiate and bi-angulated quadri-radiate siliceous spicula." Type, *Hymeniacidon bucklandi*. (*Sphinctrella horrida*, Schm., belongs to this genus).

Raphiodesma. "Skeleton without fibre, composed of an irregular net-work of polyspiculous faggot-like bundles, the spicula of which are compactly cemented together at the middle, but are radiating at their terminations." Type, *Hymeniacidon lingua*.

BOWERBANK further describes (4) a number of new species from the Eastern seas: *Microciona tuberosa*, p. 281 (Malacca Straits); *Hymeraphia spinularia*, p. 282 (Corea); *Raphiodesma parishi*, p. 283, *Halichondria elegan*[*tia*]*s*, p. 286, and *aspera*, p. 287, *frondifera*, p. 288 (also from Gaspar Straits), *rigida*, p. 289, *crassa*, p. 290, *compressa*, p. 291, *varia*, p. 292, *purpuracea*, p. 293, *Isodictya rudis*, p. 293, *virgata*, p. 294, *Desmacidon folioides*, p. 295, and *venusta*, p. 296 (all from the Straits of Malacca).

HYATT (12) describes the following keratose hollow fibred species (suborder *Aplysinæ*) [the new are marked "H."].

Dendrospongia (g. n.) *crassa*, H., p. 3, pl. xiii. figs. 1, 2, & 7 (Nassau) (= *Aplysina aerophoba*, Schm., pt.). The *Dendrospongiidæ* are characterized by "the irregular anastomosis of the fibres of the skeleton, their rotund form, and the thickness of the horny walls."

Verongia (*Luffaria*) *fistularis* (Esp.) (= *rigida*, Esp.), p. 4, figs. 11, 19, & 20; *V. hirsuta*, H., p. 5 (Florida, Cuba); *V. tenuissima*, H. (Key West).

Aplysinidæ. "This family may be characterized by the regular net-like anastomosis of the fibres, the tendency of this to occur in the same plane, the flatness of the fibres, and the thinness of their walls."

Aplysina (*Evenor*, D. M.) *aurea*, H., p. 6, figs. 5 & 6, *prætexta*, H., p. 7, figs. 12–15, *gigantea*, H., figs. 8, 9, & 14 (Nassau); *aerophoba*, Nardo, Schm. p. 8, figs. 10 & 16; *cellulosa*, Esp., figs. 13, 17 & 18.

Janthellidæ. *Janthella concentrica*, H., p. 9 (Fiji Islands) (*Antipathes flabelliformis*, Dana ?).

Luffaria archeri, sp. n., Higgin (11) (Bay of Honduras). The genus *Luffaria* is also represented in the Mediterranean.

Among the sponges enumerated by SCHMIDT (16), as collected during the cruise of the "Pommerania" (with the usual notes on localities, depth, nature of the bottom, &c.) the following are new [when no locality is given, the new species all belong to the Norwegian fauna, South of Bukkefjord, Haugesund or Korsfjord]:—

Amorphina appendiculata (N. E. of Cromer), *paciscens* (Portobello); *Tedania increscens* (p. 115); *Suberites dianæ* (p. 116, pl. i. fig. 1); *Cometella spermatozoon* (fig. 2); *Bursalina* (g. n.) *muta* (figs. 3 & 4); *Inflatella* (g. n.) *pellicula*, p. 117, fig. 5; *Desmacidon filiferum* (fig. 6), *koreni*, *neptuni* (fig. 7), *emphysema* (p. 118), *physa* (figs. 8 & 9), *crux* (figs. 10 & 11); *Esperia lanugo* (Store Bælt) and *rhopalophora* (fig. 12); *Cladorrhiza pennatula* (p. 119, figs. 14–16); *Sceptrella triloba* (figs. 17 & 18); *Raspailia mœbii* (p. 120); *Pseudaxinella* (g. n.) *sulcata*; *Spirastrella vidua*.

The following notes may give a preliminary idea of the new genera :—

Pseudaxinella. Unbranched, club-shaped or lobate shrub-like, without any corneous axis of basket-like tissue; spicula those of *Axinella*, but not distinctly cemented together.

Inflatella. Longish bladders, fixed directly through the proximal extremity of the body wall, or through some flattish excrescences, ending distally in a few closed or perforate processes; needles of the parenchyme somewhat swollen at one extremity, obtusely pointed at the other.

Bursalina. Monozoic, stalked, hollow, fusiform or roundish; osculum obliterate, wanting; body cavity partially filled with a flocculate substance, containing needles of the body wall; these are in the external portion obtusely pointed or pin-shaped, placed vertically to the surface, with prominent points; those of the inner layer and of the stalk larger, somewhat swollen in the middle, forming 14–18 vertical ridges on the inner aspect of the cavity, connected by secondary strings into a rather regular meshwork, including in its meshes funnel-shaped intromittent pores.

The following new "siliceo-fibrous" (vitreous, hexactinellid) sponges are described by Bowerbank (2):—*Farrea gassioti*, p. 272, pl. xxxix. figs. 1–3, and *pocillum*, p. 273, pl. xxxix. figs. 4–8 (West Indies); *fistulata*, p. 276, pl. xl. figs. 3 & 4, and *lævis*, p. 278, pl. xl. figs. 5 & 6 (? W. Indies); *parasitica*, p. 279, pl. xl. fig. 7 (W. Indies); *valida*, p. 507, pl. lvii. figs. 1 & 2, *spinosissima*, p. 508, pl. lvii. figs. 3 & 4, and *spinifera*, p. 558, pl. lxi. (? W. Indies); *spinulenta*, p. 560, pl. lxi. figs. 2 & 3 (Tripoli); *aculeata*, p. 561, pl. lxii. fig. 1, and *robusta*, p. 562, pl. lxii. figs. 2–6 (West Indies ?).

Deanea (g. n.), *id. l. c.* "Skeleton siliceo-fibrous, fibres canaliculated; canals continuous; rete symmetrical; areas rotulate, confluent." (Intermediate between *Iphiteon* and *Farrea*). *D. virgultosa*, sp. n. *id. l. c.* p. 275, pl. xl. figs. 1 & 2 (West Indies ?).

Additions are further made to the knowledge of *Alcyoncellum speciosum* (*Euplectella aspergillum* and *cucumer*), id. *l. c.* pp. 503–507, pls. lvi. & lxi. fig. 4, and (3) p. 607; and *Hyalonema mirabile* (3, pp. 608–610). The author gives his reasons (partly based on the different arrangements of the spicules, in the "basal" and lateral portion of the investment of the conical sponge) for supposing that the sponge is attached through its broader terminal surface, and that the glass rope ("the spiral column of the cloacal system") is not plunged in the mud of the sea-bottom; and he further persists in not acknowledging the "mamilloid or ocular organs" as "polype cells." Küstermann (13) and Wright (19), on the

other hand, confirm the results now generally adopted after the researches of Claus and Lovén.

On the *Hyalonema* ground off Enosima; R. v. Willemoës-Suhm, Z. wiss. Zool. xxvii. p. xcviii.

Hyalonema cebuense, Higgin (10), p. 377, pl. xxi. figs. 1–9, and xxii. figs. 1 & 2 (Philippines). *H. thomsonis*, sp. n., Marshall (14), p. 225. pl. xvii. fig. 84 (N. of Shetland, 550 fathoms); *affine*, sp. n., *id. l. c.* p. 234 (Japan).

Labaria hemisphærica, Gr., Higgin (10), p. 385, pl. xxii. fig. 3.

Rossella antarctica, Cart., *philippensis*, Gr., and *velata*, W. T., Carter (5), pp. 114, 118, & 120, pl. x.

Notes on the occurrence of vitreous sponges in deeper portions of the Pacific; Willemoës-Suhm, Z. wiss. Zool. xxv. pp. xxx. & xxxi.; xxvi. pp. liii. & lxxiv.

The following genera and species of the same group are described by Marshall (14):—

Euplectella oweni, Herkl. & Marsh., p. 189, pl. xii. fig. D. (Japan).

Eudictyon (g. n.) *elegans*, sp. n., p. 211 (hab. unknown).

Semperella schultzii, Gr. (= *Hyalothauma ludekingi*, H. & M.) (Ceram, Philippines, 200 fathoms), p. 212, pl. xii. fig. E.

Eurete simplicissima, Semp., p. 181, pl. xii. fig. C. (Philippines).

Periphragella (g. n.) *elisæ*, sp. n., p. 177, pl. xii. fig. B. (Moluccas).

Sclerothamnus (g. n.) *clausi*, sp. n., p. 171, pl. xi. fig. A. (hab. unknown).

Fossil Sponges.

Ewald, "Ueber ein neues *Coeloptychium* aus der obern Senonen Kreide von Halden in Westphalen"; SB. Nat. Fr. 1873, p. 38. A. Rutot, "Note sur deux Spongiaires", &c.; Ann. Mal. Belg. ix. p. 55.

Glenodictyum hexagonum, V. d. Marsh. (Palæontogr. xxii. p. 68, pl. ii. fig. 10); *Clivna conybeari* and *Spongia talpinoides*, Geinitz, Palæont. xx. 1, pp. 233 & 234, pl. xxxvi. fig. 7, xlvi. fig. 4.

INFUSORIA.*

1. Allman, G. J. Recent progress in our knowledge of the Ciliate *Infusoria*. M. Micr. J. xiv. pp. 170–191, pl. cxviii. Nature, xii. pp. 136 & 137, 155 & 156, 175–177.

2. Balbiani, —. Sur la génération sexuelle des Vorticelliens. C. R. lxxxi. pp. 676–679; J. Zool. v. pp. 57–59; Ann. N. H. (4) xvi. pp. 437–439; abstr. R. Z. (3) iii. pp. lix. & lx.

* See also:—W. H. Dallinger and J. Drysdale, "Further researches into the life history of the Monads"; M. Micr. J. x. pp. 245-249, xi. pp. 7-10, 69-72, 97-103, xii. pp. 261-269, xiii. pp. 185-197, pls. xli.-xliii., xlvi.-xlviii., li. & lii., lxxxiii.-lxxxv., cii.-civ. *Iid.*, "On the existence of flagella in *Bacterium termo*"; *op. cit.* xiv. pp. 105-108, pl. cxiii. W. Roberts, "Studies on Biogenesis"; Phil. Tr. clxiv. pp. 457-477 (abstr. P. R. S. xxii. pp. 289-291; Veterinar. 1875, pp. 445-447). F. Putzeys, "Ueber die Abiogenesis Huizingas"; Arch. f. Anat. xi. pp. 387-391.

3. Bütschli, O. Vorläufige Mittheilung einiger Resultate von Studien über die Conjugation der Infusorien, &c. Z. wiss. Zool. xxv. pp. 426–441.

4. Fromentel, E. de. Études sur les Microzaires ou Infusoires proprement dits comprénant de nouvelles recherches sur leur organisation, leur classification et la description des espèces nouvelles ou peu connues. Planches et notes descriptives des espèces par Mme. J. Jobard-Muteau. Paris: 1874, 364 pp. 30 pls. (*cf.* J. Zool. iv. pp. 340–342).

5. Hertwig, R. Ueber *Podophrya gemmipara* nebst Bemerkungen zun Bau und zur systematischen Stellung der Acineten. Morphol. JB. i. pp. 20–82, pls. i. & ii. (Separately, "Beiträge zur Kenntniss der Acineten": Leipzig and Jena.) (Abstr. Arch. Z. expér. v. pp. viii. & ix.)

6. Jackson, W. H. On a new peritrichous Infusorian (*Cyclochæta spongillæ*). Q. J. Micr. Sci. xv. pp. 243–249, pl. xii.

7. Simroth, H. Zur Kenntniss des Bewegungsapparates der Infusionsthiere. Arch. mikr. Anat. xii. pp. 51–86, pl. ix.

Anatomy and Physiology.

According to the researches of Hertwig (5), the *Acineta* are true unicellular animals; in *Podophrya gemmipara* the tentacles are differentiated into pointed prehensile organs and suctorial tubes; they are not pseudopodial prolongations from the protoplasm of the body, but continued through the investing cuticle towards the central part of the body. *Podophrya* propagates through partially ciliate "swarmers," which are formed as buds from the upper tentaculiferous surface. The "nucleus" is first horse-shoe shaped, afterwards strongly ramified, one clavate branch penetrating into each bud. The partial ciliation and rudimentary "cytostome" is favourable to the hypothesis, that the *Acineta* or *Infusoria suctoria* are derived phylogenetically from the *Infusoria ciliata*. Critical remarks on the morphology, &c., of the *Infusoria* are scattered through the paper.

E. Buck, "Die Acinete im Aquarium"; Zool. Gart. xvi. pp. 90–92.

Balbiani (2) criticises Stein's observations on the conjugation and reproduction of *Vorticellina* (*Carchesium*), and maintains that a fecundation through spermatozoic filaments really takes place; during the conjugation, the "nucleolus" (testis ?) of the swarmer or "microgonidium," is divided into 2 nucleoli, which are afterwards found in the new individual, resulting from the conjugation. Some of the nuclear fragments become ova, while the others reconstitute the nucleus; but they do not form a "placenta," in the interior of which the embryos originate, as Stein describes.

On cases of *Balantidium coli* and their treatment; S. Henschen & J. A. Walderström, Upsala, Läkare fören. Förh. ix. p. 579, x. p. 120 (Nord. Med. Ark. vii. No. 4, p. 17).

Genera and Species; Classification.

Podophrya gemmipara and *P. poculum*, spp. nn. (Heligoland, on *Bryozoa*, *Tubulariæ*, and other *Hydrozoa*), Allman (1).

Cyclochæta, g. n. [Family *Urceolarina*]. "Animal with circle of 16 setæ on the oral surface of the disc; spiral of buccal cilia absent; mouth placed in the angle formed by the junction of the body and disc; body soft, changing in shape; ring with 37 hooks and radii, being of one piece throughout." *C. spongillæ*, sp. n., Jackson (6) (on *Spongilla fluviatilis*, Oxford).

FROMENTEL (4) classifies the "*Microzoa*" in the following manner:—

Microzoa vorticosa (Infusoires à tourbillon).	
À disque vibratile retractile	*Vorticellidæ.*
Vorticellides pedonculées ou fixées	*Vorticellina.*
V. envaginées	*Vaginicolina.*
V. libres	*Stentorina.*
Sans disque vibratile retractile	*Paramœcidæ.*
Point de cuirasse*:	
Une couronne de cirrhes buccaux; corps glabre.	*Halterina.*
Pas de couronne de cirrhes:	
Infusoires nageurs et marcheurs	*Keronina.*
Infusoires nageurs seulement:	
Un appareil dentaire dégluteur	*Nassulina.*
Point de dents:	
Un pied spécial	*Ervilina.*
Point de pied:	
Animalcule très contractile	*Lacrymarina.*
Animalcule non contractile	*Paramœcina.*
Une cuirasse persistante	*Colepina.*
Microzoa nutantia (Infusoires oscillants).	
M. possédants un ou plusieurs flagellums	*Monadidæ.*
Carapace solide	*Peridinina.*
Nus, à tegument contractile	*Euglenina.*
Nus, isolés, à tégument non contractile	*Monadina.*
Nus, agglomerés, non contractiles	*Volvocina.*
M. dépourvus de flagellum	*Vibrionidæ* (*Vibrionina*).
Groupe de transition	*Amœbæa.*

It will hardly be necessary to enumerate the new species; the following† new genera are introduced:—

Trichodon [name pre-occupied]. Characters of *Chilodon*, but having beside the apparatus of deglutition, a long bristle inserted at its margin. *T. ciliatus* and *acuminatus* [fam. *Nassulina*].

Tricholeptus. General form of *Condylostoma*, differing in its less en-

* Notwithstanding this scheme, there are enumerated *Keronina* with "cuirasse" (*Campylopus*, &c.).

† Other new genera are, *Trichonema* and *Stomonema* (fam. *Euglenina*), *Pleuromonas*, *Cyathomonas*, *Diplomita* (fam. *Monadina*), *Stylobryon*, *Pycnobryon*, *Allodorina*, and *Diplodorina* (fam. *Volvocina*).

larged mouth, which is slit-shaped from the apex, and provided with 2 rather long bristles, one at the base, the other at the apex of the mouth-slit. *T. aculeatus* [fam. *Lacrymarina*].

Trichomæcium. External form of *Paramæcium*; extremity pointed; a buccal bristle, &c. *T. caudatum* [fam. *Paramæcina*].

Districha. Mouth lateral, provided at the apex with a long bristle; also a caudal bristle, differing by this character from *Cyclidium* [subfam. *Encheliina*].

RHIZOPODA.

1. Archer, W. On *Chlamydomyxa labyrinthuloides*, g & sp. nn., a new freshwater sarcodic organism. P. R. Irish Ac. (2) i. pp. 140–159, pls. xiv. & xv.; Q. J. Micr. Sci. xv. pp. 107–130, pls. vi. & vii. (abstr. Rep. Br. Ass. 1874, p. 136).

2. Bessels, E. *Haeckelina gigantea*, ein Protist aus der Grüppe der Monothalamien. Jen. Z. Nat. ix. pp. 264–279.

3. Bütschli, O. Zur Kenntniss der Fortpflanzung bei *Arcella vulgaris*, Ehrb. Arch. mikr. Anat. xi. pp. 459–467, pl. xxv.

4. Carter, H. J. Relation of the canal system to the tubulation in the *Foraminifera*, with reference to Dr. Dawson's "Dawn of Life." Ann. N. H. (4) xvi. pp. 420–424.

5. Cienkowski, L. Ueber einige Rhizopoden und verwandte Organismen. Arch. mikr. Anat. xii. pp. 15–50, pls. iv.–viii.

6. Fischer, P. Note sur un type particulier de Rhizopodes (*Astrorhiza*) J. Zool. iv. pp. 503–510, pl. xvi. figs. 1–4.

7. ——. Sur la présence dans les mers actuelles d'un type de Sarcodaires des terrains secondaires. *L. c.* pp. 530–533, pl. xvi. fig. 5; C. R. lxxi. pp. 1131–1133.

8. ——. Examen d'une série de sondages éxecutés dans l'Atlantique sous la direction du Commandant Vignes. J. Zool. iv. pp. 298–302.

9. Leidy, J. [*a*] Notices of some Rhizopods (P. Ac. Philad. 1874, pp. 155–157, 166–168, 225–227). [*b*] Remarks on some marine Rhizopods (*op. cit.* 1875, pp. 73–76). [*c*] On a curious Rhizopod (*l. c.* pp. 124 & 125). [*d*] On *Ouramœba* (l. c. pp. 126 & 127). [*e*] Remarks on Rhizopods (*l. c.* pp. 413–415). Reprints or translations of several of Leidy's notes on *Rhizopoda*; Ann. N. H. (4) xv. pp. 160, 161, & 232; J. Zool. iv. pp. 438–440; Arch. sci. nat. lii. pp. 166 & 167.

10. Maddox, R. L. On an organism found in fresh pond-water. M. Micr. J. x. pp. 201–204, pl. xxxvii.

11. Schulze, F. E. Rhizopodenstudien, iv. & v. Arch. mikr. Anat. xi. pp. 329–353, & 583–596, pls. xviii., xix., xxxv. & xxxvi.

12. ——. Rhizopoden. JB. Comm. zur wiss. Untersuch. der deutsch. Meere ii. & iii. pp. 97–114; *cf.* Ann. J. Sci. (3) ix. p. 479; Zeitschr. ges. Naturw. xii. pp. 173–181.

13. Tatem, J. G. On a presumed phase of Actinophryan life. M. Micr. J. vii. pp. 169 & 170, pl. xv.

14. Trinchese, S. Intorno ai cambiamenti di forma dell *Amœba limax*. Mem. Acc. Bologn. v. pp. 524 & 525 (abstr. Rend. Acc. Bologn. 1874–75, pp. 113 & 114).

15. Wallich, G. C. The Amœban, Actinophryan, and Difflugian Rhizopods. M. Micr. J. xiii. pp. 210–213.

16. ——. On the true nature of the so-called "*Bathybius*," and its alleged function in the nutrition of the *Protozoa*. Ann. N. H. (4) xvi. pp. 322–329.

The bearing of the *Foraminifera* upon the nature and composition of the deep-sea bottom is discussed in papers by W. B. Carpenter ("Remarks on Prof. Wyville-Thomson's preliminary notes on the nature of the sea-bottom procured by the soundings of H.M.S. "Challenger." P. R. S. xxiii. pp. 234–245, Nature, xi. pp. 297 & 298, Ann. N. H. 4, xv. pp. 286–297, Am. J. Sci. 3, ix. pp. 72 & 73), and W. King ("Oceanic sediments and their relation to geological formations," Ann. N. H. 4, xv. pp. 198–204). Abstract of Wyville-Thomson's "Notes" in Q. J. Micr. Sci. xv. pp. 65–71.

A note by Schlumberger "Structure intime des Foraminifères" (Congr. Sc. 1873) has not been seen by the Recorder.

The *Foraminifera* of "the submarine cable fauna of the Falmouth-Lisbon cable" are enumerated by A. M. Norman, Ann. N. H. (4) xv. pp. 174 & 175. Schulze (12) enumerates the *Foraminifera*, &c., collected during the "Pommerania" expedition. The new types are briefly characterized below. D. Robertson, "Notes on the recent *Foraminifera* of the Firth of Clyde" (Tr. G. Soc. Glasg. v. p. 112). Lists of *Foraminifera*, &c., of Davis' Straits and Baffin's Bay, are reprinted in the "Arctic Manual," pp. 192–195.

Observations on the granule-streams on the pseudopodial filaments, by Archer (1); on the affinities between *Rhizopoda nuda, Myxomyceta, Flagellata*, &c., by Cienkowski (5); on division of the "nucleus" preceding that of the body in *Amœba polypodia*, by Schulze (11), pp. 592–595, pl. xxxvi.; on the propagation of *Arcella* through amœboid germs, by Bütschli (3). A case of the occurrence of true *Amœbæ* in great numbers in the rectum of a man suffering from dysentery is reported by F. Lösch in the Arch. Anat. Phys. lxv. pp. 196–211, pl. x. figs. 1–3.

Genera, Species, and other Details.

Uramœba, Leidy [Zool. Rec. xi. p. 538], is now (10, *d*) characterized thus: "Body consisting of an ever-changing fluctuating mass of jelly, composed of a granular entosarc, including a contractile vesicle and a discoid nucleus, and defined by a clearer ectosarc. Pseudopods usually digitiform, projecting anywhere, but usually in a forward direction, and composed of extensions of the ectosarc accompanied by included exten-

sions of the endosarc. Posterior part of body furnished with one or more tufts of non-retractile rigid linear appendages branching radially from points in the vicinity of the contractile vesicle." *U. vorax* and *botulicauda* (fig. p. 127).

Amœba viridis and *tentaculata*, sp. n., Leidy (9, *a*) p. 167 (New Jersey). Note on *A. quadrilineata*, Cart., *ib.*, "On supposed spermaries in *Amœba*," l. c. p. 168.

Trichamœba, g. n., Fromentel, Microz. [*suprà*, p. 571] p. 222. Scarcely diffluent *Amœbæ* with profound changes in the shape of the body; tegument totally or partially covered with stiff, non-vibratile cilia. *T. radiata* and *hirta*, l. c. p. 345, pl. xxviii, figs. 1 & 4.

Thecamœba, g. n., *id. l. c.* An oval cuirass or thickened integument, divided longitudinally into 4 mobile portions, covers the back of the animalcule; contractile vesicle highly developed. *T. quadripartita*, l. c. p. 346, pl. xxviii. fig. 3.

Psammosphæra, g. n., Schulze. Smooth globules (2–4 mm.), free or fixed to stones, without orifices, with a solid shell formed of sand grains, cemented together by a finely granulated substance. *P. fusca*, sp. n., *id.* (12) p. 113, pl. i. fig. 8.

Abstracted remarks by ARCHER on *Heterophrys* (= *Nuclearia*, according to CIENOWSKI, 5, p. 43), *Acanthocystis*, *Rhaphidiophrys*, *Plagiophrys*, *Pamphagus*, and *Uramœba*; Q. J. Micr. Sci. xv. pp. 202, 203, & 331.

Storthosphæra, g. n., Schulze. Hollow globules, containing a finely granular soft substance; crust formed of small sand grains, and produced into numerous irregular conical processes. *S. albida*, sp. n., *id. l. c.* fig. 9.

Astrodiscus, g. n., *id.* Flat disc-shaped bodies, with the margin produced into several short processes, open at the extremity; crust composed of minute sand granules cemented together; internal sarcode continued through the marginal processes in the shape of delicate dichotomical ramifications. *A. arenarius*, sp. n., *id. l. c.* fig. 10. This genus (Norman, P. R. S. xxv. p. 212) is identical with *Astrorrhiza* of Sandall (1857), as is also *Hæckelina* of BESSELS (2) (Carpenter, Q. J. Micr. Sci. xv. p. 294). According to FISCHER (6), *Astrorrhiza* was described in 1870, under the names of *Arenistella* (Fischer & Folin), and *Ammodiscus*, Carpenter. "*H. gigantea*" was found abundantly in Black-Island-Sound (Connecticut), in relatively shallow water. BESSELS observes that the distal portions of the radiating processes, though not retractile, are naked, uncovered by the shell, and give off the pseudopodia from their extremities; he has also found that the individual "sand-stars" are connected into *Myxodictyum*-like colonies, covering large portions of the sea-bottom. Specimens from the same locality are correctly described as *Astrorrhiza limicola*, Sand., by LEIDY (9, *b*), who also briefly mentions the occurrence at the same locality of several arenaceously- or calcareously-shelled polythalamous *Foraminifera*.

Quadrula, g. n., Schulze. Type, *Q. symmetrica* (*Difflugia symmetrica*, Wallich) (11), p. 329, pl. xviii. figs. 1–6. Shell composed of quadratic plates, otherwise as in *Difflugia*. A nucleus with nucleolus, 1 or 2 pulsating vacuoles, digitiform pseudopodia, &c.

Pseudochlamys patella, Cl. & Lac., Schulze (11), p. 332, pl. xviii. figs. 7–14.

Difflugia vas, olla; *D.* (*Cathariа*) *papilio, elegans*; *D.* (*Nebela*) *ansata, equicalceus, sphagni, numata, barbata, flabellulum*, spp. nn., described by LEIDY (9, *a*) from New Jersey. *Cathariа* (subg. n.) are Difflugians, with a membranous, structureless test, without adherent particles of foreign matter. *Nebela* (subg. n.), Difflugians with an areolated test. *Cathariа*, however (LEIDY, 9, *e*), is identical with *Hyalosphenia*, St.; *H. lata*, = *D. ligata*, Tat.

Hyalosphenia lata, sp. n., Schulze (11) p. 335, pl. xviii. figs. 15–18; shell hyaline, pyriform, compressed, truncate; nucleus and pulsatile vacuoles present; 1–3 digitiform pseudopodia (Graz, Rostock).

LEIDY also notices and briefly describes several species of *Euglypha* as common in the vicinity of Philadelphia, or at New Jersey, partly identical with those described by Schulze, including *E. cristata* and *brunnea*, spp. nn. (9, *a*), pp. 226 & 227; one species is doubtfully referred to *Corycia*, Duj., or *Pamphagus*, Baily, and identified with *Plagiophrys scutiformis* or *cylindrica* ?.

Cochliopodium pellucidum, Hertw. & Less. (*Amphizonella vestita*, Archer), Schulze (11), p. 337, pl. xix. figs. 1–5. Integument bell-shaped, open below; a large nucleus; pulsating vacuoles not always distinct; crystalliform corpuscles embedded in the protoplasm; pseudopodia cuneiform (*Amœba bilimbosa* and *actinophora* are closely allied or identical).

Pelomyxa palustris, Gr., *id.* (11), p. 342, pl. xix. figs. 6–8. Observations on the streaming of the protoplasm.

Notes on *Clathrulina elegans*, *Actinosphærium eichhorni*, *Acanthocystis viridis*, and *Rhaphidiophrys elegans*, occurring at New Jersey; LEIDY (9, *a*), pp. 166 & 167.

Placopus, g. n., Schulze. *P. ruber*, sp. n., *id.* (11) p. 348, pl. xix. figs. 9–16 (= *Hyalodiscus rubicundus*, Hertw. & Less. ?). Naked, with membrane-like, anastomosing, pseudopodial expansions; one or more nuclei; several feebly pulsating vacuoles (Graz, in pools).

Mastigamœba, g. n., *id.* Shape of the naked body generally fusiform, pseudopodia digitiform; surface rough from minute "bacilli." One or two not distinctly pulsating vacuoles posteriorly; a nucleus-like body anteriorly, close behind the insertion of the single flagellum. *M. aspera*, sp. n. (11), p. 583, pl. xxxv. *Amœba monociliata*, Cart. ?; *Dactylosphærium vitreum*, H. & L. ? ? (Graz) (connecting link between the *Rhizopoda* and *Flagellata*).

According to LEIDY (9, *e*), his *Deinamœba* is probably identical with *Dactylosphærium*.

Vampyrella vorax, Cienkowski (5), p. 24, pls. iv. & v. figs. 14–17 (= *Leptophrys cinerascens*, Hertw. & Less. ?).

Arachnula, g. n., *id.* Differs from *Vampyrella* in the presence of one or more contractile vacuoles and the scarcely ramified anastomosing pseudopodia which originate arbitrarily in numbers from the body, from thick bands; body naked, colourless, without nucleus. *A. impatiens*, sp. n., p. 27, pl. v. figs. 18–24 (fresh- and brackish-water pools in Germany and Russia).

Ciliophrys, g. n., *id.* Body as in *Actinophrys sol*; in place of the

large contractile space of *Actinophrys*, 1–3 small, temporary, collapsing vacuoles. *C. infusionum*, sp. n., p. 29, pls. v. & vi. figs. 26–43 (In infusions, among *Oscillatoriæ*, *Leptothrix*, &c.). *Ciliophrys* transforms itself totally in a flagellate "swarmer," or "zoospore," but also propagates by division; several "individuals" conjugate, dividing again in "swarmers," which may again be fused, &c.

Gymnophrys, g. n., *id.* Body naked, without nucleus or contractile vacuoles; the pseudopodial nets, with granular streaming, originate arbitrarily from a few points of the body-surface (a naked amphistomous Monothalamian). *G. cometa*, sp. n., p. 31, pl. v. fig. 25 (marine at Naples, in peat bogs at Charkow).

Gromia paludosa, sp. n., *id. l. c.*, p. 32, pl. vi. figs. 44–47 (Russia, in pools). Propagation by fission; no nucleus.

Biomyxa, g. n., Leidy. Might best be compared to the reticular pseudopods of a *Gromia* separated from the body; assumes the most varied forms; no nucleus or investing membrane; a multitude of minute vacuoles. *B. vagans*, sp. n., Leidy (9, *c*), p. 125 (New Jersey).

A large marine *Gromia* (8–9mm.) is figured by Schulze (12), pl. ii. fig. 11.

Microgromia socialis, Hertw., Cienkowski (5), p. 34, pl. vi. figs. 48–59 (= *Cystophrys hæckeliana*, Arch.). Observations on the longitudinal or transversal fission, the formation of "zoospores," &c.

Lecythium hyalinum (Ehrb.), *id. l. c.* p. 38, pls. vi. & vii. figs. 66–72. Shell flexible, not rigid.

Chlamydophrys, g. n., id. *Euglypha* without sculpture of the shell. Propagates by a process half budding, half fission, forming colonies of rough portions severed from the protoplasm-expansion; also cysts, often embracing the contents of several shells, &c. *C. stercorea*, sp. n., *id. l. c.* p. 39, pls. vii. & viii. figs. 73–89 (= *Difflugia enchelys*, Schn.).

Diplophrys stercorea, id. *l. c.* p. 44, pl. viii. figs. 92–100 (in horsedung); *archeri*, ibid., figs. 90 & 91 (encysted).

Microcometes, g. n., *id.* Capsule globular, perforate in a few places; protoplasm-body with eccentric nucleus, and 2–3 peripheral contractile vacuoles; pseudopodia very long, scarcely branched, without granule-streaming. *M. paludosa*, sp. n., *id. l. c.* p. 46, pl. viii. figs. 101–110 (Russia, among gelatinous *Algæ*).

Chlamydomyxa, g. n., Archer (1). (Systematic place uncertain, allied to or analogous with the *Labyrinthulæ*.) Body-substance enclosed in a hyaline multi-laminated envelope of cellulose, of a variable lobate or irregular shape, whence, through an apparently lacerated aperture, the non-nucleated granule-bearing contents emerge at intervals, giving off irregularly, in an arborescent manner, tapering ramifications, and emitting numerous slender hyaline ramifying threads, occasionally coalescing and forming a more or less complex "labyrinth," along which slowly proceed, with a gliding motion, from the central mass, numerous, little, therein pre-existent, non-nucleated, globular, plastic granules, which during progression assume a fusiform figure. The central mass contains

numerous pigment-granules and pulsating vacuoles. In its early stage, *Chlamydomyxa* is found endoparasitic in the cellular or intercellular tissues of aquatic plants (e. g. *Sphagnum*, which is apparently killed by its exuberant evolution); in its developed condition on the outside of leaves or roots, mostly dormant, sometimes with the contents broken up in encysted balls. *C. labyrinthuloides*, sp. n., Archer, *l. c.* (Ireland, in pools).

While HUXLEY is highly inclined (Qu. J. Micr. Sci. xv. pp. 390–392; Nature, xii. pp. 315 & 316) to drop the *Bathybius* as reposing upon a delusion (sulphate of lime precipitated in a flocculant state from sea-water by the strong alcohol in which the specimens of the deep-sea soundings examined were preserved), its place is apparently taken by the *Protobathybius* of Bessels [Zool. Rec. xi. p. 544]. A figure is given in A. S. PACKARD'S "Life histories of animals, including man, or outlines of comparative embryology" (New York: 1876), p. 3 (reprints from Am. Nat. ix. pp. 37, 87, 160, 218, 282, *et seq.*). It is mainly distinguished from *Bathybius* by the absence of discolithes and cyatholithes [which have been shown previously by Wallich to belong to the "coccospheres," floating at the surface of the sea, and therefore can only be regarded as "foreign matter" in relation to the presumed protoplasmatic substances of the sea-bottom], consists of nearly pure protoplasm, contains fine grey granules and a great number of oleaginous drops, but hardly any foreign matter, except a fine sediment of limestone constituting the bottom of the sea; it *manifests very marked* ["magnificent"] *amœboid motions* and takes up particles of foreign substances suspended in the water." Lively "granule-streamings" were also observed (Jen. Z. nat. ix. p. 227). (90 fath., Smith's Sound).

Minute ramified excavations with a single external orifice, of t superficial layers of shells from the Bay of Biscay, the Mediterranea and the Indian Ocean, are referred to the genus *Dendrina*, comprising similar excavations of *Belemnitella* and other genera in the cretaceous and jurassic epochs. The absence of spicula and the presence of delicate canaliculi branching from the cavities suggest to FISCHER (6) that they are the home and fabric of a peculiar type of perforating Sarcodarians, more related to the *Rhizopoda* than to the *Spongiaria*.

FOSSIL RHIZOPODA.

E. VANDEN BROECK, Observations sur la *Nummulites planulata* du panisélien (Bull. Soc. Géol. 3, ii. p. 559). *Id.*, Quelques considérations sur la découverte dans le calcaire carbonifère de Namur d'un fossile microscopique nouveau appartenant au genre *Nummulites* (Ann. Soc. Géol. Belg. i. p. 16). H. I. MILLER, Observations sur la *Nummulites planulata*, var. *minor* (Ann. mal. Belg. viii. p. 20). M. V. HANTKEN, Die Fauna der Clavulina Szaboi-Schichten. i. Foraminiferen (Mittheil. a. d. Jahrb. d. k. ungar. geol. Anst. iv. l. 93 pp. 16 pls.). TERQUEM, Recherches sur les Foraminifères du department de la Moselle (i.–x., Metz and Paris, 1868–74) [not seen by the Recorder]. F. W. DAWSON, Note on the occurrence of *Foraminifera* in the cretaceous rocks of Manitoba

(Canad. Nat. n.s. vii. p. 252). *Id.*, The Dawn of Life, being the history of the oldest known fossil remains and their relations to geological time and to the development of the animal kingdom, London: 239 pp. 8 pls. *Id.*, Notes on the occurrence of *Eozoon canadense* at Côte St. Pierre (J. G. Soc. xxxii. pp. 66–75, pl. x.) (the name of "*Archæosphærina*" is introduced for "serpentinous casts of chamberlets, single or arranged in groups, which resemble in form those of the globigerine *Foraminifera*; they may belong either to separate organisms or to the acervuline layer of the *Eozoon*, and have the form and aggregation of *Globigerina* with the proper wall of *Eozoon*"). C. G. Ehrenberg, Ueber massenshafte Gesteinsproben des Polycystinen-Mergels von Barbados (SB. Nat. Fr. 1873, p. 19). *Id.*, Forsetzung der mikrogeologischen Studien als Gesammt-Uebersicht der mikroskopischen Palæontologie gleichartig analysirter Gebirgsarten der Erde, mit specieller Rücksicht auf den Polycystinen-Mergel von Barbados (Abh. Ak. Berl. 1875, 222 pp. 30 pls.). T. R. Jones & W. K. Parker, Lists of some English jurassic *Foraminifera* (Geol. Mag. 2, ii. pp. 308–311). H. B. Brady, On some fossil *Foraminifera* from the West Coast district, Sumatra (*tom. cit.* pp. 532–539, pls. xiii. & xiv.). J. Young, On the occurrence of *Saccammina carteri* in the limestone series of the Lanarkshire coalfield (Tr. G. Soc. Glasg. iv. p. 263). J. Wright, A list of the cretaceous *Microzoa* of the North of Ireland (Tr. Belf. Club, 1875, pp. 73–99, pls. ii. & iii.). C. W. Gümbel, Beiträge zur Kenntniss der Organization und systematischen Stellung von *Receptaculites* (Abh. bayer. Ak. xii. pp. 166–215, pl. A) (*Receptaculites*, *Ischadites*, *Tetragonis*, *Coscinopora*, &c., apparently belong to one genus, perhaps including also *Protospongia*; it belongs to the *Rhizopoda*, not *Spongozoa*). C. W. Gümbel & E. v. Mijsisovics, On *Gyroporella* and *Diplopora* (Ver. geol. Reichsanst. 1874, pp. 235 & 236). A. W. Waters, Notes on fossil *Lithothamnia* (so-called *Nulliporæ*), London, 1874.

Gregarinidæ.

1. Schneider, A. Sur un appareil de dissémination des Grégarines et *Stylorhynchus*; phase remarquable de la sporulation dans le dernier genre. C. R. lxxx. pp. 432–435; Ann. N. H. (4) xv. pp. 368–370; abstr. R. Z. (3) iii. p. viii.
2. ——. (A.) Note sur la psorospermie oviforme de Poulpe; (B.) Note sur les rapports des psorospermies oviformes aux véritables Grégarines. Arch. Z. expér. iv. pp. xlv.–xlviii.
3. ——. Contributions à l'histoire des Grégarines des Invertébrés de Paris et de Roscoff. *L. c.* pp. 493–604, pls. xvi.–xxii.

On the gregariniform and infusorian Parasites of Nemerteans, *cf.* the "Monograph" of McIntosh, pp. 128–130, pls. xix. figs. 109–111, xviii. figs. 17 & 18. On "Psorosperms" in a Mallard Duck; Leidy, P. Ac. Philad. 1875, p. 125.

The "oviform Psorosperm" of the Mouse is termed *Eimeria* (g. n.) *simplex* by Schneider (2); that of the kidney of *Helix hortensis*, *Klossia*

(g. n.) *helicina*; a third, from the walls of the intestinal tube in *Octopus vulgaris*, *Benedenia* (g. n.) *octopiana*.

Among the *Gregarinidæ*, SCHNEIDER (3) describes the following genera and species (the diagnoses of the former cannot be reproduced for want of space):—

Stylorrhynchus (Stein., pt.) *oblongatus* (Hamm.), *l. c.* p. 569, pl. xviii. figs. 1–13 (intestine of *Coleoptera*); *longicollis*, sp. n., p. 572, pl. xix. figs. 1–9 (*Blaps mortisaga*).

Clepsidrina (Hamm., pt.) *munieri*, sp. n., p. 574, pls. xvii. figs. 1–10, xxi. fig. 5 (*Timarcha tenebricosa*); *ovata* (Duf.), p. 578, pl. xvii. figs. 13–15 (*Forficula auricularis*; *blattarum*, Sieb., p. 580, pl. xvii. figs. 11 & 12 (*Blatta orientalis*); *polymorpha*, H., p. 580, pl. xx. figs. 1–19 (*Tenebrio molitor*, larva).

Euspora (g. n.) *fallax*, sp. n., p. 583, pl. xviii. figs. 14–17 (*Rhizotrogus æstivus* ?, larva).

Hyalospora (g. n.) *roscoviana*, sp. n., p. 584, pl. xvi. figs. 41 & 42 (*Petrobius maritimus*).

Stenocephalus (g. n.) *juli* (Leidy), p. 584, pl. xx. figs. 29 & 30 (*Julus sabulosus*, *terrestris*).

Porospora (g. n.) *gigantea*, V. B., p. 585, pl. xviii. figs. 18 & 19 (the lobster).

Gamocystis (g. n.) *tenax*, sp. n. p. 587, pls. xix. figs. 10–13, xxi. fig. 6 (*Blatta lapponica*).

Actinocephalus (St.) *stelliformis*, sp. n., p. 588, pl. xvi. figs. 32–34 & 45 (*Coleoptera*); *dujardini*, p. 589, pl. xvi. figs. 9–20 (*Lithobius forcipatus*); *digitatus*, sp. n., p. 590, pl. xvi. fig. 35 (*Chlænius vestitus*).

Hoplorhynchus (Carus) *oligacanthus*, St., p. 591, pl. xvi. figs. 25–31 (*Callopteryx virgo*, larva).

Pileocephalus (g. n.) *chinensis*, sp. n., p. 592, pl. xvi. figs. 21–24 (larvæ of *Mystacidæ*).

Echinocephalus (g. n.) *hispidus*, sp. n., p. 593, pl. xvi. figs. 36–40 (*Lithobius forcipatus*).

Geneiorhynchus (g. n.) *monnieri*, sp. n., p. 595, pl. xx. figs. 21–27 (larvæ of dragon-flies).

Dufouria (g. n.) *agilis*, sp. n., p. 595, pl. xxii. figs. 1–6.

Bothriopsis (g. n.) *histrio*, sp. n., p. 596, pl. xxi. figs. 8–13 (*Hydaticus*, *Colymbetes*, &c.).

Urospora (g. n.) *nemertis* (Köll.), p. 597, pl. xxi. figs. 2–4 (*Valencinia*).

Gonospora (g. n.) *terebellæ* (Köll.), p. 598, pls. xix. figs. 14–16, xxi. fig. 1 (*Audouinia*, *Terebella*).

Adelea (g. n.) *ovata*, sp. n., p. 598, pl. xvi. figs. 1–7 (*Lithobius forcipatus*).

SCHNEIDER (*l. c*) distinguishes between the following layers, &c., in the *Gregarinidæ*: (1) the "epicyte," (2) the "sarcocyte," (3) the "myocyte ?," (4) the "endocyte," (5) the nucleus and nucleolus, (6) the septa (7) the appendicular organs (hooks, &c.) at the anterior extremity. The sarcocyte however may be absent (not separable from the endocyte), and the fibrillary element of the sarcocyte also may be undeveloped. The contractility does not reside in the "myocyte," and is quite independent

of the presence or absence of the fibrillary layers. The nucleoli also may be wanting, and the nucleus always disappears shortly after the encystation. The species which are provided with an apparatus of attachment are only fixed to the intestinal channel of their hosts during a certain part of their life; the "epimerite," or the portion of this segment forming the adhesive apparatus is thrown off and the fixed stage ("cephalin") followed by an errant stage of life ("sporadin"). The encystation may be solitary or combined with a false or real conjugation. The dissemination of the spores is ordinarily the result of the bursting of the wall of the cyst, but in *Clepsidrina* and *Gamocystis* of more complicated structural arrangements—the sporoducts. Though the shape of the spores ("pseudonavicellæ," "psorospermia" of authors) are ordinarily very regular and characteristic of the genera, it may also be very variable (e. g., in the *Monocystis* of the earthworm); a distinction may sometimes be made between "macrospores" and "microspores." In *Urospora*, the spore is provided with a rigid tail. In some genera with a "nucleus," in each spore, 6–8 falciform nucleated corpuscles are developed and set free through the rupture of the spore (*Gonospora*, *Urospora*, *Dufouria*, *Monocystis*). The transformation of these bodies into an amœboid stage was not observed, but is perhaps probable, from analogy with the "falciform corpuscles" of the "oviform psorospermia" of *Mammalia*, which cannot, according to Schneider, be separated from the *Gregarinidæ*; but it is also possible that these bodies are directly transformed in young Gregarines. The *Gregarinidæ* are incontestably animals and *Protozoa*; they are (when the "*Psorospermia oviformia*" of the *Mollusca* are not taken into account) rare in *Ascidiæ* and *Holothuridæ*, less rare in *Turbellaria*, *Chætopoda*, and *Gephyrea*, and rather abundant in *Insecta* and *Myriopoda*, the several order of Insecta differing, however, largely in this respect; they are also relatively rare in *Arachnida* and *Crustacea*. The *Monocystidea* are either inhabitants of the alimentary canal or of the common body-cavity, they are rare in *Arthropoda*; the *Polycystidea*, on the other hand, are limited to the intestinal tube of this division of the animal kingdom.

APPENDIX.

Generalities, Philogenesis, &c.

1. Agassiz's critique of Häckel's *Gastræa*-theory (in the "Embryology of *Ctenophoræ*") is reprinted in Ann. N. H. (4) xv. pp. 87–62.

2. Dohrn, der Ursprung der Wirbelthiere und das Princip des Functionswechsels. Genealogische Studien. Leipzig: 92 pp. (Review, Arch. sci. nat. liv. pp. 97–108).

3. Elsberg, L. Regeneration, or the preservation of organic molecules; a contribution to the doctrine of evolution. Pr. Am. Ass. 1874, pp. 87–103.

4. Häckel, E. Die *Gastrula* und die Eifurchung der Thiere. Jen. Z. nat. ix. pp. 402–501, pls. xix.–xxv.

5. ——. Ziele und Wege der heutigen Entwickelungsgeschichte. *Op. cit.* x. Suppl. pp. 1–100.

6. Huxley, T. On the classification of the animal kingdom. Q. J. Micr. Sci. xv. pp. 52–56 ; J. L. S. xii. pp. 199–226.

7. Moquin-Tandon, G. De quelques applications de l'embryologie à la classification méthodique des animaux. Ann. Sci. Nat. (6) ii. 7, pp. 54.

8. Salensky, W. Observations on Häckel's *Gastræa*-theory. Ann. N. H. (4) xv. pp. 1–27, pl. v.

9. Semper, C. Die Stammverwandschaft der Wirbelthiere und Wirbellosen ; Arb. Inst. Würzb. ii. pp. 25–76, pls. iii.–v. ; review, Arch. sci. nat. liv. pp. 97–108 ; abstr., "On the relationship of the *Vertebrata* and *Annelida*," Ann. N. H. (4) xv. pp. 94–97 ; Centralbl. f. d. medicin. Wissensch. 1874, No. 35 ; J. Zool. v. pp. 106–112. "Arbre généalogique du règne animal" (Arch. Zool. expér. iv. pp. xv.–xxviii.).

10. Villot, A. La science positive et la doctrine de l'évolution. Arch. Z. expér. iv. pp. 232–264.

INDEX TO

GENERA AND SUBGENERA RECORDED AS NEW IN THIS VOLUME.

INCLUDING NAMES PROPOSED FOR GENERA ALREADY CHARACTERIZED.

[The symbol ‖ indicates that the name to which it is affixed has been used before in Zoology.]

Acalonoma, *Pascoe*, 352.
Acanthipeza, *Rondani*, 476.
Acánth[oh]ispa, *Chapuis*, 380.
Acanthococcus, *Signoret*, 516.
Acanthodonia, *Stal*, 490.
Acentrocneme, *Scudder*, 418.
Acestus, *Haag*, 336.
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Elæochanis, *Greef*, x. pp. 530 & 536, should be Elæo[r]rhanis.

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