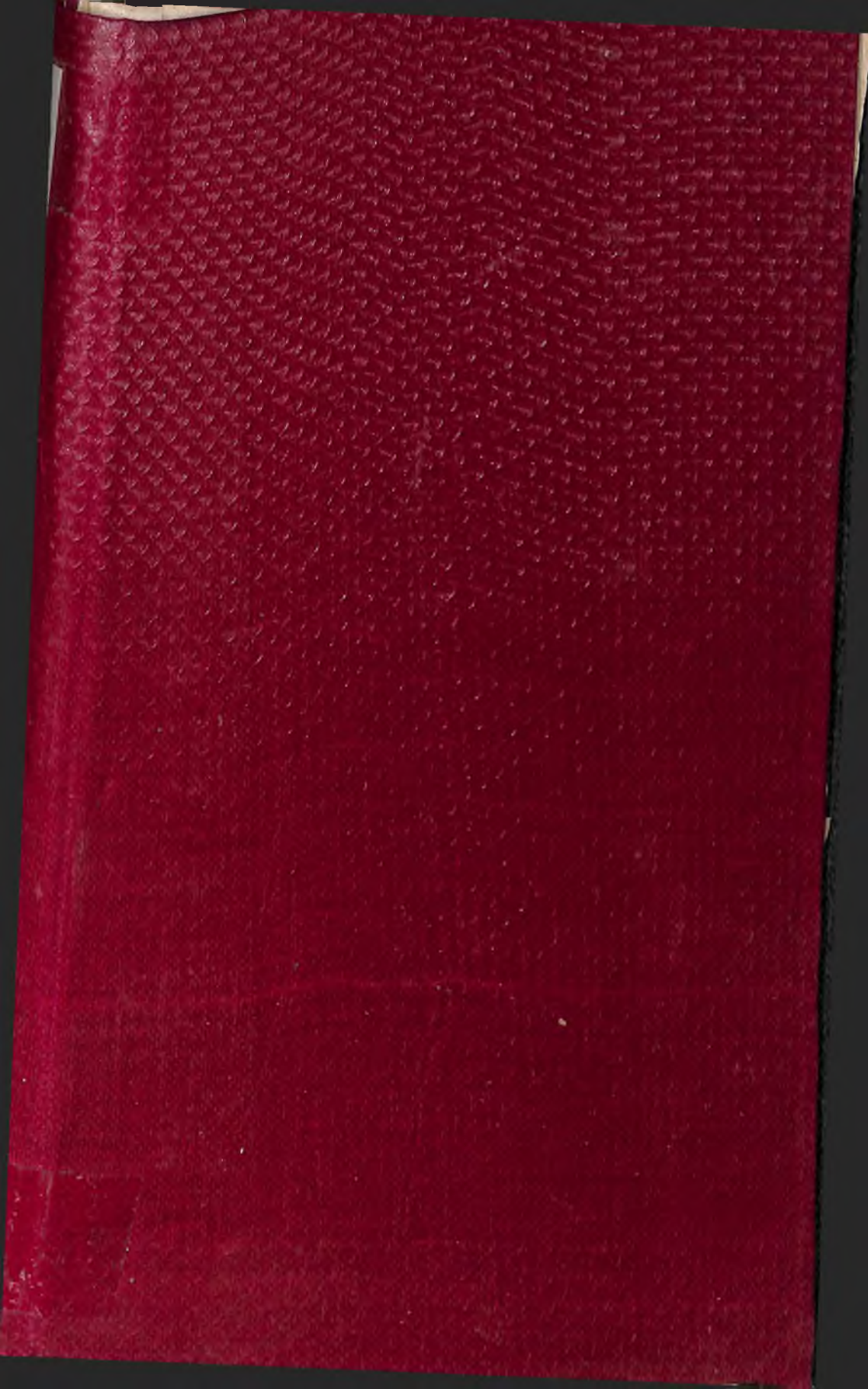




THE
RECORD
OF
ZOOLOGICAL LITERATURE.

1869.

VOLUME SIXTH.



EDITED BY
ALBERT C. L. G. GÜNTHER,
M.A., M.D., PH.D., F.R.S., F.Z.S., ETC. ETC.



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P R E F A C E .

IN this (sixth) Volume of the 'Record' the Editor has adhered to the plan which was followed in the preceding volumes. There is, however, a change in one section. Mr. Dallas being prevented, by the duties resulting from his recent appointment to the Secretaryship of the Geological Society, from undertaking the laborious task of preparing the whole of the Entomological Record, Messrs. Kirby, MacLachlan, Marshall, and Rye consented to relieve him of certain parts of it.

Zoologists have to thank the British Association for another grant of £100 toward the expenses of the preparation of this volume, the contributors having again made a sacrifice similar to that of the two preceding years.

The present Editor's duties cease with this volume; considering his fellow-labourers entitled to the honour of the post as well as to a share in its cares and responsibilities, he would have resigned the Editorship at the end of the fifth year, if Professor Newton, his first associate in the work, had then been ready to succeed him. To his successor, therefore, he must leave it to state, with the commencement of the seventh volume, what arrangements have been made to ensure the continuation of the 'Record' in the form in which it has hitherto appeared; but he cannot conclude these remarks without expressing his gratification at the readiness with which British zoologists have joined in support of the work, proving that he was not mistaken as regards its necessity and usefulness.

ALBERT GÜNTHER.

[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." All publications sent will be distributed among the several Recorders.]

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ECHINODERMATA. By E. PERCEVAL WRIGHT, M.A. &c.
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CŒLENTERATA. By E. PERCEVAL WRIGHT, M.A. &c.
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PROTOZOA. By E. PERCEVAL WRIGHT, M.A. &c.
(Page 669.)

ERRATA ET CORRIGENDA.

Page 67, line 26, between this line and the next insert line 16 from page 81.

„ 93 „ 2, for *P. longipes* read *Palaoperdix longipes*, and for *P. medius* read *Phasianus medius*.

„ 97 „ 14, read tips of the feathers black, with a pale v-shaped mark.



RECORD
OF
ZOOLOGICAL LITERATURE.

MAMMALIA

BY

ALBERT GÜNTHER, M.A., M.D., PH.D.

A. Separate Publications.

MIDDENDORFF, A. VON. *Sibirische Reise. Band iv. Uebersicht der Natur Nord- und Ost-Sibiriens. Theil ii. Erste Lieferung. Die Thierwelt Sibiriens.* St. Petersburg. 1867, 4to, pp. 785-1094. [Siberian Journey. Vol. iv. Account of the Nature of North and East Siberia. Divis. ii. Part first. The fauna of Siberia.]

All zoologists are acquainted with the second volume of Dr. von Middendorff's 'Reise,' which contains the detailed descriptions of the species of Mammalia collected during his voyage. The present volume is devoted to a more philosophical treatment of the author's observations, to the geographical distribution and variation of the species, and their relation to the physical features of the country in recent and past times. Of necessity many general questions are discussed; and the opinions held by a man with so much positive knowledge, and so long an experience, as Dr. v. Middendorff demand every attention. We give a short abstract of the contents of the volume.

In the first two chapters the author demonstrates the identity of the Siberian fauna with that of Europe, the number of species decreasing from the south towards the north. Only 16 mammals, 71 birds, and not one reptile have been met with between lat. 1869. [VOL. VI.]

71° and 75½°, whilst in South-eastern Siberia, between lat. 52° and 61° N., 44 mammals, 157 birds, and 4 reptiles were collected. The following chapter is directed against the tendency of many zoologists to separate the slightest variations under distinct specific names. The identity of most of the Mammalia of the north of Asia and America becomes evident as soon as a sufficient number of examples from various localities are examined. The causes of variation must be manifold; climate is certainly not the only cause. Thus, with regard to the variation of size, it has been observed that Asiatic examples are of greater size than European; of many birds a smaller and a larger variety exist, but both are found in the same localities, the lesser variety being probably the product of a second brood. Mountain-races in Europe are generally the smaller; in Siberia they are larger than those of the plains. Food must be one of the principal causes of vigorous growth: where the animal finds a regular and plentiful supply, and where the food is enjoyed without disturbance, there races of larger growth will be produced. Variations of colour are likewise dependant on various causes.

Passing on to the distribution of animals, the author expresses his belief that there is originally a continuity of distribution of every species; but it is frequently now found interrupted from geological changes, or in consequence of migration or of partial extinction. In Siberia the following animals are extinct, or exposed to the danger of becoming entirely or locally extinct:—*Rhytina*, *Enhydria*, *Otaria stelleri* and *ursina*, *Ovis montanus*, Beaver, Sable, Wild Cat, Wolf, Bear, Eland, and the Saiga Antelope. To prevent the extinction of useful animals it is necessary to protect them by laws, as, for instance, in the case of the Sea-Bear, which decreased so rapidly in numbers that a Russian Company was obliged to introduce, in the year 1830, a system of preservation on the island of St. Paul. The consequence was that they were enabled to kill 4000 animals in 1840, 8000 in 1841, 12,000 in 1843, 15,000 in 1845, and 47,960 in 1861, the species being, moreover, compelled to resort to other additional localities for breeding.

The "circumpolar" fauna is divided into "hyperboreal" and "circumboreal" animals, the latter being subdivided into "Tundra" species, that is, inhabitants of open country, and into "forest-species." We need not enumerate them by name; and it may suffice to say that the author treats in a copious manner of their distribution, habits, and relation to man. In the concluding chapters the arctic fauna is compared with alpine faunas, and an attempt is made to distinguish subdivisions in the direction from east to west.

MILNE-EDWARDS, H. et A. Recherches pour servir à l'histoire naturelle des Mammifères. Paris, 1868-69. 4to.

See Zool. Record, v. p. 3. Two other parts (4 & 5) have been published in 1869; they contain the continuation of the Mammalian fauna of China, and more especially the monograph of *Siphneus*.

BENEDEN, P. J. VAN, et GERVAIS, P. Ostéographie des Cétacés vivants et fossiles, &c. Paris. Text 4to, Atlas fol.

We have given a notice of this grand work in Zool. Record, v. p. 5. Parts 4 to 8 have been published of the text, as well as of the plates, containing the account of *Megaptera* and *Balenoptera* and of the fossil forms belonging to *Balæna* and the two other genera mentioned.

PETERS, W. C. H. Säugethiere gesammelt von Baron C. C. von der Decken auf seinen Reisen im äquatorialen Ostafrika, pp. 1-10, with 4 plates.

This forms an appendix to C. C. von der Decken's 'Reisen in Ost-Africa,' Leipz. 1869, 8vo, of which a preliminary abstract was given by the author in 1866 (see Zool. Record, iii. p. 11). The general work is divided into a narrative and a scientific part, the whole being edited by O. Kersten after the death of the traveller. The narrative contains numerous accounts of East-African animals, but they are composed in so artistic a manner that one cannot know what are original observations made by the traveller and taken from his M.S. notes, or what composition by the editor and his coadjutors. The scientific parts only are of interest to zoology, one of them being the Report of the Mammalia by Peters.

WALLACE, A. R. The Malay Archipelago: the land of the Orang-utan and the Bird of Paradise. A narrative of travel, with studies of Man and Nature. Second edition. London, 1869. 16mo. Vol. i. pp. 312; vol. ii. pp. 341.

Mr. Wallace has the great merit to have been the first to throw light into the zoogeography of the Malayan archipelago, and to reduce to something like systematic order the mass of fact relating to it. All future researches, be they confirmatory of or controverting the views put forth by Mr. Wallace, will make his work the starting-point. From a study of Birds principally, and also of Mammalia, he comes to the conclusion that five groups of islands must be distinguished in a zoogeographical point of view:—

1. The Indo-Malay Islands, comprising the Malay peninsula and Singapore, Borneo, Java, and Sumatra.

2. The Timor group, with Timor, Flores, Sumbawa, and Lombock.

3. Celebes, with the Sula Islands and Bouton.

4. The Moluccas, comprising Buru, Ceram, Batjan, Gilolo,

Morty, Ternate, Tidore, Makian, Amboina, Banda, Goram, and Matabello.

5. The Papuan group, comprising New Guinea, the Aru Islands, Mysol, and Waigiou.

Accordingly the work is divided into five parts, a separate chapter being devoted to certain portions of their natural history. Nearly all the more interesting mammals of this region are referred to, and the greater part of a chapter is devoted to the author's own observations of the Orang-utan.

FATIO, V. Faune des Vertébrés de la Suisse. Vol. I. Histoire naturelle des Mammifères. Genève et Bâle, 1869. 8vo, pp. 410, with 8 plates.

A careful monograph of the Mammalia of Switzerland, describing 18 Bats, 8 Insectivores (among which *Talpa cæca*), 10 Rodents (with a rather doubtful new species of Mouse), 12 Carnivores, 1 Sus, and 2 Ruminants. Five of the plates are coloured; skulls and dentition are represented on the three others.

LA FONTAINE, A. DE. Faune du pays de Luxembourg. Mammifères. Luxemb. 1869. 8vo, pp. 128.

The character of this book renders it a publication of local interest only.

GRAY, J. E. Catalogue of Carnivorous, Pachydermatous, and Edentate Mammalia in the British Museum. Lond. 1869, pp. 398, with numerous woodcuts.

This catalogue is a reproduction of the various papers published by the author in the 'Proceedings of the Zoological Society' and 'Annals & Magazine of Natural History' within the last five years, and collected in a continuous form, with the addition of much synonymic and descriptive detail. Having fully referred to those papers in the previous volumes of the 'Record,' this notice will suffice.

B. Papers published in Journals.

ALLEN, J. A. Mammalia of Massachusetts. No. 8 of the Bullet. Museum of Comparative Zoology at Harvard College, Cambridge, Mass. 8vo, pp. 143-252.

BENEDEN, P. J. VAN. Les Baleinoptères du Nord de l'Atlantique. Bull. Ac. Roy. Belg. xxvii. 1869, pp. 281-291, with a Map.

BLANFORD, W. T. On the species of *Hyrax* inhabiting Abyssinia and the neighbouring countries. Proc. Zool. Soc. 1869, pp. 638-642.

BLYTH, E. Notice of two overlooked species of Antelope. Proc. Zool. Soc. 1869, pp. 51-55, with woodcuts.

BOCAGE, J. V. B. DU. Sur une espèce de *Cephalophus* à taille plus forte, d'Afrique occidentale, qui paraît identique au *C. longiceps* (Gray). Journ. Ac. Sc. Lisb. no. vii. pp. 220-222.

BRANDT, J. F. De Dinotheriorum genere Elephantidarum familiæ adjungendo nec non de Elephantidarum generum craniologia comparata. Mém. Ac. Sc. St. Pétersb. xiv. no. 1, 1869, pp. 38.

——. Untersuchungen über die Gattung der Klippschliefer (*Hyrax*), besonders in anatomischer und verwandtschaftlicher Beziehung, nebst Bemerkungen über ihre Verbreitung und Lebensweise. Ibid. no. 2. pp. 127, with 3 plates. [Researches into the genus *Hyrax*, especially into their anatomy and relations to other Mammalia, with remarks on their distribution and mode of life.]

——. Wenige Worte in Bezug auf die Erwiderungen in Betreff der Vertilgung der nordischen Seekuh. Bull. Soc. Nat. Mosc. 1868 (1867), Heft. 4, pp. 508-524. [A few words on the replies regarding the extinction of *Rhytina borealis*.]

BUSK, G. Notice of the Discovery at Sarawak, in Borneo, of the fossilized teeth of Rhinoceros, and of a Cervine Ruminant. Proc. Zool. Soc. 1869, pp. 409-416, with woodcuts.

CAMPBELL, A. Notes on the modes of capture of Elephants in Assam. Proc. Zool. Soc. 1869, pp. 126-140.

COPE, E. D. On *Agaphelus*, a genus of toothless Cetacea. Proc. Acad. Nat. Sc. Philad. 1868, pp. 221-227.

EICHWALD, ED. VON. Die Lethæa rossica und ihre Gegner. Bull. Soc. Nat. Mosc. 1867 (1868), Heft 3, pp. 220-227, and 1869, xli. pp. 311-373. [The 'Lethæa Rossica' and its opponents.]

We refer to this polemical paper because a part of it treats of the possible rediscovery of *Rhytina* in a living state.

FITZINGER, L. J. Revision der zur natürlichen Familie der Katzen (*Feles*) gehörigen Formen. Sitzgsber. Ak. Wiss. Wien, 1868, lviii. pp. 421-519, and 1869, lix. pp. 211-279, 629-716, and lx. pp. 173-262.

——. Die Gattungen der Familie der Antilopen (*Antilopæ*) nach ihrer natürlichen Verwandtschaft. Ibid. 1869, lix. pp. 128-182.

——. Die natürliche Familie der Maulwürfe (*Talpæ*) und ihre Arten, nach kritischen Untersuchungen. Ibid. pp. 353-432.

- FITZINGER, L. J. Die natürliche Familie der Spitzhörnchen (*Cladobata*). Sitzgsber. Ak. Wiss. Wien, lx. pp. 263-289.
- FLOWER, W. H. On the value of the characters of the base of the cranium in the classification of the order *Carnivora*, and on the systematic position of *Bassaris* and other disputed forms. Proc. Zool. Soc. 1869, pp. 4-37, with numerous woodcuts.
- . Notes on four specimens of the Common Fin-Whale (*Physalus antiquorum*, Gray; *Balenoptera musculus*, auct.) stranded on the south coast of England. Ibid. pp. 604-611, with a plate.
- . On the anatomy of the Proteles (*Proteles cristatus*, Sparrm.). Ibid. pp. 474-496, with a plate and woodcuts.
- FRANTZIUS, A. von. Die Säugethiere Costarica's, ein Beitrag zur Kenntniss der geographischen Verbreitung der Säugethiere America's. Wieg. Arch. 1869, pp. 247-325. [The Mammals of Costa Rica, a contribution to our knowledge of the geographical distribution of the American Mammals.]
- GEORGE, —. Etudes zoologiques sur les Hémionides et quelques autres espèces chevalines. Ann. Sc. Nat. 1869, xii. pp. 5-48, pls. 1-4.
- GILPIN, J. B. On the Mammalia of Nova Scotia. No. IV. Proc. & Trans. N. Scot. Inst. Nat. Sc. ii. 2. 1869, pp. 58-69. [See Zool. Record, ii. p. 7, iv. p. 8.]
- GRANDIDIER, A. Description de quelques animaux nouveaux découverts, pendant l'année 1869, sur la côte ouest de Madagascar. Rev. et Mag. Zool. 1869, pp. 337-339.
- GRAY, J. E. On the bony dorsal shield of the male *Tragulus kanchil*. Proc. Zool. Soc. 1869, p. 226, with woodcut.
- . On the Guemul, or Roebuck of Southern Peru. Ibid. pp. 496-499, with woodcut.
- . Note on the varieties of Dogs. Ann. & Mag. Nat. Hist. 1869, iii. pp. 236-240.
- . Additional notes on Sea-Bears (*Otariadæ*). Ibid. iv. pp. 264-270.
- . Notes on Seals (*Phocidæ*), and the changes in the form of their lower jaw during growth. Ibid. pp. 342-346.
- GREEN, A. H. On the Natural History and Hunting of the Beaver (*Castor canadensis*, Kuhl) on the Pacific slope of the Rocky Mountains. With supplementary notes by ROBERT BROWN, Esq. Journ. Linn. Soc. Zoology, x. 1869, pp. 361-373.

- HALLAS, S. Optegnelser om nogle paa et Hvalfangst-Tog i Havet omkring Island iagttagne Hvaler. Vid. Meddel. ntrh. Foren. i. Kjöbenh. for 1867 (1868), pp. 150-177. [Notes on some Whales captured on a Whaling-expedition in the sea round Iceland.]
- HARTMANN, R. Geographische Verbreitung der im nord-östlichen Africa wild lebenden Säugethiere. Zeitschr. Ges. f. Erdkunde Berlin, 1868, iii. pp. 28-69, 232-270, 346-367. (Not concluded.)
- HAYDEN, F. V. A new species of Hare from the summit of Wind-River Mountains. Amer. Nat. iii. 1869, pp. 113-116, with woodcut. [*Lepus bairdii*.]
- HENSEL, R. Beiträge zur Kenntniss der Thierwelt Brasiliens. Zoolog. Garten, 1869, pp. 16-19, 33-40, 135-140, 289-298, 328-336.
Continuation, see Zool. Record, iv. p. 9. The author relates his experiences with *Cebus fatuellus* and *Hapale iacchus*. He considers the monkey, with regard to intellectual qualities, to be as superior to the dog as the latter is to the horse. The horse stands very low in the intellectual scale of animals; it is certainly inferior to the pig. Pages 135-140 contain a general account of the Bats of Brazil; and in the remainder a part of the Carnivora are treated of, to which we shall refer subsequently.
- HOUGHTON, W. The Rabbit (*Lepus cuniculus*) as known to the Ancients. Ann. & Mag. Nat. Hist. 1869, iii. pp. 179-183.
- KINBERG, J. G. H. Om arktiska Phocaceer, funna uti medlersta Sveriges glaciallera. Öfvers. Vet. Akad. Förhandl. 1869, pp. 13-51.
- KRAUSS, F. v. Ueber *Choloepus didactylus*, L. Wiegmann. Arch. 1869, pp. 122-135.
- LENORMANT, F. Sur l'antiquité de l'âne et du cheval comme animaux domestiques en Egypte et en Syrie. Compt. Rend. 1869, lxi. pp. 1256-1260.
- MALM, A. W. Om ett i Zoologiska Richsmuseum [i Stockholm] befintligt skelett af *Balanoptera musculus* (Companyo) från Finmarken. Öfvers. Vet. Akad. Förhandl. 1868, pp. 95-103, with a plate.
- MILNE-EDWARDS, A. Note sur un métis d'Hémione et de Jument né au Muséum d'Histoire naturelle. Bull. Soc. Zool. d'Acclim. 1869, pp. 180-181.
- MURIE, J. Report on the Eared Seals collected by the Society's Keeper, F. Lecomte, in the Falkland Islands. Proc. Zool. Soc. 1869, pp. 100-109, pl. 7.

- PETERS, W. Ueber neue oder weniger bekannte Flederthiere, insbesondere des Pariser Museums. Monatsber. Ak. Wiss. Berlin, 1869, pp. 391-406.
- REINHARDT, J. Mæketandsættet og Tandskiftningen hos *Centetes ecaudatus* (Schr.). Overs. Dansk. Ved. Selsk. Forhandl. f. 1869, pp. 171-178, with woodcuts.
- SANSON, A. Nouvelle détermination des espèces chevalines du genre *Equus*. Compt. Rend. 1869, lxi. pp. 1204-1207.
- SCAMMON, C. M. On the Cetaceans of the Western Coast of North America. Edited by E. D. COPE. Proc. Acad. Nat. Sc. Philad. 1869, pp. 13-63, with 6 plates of very rude figures.
- SCLATER, P. L. Remarks on two species of Mammals described from specimens recently living in the Society's Gardens. Proc. Zool. Soc. 1869, pp. 592-596, with a plate.
- SMITH, J. A. Notice of remains of the Rein-deer, *Cervus tarandus*, found in Ross-shire, Sutherland, and Caithness; with notes of its occurrence throughout Scotland. Proc. Soc. Antiquar. Scotl. viii. 1868-69. Separately printed, Edinb. 1869, pp. 1-39, with many woodcuts.
- STEENSTRUP, J. Den oprindelige islandske Landpattedyr-faunas Karakter, særligt med Hensyn til Hr. A. Murray's Fremstilling heraf i hans "The geographical distribution of Mammals." Vidensk. Meddel. ntrh. Foren. i Kjöbenh. for 1867 (1868), pp. 51-56. [On the character of the indigenous Mammalian Fauna of Iceland, especially with regard to Mr. A. Murray's account of it in his work entitled "The geographical distribution of Mammals."]
- SWINHOE, R. On the Cervine Animals of the Island of Hainan (China). Proc. Zool. Soc. 1869, pp. 652-660, with woodcuts.
- WELCH, F. H. Observations on *Lepus americanus*, especially with reference to the modifications in the fur consequent on the rotation of seasons, and the change of colour on the advent of winter; based on specimens obtained in the province of New Brunswick, North America. Proc. Zool. Soc. 1869, pp. 228-236.

C. Anatomical Publications.

- BENEDEN, E. VAN. Recherches sur la composition et la signification de l'œuf, basées sur l'étude de son mode de formation et des premiers phénomènes embryonnaires (Mammifères, Oiseaux, Crustacées, Vers). Mém. Cour. Ac. Belg. xxxiv. pp. 283, with 12 plates.

FLOWER, W. H. Remarks on the homologies and notation of the teeth of Mammalia. Journ. Anat. & Physiol. iv. 1869, pp. 262-278, with woodcuts.

FRIEDLÖWSKY, A. Ueber Missbildungen von Säugethier-Zähnen. Sitzsber. Ak. Wiss. Wien, 1869, lix. pp. 333-350, with a plate. [On malformations of teeth in mammals.]

See also MURIE, J., on the same subject, p. 10.

GALTON, J. Ch. The muscles of the fore and hind limbs in *Dasypus sexcinctus*. Trans. Linn. Soc. xxvi. 1869. pp. 523-566, with a plate.

——. The myology of the upper and lower extremities of *Orycteropus capensis*. Ibid. pp. 567-608, with two plates.

——. The myology of *Cyclothurus didactylus*. Ann. & Mag. Nat. Hist. 1869, iv. pp. 244-264, with a plate.

GRIMM, O. v. Der Bogenapparat der Katze. Bull. Acad. Sc. St. Pétersb. xiv. 1869, pp. 73-80, with a plate. [The semi-circular canals of the cat.]

HULKE, J. W. Note on the blood-vessel-system of the retina of the Hedgehog (being a fourth contribution to the anatomy of the Retina). Proc. R. Soc. 1869, pp. 357-358.

HUMPHRY, —. The myology of the limbs of *Pteropus*. Journ. Anat. & Physiol. iv. 1869, pp. 294-319, with two plates.

——. On the disposition and homologies of the extensor and flexor muscles of the leg and forearm. Ibid. pp. 320-334.

——. The myology of the limbs of the Unau, the Ai, the two-toed Anteater, and the Pangolin. Ibid. v. pp. 17-78, with four plates.

JÄGER, G. Ueber das Längenwachsthum der Knochen. Jena. Zeitschr. Medic. u. Ntrwiss. l 869, v. pp. 1-42. [On the longitudinal growth of bones.]

KINBERG, J. G. H. Om andra halskotans uppkomst genom sammansmältning af två kotor. Öfvers. Vet. Akad. Förhandl. 1868, pp. 429-448. [On the origin of the second vertebra by means of coalescence of two vertebræ.]

The author demonstrates that the processus odontoides is originally separated from the centrum of the epistropheus by two intervertebral epiphyses, that it has parts corresponding to, but not developed into, an arcus, that its formation is analogous to that of a caudal vertebra; consequently the epistropheus is composed of two centra, coalescent like the sacral vertebræ.

——. Undersökningar rörande Djurens historia. 1. Ossa metacarpi et metatarsi Ovis et Capræ. Ibid. 1869, pp. 359-

433. [Researches concerning the history of animals. Part I.]

KINBERG, J. G. H. Synopsis suturarum et epiphysium. Ibid. 1869, pp. 157-186.

KOSTER, W. Onderzoek omtrent de vorming van eieren in het ovarium der zoogdieren, na de geboorte, en de verhouding van het ovarium tot het buikvlies. Versl. & Mededeel. Ak. Wet. Amsterd. 1869, pp. 141-151, with a platé.

The same paper, under the title "Recherches sur l'épithélium de l'ovaire des Mammifères après la naissance, et sur les relations de l'ovaire avec le péritoine." Arch. Néerland. Sc. Exact. et Nat. iv. 1869, pp. 363-374.

MACALISTER, A. On the Myology of *Bradypus tridactylus*; with remarks on the general muscular anatomy of the *Edentata*. Ann. & Mag. Nat. Hist. 1869, iv. pp. 51-67.

——. On the arrangement of the Pronator Muscles in the limbs of Vertebrate Animals. Journ. Anat. & Phys. 1869, iv. pp. 335-340.

MURIE, J., and MIVART, St. G. On the Anatomy of the *Lemuroidea*. Trans. Zool. Soc. vii. 1869, pp. 1-113, with six plates.

This paper treats on some of the external characters and the myology.

MURIE, J. Notes on some diseased dental conditions in animals. Proc. Odontolog. Soc. Great Brit. 1869, pp. 37-69, with woodcuts.

See also FRIEDLOWSKY, A., on the same subject, p. 9.

NEPVEU, G. Observations sur les corpuscules de Pacini chez le Singe. Ann. Sc. Nat. 1869, xii. pp. 326-337, pls. 19 & 20.

ROLLESTON, G. On the homologies of certain muscles connected with the shoulder-joint. Trans. Linn. Soc. 1869, xxvi. pp. 609-630, with a plate.

FAUNÆ.

Iceland. Only one Mammal is known to be indigenous to this island, a mouse described by Olafsen, Henderson, and others, named *Mus islandicus* by Thienemann, and generally believed to be identical with *M. silvaticus*. Mr. A. Murray, in his book on the geographical distribution of Mammals, had attempted to prove, from the accounts of the travellers named, that the animal could not be a mouse, but must be a lemming, most probably *Myodes hudsonius*, and, consequently, that the Icelandic fauna belonged to that of the New World. Prof. Steenstrup shows now that this argument cannot be maintained, that Mr. Murray has been partly misled by an error in the

English translation of Olafsen, that the accounts of the habits of the Icelandic mouse are perfectly in accordance with those of *Mus silvaticus* as described in the most accessible and well-known works of English and foreign authors, and not at all with those of the lemming; consequently that there is no evidence to refer the Icelandic fauna to that of America. (Prof. Steenstrup also directs attention to an (accidental) mistake in Mr. Murray's book, where a "*Mus islandicus*" is referred to instead of "*Mus insularis*." Vid. Meddel. ntrh. Foren. i Kjöbenh. for 1867 (1868), p. 51.

Siberia. We again direct attention to the fourth volume of Middendorff's "Reise" (see above, p. 1), which contains copious notes on the distribution and habits of all the Siberian Mammals.

St. Petersburg. According to J. von Fischer the following Mammals are found in the St.-Petersburg Gouvernement:—6 Bats, 5 Insectivores, 12 Carnivores, 12 Rodents, *Cervus alces* and *capreolus*, *Phoca vitulina* and *annulata*. Zool. Gart. 1869, pp. 336-343.

Switzerland. V. Fatio's work on the Mammals has been mentioned above, p. 4.

British North America. The Hudson's Bay Company sold by auction, in London, during the years 1769 to 1868, among other furs, the following:—4,708,702 beavers, 1,240,511 sables, 674,027 otters, 1,052,051 lynxes, 891,091 foxes, 68,694 gluttons, 288,016 bears, 467,549 wolves, 1,507,240 minks, 18,290,218 musk-rats, 118,342 raccoons, 237,794 deer, 1,773,363 rabbits, 218,653 polecats, 94,326 swans, 275,302 badgers, 5349 sea-otters. Besides this company there was a second, the Canada Company, who sold in the years 1763 to 1839 the following furs:—6,084,276 beavers, 2,931,383 sables, 767,232 bears, 538,322 lynxes, 765,711 foxes, 29,110 gluttons, 895,832 otters, 254,502 wolves, 1,080,780 minks, 4,250,580 musk-rats, 7,608,760 raccoons, 5,692,348 deer, 171,542 elands, 43,923 swans. In the year 1868 the Hudson's Bay Company sold by auction 146,774 beavers, 106,254 sables, 73,473 minks, 14,966 otters, 70,473 lynxes, 6691 bears, 6298 polecats, 41,105 foxes, 7494 wolves, 1104 gluttons, 617,486 musk-rats, 21,162 raccoons, 1551 badgers, 123 sea-otters, 527 swans, 6851 deer, 106,279 rabbits, 1055 seals, 2141 fur-seals. Besides, in the autumn of the same year the following were sold in London:—About 130,000 raccoons, 4500 sables, 1700 bears, 22,000 otters, 4800 lynxes, 900,000 musk-rats, 24,000 chinchillas, 10,000 grebes, 14 rabbits, &c. Droste-Hülshoff, Zool. Gart. 1869, p. 317.

North America. Mr. Allen's memoir on the Mammals of Massachusetts (see above, p. 4) is a most valuable contribution to that local fauna, but still more important as a critical treatise on North-American Mammalia. "Specimens," the author says, "have too often been described instead of species." The total number of species still living in the State is 65, five others being already extirpated, whilst three (*Mus*) are introduced. Eighteen are Cetaceans; but these do not appear to have been critically examined by the author. Seven belong to the northern, and eight to the southern North-American fauna, and are not universally distributed over the State. *Thirteen are common to North America and the Old World.* The species are not described; those to which the author has paid particular attention will be mentioned in the special part.

Nova Scotia. Dr. Gilpin has continued his observations on the Mammalian Fauna, Proc. & Trans. N. Scot. Inst. Nat. Sc. ii. 2, 1869, pp. 58-69.

This part treats of *Lutra canadensis*, *Mephitis mephitis*, and *Procyon lotor*. He also gives a general sketch of the geological appearance of the various Mammals in this part of North America.

California. Dr. Cooper adds a list of Seals, Bats, and some Rodents to that previously given by him; he states that 115 Mammals are known from California. Proc. Calif. Ac. Nat. Sc. iv. 1869, p. 3.

Costa Rica. Dr. von Frantzius has published his observations on the Mammalia of this province of Central America. He has found not less than 60 well-established species, which geographically may be divided thus:—

1. Species spread over the greater part of South America, and extending to, or even beyond, Costa Rica: thirty species.

2. Species not found south of the Equator, and extending to, or even beyond, Costa Rica: eleven species.

3. Species peculiar to Central America and Mexico: twelve species.

4. Species extending northwards beyond the tropics: five species.

From a study of the Mammalian fauna, the author concludes that Central America was connected with South America at a much earlier period than with North America. The presence of a number of salt lakes north of Mexico indicates the place where the sea separated the North from the South down to within a very recent period. The great variety of the physical conditions of Costa Rica accounts for the presence and persistence of so many different Mammals within so limited a district. The author finds evidence of the early connexion of Central with South America in the presence of several species of Marsupials; at a later period the Edentata immigrated from the south, and still more recently the Quadrumana. It is singular that the Edentata have preserved their original characters, the same species being found at the extreme limits towards the south and north, whilst the Quadrumana were more influenced by the change of external conditions, some being now specifically distinguishable, although there are still intermediate forms indicating their original affinities. Wiegmann. Arch. 1869, pp. 247–325.

North-eastern Africa. Robert Hartmann has published a catalogue of the Mammals of this region, adding his personal observations on their habits, geographical distribution, chase, &c. Zeitschr. Ges. f. Erdkunde Berlin, 1868, iii. pp. 28–69, 232–270, 347–367 (not concluded). These parts refer to 13 Quadrumana, an uncertain number of Bats, 34 Carnivora, 16 Insectivora, 57 Rodents, 2 Edentates, 38 Ruminants, and 13 Pachyderms.

An appendix to Th. v. Heuglin's 'Reise in das Gebiet des Weissen Nil' (Leipzig. 1869, 8vo), contains notes on the Elephant, Hippopotamus, and Buffalo, a list of 43 Antelopes, remarks on *Aulacodus semipalmatus* (Heugl.), *Georychus ochraceo-cinereus* (Heugl.), *Orycteropus*, *Manis temminckii*, several Bats, and *Colobus*.

East Africa. On the Mammalia collected by Von der Decken, see above, under PETERS (p. 3) and Zool. Record, iii. p. 14.

East-Indian Archipelago. Mr. Wallace's work on "The Malay Archipelago" is noticed above, p. 3.

Borneo. The discovery of fossilized teeth of a *Rhinoceros (sondaicus)* and of a Deer proves the former existence of these animals in that island. Busk, Proc. Zool. Soc. 1869, p. 409.

QUADRU MANA.

Dr. E. von MARTENS has published an article on the names of monkeys in different languages. Zool. Gart. 1869, pp. 73-80, 145-147.

Simia satyrus. Mr. Wallace relates his own experiences with the Orang-utang in 'The Malay Archipelago,' vol. i. chapt. 4.

Troglodytes. In the regions of the upper Nile a large black monkey is found, belonging to this genus, but the species is uncertain. R. Hartmann, Zeitschr. Ges. f. Erdkunde Berlin, 1863, iii. pp. 30-33.

Colobus kirkii. An example, said to be from Madagascar (?) noticed by A. von Pelzeln, Verh. Zool.-Bot. Ges. Wien, 1869, p. 567.

Colobus palliatus (Ptrs.) was thought to be identical with *C. kirkii* (Gray), Gray, Ann. & Mag. Nat. Hist. 1869, iii. p. 171. [These species appear to be distinct.]

Macacus tcheliensis figured by A. Milne-Edwards, Recherch. Hist. Nat. Mammif. pl. 32.

Macacus andamanensis, Bartlett, is a supposed new species, and figured in Proc. Zool. Soc. 1869, p. 467. [Doubts have recently been expressed as regards the true habitat of this monkey; there is no species of monkey found in the Andaman Islands.]

Mycetes palliatus. Notes by Dr. v. Frantzius, Wieg. Arch. 1869, p. 254.

Ateles variegatus and *frontatus*. Observations by Dr. v. Frantzius made in Costa Rica, Wieg. Arch. 1869, pp. 257, 258.

Cebus hypoleucus in Costa Rica, Frantzius, l. c. p. 259.

Chrysotrrix sciurea in Costa Rica, Frantzius, l. c. p. 260.

Mico sericeus (Gray) = *Hapale chrysoleucos* (Wagn.). Selater, Proc. Zool. Soc. 1869, p. 592.

Messrs. MURIE & MIVART have published a detailed account of the myology of *Lemur* and *Galago*. Trans. Zool. Soc. vii. 1869, pp. 1-113, pls. 2-6.

Galago crassicaudatus and *G. garnettii* figured by Messrs. Murie & Mivart, l. c. pl. 1, with notes on the habits of these animals, p. 4.

Otolemur agisymbanus different from *Otolemus crassicaudatus*, Peters in Von der Decken's Reisen, Säugethiere, p. 4.

Propithecus diadema = *verreauxii* (Grandidier, see Zool. Record, iv. p. 21) figured by Peters, in Von der Decken's Reisen, taf. 1.

Perodicticus potto. Remarks on a living example by Mr. Skues, Proc. Zool. Soc. 1869, p. 1; figured by Selater, ibid. p. 469.

Chiromys madagascariensis has no striated fibres in the muscular sheath of the cardiac end of the oesophagus. Gulliver, Proc. Zool. Soc. 1869, p. 249.—On malformation of the incisors, Murie, Proc. Odontol. Soc. Great Brit. 1869, p. 60.

CHIROPTERA.

Dr. HENSEL gives an account of the habits of the Bats observed by him in Brazil. *Desmodus* and *Diphylla* alone are blood-suckers. Zool. Gart. 1869, pp. 135-140.

Dr. E. von MARTENS treats of the names used for Bats in various languages. Zool. Gart. 1869, pp. 147-149.

Pteropus. Prof. Peters has made remarks on *Pt. insularis* (Hombr. & Jacq.), Berl. Monatsber. 1869, p. 391; on *Pt. phaeops* (Temm.) and *Pt. molossinus*,

p. 392; and describes as new *Pt. condorensis* from Paulo Condore and *Pt. tuberculatus*, habitat unknown, p. 393.

Cynonycteris stramineus (Geoffr.) = *Pterocyon palaceus* (Ptrs.) Peters, in Von der Decken's Reisen, Säugethiere, p. 5.

Cynonycteris grandidieri, sp. n., Peters, Berlin Monatsber. 1869, p. 394, from Zanzibar.

Cynopterus marginatus (Geoffr.) = *C. diardii* (G.) = *duvaucelii* (G.) = *brevicaudatus* (G.) Peters, l. c. p. 395.

Nycteris hispida. Notes on the skull by Peters, l. c. p. 396.

Rhinolophus deckenii figured by Peters, in Von der Decken's Reisen, Säugethiere, taf. 2. fig. 1.

Rhinolophus commersonii (Geoffr.). Notes by Grandidier, Rev. et Mag. Zool. 1869, p. 257.

Vampyrus auricularis (Sauss.) = *Mimon bennettii* (Gray). Peters, Berlin Monatsber. 1869, p. 396.

Schizostoma hirsutum, sp. n., Peters, l. c. p. 396. Hab. —?

Glossophaga ecaudata (Neuwied, not Geoffr.) described by Peters as *Anura wiedii*, l. c. p. 398.

Stenoderma rufum (Geoffr.) described by Peters, l. c. p. 399.

Artibeus undatus (Blainv.) is the type of a new genus, *Histiops*. Peters, l. c. p. 399.

Dididurus scutatus, sp. n., Peters, l. c. p. 400, South America.

Phyllorhina diadema (Geoffr.) = *Ph. nobilis* (Horsf.). Peters, l. c. p. 400.

Taphozous mauritanus (Geoffr.) = *T. leucopterus* (Temm.). Peters, l. c. p. 402.

Molossus acetabulosus (Commers.) = *Nyctinomus natalensis* (Smith) = *Mormopterus jugularis* (Ptrs.). Peters, l. c. p. 402.

Molossus acuticaudatus (Geoffr.) = *M. obscurus* (Geoffr.) Peters, l. c.

Nyctinomus leucogaster and *miarensis* are described as new species from Madagascar by Grandidier, Rev. et Mag. Zool. 1869, pp. 337.

Miniopterus minor (Ptrs.) proves to be identical with *M. scotinus* (Sundev.), and is figured by Peters in Von der Decken's Reisen, Säugethiere, taf. 3.

Vespertilio schreibersii and *mystacinus* are figured by Fatio, Faune Suisse, pls. 1 & 2.

Vespertilio subulatus. On its synonymy and some allied forms, Allen, Mamm. Massach. p. 209.

Vespertilio davidii, sp. n., Peters, Berl. Monatsber. 1869, p. 402, Peking.

Vespertilio (Leuconoe) pilosus, sp. n., Peters, l. c. p. 403, Montevideo.

Vesperugo krefftii, sp. n., Peters, l. c. p. 404, New South Wales.

Vesperugo bottæ, sp. n., Peters, l. c. p. 406, Arabia.

INSECTIVORA.

Centetes ecaudatus. Prof. Reinhardt has examined the milk-dentition; it has only three milk-molars, the formula being:— $i \frac{3}{3}, c \frac{1}{1}, m \frac{3}{3}$; the permanent dentition is $i \frac{2}{2}, c \frac{1}{1}, p \frac{3}{3}, m \frac{3}{3}$. Overs. Dansk. Ved. Selsk. Forhandl. f. 1869, pp. 171–178.

Cladobates. Dr. Fitzinger has compiled a paper on "The natural family of *Cladobatæ*." Sitzgsber. Wien. Akad. 1869, lx. pp. 263–289.

Sorex. Dr. Ed. Brandt's paper on the dentition of *Sorex* is translated into

German in Bull. Soc. Nat. Mosc. xli. pp. 76-95, with 6 plates. [See Zool. Record, iii. p. 24.]

M. Fatio figures in his 'Faune Suisse':—*Sorex vulgaris*, pl. 4; *Sorex araneus* and *leucodon*, pl. 5. He proposes for the latter species the name of *S. microurus* (p. 137).

The peculiar disease of the skin by which Mice and Rats are affected has also been observed in the Shrew. Gray, Ann. & Mag. Nat. Hist. 1869, iv. p. 360.

Sorex palustris. *Neosorex albibarbis* (Cope) is identical with this species. Allen, Mamm. Massach. p. 211.

Crociodura albicauda figured by Peters in Von der Decken's Reisen, Säugethiere, taf. 4.

Blarina. The species of this genus have been critically revised by Allen, l. c. p. 213.

Talpa. Dr. Fitzinger has compiled a paper entitled "The natural family of Moles (*Talpæ*) and its species, from critical researches." Sitzgsber. Wien. Akad. 1869, lix. pp. 353-432.

Scaptochirus moschatus (M.-E. 1867) figured by A. Milne-Edwards, Recherch. Hist. Nat. Mammif. pl. 17. fig. 4.

Echinops niwarti is described as a new species by Grandidier, Rev. et Mag. Zool. 1869, p. 337, from Madagascar.

CARNIVORA.

Dr. GRAY's 'Catalogue of Carnivorous Mammalia' has been noticed above, p. 4.

Prof. FLOWER has found a valuable character for the arrangement of fissipedous Carnivores in the form and structure of the osseous bulla and parts immediately surrounding it (Proc. Zool. Soc. 1869, pp. 4-37). He regards this character as more indicative of affinity than the dentition, the modifications of which are mainly adaptive, reappearing in various degrees and combinations in many of the great natural divisions of the order. He describes and figures the base of the skull of the majority of the genera, and arranges them into three sections, which he proposes to call *Arctoidea*, *Cynoidea*, and *Æluroides*. The first contains the families *Ursidæ*, *Ailuridæ*, *Procyonidæ*, and *Mustelidæ*, the *Procyonidæ* comprising *Cercoleptes*, *Nasua*, *Procyon*, and *Basaris*. The *Cynoidea* are regarded as the central and most generalized form, and consist of the family *Canidæ* only. The *Æluroides* comprise five families, viz. *Hyænidæ*, *Viverridæ*, and *Felidæ*, the *Cryptoproctidæ* filling an intermediate position between *Felidæ* and *Viverridæ*, and the *Protelidæ* connecting the *Viverridæ* with the *Hyænidæ*. *Arctictis* is shown to be a member of the *Viverridæ*. The various groups are arranged in a diagrammatic plan (p. 37), showing the cross relationships.

Felis. Dr. Fitzinger has commenced the publication of a "Revision of the forms belonging to the natural family of Cats," Sitzgsber. Ak. Wiss. Wien,

1868, lviii. pp. 421-519; and 1869, lix. pp. 211-279, 629-716, and lx. pp. 173-262. It is of the same character as the preceding publications (for instance, that noticed in Zool. Record, iv. p. 28). The "Revision" begins with five species of Lions.

Eight species of *Felis* are found in Costa Rica. Frantzius, Wieg. Arch. 1869, pp. 277-281.

Felis leopardus. Notes on this species and its variations. Hartmann, Zeitschr. Ges. f. Erdkunde Berlin, 1868, iii. pp. 52-55.

Felis megabalia (Heuglin) is possibly only a Guepard. Hartmann, l. c. p. 55.

Felis planiceps is the type of a distinct genus, *Ailurogale*. Fitzinger, l. c. lx. p. 249.

Viverra genetia. On its variations, Hartmann, l. c. p. 233.

Canis. Dr. E. von Martens has published an article on the names of the wolf, fox, and jackal in various languages. Zool. Gart. 1869, pp. 175-180. Of the dog, *ibid.* pp. 149-152.—On the species inhabiting North-eastern Africa, see Hartmann, l. c. pp. 63-69.

Canis familiaris. Dr. Gray refers the pure breeds of the domestic dog to four groups—Dogs, Terriers, Greyhounds, and Hounds. Ann. & Mag. Nat. Hist. 1869, iii. pp. 236-240.

Canis lupus. The wolf of the United States is identical with the European species, presenting varieties described by authors under various specific names. Allen, Mamm. Massach. pp. 154-158.

Canis latrans and *C. virginianus* are probably late immigrations into Costa Rica from the north. Frantzius, Wieg. Arch. 1869, pp. 282-285.

Canis rulpes. An example of the black-bellied variety from the Ardennes is mentioned by Dr. Hamilton, Proc. Zool. Soc. 1869, p. 247.

On a skeleton found at a depth of 10 or 15 feet near Uddevalla in Sweden. Kinberg, Öfvers. Vet. Akad. Förhandl. 1868, pp. 403-405.

Canis decussatus, *argentatus*, *fulvus*, &c. are but varieties of the common European fox. Allen, Mamm. Massach. p. 158.

Canis fulvipes and *C. azaræ*. Dr. R. A. Philippi has published notes on these two foxes and figured their skulls. Wieg. Arch. 1869, pp. 45-51, taf. 3.

Hyæna crocuta. Notes on the young and its skull by Dr. Gray, Proc. Zool. Soc. 1869, p. 245, with woodcut of skull.

Proteles cristatus. A detailed account of its external characters and anatomy has been given by Prof. Flower in Proc. Zool. Soc. 1869, pp. 474-496. He places it in a family by itself, allied to the *Hyænidæ* and *Viverridæ*, the affinities with the former family being considered to be closer than would appear from the examination of the skull alone. The paper is illustrated by a plate and woodcuts.

Mustela. J. A. Allen has come to the conclusion that the Martens and Sables, at least all thus far described, belong to a single circumpolar species, *M. martes*, with possibly two or more well marked and tolerably constant continental races. Mamm. Massach. pp. 161-167.

Mustela erminea = *Putorius noveboracensis* (Dekay) = *M. richardsonii* and *cicognanii* (Bonap.) = *P. fuscus* and *agilis* (Aud. & Bach.) = *kaneii* and *longi-*

caudus (Baird) = *boccamela* (Bonap.). Allen, Mamm. Massach. pp. 167-175.

Lutra canadensis in Costa Rica. Frantzius, Wieg. Arch. 1869, p. 289.

Lutra destructor (Barnston) not distinct from *L. canadensis*. Allen, l. c. p. 178.

Pteronura sandbachii occurs most probably also in Southern Brazil; but *Lutra solitaria* (Natterer) is a different animal. Reinhardt, Proc. Zool. Soc. 1869, p. 57.

Mephitis mephitica. On the supposed species which have been separated from this variable form, see Allen, l. c. p. 178.

Mephitis chilensis in Costa Rica. Frantzius, Wieg. Arch. 1869, p. 289.

Galictis barbara in Costa Rica. Frantzius, l. c. p. 287.

Ursus. J. A. Allen agrees with Blainville & Middendorff that all the land-bears of the northern parts of the Old and New Worlds belong to one species only, *U. arctos*. Mamm. Massach. pp. 184-192.

Procyon hernandezii is distinct from *P. lotor*, and occurs in Costa Rica. Frantzius, l. c. p. 291.

Meles. A. Milne-Edwards figures, in Recherch. Hist. Nat. Mammif., *M. leucolæmus*, pl. 24, *M. leptorhynchus*, pl. 25, and their skulls, pls. 26 & 27.

Nasua leucorhynchus from Peru occurs also in Costa Rica, and is a distinct species. Frantzius, l. c. p. 292.

Ailurus fulgens. Notes on its habitat &c. by Dr. Simpson, Proc. Zool. Soc. 1869, p. 507; it is figured on pl. 41.—A very indifferent figure (woodcut) in Proc. Zool. Soc. 1869, p. 408.

PINNIPEDIA.

Dr. GRAY revises the arrangement of *Phocidæ* (Ann. & Mag. Nat. Hist. 1869, iv. p. 342), and draws attention to the changes in the form of the front part of the lower edge of the mandible, which are dependent on age. He arranges the Seals thus:—

Sect. A. *Cutting-teeth* $\frac{5}{4}$, lower conical; hind toes clawed.

I. *Phocina*: *Phoca*, *Pagophilus*, *Halicyon*, *Callocephalus*, *Pagomys*.

II. *Halichærina*: *Halichærus*.

Sect. B. *Cutting-teeth* $\frac{4}{3}$. *Muffle hairy to the edge and between the nostrils*.

III. *Monachina*: *Monachus*.

IV. *Lobodontina*: *Lobodon*.

V. *Stenorhynchina*: *Stenorhynchus*, *Ommatophoca*, *Leptonyx*.

VI. *Cystophorina*: *Morunga*, *Cystophora*.

Dr. GRAY (Ann. & Mag. Nat. Hist. 1869, iv. p. 269) arranges the *Otariidæ* thus:—

A. SEA-LIONS.

I. *Otariina*: *Otaria*.

B. SEA-BEARS.

II. *Callorhinina*: *Callorhinus*.

III. *Arctocephalina*: *Phocarcetos*, *Arctocephalus*, *Euotaria*, *Gypsophoca*.

IV. *Zalophina*: *Zalophus*, *Neophoca*.

V. *Eumetopiina*: *Eumetopias*, *Arctophoca*.

Dr. Gray has also added notes on skulls from Desolation Island, which belong to *Euotaria nigrescens* (l. c. p. 264). *Arctocephalus schisthyperoës* (Turner) is *A. delalandii* (p. 265).

Phoca. Prof. KINBERG describes in detail the remains of *Phoca grönlandica*, *barbata*, *fatida*, and *vitulina* found in glacial deposits in Central Sweden. Öfvers. Vet. Akad. Förhandl. 1869, pp. 13-51.

Otaria jubata. Dr. Murie has reported on a collection of specimens made by a keeper in the Zoological Society's service in the Falkland Islands. He notices the changes of colour in both sexes, and the sexual differences in the skull, and size and length of fore limbs. Proc. Zool. Soc. 1869, pp. 100-109. On pl. 7 male, female, and young are represented in a not very artistic manner.

Morunga proboscidea. Its extinction in the Falkland Islands recently confirmed. Gray, l. c. iii. p. 400.

RODENTIA.

Sciurus rigidus and *Sc. hoffmanni*, from Costa Rica, Frantzius, Wieg. Arch. 1869, p. 266. Prof. Peters regards now the former as a variety of *Sc. collicii*, and the latter as one of *Sc. æstuans*.

Spermophilus mongolicus figured by A. Milne-Edwards, Recherch. Hist. Nat. Mammif. pl. 17. fig. 1.

Anomalurus fulgens, sp. n., Gray, Ann. & Mag. Nat. Hist. 1869, iii. p. 407, from the Gaboon.

Castor fiber. Messrs. Green & Brown have published their observations made on the Beaver in Western America. Journ. Linn. Soc. Zoology, x. 1869, pp. 361-373.

Mus rattus and *musculus* common in Costa Rica. Frantzius, Wieg. Arch. 69, p. 270.

Mus musculus. J. von Fischer attempted to breed a variegated variety by pairing grey and white mice. He was not successful, the young being always either uniform grey or uniform white. Zool. Gart. 1869, p. 341.

A black mouse, common in a tobacco-manufactory at Poschiavo, in the Canton Grisons, and feeding on tobacco, has been described as a possibly distinct species, *Mus poschiavinus*, by Fatio, Faune Suisse, p. 207, pl. 7.

Mus islandicus. See above (p. 10), under *Iceland*.

Hesperomys leucopus. When disturbed the mother transports the young, the latter adhering to the outside of the thighs of the parent. Caton, Amer. Natur. iii. 1869, p. 119.—On the synonymy of this species and some doubtful others, see Allen, Mamm. Massach. p. 227.

Hypogeomys, g. n., Grandidier, Rev. et Mag. Zool. 1869, p. 338. Incis. $\frac{2}{2}$; mol. $\frac{2}{2}$. Toutes les molaires sont formées de trois lames simples, obliques et penchées en avant; elles ont des racines; l'antérieure est la plus grande. Leur train de derrière surpasse d'une manière remarquable celui de devant, de sorte qu'ils peuvent faire d'énormes sauts. Comme les vrais rats, ils n'ont qu'un rudiment de pouce aux pieds de devant. Les angles sont très-robustes. *H. antimensa*, sp. n., l. c. p. 339, from Madagascar.

Siphneus. M. A. Milne-Edwards's paper on the Mole-Rats (see Zool. Record, v. p. 21) is translated in Ann. & Mag. Nat. Hist. 1869, iii. p. 157.

Siphneus psilurus. Skull and skeleton figured by A. Milne-Edwards, Recherch. Hist. Nat. Mammif. pls. 9 A and 9 B.

Arvicola. In De la Fontaine's book on the Mammalia of Luxemburg an *Arvicola pseudo-arvalis* is noticed (p. 87); it appears to be a very doubtful species.

Arvicola riparia. On its numerous synonyms see Allen, Mamm. Mass. p. 231.

Arvicola curtata described as a new species from Lower California by Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 2.

Geomys heterodus. Notes by Dr. v. Frantzius, l. c. p. 269.

Gerbillus unguiculatus and *brevicaudatus* figured by A. Milne-Edwards in Recherch. Hist. Nat. Mammif. pl. 11.

Ctenomys mendocina, sp. n., Philippi, Wieg. Arch. 1869, p. 33, from Mendoza. Notes on *Ct. brasiliensis* and *magellanica* are added.

Cercolabes novæ hispaniæ in Costa Rica. Frantzius, l. c. p. 272.

Erethizon dorsatus = *E. epixanthus* = *E. rufescens* (Gray). Allen, Mamm. Massach. p. 237.

Dasyprocta cristata. Notes by Frantzius, l. c. p. 274.

Lepus timidus. On abnormal growth of the incisors, Friedlowsky, Sitzgsber. Wien. Akad. 1869, lix. p. 341, figs. 5-6.

Lepus tigrænsis, sp. n., Blanford, Ann. & Mag. Nat. Hist. 1869, iv. p. 330, from Abyssinia.

Lepus americanus. Mr. Welch has made observations on the modifications and change of colour of the fur of this hare in sequence to the seasons. Proc. Zool. Soc. 1869, pp. 228-236.

Lepus bairdii is described as a new species by Hayden from the Wind Mountains, Western North America. Amer. Natur. iii. 1869, p. 113, with woodcut.

Lepus brasiliensis in Costa Rica. Frantzius, l. c. p. 276.

Lepus cuniculus cannot be acclimatized in Costa Rica. Frantzius, l. c. p. 277.

Lepus cuniculus. The Rev. W. Houghton has examined the ancient literature treating of the rabbit. Ann. & Mag. Nat. Hist. 1869, iii. pp. 179-183.

EDENTATA.

Dr. GRAY's 'Catalogue of Edentate Mammalia' has been noticed above, p. 4.

Manis dalmanni. On the muscles of the limbs, Humphry, Journ. Anat. & Physiol. v. 1869, p. 17.

Dasybus gymmurus and *fenestratus*. Notes by Frantzius, Wieg. Arch. 1869, p. 309.

Orycteropus capensis. A woodcut from a living example. Sclater, Proc. Zool. Soc. 1869, p. 431.

Myrmecophaga. Three species are found in Costa Rica—*M. jubata*, *tetradactyla*, and *dorsalis*. Frantzius, l. c. pp. 307-309.

Myrmecophaga didactyla. Its myology described by Galton, Ann. & Mag. Nat. Hist. 1869, iv. pp. 244-264; on the muscles of the limbs, Humphry, Journ. Anat. & Physiol. v. 1869, p. 17.

Bradypus tridactylus. On its myology, Macalister, Ann. & Mag. Nat. Hist.

1869, iv. pp. 51-67; on the muscles of the limbs, Humphry, Journ. Anat. & Phys. v. p. 17.

Bradypus didactylus. On the muscles of the limbs, Humphry, *l. c.*—Dr. v. Krauss gives an account of the variations of colour, skull, and dentition from an examination of more than twenty examples from Surinam. Wiegmann Arch. 1869, pp. 122-135.

Bradypus hoffmanni. Notes by Frantz, *l. c.* p. 312.

PACHYDERMATA.

Dr. GRAY's 'Catalogue of Pachydermatous Mammalia' has been noticed above, p. 4.

Phacochærus æliani figured by Mr. Sclater, Proc. Zool. Soc. 1869, pl. 20; it is distinct from *Ph. æthiopicus*, the head of which is also figured on p. 277.

Potamochoerus porcus. Prof. Reinhardt states that Dr. Gray must have misunderstood Maregrave when he thought that the latter had seen this pig domesticated in Brazil. Proc. Zool. Soc. 1869, p. 56.

Porcula salvania. Notes by Dr. Anderson in Proc. Zool. Soc. 1869, p. 470.

Hippopotamus amphibius. On malformation of the tusks, Friedlowsky, Sitzgsber. Ak. Wiss. Wien, 1869, lix. p. 338, fig. 4.

Elephas. Prof. Brandt's memoir on *Dinotherium* (Mém. Ac. Sc. St. Pétersb. xiv. no. 1, 1869) is mentioned here, the author having examined the affinities of this genus with *Mastodon* and *Elephas*, these three genera being regarded as types of the same group.

Elephas indicus. Dr. Campbell has given a description of the modes of capture of elephants in Assam. Proc. Zool. Soc. 1869, pp. 136-140.

Elephas africanus. On malformation of the tusks, Friedlowsky, Sitzgsber. Ak. Wiss. Wien, 1869, lix. p. 333, figs. 1-3.

Rhinoceros sundaicus existed in Borneo, and is now found also in Sumatra. Busk, Proc. Zool. Soc. 1869, p. 409.—Mr. Sclater has received from a correspondent additional confirmation of the existence of a *Rhinoceros* in Borneo. Proc. Zool. Soc. 1869, p. 529.

Rhinoceros bicornis. On abnormal conditions of the dentition of the mandible, Murie, Proc. Odontol. Soc. Great Brit. 1869, p. 39.

Rhinoceros keitloa. Note on the incisor teeth of a nearly adult animal by Dr. Gray, Proc. Zool. Soc. 1869, p. 225. Its distinctness from *Rh. bicornis* confirmed by Dr. Gray, Ann. & Mag. Nat. Hist. 1869, iii. p. 244.—R. Hartmann thinks it to represent one of the sexes of *Rh. bicornis*, Zeitschr. Ges. f. Erdkunde Berlin, 1868, p. 365.

Hyrax. Prof. v. BRANDT has published an elaborate memoir on the anatomy of this genus. Without entering into the specific distinction of the various forms, he examines the affinities of *Hyrax* with, and its distinctions from, the other Pachydermatous genera, and discusses its relationship to the Rodentia*

* The author protests against a statement of Messrs. Murie & Mivart, as if he had placed *Hyrax* to the Rodentia, an idea which never entered his mind. Mém. Biolog. vii. 1868, p. 26.

and Edentata. He regards it as the type of a separate suborder of Pachyderms, which may be called "*Gliriformia*," on account of its numerous resemblances to the Rodentia. Mém. Ac. Sc. St. Pétersb. 1869, xiv. no. 2, pp. 127, with three plates.

Dr. GRAY has recognized three species brought home by Mr. Jesse from Abyssinia—*Hyrax ferrugineus*, *irroratus*, and *luteogaster*, var.—A new species from Angola is named *Hyrax bocagei*. Ann. & Mag. Nat. Hist. 1869, iii. p. 242.

From an examination of numerous examples of *Hyrax* collected by himself in Abyssinia, Mr. Blanford has come to the conclusion that these animals vary much in colour, texture of the fur, and the extent of the space between the incisors and molars in the upper jaw; therefore he does not admit the genus *Euhyrax*. He distinguishes four Abyssinian species: 1. *H. abyssinicus* (H. & E.); 2. *H. capensis*? = *H. abyssinicus* (Gray); 3. *H. brucei* (G.) = *H. alpini* (G.) = *H. ferrugineus* (G.) = *H. irroratus* (G.); 4. *H. dongolanus* (H. & E.) = *H. ruficeps* (H. & E.) = *H. burtoni* (Gray). Proc. Zool. Soc. 1869, pp. 638-642.

Equus. M. Lenormant states that the ass was used as a domestic animal by the ancient Egyptians since the oldest times whence monumental representations are preserved, but that the horse was not introduced into Egypt before the 19th century B.C. (Compt. Rend. 1869, lxi. p. 1256),—an observation which is in accordance with the original geographical distribution of the two species, Milne-Edwards, *ibid.* p. 1259. M. Faye adds biblical evidence with regard to the presence of the horse in Egypt and Syria, *ibid.* pp. 1281-1283, 1379.

M. Sanson has continued his researches into the domestic races of the horse; he distinguishes what he terms eight species from North-western Europe alone. Compt. Rend. 1869, lxi. pp. 1204-1207.

Dr. George has examined the wild asses distinguished by authors from *Equus hemionus*, and reviewed the literature relating to them. He comes to the conclusion that the Hemippus, Gour, Ghor-Khur (*A. indicus*, Sclater), Koulang, Dshiggetai, Kiang (*A. equioides* or *polyodon*, Hodgson), and *A. equuleus* are local races of one species, *Equus hemionus*—a view held previously by Brandt and Milne-Edwards. *Equus asinus* is found at present in a wild state in North Africa only. Ann. Sc. Nat. 1869, xii. pp. 5-48. Skulls and other anatomical details are figured on pls. 1-4.

M. A. Milne-Edwards describes a cross between *E. hemionus* and a mare, Bull. Soc. Zool. d'Acclim. 1869, p. 180.

RUMINANTIA.

Bos taurus. On the abnormal condition of the skull of European examples similar to that of a South-American race called "*niatos*," C. Dareste, Compt. Rend. 1869, lxxviii. pp. 733, 734, and Sanson, *ibid.* pp. 834-836.—Note on malformed hoofs from a specimen of the feral cattle of the Falkland Islands, Dr. Murie, Proc. Zool. Soc. 1869, p. 59.

Antelope. Dr. Fitzinger has written a paper, in which he gives, first, an account of the systematic arrangements of the antelopes by previous writers, and, secondly, diagnoses of the various genera and subgenera, adding the names of the species. Sitzgsber. Ak. Wiss. Wien, 1869, lix. pp. 123-182.

On the antelopes of North-eastern Africa, Hartmann, Zeitschr. Ges. f. Erdkunde Berlin, 1868, pp. 252-270.

Boselaphus major, sp. n., Blyth, Proc. Zool. Soc. 1869, p. 51. fig. A, from North Africa.

Strepsiceros imberbis, sp. n., Blyth, l. c. p. 52. fig. B, Abyssinia.

Antilope gnu. Dr. Gray has described the horns of a half-grown animal, which are very different from those of the adult. Ann. & Mag. Nat. Hist. 1869, iv. p. 291.

Cephalophus dorsalis (Gray) = *C. badius* (Gray) = *C. breviceps* (Gray). Slater, Proc. Zool. Soc. 1869, p. 594; the species is figured on pl. 46.—Prof. Bocage describes a head referable to *Cephalopus longiceps* (Gray), Journ. Ac. Sc. Lisb. no. vii. 1869, p. 220.

Cephalophus mergens. Dr. Max Schmidt reports on the propagation of this antelope in the Frankfort Zoological Gardens. Zool. Gart. 1869, pp. 28-30.

Rupicapra. Mr. Blyth has figured the horns of a hybrid between the Chamois and Domestic Goat. Proc. Zool. Soc. 1869, p. 134.

Cervus tarandus. The Reindeer of the Old and New Worlds are specifically identical, Allen, Mamm. Mass. p. 196.—Dr. J. A. Smith has collected evidence of the existence of the Reindeer in Scotland, down even to the twelfth century. Proc. Soc. Antiquar. Scotl. viii. 1868-9, pp. 39.

The attempt to introduce the Reindeer into the Upper Engadin is a failure. Zool. Gart. 1869, p. 91.

Cervus. Mr. Swinhoe has found three deer in the island of Hainan—*C. vaginalis*, *C. eldi*, and *C. equinus*, the latter being regarded by Mr. Blyth as identical with *C. aristotelis*. The horns of the two latter species are figured. Proc. Zool. Soc. 1869, pp. 652-660.

Cervus mexicanus and *rufinus* in Costa Rica. Frantzius, Wieg. Arch. 1869, pp. 299, 300.

Cervus macrotis, described and figured by W. J. Hays, Amer. Natur. iii. 1869, p. 180, pl. iii.

Cervus chilensis. Dr. Gray regards this as the type of a distinct genus, *Xenelaphus*; he describes the animal and figures the very curious antlers, Proc. Zool. Soc. 1869, p. 496. *C. chilensis* (Gervais) = *Capreolus leucotis* (Gray) = *Furcifer huamel* (Gray) = *Xenelaphus huamel*.

Moschus moschiferus figured by A. Milne-Edwards in Recherch. Hist. Mammif. pl. 19.

Tragulus kanchil. Dr. Gray has described and figured a peculiar osseous expansion over the lumbar and pelvic region of a male example. Proc. Zool. Soc. 1869, p. 226.

SIRENIA.

Rhytina. Ed. von Eichwald repeats the reasons which induce him to believe in the possible rediscovery of living examples. Bull. Soc. Nat. Mosc. 1867 (1868), Heft 3, pp. 220-227, and 1869, xli. pp. 313 *et seq.*—Prof. von Brandt, in reply, considers the evidence, as it stands at present, to be conclusive, *ibid.* 1867 (1868), Heft 4, pp. 503-524.

Manatus americanus. Notes on its distribution in Central America by Frantzius, Wieg. Arch. 1869, p. 301.

CETACEA.

The work of MM. VAN BENEDEN & Gervais has been mentioned above, p. 3.

SOPHUS HALLAS has published his notes on the Whales observed on a whaling-expedition in the Iceland Sea: Vid. Meddel. ntrh. Foren. i Kjöbenh. for 1867 (1868), pp. 150-177. They refer chiefly to *Balenoptera*; and especially to the "Steypireyör" of the Icelanders, which formed the subject of Prof. Reinhardt's paper noticed in Zool. Record, v. pp. 9 & 26.

Mr. C. M. SCAMMON has published the results of many years' observations made by him whilst engaged in the whale-fishery on the western coast of North America (Proc. Acad. Nat. Sc. Philad. 1869, pp. 13-63). The paper, which contains some descriptive details, treats chiefly on peculiarities and habits of the various Cetaceans distinguished by whalers, and on the mode of capture. Mr. COPE, who edited the paper, has prefixed a systematic synopsis, in which the species observed and mentioned by Mr. Scammon, and others known to exist in those parts, with the addition of some Atlantic Cetaceans, are characterized. The following are mentioned or described in this paper:—

A. From the Pacific: *Balæna mysticetus*, *sieboldii*, and *cullamach*, fig. 4; *Rhachianectus* (g. n.) *glaucus*; *Megaptera versabilis*, sp. n., p. 15, figs. 5 & 6; *Balenoptera velifera*, sp. n., p. 16, figs. 9 & 10; *Sibbaldius tuberosus*, sp. n., (p. 16), and *S. sulfureus* (Cope), fig. 11; *Globiocephalus scammonii*, sp. n., p. 21, figs. 12 & 13; *Orca rectipinna* (figs. 15 & 16) and *ater* (fig. 17), spp. nn., p. 22; *Delphinus obliquidens* (Gill) and *D. styx*; *Delphinapterus borealis*; *Phocæna vomerina*; *Beluga rhinodon* (Cope), fig. 1; *Physeter macrocephalus*.

B. From the Atlantic and Arctic Oceans: *Sibbaldius tectirostris*, sp. n., p. 17; *Beluga declivis* (Cope), p. 27, fig. 2; *Beluga angustata* (Cope), fig. 3; *Hyperoodon semijunctus* (Cope), p. 31, pl. 1.

Agaphelus is the name of a new genus proposed by Mr. Cope for *Balæna gibbosa* (Erxl.) and the Grey Whale of California, *Agaphelus glaucus* (Cope). Proc. Ac. Nat. Sc. Philad. 1863, p. 159. A more detailed description of the former species and notes on the latter, *ibid.* p. 221.—Later *A. glaucus* is made the type of a distinct genus, *Rhachianectes*, *ibid.* 1869, p. 15, figs. 7-8.

Balenoptera. Four species only inhabit the North Atlantic, according to Prof. van Beneden, Bull. Ac. Roy. Belg. xxvii. 1869, p. 281; they are:—1. *B. rostrata* (Fabr.); 2. *B. borealis* (Cuv.)=*laticeps* (Gray); 3. *B. musculus* = *Physalus antiquorum* (Gray) = *B. gigas* (Eschr.); 4. *B. sibbaldii* (Gray) = *latirostris* (Flower) = *carolina* (Malm.). The author adds the principal specific characters and a list of the specimens observed, and shows on a map the localities where each species has been found.

Balenoptera musculus. Prof. Flower has described and figured an example stranded on the south coast of England in 1869 (Proc. Zool. Soc. 1869, p. 604, pl. 47); he has also appended notes on three other skeletons of the same species, showing variations in the development of the lower transverse process of the sixth cervical vertebra in the presence or absence of the capitular

process of the first rib, and in the development of the fifteenth rib.—Prof. van Beneden reports on an example cast ashore in the Schelde (May 1869); the skeleton was preserved. Bull. Ac. Belg. 1869, xxvii. pp. 680-682.

Hr. Malm describes a skeleton of *Balenoptera musculus* from Finmarken in the Stockholm Museum. Öfvers. Vet. Ak. Förhandl. 1868, pp. 95-103, with a plate.

Physeter. L. N. Atwood records the captures of lean Sperm-Whales, in the intestines of which ambergris was found. Americ. Natur. ii. 1869, p. 14.—On malformation of a tooth, Murie, Proc. Odontol. Soc. Great Brit. 1869. p. 47.

MARSUPIALIA.

Didelphys. Dr. v. Frantzius has observed in Costa Rica *D. aurita*, *quica*, *myosurus*, and *murina*. Wiegmann. Arch. 1869, pp. 315-318.

Halmaturus. Dr. Lucae mentions another case in confirmation of his former observations on the female genital organs [see Zool. Record, iv. p. 41]. Zool. Garten, 1869, p. 61.

Phalangista vulpina. Marno describes the young bred in the menagerie at Vienna. Zool. Gart. 1869, p. 62.

AVES

BY

ALFRED NEWTON, M.A., F.R.S., etc.

SEVERAL causes induce us to hope that the present 'Record' may be found more complete than any of those which have preceded it; and though, as before, we stand greatly indebted to the good offices of many kind friends, we believe we have omitted few works which could justly claim a place*. There seems to us no need to particularize any of the publications herein mentioned; and if, in the following pages, some are distinguished typographically, this is done on the responsibility of the Editor. The ornithology of the Palaearctic Region engrosses, as it most likely long will engross, the greatest share of attention; but it is extremely gratifying to find that constantly increasing interest is taken in that of remoter regions. We think, also, that there is manifest a growing desire on the part of ornithologists to become acquainted with each other's work before committing themselves to print; for it is certain that the flagrant cases of wilful neglect which some years ago were far from uncommon are now comparatively rare, if indeed they have any existence. We accordingly deem the present state of our science to be healthy; and with fresh labourers springing up on every side, while the elders (as in Mr. G. R. Gray's case) display their wonted activity, its most zealous cultivator need have few fears for the future.

BIBLIOGRAPHY AND CRITICISM.

HARTLAUB, G. Bericht über die Leistungen in der Naturgeschichte der Vögel während des Jahres 1868. Archiv für Naturg. xxxv. Band ii. pp. 105-132. Berlin: 1869.

It has hitherto been so great a pleasure for us to speak in the highest terms of the Reports executed by Dr. Hartlaub that it is with as much pain that we must notice some indications of

* The concluding *Heft* of the 'Journal für Ornithologie' for 1869 did not appear until after the first for 1870; and we have not been able to see a complete set of the 'Proceedings' of the Philadelphia Academy.

hasty compilation which we perceive in this the *Twenty-third* of the series. It is, however, no part of our duty to criticize minutely the publications we have to record; and indeed it would be obviously indecorous for us to do so in this case of a work having the same object as our own.

BARBOZA DU BOCAGE. Algumas observações e additamentos ao artigo do sr. A. C. SMITH. [See "PALÆARCTIC REGION."]

BULLER, W. Notes on Herr Finsch's Review of Mr. Walter Buller's Essay on New Zealand Ornithology. [See "AUSTRALIAN REGION."]

DROSTE-HÜLSHOFF, FERD. BARON. Uebersicht über ornithologische Publicationen des Jahres 1868 welche die europäische Ornithologie berühren. Bericht XVII. Versamml. Deutsch. Ornith.-Gesellsch. pp. 17-23.

By taking a very liberal view of what relates to European Ornithology, the author is able to enumerate upwards of 50 papers or separate works on the subject, respecting most of which a few judicious comments are added.

FITZINGER, L. J. Bemerkungen über die uns zu Gebote stehenden Mittel zu einer möglichst raschen und sichern Bestimmung der Säugethiere und Vögel. Zoolog. Garten, 1869, pp. 152-155.

Prof. Reichenbach's work is alone named for ornithology.

MARTENS, E. VON. Ueber Thiernamen. *Tom. cit.* pp. 49-53.

The passage above indicated refers to the only ornithological portion, coming within our present limits, of a most interesting series of papers, and treats of the words in various languages used for the second class of vertebrates.

SALVIN, OSBERT. Notes on Mr. Lawrence's List of Costa Rica Birds. [See "NEOTROPICAL REGION."]

WALDEN, ARTHUR, Viscount. Remarks on Dr. Stoliczka's "Ornithological Observations in the Sutlej Valley." [See "INDIAN REGION."]

THE GENERAL SUBJECT.

BERTHELOT, SABIN. Les Oiseaux migrants. Bull. Soc. Imp. d'Acclimat. 1869, pp. 660-675.

BLEEKER, P. Naamlijst der Vogelen in het Museum van het Koninklijk zoölogisch botanisch Genootschap te 'sGravenhage. Verslag van het K. Z.-B. Genootsch. van Akklim. 1869, pp. 77-103.

The names of about 750 species given, with the number of specimens of each, their locality, and a reference, when possible, to Bonaparte's 'Conspectus Avium.'

CLAUS, CARL. Grundzüge der Zoologie zum Gebrauche an Universitäten und höhern Lehranstalten. Leitfaden zur Einführung in das wissenschaftliche Studium der Zoologie. Marburg und Leipzig: 1868. 8vo, pp. 839.

The ornithological portion (pp. 643-719) is fairly treated as to its extent, and the introductory remarks on the nature and properties of the class are judicious; but not so much is to be said for the systematic portion, though the author deals with that in considerable detail, giving even the characters of families, and at least the names of the more remarkable species thereto belonging. The general classification of Birds is in eight orders—*Natatores*, *Grallatores*, *Cursores*, *Gallinacei*, *Columbæ*, *Scansores*, *Ambulatores*, and *Raptatores*.

CORDEAUX, JOHN. Notes on Bird-Parasites. Zoologist, Sec. Ser. pp. 1583-1588.

Some of these are interesting, and from the ornithologist's rather than the entomologist's point of view.

DROSTE-HÜLFSSHOFF, FERD. BARON. Die Vertretung die Vögelwelt im höchsten Norden. Bericht XVII. Versamml. Deutsch. Ornith.-Gesellsch. pp. 48-62.

The author discusses the question of the avifauna of the North Pole, and gives a list of 28 species which, he thinks, will certainly be found there, while 12 more may possibly reach that much-desired spot. [Cf. Ibis, 1870, p. 130.]

GRAY, G. R. Hand-List of Genera and Species of Birds, distinguishing those contained in the British Museum. Part I. *Accipitres*, *Fissirostres*, *Tenuirostres*, and *Dentirostres*. London: 1869. 8vo, pp. 404.

This, the first part of a work which has occupied its veteran author for many years, is so certain to be in the hands of every working ornithologist that we do not feel compelled to expatiate upon it at such a length as its importance would otherwise require. Its object is to give a complete list of all the genera with their subdivisions, and of all the species under the groups to which they are supposed to belong,—such genera and species as are contained in the British Museum Collection being typographically distinguished. In this way about 1500 genera and nearly 7000 species are included, the name of the author to whom each is due and the date of the genus being given, while some of the principal synonyms and the localities are added, as well as references to figures of the species, but not to descriptions. Herein lies the chief defect; for had references to the descriptions been included, the value of the book as a help to work-

ing ornithologists would have been incalculably greater, and at the same time facility would have been afforded to the author of correcting many of the errors it contains, errors which, according to the method he has adopted, can as a rule only be detected by an amount of labour nearly equal to that bestowed on the compilation itself. For the same reason it is impossible for us to say how many species here receive names for the first time. We believe the number to be large; and therefore the matter is to be the more regretted, especially as no descriptions are appended—a want of consideration to other ornithologists which they will hardly fail to condemn. Yet while our duty obliges us to mention these shortcomings, and to point out what, as it seems to us, would have made the work worthy of the highest praise, we have yet the satisfaction of maintaining that according to the method pursued, and so far as its plan admits, it is a really honest performance, and one which in that aspect does great credit to its author, who, we trust, will in time bring out another and an improved edition with the information added, which, as we have above indicated, is now so much needed. The arrangement followed is, as might be expected, mainly that of the author's previous works; but the want of an index, to at least the genera, is most urgent, and will, we hope, be supplied in the concluding part, which may be shortly expected. [*Cf. Ibis*, 1869, p. 464; 1870, pp. 116–118.]

HUTTON, F. W. On the Mechanical Principles involved in the Sailing Flight of the Albatros. *Philos. Mag.* Aug. 1869, pp. 130–136.

This is in some sort a continuation of the treatise before noticed (*Zool. Rec.* ii. p. 56); but the subject is handled solely from a mathematical point of view. Hence we are prohibited from giving an abstract of the author's reasoning; but we deem ourselves bound to mention it here among the other papers which have reference to the faculty and the laws of flight. [*Cf. Ibis*, 1870, p. 122; *Zool. Rec.* iv. pp. 45, 46, 50; *et infra*, KRARUP-HANSEN, C. J. L., *et* MAREY, —.]

KRARUP-HANSEN, C. J. L. Essay to a theory of the Flight of Birds and Insects, popular treatise, illustrated by woodcuts. Copenhagen: 1869. 8vo, pp. 42.

This appears to be the translation of an original which we have not seen. The subject is treated mechanically; and thereby we may be excused from giving any abstract of the author's theory. [*Cf. Ibis*, 1870.]

MAREY, —. Mémoire sur le vol des insectes et des oiseaux. *Ann. Sc. Nat.* 5e sér. xii. pp. 49–150, figs. 42. Revised issue. Originally published in 'Revue des Cours Scienti-

fiques.' 6me Année, 1869, the part relating to Birds in nos. 37 (14 Aug.), 38 (21 Aug.), 41 (11 Sept.), 44 (2 Oct.), pp. 578-583, 601-604, 646-656, 700-704.

This admirable paper shows how the author by most ingenious contrivances caused various birds to record the movements of their wings so as to exhibit the actual direction and duration of the strokes. To give an abstract of it within our present limits is impossible, and all interested in the subject must refer to the paper itself. [Cf. Ibis, 1870, pp. 266-268.]

MILNE-EDWARDS, A. Recherches Anatomiques et Paléontologiques pour servir à l'histoire des Oiseaux Fossiles de la France. Livr. 26-30*. Paris: 1869. 4to, plates.

The progress made in this great work during the past year has not been quite so rapid as before. Having formerly noticed it at some length (Zool. Rec. iv. pp. 49, 50, v. p. 36), we have only now to remark that, pursuing the same method as hitherto, the author concludes his account of the "Ardéides" and then of the "Rallides" (*Rallidæ*), after which he begins the consideration of the "Gallinacés," in the middle of which the work at present breaks off. Of *Rallidæ*, 8 new species are described, 6 of which are from Miocene beds, and the remaining 2, one of them being the type of a new genus, from the Eocene. Many remains of "Gallinacés" and some of "Colombides" are figured; and the fossil species will be found named in our special part under *Columbidæ*, *Phasianidæ*, *Tetraonidæ*, and *Pteroclidæ*; but as yet the letterpress has not reached them.

—. Oiseaux Fossiles. Dict. Univers. d'hist. nat. Deuxième édition, ix. pp. 671-719. Paris: May 1869. 8vo.

A general account of Fossil Ornithology so far as the subject is yet known, beginning with the *ornithichnites* of the Trias, proceeding to the bird of the Jura formation—*Archæopteryx*, those of the Cretaceous series, of the Tertiary, including the Eocene, Miocene, and Pliocene periods, and so on to the species but recently extinct. As may be expected from the author's intimate acquaintance with his subject, even to the most minute details, this treatise is extremely well executed.

NEWTON, ALFRED. The Strickland Collection in the University of Cambridge. Ibis, 1869, pp. 320-324, pl. ix.

A short notice of the collection of the late Hugh Edwin Strickland, recently presented by his widow to the University of Cambridge and now in its Museum, where it is lodged in cabinets having their drawers made on the "interchangeable" principle first suggested by Mr. Salvin. The collection contains 5802 specimens, referable to 3031 species. Occasion is taken to

* Sheets 10-12 inclusive of vol. ii. have apparently not yet been published.

figure a species, belonging to *Picidae*, first described by Strickland.

RUSS, KARL. Vorläufige Mittheilungen über die Zucht fremdländischer Vögel. Journ. für Orn. 1869, pp. 73-82.

Concerns many of the exotic species of *Ploceidae* and *Fringillidae* commonly kept in confinement.

SCLATER, P. L. On the Breeding of Birds in the Gardens of the Zoological Society of London during the past Twenty Years. Proc. Zool. Soc. 1869, pp. 626-629.

A similar paper to that on mammals before noticed (Zool. Rec. v. p. 10), consisting of two Tables—the first showing the number of species of birds (104, *errore* 108) that have bred, and the number of times (671) they have produced young; the second, the number of species exhibited (720) in comparison with those that have bred, being on the whole 1 in 6.6.

SCLATER, P. L., and SALVIN, O. Exotic Ornithology. Parts IX.-XIII. London: 1869. Imp. 4to, pp. 129-204, pls. lxx.-c.

These five parts* complete the work of which we have spoken several times before (Zool. Rec. iii. p. 48; iv. p. 51, v. p. 38). All the species included in them are Neotropical, and will be noticed under the families to which they belong. The entire number of species figured in the whole work is 104, referred to 51 genera; and in most cases a systematic list of the other American species of the same genus is appended to the final illustration of each. All the plates are by Mr. Smit. [*Cf.* Ibis, 1870, pp. 262-264.]

SELENKA, EMIL. Dr. H. G. BRONN's Klassen und Ordnungen des Thier-Reichs, wissenschaftlich dargestellt in Wort und Bild. Sechster Band. IV. Abtheilung. Vögel: *Aves*. 1, 2 Lieferungen. Leipzig und Heidelberg: 1869. 8vo, pp. 80, pls. 6.

These two parts form the beginning of what will apparently be a very good general work on the class, the best of its kind that we have seen. The introduction gives a concise notice of the chief general works on the subject; and then follows a treatise on the anatomy of birds, wherein the author shows that he is sufficiently acquainted with the latest investigations of foreign as well as of German writers. This is still incomplete, but is of a very promising character. The subjects of the plates too (all at present anatomical) are well selected and clearly drawn, considering their small size. [*Cf.* Zool. Garten, 1869, p. 160; Ibis, 1870.]

* Part IX., containing pp. 129-144 and pls. lxx.-lxxii., though bearing date "December, 1868," was not, we believe, published till 1869.

PALÆARCTIC REGION.

ANDERSON, THOMAS. [See GRAY, ROBERT.]

BARBOZA DU BOCAGE. Algumas observações e additamentos ao artigo do sr. A. C. SMITH intitulado "A Sketch of the Birds of Portugal." Journ. Sc. Math. Phys. e Nat. Lisboa, 1869, pp. 214-219.

Mr. Smith's paper was noticed last year (Zool. Rec. v. pp. 43, 44). Prof. du Bocage makes some observations, generally favourable, upon it, but notices an error due to the present writer, and adds 44 species to the Portuguese list. [Cf. Ibis, 1870, pp. 134, 266.]

BARTH, G. R. Bericht über eine nach Lofoten und Vesteraalen unternommene Reise, in freier Uebersetzung mit nachträglichen Bemerkungen von F. BOIE. Journ. für Orn. 1869, pp. 82-105.

A good contribution to Norwegian ornithology, relating as it does to a chain of islands so remarkable, and so seldom visited for any length of time, as the Loffodens. It is also with peculiar pleasure that we see associated with the traveller a name so venerable as that of the naturalist who, more than fifty years ago, investigated the ornithology of this part of Norway. The species observed were 81 in number, being 7 fewer than were seen by Messrs. F. and P. Godman at Bodö, on the other side of the Vest Fjord (Ibis, 1861, pp. 77-92). The observations on *Lagopus subalpina* [sc. *albus*] seem to be particularly worthy of attention.

BETTONI, EUGENIO. Storia Naturale degli Uccelli che nidificano in Lombardia ad illustrazione della raccolta ornitologica dei fratelli ERCOLE ed ERNESTO TURATI con tavole litografate e colorate prese dal vero da O. DRESSLER. Milano: 1869. Folio. Vol. ii. fascicoli x.-xxiii.

This work is continued with the same spirit as before (Zool. Rec. v. p. 39). The species whose young and eggs are figured will be found under "NEOSSOLOGY" and "OOLOGY."

BOIE, F. [See BARTH, G. R.]

"BONIZZI, PAOLO. Catalogo degli Uccelli del Modenese. Modena: 1868. 8vo."

We only know of the existence of this from a reference (p. 145, note) in Prof. Doderlein's paper (*ut infra*), whence it appears that 224 species are included in the list.

BORGGREVE, BERNARD. Die Vogel-fauna von Norddeutschland. Eine kritische Musterung der europäischen Vogel-Arten nach dem Gesichtspunkte ihrer Verbreitung über das nördliche Deutschland. Unter Benutzung der einschlägigen Literatur und nach eigenen Beobachtungen bearbeitet. Berlin: 1869. 8vo, pp. 187.

This work is divided into two portions,—(i.) the Generalities of the subject, containing disquisitions on (1) various preliminary questions, (2) the conditions of local distribution, (3) its temporary changes, and (4) the classification and enumeration of the species according to their distribution in North Germany; and (ii.) the Specialities, wherein the various birds are dealt with systematically. Herein 490 species are included, and 5 more added in a supplement. Much care seems to have been bestowed on the whole. [Cf. Zool. Garten, 1869, pp. 223, 224; Ibis, 1870, p. 128.]

BOWDEN, J. The Naturalist in Norway; or, Notes on the wild Animals, Birds, Fishes, and Plants of that Country. London: 1869. 8vo, pp. 263.

A popular compilation of the worst kind. [Cf. Ibis, 1870, pp. 122, 123.]

BROWN, FRANCIS H. Some Observations on the Fauna of Madeira. Proc. Boston Soc. N. H. 1868, pp. 205–214.

The list of birds reprinted from the well-known one by Mr. E. Vernon-Harcourt, and no new ornithological fact recorded.

CROMMELIN, J. P. VAN WICKEVOORT. Notes ornithologiques sur la Faune des Pays-Bas. Arch. Néerland. iv. (1869) pp. 231–238.

A series of comments, chiefly on the works of Prof. Schlegel and MM. van Bemmelen and Albarda (Rouwstoffen voor eene Fauna van Nederland, ii., iii.) on the birds of Holland, with the latter of which we are not acquainted. The remarks show much research, and often contain information of value; but the opinions of the author on nomenclature are not likely to be generally adopted in this country. [Cf. Ibis, 1870, p. 270.]

——. Remarques sur la Faune ornithologique de la Hollande. *Tom. cit.* pp. 379–398.

This may be regarded as a supplement to Baron Droste's work [*vide infra*] from a Dutch point of view.

DAVID, ARMAND. Journal d'un Voyage en Mongolie fait en 1866. Nouv. Archives du Muséum, Bulletin, iii. pp. 18–96, pl. 4 (map), iv. pp. 3–72, pls. 1, 2 (maps).

This paper contains the most important contribution to the zoology of Northern China that has yet been made. In it (iii. pp. 29–41) is the best catalogue of the birds hitherto observed near Peking, including 295 species, many of which are not named, though it is probable that they can be referred to published descriptions; and indeed some are identified [apparently by M. J. Verreaux]. The only one which seems to receive a new name belongs to *Motacillidæ*. One of the most interesting discoveries is that of a species of Swan (see *Anatidæ*), certainly new to the Old World. But the Journal itself contains

numerous notices on the birds met with by the author in travelling (1) from Pekin to Seu-en-hwa-foo (iii. pp. 44-96), and during (2) his first and (3) second exploring expeditions to the Woorato country (iv. pp. 3-32, 32-51), and (4) excursion around Woo-tang-jiao (pp. 51-72), the narrative of which is, so far as we have seen, unfinished. The maps show the various itineraries.

DODERLEIN, PIETRO. Avifaune del Modenese e della Sicilia ossia Catalogo ragionato e comparativo delle varie specie di Uccelli che si rinvencono in permanenza o di passaggio nelle Provincie di Modena, di Reggio e nella Sicilia. Giorn. Sc. Nat. ed Econom. Istit. Tecn. Palermo, v. (1869) pp. 137-195.

The introduction states that 250 species will be enumerated in the Modenese list, and 300 in the Sicilian; but the portion of the paper as yet published extends to 58, of which 45 belong to Modena and 52 to Sicily. A good deal of bibliographical information is contained in the introductory observations, as well as some comparative lists of the birds of different parts of Italy and its islands; and the notes on the several species seem, in most cases, to be to the point.

DRAKE, C. F. TYRWHITT. Further Notes on the Birds of Morocco. Ibis, 1869, pp. 147-154.

In continuation of the paper before mentioned (Zool. Rec. iv. p. 53), which referred to the districts of Tangier and Tetuan. The author has since travelled along the coast from Tetuan to Mazagan, thence inward to the city of Morocco, and so to Mogador. After a brief description of the countries traversed, a list is given of the species (27 in number) not before observed by him, of which the most noteworthy are *Melierax polyzonus*, *Galerita macrorhyncha*, and *Otis tarda*.

DROSTE-HÜLSHOFF, FERD. BARON. Die Vogelwelt der Nordseeinsel Borkum. Nebst einer vergleichenden Uebersicht der in den südlichen Nordseeländern vorkommenden Vögel. Münster: 1869. 8vo, pp. 389, 16, plate and map.

A very complete ornithological monograph of the island of Borkum, the topography of which is fully treated, and essays on various matters in connexion with the subject, some having before appeared (Zool. Rec. ii. p. 62, iii. p. 49, v. p. 39), introduced. About 220 species are mentioned, and abundant information respecting the water-birds, which form the majority, is given. An appendix is added, consisting of a comparative list of the birds of the south coast of the North Sea and of the Baltic. The plate represents a scene on Rottum; and the map is of Borkum and the parts adjacent. [Cf. Rev. Zool. 1869, p. 365; Zool. Garten, 1869, p. 223; Bericht XVII. Versamml. D. O. G. pp. 24-27; Ibis, 1870, pp. 128, 129.]

DROSTE-HÜLSHOFF, FERD. BARON. Eine Fahrt nach Rottum. Zoolog. Garten, 1869, pp. 304-309.

The species mentioned are only such as might be expected to occur on the island.

——. Liste seltenerer Vögel, welche in Ostfriesland vorgekommen sind. Journ. für Orn. 1868, pp. 405-407. [Not published till 1869.]

Chiefly of local interest.

——. Enten- und Strandvögelfang in Stellnitzen. *Op. cit.* 1869, pp. 279-283.

On the mode of catching *Limicolæ* and *Anatidæ* in stake-nets on Borkum.

——. Die Ganzjagd am Dollart. *Tom. cit.* pp. 283-285.

Translated from the Dutch. [*Cf.* Zool. Rec. iv. p. 121.]

——. [See also MUELLER, H. C.]

ELWES, H. J. The Bird-Stations of the Outer Hebrides. *Ibis*, 1869, pp. 20-37.

A very interesting paper, but not requiring any especial notice.

FRITSCH, ANTON. Ornithologische Notizen aus Böhmen. Journ. für Orn. 1869, pp. 45-47.

Nothing of very particular interest.

GALLIARD, LÉON OLPHE. Oiseau nouveau pour la faune Européenne. Rev. et Mag. de Zool. 1869, pp. 363-365. [*Muscicapidæ*.]

GOEBEL, H. Briefliches aus Süd-Russland. Journ. für Orn. 1869, pp. 318-320.

The most noteworthy fact mentioned is the breeding of a *Turdus*, supposed to be a Siberian species, in the Government of Archangel. From Southern Russia the news is unimportant.

——. Notizen über drei Vögel des Archangelschen Gouvernements. *Tom. cit.* pp. 320-322. [*Mergus serrator*, *Spatula clypeata*, and *Erythropus vesperinus*.]

GOULD, J. The Birds of Great Britain. Parts xv. and xvi. London: 1869.

The two parts published during the past year (bearing as usual the respective dates of 1st Aug. and 1st Sept.) are fully equal, if not superior, to any that have appeared. The species figured are noticed under the families to which they belong. [*Cf.* *Ibis*, 1870, pp. 120, 121.]

GRAY, ROBERT, and ANDERSON, THOMAS. The Birds of Ayrshire and Wigtownshire. Glasgow: 1869. 8vo, pp. 62. Reprinted from Proc. Nat. Hist. Soc. Glasgow, i. pp. 269-324.

The introduction gives a very fair account of the natural features of the two counties, in which at least 196 species have been noticed. The recently passed Act of Parliament (32 and

33 Viet. cap. 17) for the preservation of Sea-birds is reprinted in the concluding remarks. [Cf. Ibis, 1870, pp. 125, 126.]

HOMER, EUGEN VON. Beiträge zur Kenntniss der Vögel Ostsibiriens und des Amurlandes. Journ. für Orn. 1869, pp. 48-61, 119-125, 169-174.

A continuation of this useful digest, which we noticed last year (Zool. Rec. v. p. 41), 79 species being treated in the three articles now cited.

HOYNINGEN-HUENE, ALEXANDER, Baron. Bericht über die Ankunft der Zugvögel in Estland, sowie Notizen über das Nisten einiger Vögel in der Umgegend von Lechts im Jahre 1868. Journ. für Orn. 1869, pp. 18-21.

Of local interest only.

KRÜPER, TH. Beitrag zur Ornithologie Klein-Asiens. Journ. für Orn. 1869, pp. 21-45.

Very welcome remarks on the ornithology of this little-known country,—those on *Accipiter brevipes*, *Buteo ferox*, *Lanius perssonatus*, *Saxicola saltatrix*, *Aedon familiaris*, and *Bessornis gutturalis* especially.

MALMGREN, A. J. Ornithologiska Notiser. Öfvers. Finska Vet.-Soc. Förhandl. 1869, no. i. (pp. 6).

Relates to the occurrence in Finland of a species of *Falconidae* and two of *Sylviidae*. [Cf. Ibis, 1870, p. 132.]

MEVES, W. Bidrag till Sveriges Ornithologi. Berättelse om en resa till Öland och Skåne. Öfvers. K. Vetensk.-Ak. Förhandl. 1868, pp. 251-293.

The results of a journey, in 1867, to Öland and Scania, which gave the author opportunity of making some very good investigations, possessing, however, rather a local than a general interest. Still the paper is of importance to those engaged on Scandinavian ornithology, and Herr Meves's observations are well known to be trustworthy, while his remarks are generally to the point. [Cf. J. f. O. 1869, pp. 390-392; Ibis, 1870.]

MUELLER, H. C. Vogelfauna der Färöer, aus dem Dänischen übersetzt und mit Anmerkungen versehen von FERD. Baron VON DROSTE. Journ. für Orn. 1869, pp. 107-118, 341-355, 381-390 *.

The original appeared in 'Videnskablige Meddelelser fra den naturhistoriske Forening i Kjöbenhavn' for 1862 (pp. 1-78), and is of very great excellence, from the intimate knowledge of the birds of the Färöes possessed by its author, who has resided there all his life. The species included in their fauna are 124 in number; and the translator's notes have generally reference to the distribution of the birds in Iceland, Scotland, or Norway.

* The last portion not published till 1870.

"NINNI, A. P. Catalogo degli Uccelli del Veneto. Faun., Flor. e Gea del Veneto e del Trentino. Venetia: 1867. 8vo. (In course of publication.)"

This we have not seen, and we only quote it from a reference (p. 144, note) in Prof. Doderlein's paper (*ut suprà*).

NOLL, F. C. Helgoland. Naturhistorische Skizze. Zoolog. Garten, 1869, pp. 109-117, 234-244.

Ornithology is scarcely noticed in these articles.

RODD, E. H. A List of British Birds as a Guide to the Ornithology of Cornwall, &c. Second Edition. London and Penzance: 1869. 8vo, pp. 51.

Some additions are made to the former edition (Zool. Rec. iv. p. 56); but few of its errors, typographical or otherwise, are corrected. [*Cf.* Ibis, 1870, p. 264.]

SABANÁEFF, LEONIDA. Materialöi dlia Faunöi Jaroslafski guberni. Bull. Soc. Imp. Nat. de Moscou, xli. 1868, pp. 202-243, 383-405.

A continuation of the articles noticed last year (Zool. Rec. v. p. 43), beginning with an account of the changes in the fauna according to season. The various birds are divided and subdivided into categories, such as migrants occasionally remaining, and pure migrants, residents, passing migrants, winter visitors, (p. 208) those which are comparatively resident, those changing their quarters from summer to winter, without really migrating, pure nomads, partly nomads, sometimes residents, but not always wintering. A table is also given (p. 214) of the species which haunt the pine-forests, the larch-forests, and the neighbourhood of houses. Another chapter treats of the spring-fauna (p. 216), remarking on the species which arrive in companies, and those that come as stragglers, noticing also the difference between the spring and summer fauna. Then follows (p. 222) an account of the autumnal fauna and the migration of birds which breed in the district; *Picus leuconotus* and *P. tridactylus* are common at that season, and *Accentor montanellus*, which also breeds there, has been observed in October. The next chapter (p. 231) treats of the fauna as affected by the natural features of the country, recounting the species which inhabit the forests, the open country, and so forth. We have then (p. 383) an account of the general distribution of the animals and of the increase and decrease of their numbers, with a table (p. 399) showing those which are fast decreasing owing to human interference (among which are the *Laridæ*), those which are decreasing notwithstanding certain favourable circumstances, those which are increasing, and those which are decreasing owing to the destruction of the forests. The last chapter (p. 400) contains a general summary and a comparison

of the faunas of the north-eastern and south-western districts, with notes on the general distribution of the species*.

SALVADORI, T. Degli uccelli avventizi in Italia. Atti Soc. Ital. Sc. Nat. xii. (24 Aug. 1869) pp. 4.

The stragglers mentioned in this portion are all *Accipitres*. The most remarkable is *Buteo ferox*.

SAUNDERS, HOWARD. Ornithological Rambles in Spain. Ibis, 1869, pp. 170-186.

The notes refer to the district south of the Sierra Morena, where the author passed the winter of 1867-68 and following spring. They relate to several very interesting species and their nidification. Mention is made of a "variety" of a species of *Procellariidæ*, which seems hitherto to have escaped description.

——. Notes on the Ornithology of Italy and Spain. *Tom. cit.* pp. 391-403.

These were made in 1868-69; and the Italian observations relate chiefly to specimens in museums, while the Spanish are rather field-notes, and refer to the neighbourhood of Aranjuez as well as to the south.

SAXBY, H. L. Ornithological Notes from Shetland. Zoologist, Sec. Ser. pp. 1760-1764.

In continuation of those before noticed (Zool. Rec. iii. p. 52, iv. p. 56). *Asio otus*, *Accentor modularis*, and *Coturnix communis*, the last breeding, are recorded for the first time as visitors.

SCHACHT, H. Ein Jahr der Beobachtung des Vogel Lebens im Teutoburger Walde. Zoolog. Garten, 1869, pp. 247-251.

Extracts from an ornithological journal kept in 1867-68, but apparently containing nothing of more than local interest.

SMITH, CECIL. The Birds of Somersetshire. London: 1869. 8vo, pp. 623.

Each species found in the county, and there are 216 of them enumerated by the author, is described by him; but the book does not give such an account of the natural features of the country as is required for a good local work. [*Cf.* Ibis, 1870, pp. 124, 125.]

SNELL, F. H. Parallele zwischen der Vogelfauna des Taunus und der Wetterau. Zoolog. Garten, 1869, pp. 321-328, 354-362.

In continuation of the paper before noticed (Zool. Rec. iii. p. 52), and of not much more than local interest.

* As before, we owe this abstract to the kindness of Mr. H. E. Dresser.

STERLAND, J. W. The Birds of Sherwood Forest, with Notes on their Habits, Nesting, Migrations, &c. London: 1869. 8vo, pp. 244.

The species observed in the district, some perhaps on authority too slight, are 172 in number. Some remarks, from original observation, on the structure and functions of the so-called "oil-gland" in birds are added. [Cf. Ibis, 1870, pp. 123, 124; Zool. S. S. pp. 1881-1888.]

STÖLKER, CARL. Ornithologische Fragmente aus Florenz. Journ. für Orn. 1869, pp. 337-339.
Unimportant.

SUNDEVALL, C. J. Svenska Foglarna. Part xx. Stockholm: 1869. Oblong 4to.

Since we last noticed this work (Zool. Rec. iv. p. 56), only one part has appeared. It contains half-sheets 61-66, and plates lxxiv.-lxxvi. and lxxx.

TSCHUSI, VICTOR VON. Ueber einige Vögel des Riesengebirges. Journ. für Orn. 1869, pp. 224-234.

A supplement to Baron Alexander von Homeyer's excursions on the boundary of Bohemia and Silesia (Zool. Rec. ii. p. 64), containing a rather interesting account of the birds of the Giant Mountains, with criticisms on the works of Drs. Gloger, Palliardi, and Hoser.

———. Bemerkungen über einige Vögel Niederösterreichs. *Tom. cit.* pp. 234-241.

Except some notes on the breeding of *Nucifraga caryocatactes*, none of these remarks require special attention.

WRIGHT, CHARLES A. Third Appendix to a List of Birds observed in Malta and Gozo. Ibis, 1869, pp. 245-256.

In continuation of the papers before noticed (Zool. Rec. i. pp. 46, 47, ii. p. 69). Nine more species are added to the list, and some severe criticisms made on Mr. Grant's work (*op. cit.* iii. p. 50).

ETHIOPIAN REGION.

ANTINORI, ORAZIO. Beschreibung und Verzeichniss, u. s. w. Journ. für Orn. 1869, pp. 327-333.

In continuation of the translation before noticed (Zool. Rec. ii. p. 69, iii. p. 53, iv. pp. 57, 58).

AYRES, THOMAS. Notes on Birds of the Territory of the Transvaal Republic. Ibis, 1869, pp. 286-303.

The names have been determined by Mr. J. H. Gurney, who has added some valuable notes. The collection includes 66 species; but none require further notice here.

BARBOZA DU BOCAGE, J. V. Oiseaux nouveaux de l'Afrique occidentale. Proc. Zool. Soc. 1868, pp. 436, 437, pl. xxix. Descriptions of 3 species belonging to *Turdidæ* (2) and *Capitonidæ*, and a nominal list of 11 others sent home by Senhor Anchieta.

BLANFORD, W. T. Descriptions of five Birds . . . from Abyssinia. Ann. & Mag. N. H. 4th ser. iv. pp. 329-330.
[See *Hirundinidæ*, *Sylviidæ* (2), *Alaudidæ*, and *Fringillidæ*.]

CABANIS, J. Baron C. C. von der Decken's Reisen in Ost-Africa. Dritter Band, Wissenschaftliche Ergebnisse. Erster Abtheilung. Vögel, pp. 19-52, tabb. xviii. Leipzig und Heidelberg: 1869. Imp. 8vo.

This contains an account of the ornithological collection made by the ill-fated Baron von der Decken during his arduous travels in East Africa, and is elaborated in the author's usual excellent manner. The collection contains examples of 126 species, whereof 21, for which see *Falconidæ*, *Bucerotidæ*, *Laniidæ* (5), *Turdidæ*, *Sylviidæ* (3), *Ploceidæ* (3), *Fringillidæ*, *Tetronidæ*, *Pteroclidæ*, *Charadriidæ*, *Otididæ*, and *Ardeidæ* (2), are described as new. These last were, all but one, briefly but sufficiently characterized at a meeting of the Deutsche ornithologische Gesellschaft zu Berlin, held 7th Oct. 1868; and their diagnoses are printed in the concluding *Heft* of the 'Journal für Ornithologie' for that year (pp. 411-414), which did not, however, as we have before mentioned (Zool. Rec. v. pp. 29, 30, note), appear until 1869, nor indeed until after the printing of the work, since a name (see *Fringillidæ*) therein conferred was, on the discovery of its former use, changed in the paper in the 'Journal.'

FINSCH, OTTO. Ueber eine Vögelsammlung aus Westafrika. Journ. für Orn. 1869, pp. 334-337.

A list, with notes, of a small collection, containing 22 species, made on the Gold Coast by Herr Max Sintonis. One species (*Sylviidæ*) receives a new name; constant references are made to the joint work of the author and Dr. Hartlaub, the *fourth* volume of 'Von der Decken's Reisen,' published in 1870.

"FRITSCH, E. Drei Jahre in Südafrika."

This work we have not seen, and only quote its title from Dr. Hartlaub's 'Bericht' (p. 113).

GRANDIDIER, A. Description de quelques animaux nouveaux decouverts, pendant l'année 1859, sur la côte ouest de Madagascar. Rev. et Mag. de Zool. 1869, pp. 337-342.

One bird only described [see *Cuculidæ*].

GURNEY, J. H. Notes on the Birds-of-prey of Madagascar and some of the adjacent Islands. [See *Accipitres*.]

GURNEY, J. H. [See AYRES, THOMAS.]

HEUGLIN, M. T. VON. The *Malurinae* of North-eastern Africa. [See *Sylviidae*.]

——. Synopsis der Vögel Nord-Ost Afrikas, des Nilquellengebietes und der Küstenländer des Rothen Meeres. Journ. für Orn. 1869, pp. 1-18, 145-168.

A continuation of the paper before noticed (Zool. Rec. iv. pp. 59, 60, v. p. 46). The most remarkable facts will be found under the heads "*Sylviidae*" and "*Sturnidae*."

——. Ornithologie Nordost-Afrika's, der Nilquellen- und Küsten-Gebiete des Rothen Meeres und des nördlichen Somal-Landes. Erster Band, Erste Abtheilung. Cassel: 1869. Imp. 8vo, pp. 416, pls. 15 and map*.

This long-expected work is very welcome, and great pains have evidently been taken with it. The numerous species, which were named by the author in 1856, and some of them since described in communications to the 'Journal für Ornithologie' or elsewhere, come out better, we think, than could have been expected [*cf.* Zool. Rec. i. p. 49] from the scrutiny to which they have been lately subjected by him while preparing the present work. It must be remarked that he has been able to consult and quote from the work on the birds of Eastern Africa, by Drs. Hartlaub and Finsch, though this has only been published within the present year, which is manifestly a great advantage, as it has led in many cases to a common view being taken by each of these authorities. It is not easy to say exactly how many species are now for the first time described; but it is believed that a special account of all the chief novelties will be found under the heads *Caprimulgidae*, *Cypselidae*, *Nectariniidae*, *Hirundinidae*, and, where they are most numerous, *Sylviidae*. The whole of the plates promised for the present part of the work are not yet given, while several that do not belong to it are. [*Cf.* Ibis, 1870, pp. 127, 421-435.]

JESSE, WILLIAM. Report on the Zoology of the Abyssinian Expedition. Proc. Zool. Soc. 1869, pp. 111-117.

A mere sketch of the author's route; full particulars of his doings are expected to be published in the Society's 'Transactions.'

LAYARD, E. L. Further Notes on South-African Ornithology. Ibis, 1869, pp. 68-79, 362-378.

The first paper refers to about 50 species, and is in continuation of those noticed last year (Zool. Rec. v. p. 46), containing

* In connexion with this work, see also the same author's "Zoogeographische Skizze," u. s. w. in Petermann's 'Geographische Mittheilungen,' 1869, pp. 406-418, Taf. 21.

much information on the nidification and oology of the birds of the Cape Colony, as well as some explanations of the limits to which the author restricted himself in his larger work (Zool. Rec. iv. pp. 60, 61). The second paper is of the same character, referring to about 80 species, two of which, belonging to *Motacillidæ* and *Fringillidæ*, are new to the Cape fauna.

MALMGREN, A. J. Letter on some South-African Birds. *Ibis*, 1869, pp. 229, 230.

Mentions 5 species found in South Africa by Wahlberg, which are not included in Mr. Layard's work on the birds of that country.

MILNE-EDWARDS, ALPHONSE. Nouvelles observations sur la faune ancienne des îles Mascareignes. *Comptes Rendus*, April 12, 1869, lxviii. pp. 856-860; Abstract, *Rev. et Mag. de Zool.* 1869, pp. 173-178. Translated, *Ann. & Mag. N. H.* 4th ser. iv. pp. 129-132. [See *Rallidæ*.]

SHARPE, R. B. On a Collection of Birds from the Fantee Country in Western Africa. *Ibis*, 1869, pp. 186-195, pl. iv.

After mentioning the scanty records which exist relating to the ornithology of this district, 60 species are enumerated, of which 21 seem not to have been before found there; and one new one, belonging to *Campephagidæ*, is described. The plate represents *Hukua poensis*.

—. On two more Collections of Birds from the Fantee Country. *Tom. cit.* pp. 381-388, pl. xi.

In addition to those included in the last paper, 36 species are here enumerated, of which 12 are marked as not hitherto recorded from the country; and 2 new ones, belonging to *Ploceidæ*, are described and figured.

—. On the Birds of Angola.—Part I. With Notes by the Collector, J. J. MONTEIRO. *Proc. Zool. Soc.* 1869, pp. 563-571, pl. xliii.

Contains notes on 3 species from St. Thomas's Island, and 29 from Angola, whereof 8 are recorded from the latter for the first time. None are new; the species figured belongs to *Hirundinidæ*.

—. [See *Alcedinidæ*.]

TRISTRAM, H. B. Notes on some new South-African *Sylviidæ*. *Ibis*, 1869, pp. 204-208, pl. vi.

Besides remarks on other species, contains descriptions of 4 new ones.

—. Notes on some African Birds. *Tom. cit.* pp. 434-438. 1869. [VOL. VI.] E

One species, belonging to *Alaudidæ*, is described as new; and valuable remarks on several others are made.

INDIAN REGION.

BEAVAN, R. C. Additional Notes on various Indian Birds. *Ibis*, 1869, pp. 403-426.

These are supplementary to the first paper of the series noticed (*Zool. Rec.* ii. p. 72, iv. p. 62, v. p. 48), and are of the same character. Upwards of 60 species are noticed.

BLANFORD, W. T. Ornithological Notes, chiefly on some birds of Central, Western, and Southern India. *Proc. Asiat. Soc. Bengal*, 1869, pp. 104, 105 (abstract); *Journ. Asiat. Soc. Bengal*, xxxviii. (1869) pp. 164-191, pl. xvii. *a*.

These notes relate to three collections, the first made in Nag-poor, Chanda, and on the Upper Godavery, the second at and near Khandalla on the Western Ghauts, and the third in the Neilgherry Hills. Of the first the chief points were mentioned in a paper previously noticed by us (*Zool. Rec.* iv. p. 62); but all respecting the other two seems to be new. The observations relating to the relative distribution of some of the migrating birds are especially worthy of notice. One new species (mentioned under *Timaliidae*) is described. [*Cf. Ibis*, 1870.]

BROOKS, W. E. Notes on Birds observed near Nynce Tal and Almorah, from April to June 1868. *Ibis*, 1869, pp. 43-60. Corrections, *tom. cit.* pp. 353, 354.

Upwards of 90 species are noticed.

BULGER, G. E. List of Birds obtained in Sikkim, Eastern Himalayas, between March and July 1867. *Ibis*, 1869, pp. 154-170.

Nearly 140 species enumerated, with notes on their habits or the elevations at which they occur.

GOULD, J. The Birds of Asia. Part xxi. London: 1869.

A bare majority of the species figured probably belongs to the Indian Region; of the remainder, one is from a doubtful locality, another pertains to the Australian, and the rest to the Palearctic Region. [*Cf. Ibis*, 1870, pp. 118, 119.]

HUME, ALLAN. Stray Notes on Ornithology in India. *Ibis*, 1869, pp. 1-20, 143-146.

The first of these papers contains an entertaining account of a morning's birds'-nesting at Bareilly, with notes on many Indian species; and the second treats of the nidification of *Nisaetus bonelli*.

— Letters respecting some Indian Birds. *Tom. cit.* pp. 120-122, 355-357.

The first contains critical remarks on *Anthus ricardi* and *A. sordidus*, *Corvus intermedius*, and *Falco peregrinator*. The second, besides treating of some other matters, describes 6 species, belonging to *Vulturidæ*, *Falconidæ* (3), *Sylviidæ* and *Ploceidæ*, as new.

——. My Scrap Book. [See "ACCIPITRES."]

SWINHÖE, ROBERT. Descriptions of two new Species of Sun-birds from the Island of Hainan, South China. [See *Nectariniidæ*.]

——. Letter identifying some of the Chinese Birds mentioned by Mr. Collingwood. *Ibis*, 1869, pp. 347, 348.

We noticed Mr. Collingwood's work last year (*Zool. Rec.* v. p. 83). Mr. Swinhoe's remarks upon the Chinese Birds mentioned in it are much to the point.

WALDEN, ARTHUR [HAY], Viscount. Remarks on Dr. Stoliczka's "Ornithological Observations in the Sutlej Valley." *Ibis*, 1869, pp. 208-215.

The paper criticised was noticed by us last year (*Zool. Rec.* v. p. 49), and the critic speaks highly of it, adding some good remarks on the nomenclature of certain species, the synonymy of which seems to be in much confusion.

WALLACE, ALFRED RUSSEL. The Malay Archipelago: the Land of the Orang-Utan and the Bird of Paradise. A Narrative of Travel, with Studies of Man and Nature. London: 1869. 2 vols. small 8vo, pp. 478 and 524.

The interest with which this work was long expected will not have been disappointed at its appearance; but the great popularity it has achieved renders it unnecessary for us to give more than an outline of its contents. Mr. Wallace has very much consulted the convenience of his readers by departing from the usual plan of travellers in their narratives, and instead of a chronological he has adopted a geographical system, giving a connected account of each island or group of islands forming the Archipelago, one after the other. Thus after a chapter devoted to the physical geography of the whole chain, the Indo-Malay Islands are treated; then come in order the Timor Group, Celebes and its satellites, the Moluccas and the Papuan Group. In each case a chapter is especially occupied by a general treatise on the natural history of the division, while that on the *Epimachidæ* and *Paradisidæ* (ii. pp. 387-426) here demands particular mention. The illustrations, except two excellent maps, consist of numerous woodcuts, well chosen for their subjects. The theory of Natural Selection, of which the author was the joint-discoverer with Mr. Darwin, receives of course great attention throughout; but it is at the same time set forth with so much judgment that its keenest opponents will have but little reason to complain. From the nature of the case, much of these two

volumes really belongs to the "Australian Region." [Cf. *Ibis*, 1869, pp. 216, 217.]

AUSTRALIAN REGION.

AMATI, AMATO. Della Nuova Guinea, ii. Real. Istit. Lomb. Rendic. Adunanza 17 June, 1869, pp. 784-800.

The ornithology of the island is briefly mentioned (p. 798).

BENNETT, GEORGE. Letter on Birds of Lord Howe's Island. Proc. Zool. Soc. 1869, pp. 471, 472.

Among those mentioned one (belonging to *Rallidæ*) is new, and is described by Mr. Selater.

BULLER, WALTER. On some New Species of New-Zealand Birds. *Ibis*, 1869, pp. 37-43.

The new species described, 8 in number, will be noticed at length under *Aridæ*, *Trichoglossidæ*, *Turdidæ*, *Maturidæ*, *Certhiidæ*, *Scolopacidæ*, *Anatidæ*, and *Laridæ*. [See FINSCH, O.]

——. Notes on Herr Finsch's Review of Mr. Walter Buller's Essay on New-Zealand Ornithology. Trans. & Proc. New Zeal. Inst. i. pp. 105-112.

The author's "Essay" and Dr. Finsch's remarks* upon it have been previously noticed (Zool. Rec. iii. p. 57, iv. pp. 64, 65). To the last this paper is a categorical reply. One new species belonging to *Rallidæ* is described, and the validity of several others which had been questioned by Dr. Finsch is confirmed, while some of his objections are admitted, and the names of 10 species added to the New-Zealand fauna since that gentleman's publication are given. An 11th, belonging to *Ardeidæ*, is mentioned, but not named. [Cf. *Ibis*, 1870, pp. 135, 136.]

FINSCH, O. On a very rare Parrot [*Domicella cardinalis*] from the Solomon Islands. Proc. Zool. Soc. 1869, pp. 126-129, pl. xi.

——. Remarks on some species of Birds from New Zealand. *Ibis*, 1869, pp. 378-381.

Criticises and disallows several of the species lately described by Mr. Buller in his "Essay" (Zool. Rec. iii. p. 57) and in the paper above mentioned.

FINSCH, O., & HARTLAUB, G. On a small Collection of Birds from the Tonga Islands. Proc. Zool. Soc. 1869, pp. 544-548.

In the 'Beitrag zur Fauna Central-Polynesiens' (Zool. Rec. iv. p. 65) the authors had enumerated 41 species of birds as found in the Tonga Islands. One of these (belonging to *Rallidæ*) is now considered not to be good; and of the remainder,

* These are also translated by Mr. R. L. Holmes and added by way of appendix to Mr. Buller's reply (Trans. and Proc. New Zeal. Inst. i. pp. 112-125), while the latter's original essay is also reprinted (*tom. cit.* part iii. p. 20).

5 seem to be peculiar to that group; 3 more, of which one (belonging to *Laniidæ*) is described as new, are contained in the present collection, which comprises 11 species, on all of which notes are added.

GOULD, J. Description of a new species of *Dacelo* from North-Western Australia. Proc. Zool. Soc. 1869, p. 602. [See *Alcedinidæ*.]

——. Descriptions of five new species of Birds from Queensland, Australia. Ann. & Mag. Nat. Hist. 4th ser. iv. pp. 108–111. [See *Meliphagidæ*, *Ampelidæ* (2), *Sittidæ*, and *Rallidæ*.]

——. The Birds of Australia. Supplement—Part v. London: 1869.

The last part of this work we noticed two years since (Zool. Rec. iv. pp. 65, 66). The species figured are 14 in number, and will be found mentioned in our special part. Some of them have only been described during the last year*.

HUTTON, F. W. Letter with Notes on two Birds in the Auckland Museum and some others. Ibis, 1869, pp. 351–353. [See *Megapodiidæ*, *Procellariidæ*, and *Casuariidæ*.]

——. Notes on the Birds of the Great Barrier Island. Trans. & Proc. New Zeal. Inst. i. pp. 160, 161.

——. Notes on the Birds of the Little Barrier Island. *Tom. cit.* p. 162.

On the first of these spots the author passed two months, finding 52 species, and on the second four days, meeting with 23 species. None are described as new, but one could not be procured for identification.

SCLATER, P. L. On a Collection of Birds from the Solomon Islands. Proc. Zool. Soc. 1869, pp. 118–126, pls. ix., x.

After reciting what has hitherto been recorded of the ornithology of this group, the 21 species, of which 3 (belonging to *Coraciidæ*, *Sturnidæ*, and *Rallidæ*) are new, contained in the collection are enumerated, and a list of 34 species known to be found in these islands is given, at least 17 being peculiar. The author subsequently proposes to divide the "Australian Region" into *five* subregions, viz.:—(1) the Papuan, the Austro-Malayan of Mr. Wallace (*cf.* Zool. Rec. i. pp. 53–55); (2) the true Australian, comprising continental Australia, the promontory of Cape York perhaps excepted; (3) the New-Zealandian; (4) the Polynesian; and (5) the Sandwich Islands. The Solomon Islands form an eastern outlier of the Papuan subregion.

* We may take this opportunity of saying that since we last noticed Mr. Diggles's work (Zool. Rec. v. p. 51) we have seen nothing more of it.

MUELLER, F. VON. List of Birds permanently occurring [in] or periodically visiting the Botanic Gardens, Melbourne. Proc. Zool. Soc. 1869, pp. 279-280.

A nominal list of 114 species.

RAMSAY, E. P. Some further remarks on the Cuckoos found in the neighbourhood of Sydney, and their Foster-parents. [See "Oology."]

WALLACE, A. R. The Malay Archipelago &c. [See "INDIAN REGION."]

NEARCTIC REGION.

ALLEN, J. J. Notes on some of the Rarer Birds of Massachusetts. American Naturalist, iii. pp. 505-519.

A supplement to the author's catalogue, published five years previously (Proc. Essex Inst. iv.). Seven species are now added to the fauna of the State, making the whole number 300.

BAIRD, S. F. On additions to the Bird-fauna of North America, made by the Scientific Corps of the Russo-American Telegraph Expedition. Trans. Chicago Acad. Sci. i. (1869) pp. 311-325. [See DALL, W. H., and BANNISTER, H. M.]

A most important paper, showing the occurrence in Alaska of several Old-World forms, and containing descriptions of 5 new species, which will be found under *Sylviidae*, *Troglodytidae*, *Fringillidae* (2), and *Laridae*, together with that of a "variety" belonging to *Fringillidae*, which, we think, is beyond all question a good species—besides 3 others, to be further mentioned under *Motacillidae*, *Scolopacidae*, and *Pelecanidae*, now first indubitably recorded as American.

BANNISTER, H. M. [See DALL, W. H.]

BREWER, T. M. Sea-side Ornithology. American Naturalist, iii. pp. 225-235.

Popularly written remarks on the birds of the New-England coast, and more to the point than are most of the kind.

BUTCHER, H. B. Lists of Birds collected at Laredo, Texas, in 1866 and 1867. Proc. Ac. Sc. Philad. 1868, pp. 148-150.

A nominal list of about 90 species, with very brief notes.

COOPER, J. G. Some recent additions to the Fauna of California. Proc. Calif. Acad. Sc. iv. (1868) pp. 3-13.

Ornithology occupies the most of this paper (pp. 7-13); and it contains notes on upwards of 50 species out of 353 now known to occur within the limits of the State, an increase of 33 since the author's former estimate in 1862 (*op. cit.* iii. p. 23). None are new; but additional examples of many only recently so described are mentioned as having been obtained by the author, and the

paper generally deserves the best attention of students of the Nearctic avifauna.

COOPER, J. G. The Fauna of Montana Territory. American Naturalist, ii. pp. 596-600, iii. pp. 31-35, 73-84. Corrections, p. 224.

In continuation of the paper noticed last year (Zool. Rec. v. p. 7). The ornithological portion is comprised in the articles cited above. Only about 110 species are included.

——. The Naturalist in California. *Tom. cit.* pp. 182-189, 470-481.

Contains notices of birds seen on the Plains of Los Angeles, the Cajon Pass, the Desert, and the Colorado Valley.

——. Notes on the Fauna of the Upper Missouri. *Tom. cit.* pp. 294-299.

Includes a good many ornithological notes.

DALL, W. H., and BANNISTER, H. M. List of the Birds of Alaska. With Biographical Notes. With Descriptions of New Species by Prof. S. F. BAIRD. Trans. Chicago Acad. Sc. i. (1869) pp. 267-325, pls. 27-34.

This most instructive paper begins by recounting briefly the circumstances under which the results were obtained, due credit being accorded to the late Mr. Robert Kennicott, who superintended the operations carried on by the expedition for exploring the line to be adopted by the Western Union Telegraph Company, in the course of which that indefatigable naturalist succumbed to the hardships of the undertaking, and died at Nulato, on the Yukon River. The list includes 212 species, some of which are altogether new to science, while others (a not less interesting fact) are new to the American fauna; and field-notes upon nearly all are appended. The great importance of this paper lies chiefly in the fact that it proves the occurrence, not merely as accidental visitors to, but as regular inhabitants of Alaska, of many forms hitherto believed to be exclusively confined to the Old World. It seems to be very well drawn up. [See BAIRD, S. F.]

ELLIOT, D. G. The new and heretofore unfigured species of the Birds of North America. Parts XIII.-XV. New York: 1869. Imp. fol.

The conclusion of this great work, begun in 1866, and now completed in two volumes, with an introduction of some length (pp. 19), wherein the validity of several of the species figured is questioned, and in the case of some denied. The species figured (of some of them the heads only, upon wood) will be mentioned in our special part, as well as the chief identifications. [*Cf.* Ibis, 1870, pp. 277, 278.]

JONES, J. MATTHEW. On some of the Rarer Birds of Nova Scotia. Proc. & Tr. Nov. Scot. Inst. Nat. Sc. ii. pp. 70-73.

The species noticed are all aquatic; and the rarest visitor is perhaps *Tringa subarquata*, which occurred in September 1868.

REEKS, HENRY. Notes on the Zoology of Newfoundland. Zoologist, Sec. Ser. pp. 1609-1614, 1689-1695, 1741-1759, 1849-1858.

A good paper on the ornithology of the island, respecting which little has before been written. The author lived there two years, and includes 212 species in his list, nearly all of which he has himself identified.

RIDGWAY, ROBERT. Notices of certain obscurely known species of American Birds. Proc. Acad. Nat. Sc. Philad. 1869, pp. 125-135.

These are based on specimens in the Smithsonian Museum, and are made in especial connexion with the determination of collections formed by the author as zoologist to the Survey of the Fortieth Parallel, chiefly in California, Nevada, and Utah. After some preliminary remarks as to the line to be drawn between "species" and "varieties," in which the author states that he regards as conclusive the evidence with respect to the hybridization of eastern and western representative forms, he proceeds to consider (1) the Thrushes of the genus *Hylocichla*, then (2) the uniformly red species of *Pyranga* (wherein "a new species or variety" is described), and (3) the smaller *Quiscalis* of the United States.

Such particulars as are needful will be found under *Turdidae*, *Tanagridae*, and *Icteridae*. [Cf. Ibis, 1870, pp. 281, 282.]

SUMICHRIST, F. The Geographical Distribution of the native birds of the Department of Vera Cruz, with a list of the migratory species. Mem. Boston Soc. Nat. Hist. i. pp. 542-563.

This is the paper of which the abstract was noticed last year (Zool. Rec. v. p. 54). The author divides the country into three vertical zones—the Hot Zone reaching to about 600 metres, the Temperate between that and 1500, and then the Alpine. The resident species of *Passeres* (to which order his remarks are limited) seem to be 175 in number; and notes on all of them are given. Many more, however, are mentioned. The paper is an important and interesting one, as it treats of the district where the Nearctic and Neotropical Regions inosculate. For instance, the south-east of Orizaba is visited by many forms from the hot zone never found on the opposite side of the city, where representatives of the cold zone are first met. A list of species for each of these zones is given, and some very good general remarks added. This paper should perhaps be regarded as relating to the "NEOTROPICAL REGION." [Cf. Ibis, 1870, pp. 278-280.]

TURNBULL, WILLIAM P. The Birds of East Pennsylvania and New Jersey. Glasgow : 1869. Roy. 8vo, pp. 62, figs.

A sort of companion volume to one by the same author previously noticed by us (Zool. Rec. iv. p. 57), and containing the observations of several years. Upwards of 340 species are included in the district, which is bounded on the west by the Alleghany Mountains, and on the east by the sea, extending from Cape May to Sandy Hook. The species are divided into (1) summer and (2) winter visitants, (3) spring and autumn passengers, (4) permanent residents, (5) stragglers, and (6) those which have disappeared—a somewhat awkward arrangement. A few of the illustrations are from sketches by Alexander Wilson. The work is edited by Mr. Robert Gray.

NEOTROPICAL REGION.

CABANIS, J. Uebersicht der im Berliner Museum befindlichen Vögel von Costa-Rica. Journ. für Orn. pp. 204–213.

This is the conclusion of a paper begun in the same journal nearly ten years ago (J. f. O. 1860, pp. 321–336, 401–416; 1861, pp. 1–11, 81–96, 241–256; 1862, pp. 161–176, 321–336). The portion we have to notice contains remarks on about 10 Costa-Rican species, of which 3, belonging to *Falconidæ*, *Crauidæ*, and *Tinamidæ*, are described as new; 8 species of *Glaucidium* (*Stringidæ*) are also differentiated.

CUNNINGHAM, R. O. Letter on Birds seen in the Straits of Magellan. Ibis, 1869, pp. 232–234.

* Contains a few interesting details.

EULER, CARL. Beiträge zur Naturgeschichte der Vögel Brasiliens. Journ. für Orn. 1869, pp. 241–255.

A continuation of the papers before noticed (Zool. Rec. iv. p. 68, v. p. 55), this portion treating of the Brazilian *Strigidæ* and *Caprimulgidæ*.

FRANTZIUS, A. VON. Ueber die geographische Verbreitung der Vögel Costaricas und deren Lebensweise. Journ. für Orn. 1869, pp. 195–204, 289–318, 361–379*.

The first of these articles contains a detailed account of the natural features of the country, which the author divides into four “regions:”—(1) that of the Sea-shore; (2) the Tropical, extending from the lowlands to the height of 2000 feet; (3) the Subtropical, rising to 6000 feet; and (4) the cooler Mountain-region lying above the last. In the other two articles he gives a list of the species known to him as occurring in Costa Rica, 518 in number (none of which appear to be new), with occasional notes respecting them. The whole paper is written with

* The last portion not published till 1870.

special reference to that of Mr. Lawrence (Zool. Rec. v. p. 55). [See also CABANIS, J., and *cf.* O. Salvin, Ibis, 1870, pp. 107-116.]

GOERING, ANTONIO. Excursion a algunas cuevas hasta ahora no exploradas (al sureste de Caripe). Vargasia, no. 5 (1869), pp. 124-128.

Contains an account of *Steatornis caripensis*, by which the caves are frequented in large numbers. [*Cf.* Ibis, 1870.]

HABEL, —. Exhibition of a collection of Birds from the Galapagos. Proc. Zool. Soc. 1869, p. 433.

The collection contains about 70 species, some of which are believed to be new; but no other particulars are given. [*Cf.* Comptes Rendus, lxix. pp. 273-277; P. Z. S. May 1870.]

LAWRENCE, G. N. A Catalogue of the Birds of Costa Rica. Ann. Lyc. Nat. Hist. New York, 1868, pp. 141-149*.

A continuation, beginning with "No. 475," of the paper noticed last year (Zool. Rec. v. p. 55). The number of species in the Catalogue is brought up to 504; and 7 more, of which one (belonging to *Tyrannidæ*) is new, are added in an Appendix, which also contains some further notes on 10 species already included. [See SALVIN, O.]

——. List of a Collection of Birds from Northern Yucatan. *Op. cit.* ix. (1869) pp. 198-210.

The collection was formed chiefly at or near Merida by Governor Salazar and Dr. Arthur Schott in 1865 and 1866, and contained 103 species, of which 2, belonging to *Tyrannidæ* and *Columbidæ*, are described as new. Some valuable remarks upon others are introduced. [*Cf.* Ibis, 1870, p. 280.]

——. Catalogue of Birds from Puna Island, Gulf of Guayaquil, in the Museum of the Smithsonian Institution, collected by J. F. Reeve, Esq. *Tom. cit.* pp. 234-238.

Of the 21 species composing the collection, 4, belonging to *Tyrannidæ* (2), *Turdidæ*, and *Troglodytidæ*, are described as new. [*Cf.* Ibis, 1870, p. 281.]

——. Characters of some New South-American Birds, with Notes on other rare or little known Species. *Tom. cit.* pp. 265-275.

The species described as new are 8 in number, belonging to *Falconidæ*, *Trochilidæ*, *Tyrannidæ* (5), and *Turdidæ*, particulars of the others (3) noticed will be found under *Galbulidæ*, *Tyrannidæ*, and *Icteridæ*. [*Cf.* Ibis, 1870, p. 281.]

——. Description of Seven New Species of American Birds from various localities, with a note on *Zonotrichia melanotis*. Proc. Acad. N. S. Philad. 1868*, pp. 359-362.

* Not published till 1869.

[See *Falconidæ*, *Formicariidæ*, *Cotingidæ*, *Tyrannidæ*, *Mniotiltidæ*, *Tanagridæ*, and *Icteridæ*. Cf. *Ibis*, 1870, p. 280.]

PELZELN, AUGUST VON. Zur Ornithologie Brasiliens. Resultate von Johann Natterers Reisen in den Jahren 1817 bis 1835. II. Abtheilung. Wien: 1869. 8vo, pp. 69-188, xxxiii-xliii.

Some mistakes were made in our notice of the contents of the first part of this work last year. Instead of about 100 species being therein included as there (*Zool. Rec.* v. p. 55) stated, the number was 374; and Mr. Sclater's prior description of some species of *Caprimulgidæ* then said (*tom. cit.* p. 74) to have been ignored was duly mentioned (p. 49, note) as since pointed out by the author and acknowledged by ourselves (*Ibis*, 1870, p. 296). In the second part 371 species are included, whereof 71 (!) are described as new, one, however, not having been discovered by Natterer and one not being Brazilian. They will be noticed under *Formicariidæ* (35), *Dendrocolaptidæ* (1), *Cotingidæ* (7), *Vireonidæ* (2), *Tyrannidæ* (25), and *Mniotiltidæ*—though these are not in every case the groups to which the author refers them. The new or little-known species are (as before) described in detail after the catalogue of the collection; and then follows a continuation of the list showing their geographical distribution throughout Brazil. Impressed as we are with the value of this work and with the extraordinary amount of labour which the author has bestowed on his task of erecting a durable monument of Natterer's zeal, we confess that the distinction between the previously described and undescribed species is hardly made plain enough, and there was certainly no need to print the manuscript names applied to the former by this great traveller. The work is indispensable to all students of South-American Ornithology.

SALVIN, OSBERT. Notes on Mr. Lawrence's List of Costa-Rica Birds. *Ibis*, 1869, pp. 310-319.

This article is on that part of Mr. Lawrence's paper which we noticed last year (*Zool. Rec.* v. p. 55), and carefully scrutinizes both the evidence on which he has admitted to or omitted from his list certain species and the validity of others, besides making several suggestions as to their nomenclature. From that list Mr. Salvin rejects 14 species, while he adds 13 others, thus leaving it with 473 "Land-birds," as nearly as possible, with regard to numbers, where he found it. [See also LAWRENCE, G. N.]

——. [See SCLATER, P. L., and SALVIN, OSBERT.]

SCLATER, P. L. On the Birds of the Vicinity of Lima. With notes on their Habits by Professor W. NATION. Part III. *Proc. Zool. Soc.* 1869, pp. 146-148, pl. xii.

A continuation of the papers before noticed (Zool. Rec. iii. p. 64, iv. p. 70). Seven species are noticed, of which one (belonging to *Fringillidæ*) is figured.

SCLATER, P. L. Description of a new species of Mexican Wren. Proc. Zool. Soc. 1869, pp. 591, 592, pl. xlv. [*Troglodytidæ*.]

SCLATER, P. L., and SALVIN, O. On Venezuelan Birds collected by Mr. A. Goering. *Tom. cit.* pp. 250-254, pl. xviii.

A continuation of the papers noticed last year (Zool. Rec. v. p. 57). The present collection was formed chiefly near the Lake of Valencia, and contains 56 species, of which one (belonging to *Galbulidæ*) is new, and about 7 others deserve comment.

—, —. On a Collection of Birds made by Mr. H. S. le Strange near the city of Mexico. *Tom. cit.* pp. 361-364.

Notes referring to 15 or 16 species, none of which are new; but the probable distinctness of two (belonging to *Corvidæ*) hitherto confounded is pointed out.

—, —. Descriptions of six new Species of American Birds of the Families *Tanagridæ*, *Dendrocolaptidæ*, *Formicariidæ*, *Tyrannidæ*, and *Scolopacidæ*. *Tom. cit.* pp. 416-420, pl. xxviii.

—, —. On two new Birds [*Tanagridæ* and *Cotingidæ*] collected by Mr. E. Bartlett in Eastern Peru. *Tom. cit.* pp. 437-439, pl. xxx.

—, —. Descriptions of three new Species of Tanagers from Veragua. *Tom. cit.* pp. 439, 440, pls. xxxi., xxxii. [*Tanagridæ*.]

—, —. On Peruvian Birds collected by Mr. Whitely. Part IV. Proc. Zool. Soc. 1869, pp. 151-158, pl. xiii. Part V. *Ibid.* pp. 596-601.

In continuation of the papers before noticed (Zool. Rec. iv. p. 71, v. p. 57). The first of these parts treats of a collection formed at and near Tinta on the Vilcamayo; but the localities probably come into two of Tschudi's regions—the Eastern-Sierra and the Puna. It contains 46 species, of which 4, belonging to *Tyrannidæ* (2), *Tanagridæ*, and *Fringillidæ*, are described as new.

The second deals with two small collections, one made, like the former, at Tinta, the other in the valley of Cosnipata. This last, containing 42 species, is very poor, the great families *Trochilidæ*, *Dendrocolaptidæ*, and *Formicariidæ* being entirely unrepresented. The other comprises about 57 species, 13 of which are new to the district and 3 (belonging to *Trochilidæ*, *Tyrannidæ*, and *Anatidæ*,—the first, however, having been described by Mr. Gould) to science.

SCLATER, P. L., and SALVIN, O. Second List of Birds collected at Conchitas, Argentine Republic, by Mr. William H. Hudson; together with some Notes upon another Collection from the same locality. *Tom. cit.* pp. 158-162. Third List, &c., collected by Mr. Hudson. *Ibid.* pp. 631-636.

The first list we noticed last year (*Zool. Rec.* v. pp. 56, 57). The Second collection contains 50 species, of which 14 are not in the first. The other part of the paper consists of notes on a collection made by Mr. Haslehurst near Buenos Ayres, which contained 10 additional species. All these are enumerated, but none are new.

The Third collection includes 92 species, of which 33 were not contained in the first two. None of them are new.

—, —. Second List of Birds collected in the Straits of Magellan by Dr. Cunningham. *Ibis*, 1869, pp. 283-286.

This collection was formed during the summer of 1867-68 (*Zool. Rec.* v. p. 54), and contained 31 species: the land-birds are all well known Chilean forms, and thus confirm the opinions already uttered by the authors (*tom. cit.* p. 56) as to the Patagonian avifauna. Remarks are added on 3 species of *Fringillidæ*.

STERNBERG, CHRYSANTHUS. Notizen aus der Vogelwelt von Buenos-Ayres. *Journ. für Orn.* 1869, pp. 174-193, 257-378.

After a general description of the neighbourhood of Buenos Ayres, notes on 35 species follow. These chiefly relate to their mode of breeding, and appear to be most carefully made.

ANATOMY AND PHYSIOLOGY.

BONSDORFF, —. Anatomiskt bevis för den af Professor Mäklin gifna tydningen af furcula hos foglarne. *Öfvers. Finska Vet.-Soc. Förhandl.* xi. pp. 66-70.

With the views of Prof. Mäklin on this subject we are not acquainted; the present paper is an anatomical proof of their correctness.

CARBONNIER, P. Observations faits sur l'incubation des œufs de Gallinacés. *Comptes Rendus*, lxxviii. pp. 613-615.

These have reference to the best mode of ensuring success in artificial incubation, and show how it may depend upon the texture and colour of the egg-shell and the ordinary temperature of the atmosphere.

CRAMER, FRIEDRICH. Beitrag zur Kenntniss der Bedeutung und Entwicklung des Voceleies. *Verhandl. Würzburger Phys. med. Gesellsch.* N. F. (1868) i. pp. 181, tab. i.

Purely physiological. [*Cf. Journ. Anat. & Physiol.* May, 1869, p. 458.]

COUES, ELLIOTT. Bird's-eye Views. *American Naturalist*, ii. pp. 571-583.

The conclusion of the paper noticed last year (*Zool. Rec.* v. p. 58).

CUNNINGHAM, R. O. On *Chionis alba*. Journ. Anat. and Physiol. Nov. 1869, pp. 87-89, pl. vii.

A brief description, illustrated by figures, of the principal digestive organs.

EYTON, T. C. Supplement to Osteologia Avium; or a Sketch of the Osteology of Birds. Wellington, Salop: 1869. 4to, pls. 18.

Of the plates given, 13 are reprints of the osteological figures contained in the author's 'Monograph of the *Anatidae*,' and refer to that family. The 5 others are new, and represent the skeleton of members of that group also. The work to which the whole forms a supplement we noticed two years since (Zool. Rec. iv. pp. 71, 72). [Cf. Ibis, 1870, p. 266.]

JOBERT, —. Recherches anatomiques sur les glandes nasales des Oiseaux. Ann. Sc. Nat. 5e sér. xi. pp. 349-369, pls. 8, 9. Abstract in Comptes Rendus, lxi. p. 1016.

The secreting-apparatus which covers most of the frontal region and opens upon the nasal fossæ is more complicated than is usually imagined, and consists, in the birds examined (certain species of *Grallæ* and *Anseres*) of two pairs of glands having each its own excretory canal. These proceed at first side by side; but their course in the nasal fossæ becomes very different, and their orifices are far apart from each other. The structure of the glands and their anatomical relations are described by the author.

MAGNUS, H. Physiologisch-anatomische Studien über die Brust- und Bauchmuskeln der Vögel. Arch. für Anat., Physiol. und wissensch. Med. 1869, pp. 207-235, Taf. vii.

This essay, which obtained the prize of the Medical Faculty at Breslau, describes at considerable length the muscles of the breast, including those of flight and respiration and of the belly. The illustrations are taken from *Aquila leucocephala*, *Falco apivorus*, and *G. pygargus*, *Otus vulgaris*, *Cuculus canorus*, *Agelæus phæniceus*, *Columba livia* (*domestica*), and *Sterna hirundo*. No generalizations with regard to taxonomy, however, seem to be given.

MILNE-EDWARDS, A. Recherches Anatomiques, etc. [See "GENERAL SUBJECT."]

MURIE, JAMES. Note on the Sublingual Aperture and Sphincters of the Gular Pouch in *Otis tarda*. Proc. Zool. Soc. 1869, pp. 140-142.

The most complete description of these singular structures (cf. Zool. Rec. v. p. 60) that has yet appeared. The pouch seems to be an infolding of the membrane below the upper larynx, and in a bird six years old attains only a comparatively moderate size: the aperture is rather sublaryngeal than sublingual; and the sphincter is a development of the superior constrictor of the pharynx and stylo-pharyngeus, and not a specialized structure.

SEIDLITZ, GEORG. Die Bildungsgesetze der Vogeleier in histologischer und genetischer Beziehung und das Transmutationsgesetz der Organismen. Leipzig: 1869. 8vo, pp. 58.

This work scarcely comes within the domain of zoological literature, as that is commonly accepted; nevertheless we do not hesitate to quote its title—if only for the sake of the carefully prepared list of works bearing on the subject with which it begins. [Cf. Zool. Garten, 1869, pp. 319, 320; Ibis, 1870, pp. 130, 131.]

SELENKA, EMIL. [See "GENERAL SUBJECT."]

TOBIAS, LOUIS. Ueber das Ausstossen der inneren Magenhaut bei den Vögeln. Zoolog. Garten, 1869, pp. 189, 190.

This peculiarity observed in *Sturnus vulgaris*, *Strix noctua*, and other birds. [Cf. *op. cit.* 1865, p. 396; *vide etiam infra*, "Bucerotidæ."]

VOIT, —. Observations sur l'ablation des hémisphères cérébraux des pigeons. Institut, no. 1828, 12 Jan. 1869; Ann. Sc. Nat. 5e sér. xi. pp. 90–92.

A translation of the paper noticed last year (Zool. Rec. v. p. 61).

WATSON, MORRISON. On the Mechanism of Perching in Birds. Journ. Anat. Physiol. May 1869, pp. 379–384.

By experiment the author discovered that the faculty of perching is not due to the action of the *rectus femoris* muscle, as has generally been supposed, and that it is indeed wanting in many birds (*Turdus*, *Pica*, and *Sturnus*) which habitually perch, while it is present in several which do not do so. The true explanation of the faculty is believed to be due to the peculiar arrangement of certain other muscles, the *biceps*, *flexor perforatus digitorum*, *flexor longus pollicis*, and especially *tibialis anticus*, which is described at some length.

PTEROLOGY.

FOREL, F. A. "Faux albinisme de trois jeunes Cygnes de Morges en 1868. Bull. Soc. Vaudoise Sc. Nat. x. no. 61, 1869." Rev. et Mag. de Zool. 1869, pp. 334, 335.

Of this paper we have only seen the abstract quoted; the particulars are given under *Anatidæ* and *Podicipidæ*.

LAYARD, E. L. Letter on variation of plumage in Birds. Ibis, 1869, pp. 458–460.

Contains particulars of a good many instances of melanism, albinescence, and other variations, which the author attributes generally to old age.

NEOSSOLOGY.

BETTONI, EUGENIO. Storia Naturale degli Uccelli che nidificano in Lombardia, &c. [See "PALÆARCTIC REGION."]

The young of *Enneotomus collurio*, *Accipiter nisus*, *Gennæus nycthemerus*, *Thaumalea picta*, *Phasianus colchicus*, *Saxicola œnanthe*, *Alauda arborea*, *Alauda arvensis*, *Budytes flava* [sc. *boarula*], *Anthus spinoletta*, *Cypselus melba*, *Gecinus viridis*, *Chelidon urbica*, *Pratincola rubicola* [cf. Ibis, 1870, p. 167], *Hortulanus chlorocephalus*, *Butalis grisola*, *Acanthis linaria*, *Coccothraustes vulgaris*, *Accentor alpinus*, *Fulica atra*, and *Syrnium aluco* are figured.

GOULD, J. The Birds of Great Britain. [See "PALÆARCTIC REGION."]

Part xv. contains figures of the nestlings of *Alauda arvensis*, *Ligurimus chloris*, *Turdus viscivorus*, *Ædionemus crepitans*, and *Numenius arquata*, and Part xvi. those of *Strix flammea*, *Tadorna vulpanser*, and *Thalassidroma pelagica*.

MARCHAND, ALB. Poussins des oiseaux d'Europe couverts de duvet à la sortie de l'œuf. Rev. et Mag. de Zool. 1869.

The species figured during the past year are :—

<i>Puffinus anglorum</i> *	pl. 1	<i>Buteo lagopus</i>	pl. 8
<i>Sterna minuta</i>	" 2	<i>Falco tinnunculus</i>	" 9
<i>Strix aluco</i>	" 3	— <i>cenebris</i>	" 10
<i>Larus tridactylus</i>	" 4	<i>Puffinus cinereus</i>	" 14
<i>Mergus serrator</i>	" 5	<i>Phaeton æthereus</i>	" 15
<i>Totanus ochropus</i>	" 6	<i>Strix bubo</i>	" 16
<i>Astur nisus</i>	" 7	— <i>tengmalmi</i>	" 17

No letterpress accompanies this series of plates (cf. Zool. Rec. v. p. 62).

OOLOGY.

BETTONI, EUGENIO. Storia Naturale degli Uccelli che nidificano in Lombardia, &c. [See "PALÆARCTIC REGION."]

Plate IV. contains figures of the eggs of *Anser segetum* (2), *Pavo cristatus*, *Meleagris gallopavo* (2), *Cairina moschata*, *Numida meleagris* (4), *Gennæus nycthemerus* (2), *Lyrurus tetrix* (2), *Thaumalea picta* (4), *Palumbæna columbella*, *Fulica atra* (2), and *Lagoptes mutus* (2).

COUES, ELLIOT. Sea-side Homes. American Naturalist, iii. pp. 337-349.

Notes chiefly on the nidification of *Charadriidæ* and *Laridæ*.

EULER, CARL. Beiträge zur Naturgeschichte der Vögel Brasiliens. [See "NEOTROPICAL REGION."]

HUME, ALLAN. Stray Notes on Ornithology in India. [See "INDIAN REGION."]

——. My Scrap Book. [See "ACCIPITRES."]

JONES, C. M. The Breeding Habits of Birds. American Naturalist, iii. pp. 48, 49.

Individual variability chiefly dwelt on.

KÖNIG-WARTHAUSEN, BARON RICHARD. Bemerkungen über die Fortpflanzung ciniger Caprimulgen. Journ. für Orn. 1868, pp. 361-388 †, tab. ii. fig. 3.

Very good notes on 28 species, especially on their eggs and, where they are known, their young, as well as on the

* *P. cinereus* on plate; but see errata, p. 448.

† Not published till 1869, see Zool. Rec. v. pp. 29, 30, note.

mode of breeding. According to the colour of the eggs the birds may be arranged in *four* groups—those laying (1) glossy eggs with a white ground, blotched with brownish- or bluish-grey, (2) very glossy eggs with a greenish-white ground, spotted and streaked with greenish-brown and grey, (3) dull and delicate eggs with a pale reddish cream-coloured or lively flesh-coloured ground marked with yellowish-red and violet-grey, and (4) unspotted eggs more or less white. The first of these is the prevailing type, especially in the northern hemisphere and the temperate districts of the Old World; the second is the northern type of the New World; the third the southern type, especially in the New World; and the fourth the Polynesian type, which is special for the *Podarginae* and *Steatornithinae*. The accounts of the different species are given in much detail and with great apparent accuracy.

KÖNIG-WARTHAUSEN, BARON RICHARD. *Revue der Sterna-Eier*. Bericht XVII. Versamml. Deutschl. Ornithol. Gesellsh. pp. 36–39.

The oological characters, so far as known to the author, of all the species of *Sternae*, are briefly given.

LAYARD, E. L. Further Notes on South-African Ornithology. [See "ETHIOPIAN REGION."]

NATHUSIUS, W. VON. Ueber die Hüllen, welche den Dotter des Vogeleies umgeben. *Zeitschr. für wissensch. Zoologie*, xviii. pp. 225–270, pls. xiii.–xvii. Nachträge. *Op. cit.* xix. pp. 322–348, pls. xxvi.–xxviii.

——. Ueber die Structur der Moa-Eischalen aus Neu-Seeland und die Bedeutung der Eischalenstructur für die Systematik. *Op. cit.* xx. pp. 106–130, pl. xii.

Of this elaborate and praiseworthy series of papers, of which we feel our inability to offer an abstract within any reasonable limits, the last has probably the most zoological interest. The author finds that the egg-shell of *Dinornis* has the same *habitus* as that of other *Struthionies*, among which it stands nearest to *Rhea*, though the resemblance was not so great in the thicker of the two fragments of the former examined by him as in the thinner. *Apteryx*, on the other hand, in this respect does not agree so much with the *Struthionies*; but the fact that the specimen of its egg examined was laid by a captive, renders, perhaps, deductions from it less satisfactory. The illustrations give many figures of highly-magnified portions of the egg-shell in several birds.

RAMSAY, E. P. Some further Remarks on the Cuckoos found in the Neighbourhood of Sydney, and their Foster-parents. *Proc. Zool. Soc.* 1869, pp. 359, 360, pl. xxvii.

A sequel to the paper before noticed (*Zool. Rec.* ii. p. 90), wherein *Lamprococcyx plagosus* and *L. basalis* were not distinguished. [VOL. VI.]

guished from *Chalcites* (*L.*) *lucidus* (under which name they were treated), and its eggs considered to be dimorphic. One egg of each of the two first mentioned, together with one of *Cuculus inornatus*, *C. cineraceus*, *Acanthiza lineata*, *A. pusilla*, *A. nana*, *Geobasileus reguloides*, *Smicrorornis brevirostris*, *Stipiturus malacurus*, *Chthonica minima* and *Ptilotis auricomus*, is figured.

SCHACHT, H. Die Baukünstler unserer Vögel. Zoolog. Garten, 1869, pp. 40-48, 80-84, 97-102.

Notes on the architecture of birds. The author's conclusions are that their capability of nidification is inborn and not learnt. The yearling in its first work betrays the same skill as its parent. The choice of a locality for the nest seems in course of time to be a matter of reflection; though nests of one and the same species are found which, as regards substantiality and accuracy of execution, differ remarkably from each other, it would be theoretical to ascribe the less skill shown in the building to the want of experience in younger birds. The author, after many observations and comparisons, believes that the nests of the first broods in the year are always the finest and strongest.

STERNBERG, CHRYSANTHUS. Zur Fortpflanzungsgeschichte des Viehstaares, *Molobrus sericeus* (Licht.). Journ. für Orn. 1869, pp. 125-136.

The notes were made near Buenos Ayres, and are of great interest. Eight species of birds, *Troglodytes platensis*, *Tyrannus violentus*, *Leistes anticus*, *Cotyle leucorrhoea*, *Zonotrichia matutina*, *Sycalis luteiventris*, *Anthus rufus*, and, curiously enough, *Molobrus badius* are duped into becoming foster-parents of this parasitic bird. The editor of the 'Journal' contributes some additional remarks.

——. Notizen aus der Vogelwelt von Buenos-Ayres. [See "NEOTROPICAL REGION."]

Accipiter brevipes (Zool. Rec. i. p. 67, ii. p. 93), notes on its breeding. T. Krüper, J. f. O. 1869, pp. 26-28.

Meniceros bicornis, its mode of nidification and habits during incubation described. C. Horne, P. Z. S. 1869, pp. 241-243.

Tyrannus carolinensis and *Troglodytes aedon*, extraordinary number of eggs laid by. C. H. Nauman, Am. Nat. iii. p. 390.

Sialia sialis, variations in its eggs. E. Ingersoll, Am. Nat. ii. pp. 391, 392.

Ploceus baya, notes on its mode of nidification. C. Horne, P. Z. S. 1869, pp. 243-245, pl. xvii.

Pedionomus torquatus, its egg (*ex ovario*) described. W. V. Legge, P. Z. S. 1869, p. 237.

Lobivanellus goensis, its breeding-habits described. C. Horne, Ibis, 1869, pp. 454-456.

ACCIPITRES.

ALLÉON, AMÉDÉE, & VIAN, JULES. Des Migrations des oiseaux de proie sur le Bosphore de Constantinople. *Rev. et Mag. de Zool.* 1869, pp. 258-273, 305-315, 342-348, 369-374, 401-409.

A series of observations of very great interest, one at least of the authors having devoted himself for many years to the task of watching the migrant *Accipitres* on their passages up and down the Bosphorus, and having enjoyed great facilities for performing it. Upwards of twenty species are noticed, one of which is announced as new to Europe; and the series is being continued in the journal for the present year. [*Cf. Ibis*, 1870, pp. 60-76.]

BARBOZA DU BOCAGE, J. V. Museu Nacional de Lisboa. Secção Zoologica. Catalogo das Collecções Ornithologicas. *Accipitres*. Lisboa: 1869. 8vo, pp. 30-62.

The specimens, belonging to 223 species of the Order, contained in the National Museum at Lisbon are catalogued, and a few notes are occasionally interspersed. None of the species appear to be new. [*Cf. Ibis*, 1870, pp. 134, 135.]

FARMAN, C. On some of the Birds of Prey of Central Bulgaria. *Ibis*, 1869, pp. 199-204.

In continuation of the paper before noticed (*Zool. Rec.* v. p. 66), and, like it, relating to 13 species, the most remarkable of which are *Haliaetus leucorypha* (Pall.) (?) and *Archibuteo lagopus*, which last is more likely to have been *Aquila pennata*.

GURNEY, J. H. Notes on the Birds-of-prey of Madagascar and some of the adjacent Islands. *Tom. cit.* pp. 443-454, pl. xvi.

This is by way of a commentary on a portion of the 'Recherches sur la Faune de Madagascar' of MM. Schlegel and Pollen (*Zool. Rec.* iv. p. 61, v. p. 47), and must not be neglected by any student either of the subregion or of the group treated; for some of the criticisms, though minute, are important. The species enumerated are twenty-eight in number; the plate represents *Hypotriorchis eleonora*.

HUME, ALLAN. My Scrap Book: or Rough Notes on Indian Oology and Ornithology. Calcutta: 8vo, pp. 237.

The portion published relates only to certain diurnal *Accipitres*, and consists of all the information in respect to them which the author has gathered since the appearance of Dr. Jerdon's 'Birds of India,' whether printed or unprinted. It necessarily follows that the innumerable facts recorded are of very unequal value; but the book contains very much that is new. Its most important details are briefly mentioned below.

VULTURIDÆ.

Gyps fulvescens is described as a new species from India, resembling *G. fulvus*, but of a rich ruddy-bay colour, with conspicuous narrow pale median stripes to the feathers beneath, and a short stout bill like *G. bengalensis*. A. Hume, Ibis, 1869, p. 356; *Id.* Scrap Book, pp. 19-21.

Gyps himalayensis is the name provisionally given to *G. fulvus* from the Himalayas, should it prove, as is suspected, distinct. *Id. op. cit.* pp. 12, 15-17.

FALCONIDÆ.

Spizactus orientalis, Temm. & Schleg., is perhaps only *S. nipalensis*. J. H. Gurney, P. Z. S. 1869, p. 1.

Nisaetus bonellii, notes on its nidification in India. A. Hume, Ibis, 1869, pp. 143-146.

Circæetus zomurus is figured. M. T. v. Heuglin, Orn. Nordost-Afr. t. iii.

Buteo borealis, notes on. W. Wood, Am. Nat. iii. pp. 393-397.

Buteo ferox, notes on. T. Krüper, J. f. O. 1869, p. 29. Its occurrence in Italy, 8 April, 1869. T. S. Salvadori, Atti Soc. Ital. Sc. Nat. 24 Aug. 1869.

Buteo fuliginosus is described as a new species from India, of a very deep smoky-brown, mingled beneath with dull red, the tail with conspicuous and well-defined greyish-white bars. A. Hume, Ibis, 1869, p. 356.

Milvus melanotis is said to have occurred at Constantinople. A. Alléon & J. Vian, R. Z. 1869, pp. 372-373. [Qu. *M. ægyptius*? H. J. Elwes & T. E. Buckley, Ibis, 1870, p. 73, note.]

Falco islandicus is figured. D. G. Elliot, B. N. Am. pt. xiii.

Falco atriceps is described as a new species from India, allied to *F. peregrinator*; but the head, nape, cheeks and ear-coverts all form one black patch, the rest of the upper surface is as in *F. peregrinus*, and beneath it is marked like *F. peregrinator*. A. Hume, Ibis, 1869, p. 356; *Id.* Scrap Book, pp. 58-62.

Falco columbarius, a defence of statements concerning its nidification made in a former paper (Zool. Rec. iv. p. 67). T. M. Brewer, Ibis, 1869, p. 243.

Hypotriorchis eleanoræ (from the coast of Madagascar) is figured. J. H. Gurney, *tom. cit.* pl. xvi.

Erythropus vespertinus, its distribution in Russia. H. Göbel, J. f. O. 1869, pp. 321, 322. Its occurrence in Finland. A. J. Malmgren, Öfvers. Finska Vet.-Soc. Förhandl. 1869, no. 1. Figured. J. Gould, B. Gr. B. pt. xvi.

"*Falco raddei* [lege *raddæi*], Hartl.," is mentioned as a synonym of *Erythropus amurensis* (Zool. Rec. iv. p. 67). M. T. v. Heuglin, Orn. Nordost-Afr. i. p. 40; G. Hartlaub, Bericht u. s. w. pp. 111, 112. [Since included under the first name by Drs. Finsch and Hartlaub in the fourth volume of Von der Decken's 'Reisen' (p. 74), published in 1870 *.]

Falco semitorquatus, A. Smith, is figured. M. T. v. Heuglin, Orn. Nordost-Afr. t. i.

Hieracidea brunnea is the immature of *H. novæ-zelandiæ*. W. Buller, Trans. & Proc. New Zeal. Inst. i. p. 106.

Astur palumbarius (ad. & juv.) is figured. J. Gould, B. Gr. Br. pt. xv.

* We cannot allow this proposed change of a specific name to pass without protesting against it as a needless and, therefore, noxious alteration, which we are surprised to find proposed by ornithologists so eminent.

Accipiter brevipes (Zool. Rec. i. p. 67, ii. p. 93) breeding in Turkey. W. Schlüter, Zool. Garten, 1869, pp. 374-376. In Asia Minor: T. Krüper, J. f. O. 1869, pp. 25-28.

Accipiter gabar, as well as *A. badius* (Zool. Rec. iv. p. 82), is said to occur on the Bosphorus. A. Alléon & J. Vian, R. Z. 1869, p. 403. [Qu. *A. brevipes*? sed cf. Ibis, 1870, p. 75.]

Accipiter melanoschistus is described as a new species from India, distinguished from *A. nisus* by the very dark head and nape, the olive slate-colour of the rest of the upper surface, the peculiarly close markings on the lower parts, and its somewhat larger size. A. Hume, Ibis, 1869, p. 356; *Id.* Scrap Book, pp. 128-132.

Accipiter nigroplumbeus is described as a new species from Ecuador, in size resembling *A. ventralis* (Zool. Rec. iii. p. 73, iv. p. 82), but very different in colouring beneath, the sides and thighs being of a clear rufous, the breast paler and duller with whitish cross-markings, and under tail-coverts nearly white. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 270, 271.

Accipiter bicolor (♂ and ♀) and *A. guttatus* are figured, a list of the seven species forming the group *Cooperastur* being added. P. L. Selater & O. Salvin, Ex. Orn. pp. 137, 138, 169, 170, pls. lxxix., lxxxv.

SCLATER, P. L., & SALVIN, O. Notes on the Species of the Genus *Asturina*. Proc. Zool. Soc. 1869, pp. 129-134.

A monograph worked out with the authors' accustomed skill. Seven species are established and diagnostically grouped: (1) *A. nitida* and *A. plagiata*, (2) *A. magnirostris*, *A. nattereri*, *A. ruficauda* and *A. gularis*, and (3) *A. leucorrhœa*, which stands alone. The synonymy and geographical range of all these is fully given; and one species,

A. ruficauda, from Mexico and Central America, is differentiated from *A. magnirostris*, with which it had hitherto been confounded.

Asturina polionota is a new species from Costa Rica and Mexico having the grey of the upper parts darker and more whole-coloured than in *A. nitida*; and on the head, neck, and back the pale cross-bands are entirely wanting. J. Cabanis, J. f. O. 1869, p. 208.

Asturina nattereri (ut suprâ), *A. ruficauda* (ut suprâ), *A. pucherani*, and *A. plagiata*, the adult and young of each, are figured and a diagnostic list of the seven species of the genus given. P. L. Selater & O. Salvin, Ex. Orn. pp. 173-180, pls. lxxxvii.-xc.

SCLATER, P. L., & SALVIN, O. Notes on the Species of the Genus *Micrastur*. Proc. Zool. Soc. 1869, pp. 361-369.

A monograph similar to that on *Asturina* (ut suprâ); and, as in that, seven species are established and a sufficient diagnosis of each given. They are grouped first according to size, *M. semitorquatus* and *M. mirandollii* being separated from the rest, which are further separated into those with a rufous back (*M. ruficollis* and *M. zonothorax*) and those with the same part ash-coloured (*M. gilvicolis*, *M. leucauchen* and *M. guerilla*).

Harpagus fasciatus is described as a new species from Guatemala, differing entirely from *H. bidendatus* and *H. diodon* in the broad transverse markings beneath. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), pp. 361, 362.

Melierax poliopterus is a new species from the river Umba in East Africa,

smaller than *M. musicus*, and with the tail-coverts above and below entirely white, the wing-coverts and secondaries being entirely ash-colour without vermiculated cross bands. J. Cabanis, J. f. O. 1868 (published in 1869), p. 413; *Id.* Von der Decken's Reisen, iii. 1, pp. 40, 41.

Melierax polyzonus, its occurrence near Mogador. C. F. Tyrwhitt Drake, Ibis, 1869, p. 153.

Melierax niloticus (Sundevall, Öfvers. K. Vet.-Ak. Förhandl. 1850, p. 132) may be accepted as distinct from the southern and larger *M. gabar*. J. H. Gurney, *tom. cit.* pp. 288, 289.

STRIGIDÆ.

Notes on the Brazilian species of this family. C. Euler, J. f. O. 1869, pp. 242-249.

Athene cunicularia, its habits in California. C. S. Canfield, Am. Nat. ii. pp. 583-585; G. M. Sternberg, *op. cit.* iii. p. 157.

Noctua (Athene) spilogastra, Heugl. (J. f. O. 1863, p. 15), is figured. M. T. v. Heugl. Orn. Nordost-Afr. tab. iv.

Surnia funerea, its occurrence in Scotland. R. Gray, Proc. N. H. Soc. Glasgow, i. p. 236.

Glaucidium, eight species of this genus are differentiated. J. Cabanis, J. f. O. 1869, pp. 205-208.

Huhua poensis (Fraser), young and very old, is figured, for comparison with the plumage of middle age (P. Z. S. 1863, pl. xxxiii.). R. B. Sharpe, Ibis, 1869, p. 194, pl. iv.

Strix flammea is said to hoot, while *S. aluco* "screeches and rarely if ever hoots." W. G. Sterland, B. Sherwood Forest, pp. 43, 44. [*Cf.* Ibis, 1870, p. 123.] Figured (*cum pull.*), J. Gould, B. Gr. Br. pt. xvi.

Strix walleri (Zool. Rec. iii. p. 74) is referred to *S. candida*, Tickell, and is figured. *Id.* B. Austral. Suppl. pt. v.

Scops asio and *S. nævia*, further remarks [*cf.* Zool. Rec. v. p. 66] tending to prove their specific identity. W. Brewster, Am. Nat. iii. pp. 334, 335.

Scops kennicotti (Zool. Rec. iv. p. 83) is figured. S. F. Baird, Trans. Chicago Ac. Sc. i. pl. xxvi., and, as well as *S. flammeola*, D. G. Elliot, B. N. Am. pt. xiii.

Otus capensis, its occurrence at Gibraltar (*cf.* Naumannia, 1852, i. p. 10). H. Irby, P. Z. S. 1869, p. 276.

Bubo dilloni, Des Murs & Prévost, as an examination of the type shows, is identical with *B. capensis*, A. Smith. J. H. Gurney, Ibis, 1869, p. 462.

PSITTACI.

BARBOZA DU BOCAGE, J.V. Museu Nacional de Lisboa. Secção Zoologica. Catalogo das Collecções Ornithologicas. *Psittaci*. Lisboa: 1869. 8vo, pp. 7-28.

A list of the specimens belonging to the Order contained in the Lisbon Museum, showing that 204 species are there represented. [See "ACCIPITRES."]

ARIDÆ.

Conurus hoffmanni is figured. P. L. Selater & O. Salvin, Ex. Orn. pp. 161, 162, pl. lxxxi.

Platycercus alpinus is described as a new species from the Southern Alps of New Zealand, allied to *P. auriceps*, but smaller and having the frontal band orange, the vertex pale yellow, the thigh-spots orpiment-orange, and an absence of the yellow element in the general plumage. Its bill, too, is fully a third less in size. W. Buller, *Ibis*, 1869, pp. 39, 40. Not distinguishable from *P. auriceps*. O. Finsch, *tom. cit.* pp. 378, 379.

PSITTACIDÆ.

Psittacus citreocapillus is figured. M. T. v. Heuglin, *Orn. Nordost-Afr.*, t. xxvi.

TRICHOGLOSSIDÆ.

Domicella cardinalis (Jacq. & Puch.), hitherto only known by the type, which was subsequently lost, is fully described and figured. O. Finsch, *P. Z. S.* 1869, pp. 126-129, pl. xi.

Nestor occidentalis is described as a new species from the western part of the South Island of New Zealand, smaller and with a more slender bill than *N. hypoleius*, besides differing in colour. W. Buller, *Ibis*, 1869, pp. 40, 41. Its validity doubted. O. Finsch, *tom. cit.* p. 379.

PICARIÆ.

PICIDÆ.

Picus lucasanus, Xantus, and *P. scalaris*, the head and foot of each figured. Probably identical. D. G. Elliot, *B. N. Am. Intr.* p. 7.

Colaptes auratus and *Picus pubescens*, notes on. A. Fowler, *Am. Nat.* iii. pp. 422-427.

Campethera capricorni, Strickl. (*Contr. Orn.* 1852, p. 155), is noticed and figured. A. Newton, *Ibis*, 1869, pl. ix.

TROGONIDÆ.

GOULD, JOHN. *Monograph of Trogonidæ*. Second edition, part ii. London: 1869. Imp. fol.

This contains figures of the following:—*Pharomacrus pavoninus*, *Prionotelus temnurus*, *Trogon elegans*, *T. surucua*, *T. aurantius*, *T. viridis*, *Troctes massena*, *Harpactes hodgsoni*, *H. ardens*, *H. kasumba*, *H. reinwardti*, *H. mackloti* and *H. orescius*. Some of the plates are reproduced from the author's 'Birds of Asia' (*Zool. Rec.* ii. p. 96). [*Cf. Ibis*, 1870, p. 118.]

BUCCONIDÆ.

Bucco striolatus is figured. P. L. Selater & O. Salvin, *Ex. Orn.* p. 153, pl. lxxvii.

CORACIIDÆ.

Eurystomus crassirostris is a new species from the Solomon Islands, with a thick bill and longer tail than *E. pacificus*. P. L. Selater, *P. Z. S.* 1869, p. 121.

Coracias indica, *C. affinis*, and *C. temmincki* are figured. J. Gould, *B. As.* pt. xxi.

MEROPIDÆ.

Merops cyanophrys is figured. M. T. v. Heugl. *Orn. Nordost-Afr.* t. vi.

GALBULIDÆ.

Brachygalba goeringi is described and figured as a new species from Venez-

uela, resembling *B. inornata*, but without a white throat. P. L. Selater & O. Salvin, P. Z. S. 1869, pp. 252, 253, pl. xviii.

Brachygalba lugubris (Swains.), note on. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 274, 275.

ALCEDINIDÆ.

SHARPE, R. B. A Monograph of the *Alcedinidæ* or Kingfishers. London: 1869. Parts iii.-vi. Roy. 8vo.

Of the merits of this work we spoke last year (Zool. Rec. v. p. 72), the four parts now to be noticed successfully sustain its reputation. Part iii. (1 Jan.) contains figures and accounts of *Dacelo gaudichaudi*, *D. tyro* (Zool. Rec. iii. p. 79), *Tanysiptera nympha*, *Halcyon badia*, *Syma torotoro*, *S. flavirostris*, *Ceyx tridactyla* and *C. philippensis* (Zool. Rec. v. p. 72). Part iv. in like manner illustrates *Melidora macrorhina*, *Halcyon senegaloides*, *Ispidina madagascariensis*, *I. leucogastra*, *I. picta*, *Ceyx uropygialis*, *Alcyone cyanopectus* and *Ceryle inda*. Part v. comprises *Ceryle amazonia*, *Alcedo beryllina*, *A. semitorquata*, *Corythornis vintsioides* [sc. *cristata*, ut *infra*], *Ceycopsis fallax* (Zool. Rec. ii. p. 98, et *infra*), *Ispidina ruficeps*, *Halcyon orientalis* (Zool. Rec. v. p. 73) and *H. cyanoleuca*. Part vi. includes *Ceryle guttata*, *C. lugubris*, *C. maxima*, *C. sharpii* (ut *infra*), *Alcyone pusilla*, *Corythornis cristata*, *C. ceruleocephala*, *Ispidina natalensis*, and *Tanysiptera sylvia*. [Cf. Ibis, 1870, pp. 121, 122; Am. Nat. iii. pp. 149, 150.]

——. On the Kingfishers of South Africa. Ibis, 1869, pp. 275-283.

The scope of this paper is to correct some mistakes in Mr. Layard's work (Zool. Rec. iv. pp. 60, 61), and it chiefly relates to matters of synonymy and distribution. The species mentioned are 24 in number, of which 23 are peculiar to the Ethiopian Region.

——. Additional Notes on the Genus *Ceyx*. Proc. Zool. Soc. 1869, pp. 507-511.

Contains critical remarks on Dr. Salvadori's paper (*vide infra*). *C. innominata*, Salvad. = *C. rufidorsa*, Strickl.; *C. sharpii*, Salvad. (ut *infra*), *C. dillwyni* (Zool. Rec. v. pp. 72, 73) and *C. melanura*, Kaup, are good species; and *C. tridactyla* (Pall.) = *C. rufidorsa*, Salvad. (nec Strickl.). In accordance with these views, diagnoses differing from those given last year (Zool. Rec. loc. cit.) are given.

SALVADORI, T. Monografia del Genere *Ceyx*, Lacépède. Atti R. Accad. Sc. Torino, iv. (21 March, 1869) pp. 440-476, pl.

The author divides the genus into two sections, *Ceyx* proper and *Therosa*, with *C. solitaria* as its type and only member, but does not take quite the same view of them as did Mr. Sharpe (Zool. Rec. v. p. 72). *C. uropygialis* is regarded as identical with *C. lepida*, *C. philippensis* is referred to the genus *Alcyone*, while

Ceycopsis is proposed as a new genus (p. 447, note) to contain *Dacelo fallax*, Schleg. (Zool. Rec. ii. p. 98), because of its four toes;

Ceyx innominata (pp. 446, 465) is the name given to *C. rufidorsa*, auctt., Dr. Salvadori retaining the latter for what may be the young of *C. tridactyla* (*vide supra*);

Ceyx sharpii is described and figured (pp. 463-465, pl.) as a new species

from Borneo, differing from *C. dillwyni*, its scapulars being rufous tinged with lilac, and from *C. innominata* (*ut supra*), its upper wing-coverts being mostly black and the lesser outwardly edged with blue. It is *C. tridactyla*, Reichenb. (Handb. *Alcedin.* p. 8, fig. 3388), nec Pall. [*Cf.* P. Z. S. 1869, p. 511; Ibis, 1870, pp. 183, 184.]

Alcedo aleyon, its nidification. C. E. Williams, Am. Nat. ii. pp. 614, 615; C. M. Jones, *op. cit.* iii. p. 48; R. Ridgway, *tom. cit.* pp. 53, 54. A winter resident in Minnesota. H. Davis, *tom. cit.* p. 389.

Alcedo chelicuti receives the new specific name of *tschelicutensis*! M. T. v. Heuglin, Orn. Nordost-Afr. i. p. 192.

Dacelo occidentalis is a new species from North-western Australia, allied to *D. cervina*, but differing in its much stouter bill, paler colours, and especially by the outer web of the outer rectaries being plainly barred with white. J. Gould, P. Z. S. 1869, p. 602.

Ceryle sharpii is a new species from the Gaboon, allied to *C. maxima*, but somewhat smaller, and having the crest almost, and the back entirely, unspotted; the abdomen and lower tail-coverts are slaty-black profusely banded with white, and the under wing-coverts with black bars. *Id.* Ann. & Mag. N. H. 4th ser. iv. p. 271.

SHARPE, R. B. On a new Kingfisher belonging to the genus *Tanyiptera*. Proc. Zool. Soc. 1869, pp. 630, 631.

This also contains a diagnostic table of the species of the genus, of which eleven are recognized. The new one is

T. ellioti, from an unknown locality, having no white dorsal spot, but a white rump and a non-spatulate tail. The type belongs to the Counts Turati.

CAPITONIDÆ.

Pogoniorhynchus rolleti, *P. leucocephalus*, and *P. diadematus*, their heads figured! M. T. v. Heuglin, Orn. Nordost-Afr. t. xxvii.

Barbatula uropygialis is figured. *Id.* t. xxviii.

Buccanodon anchietæ is described and figured as a new species from Caconda (W. Africa). J. V. Barboza du Bocage, P. Z. S. 1869, pp. 436, 437, pl. xxix.

BUCEROTIDÆ.

BARTLETT, A. D. Remarks on the Habits of the Hornbills (*Buceros*). Proc. Zool. Soc. 1869, pp. 142-146.

An example of *B. corrugatus* being observed to throw up a singular casting, this on examination proved to consist of a mass of the bird's food enveloped in a casing which the author regards as the natural secretion of the animal, and is the means by which the male feeds the female while she is plastered up in her nest. Some remarks on the castings and secretions of other birds are added.

FLOWER, W. H. Note on a Substance ejected from the Stomach of a Hornbill (*Buceros corrugatus*). *Tom. cit.* p. 150.

The sack containing the casting above mentioned consists of the entire epithelial lining of the bird's gizzard. [*Vide supra*, "ANATOMY, &c., Tobias, L."]

Buceros, the curious habits during incubation of birds of this genus first

noticed in *B. pica* (Ann. & Mag. Nat. Hist. 2nd ser. xi. p. 234). E. L. Layard, *tom. cit.* pp. 529, 530.

Meniceros bicornis, its remarkable mode of nidification and habits during incubation described. C. Horne, *tom. cit.* pp. 241-243.

Rhynchaceros (Tockus) deckeni is described and figured as a new species from East Africa, differing from the small allied species by being darker and blacker above, and having the wing-coverts not so much spotted. The sides of the head, the neck, middle line of the back, and lower surface are white. J. Cabanis, J. f. O. 1868 [published in 1869], p. 413; *Id.* Von der Decken's Reisen, iii. 1, p. 37, pl. vi.

MUSOPHAGIDÆ.

Corythaire leucolophus is figured. M. T. v. Heuglin, Orn. Nordost-Afr. t. xxiv.

CUCULIDÆ.

WALDEN, ARTHUR [HAY], Viscount. On the *Cuculidæ* described by Linnæus and Gmelin, with a sketch of the Genus *Eudynamis*. Ibis, 1869, pp. 324-346, pl. x.

A paper showing a vast amount of research and accurate knowledge, and undertaken partly with the view of testing the practical working of the British Association code of rules for zoological nomenclature; for the author thinks that the foundation of a correct system cannot be laid until the whole of the species described by Linnæus and Gmelin have been identified or disposed of. Of the 22 Linnæan species of *Cuculus*, 3 belong to other families, and 11 of the remaining 19 have been more or less satisfactorily identified, leaving 8 undetermined. Of these, 2 seem to be beyond hope at present; but the names of the last 6 can, it is shown, be referred without much fear of error to the species for which they were intended. The 2 Linnæan species of *Crotophaga* are identical. Gmelin named 24 species and 10 varieties of *Cuculus* in addition to those given by Linnæus, besides 2 species which belong to other families, 2 which really are Cuckoos though placed in other genera, and 1 *Crotophaga*. Of these 29 only 9 can, from one cause or another, retain Gmelin's names. To all this patient investigation follows what is modestly called a "sketch" of the genus *Eudynamis*; but it is a sketch of very elaborate character, for the synonyms of each of the 9 species recognized by the author, and in most cases sufficient diagnoses, are given, and *Eudynamis ransomi*, Bp. (Consp. Av. i. p. 101) is figured.

Cuculus canorus, its castings. G. Brucklacher, Zool. Garten, 1869, pp. 124, 125.

Lamprococcyx plagosus, *L. basalis*, *Cuculus inornatus* and *C. cineraceus*, their eggs figured. E. P. Ramsay, P. Z. S. 1869, pp. 359, 360, pl. xxvii. figs. 1-4.

Centropus senegalensis in confinement. P. L. Selater, *tom. cit.* p. 276.

Cona hartlaubi is described as a new species from Madagascar resembling *C. coquereli* (Zool. Rec. iv. p. 89), of which it may be only a local race, but rather smaller, and with a shorter tail and stouter bill. It belongs to the group *Serisomus*. A. Grandidier, R. Z. 1869, p. 339.

STEATORNITHIDÆ.

Steatornis caripensis, its mode of breeding. R. König-Warthaussen, J. f. O. 1868 (not published till 1869), pp. 384-386. Notes on some caves it frequents. A. Goëring, Vargasia, 1869, pp. 124-128. In confinement. P. L. Selater, P. Z. S. 1869, p. 467.

CAPRIMULGIDÆ.

Notes on the mode of breeding of 28 species of the family, in which the author includes *Steatornis*. R. König-Warthaussen. [See "OOLOGY."] On the Brazilian species. C. Euler, J. f. O. 1869, pp. 249-255.

Caprimulgus europæus, notes on, in confinement. V. von Tschusi, J. f. O. 1869, pp. 220-224.

Caprimulgus inornatus from the Bogos country is a species hitherto undescribed and almost deserving generic separation. It is distinguished by its peculiar pale greyish-red colouring and the almost entire absence of any white or rusty marks on the neck, throat, and ears. M. T. v. Heuglin, Orn. Nordost-Afr. i. pp. 129-130*.

CYPSELIDÆ.

Cypselus caffer orientalis from East Africa is described as a variety of the South-African *C. caffer*, being smaller and with much less white on the throat. M. T. v. Heuglin, Orn. Nordost-Afr. i. pp. 143, 144.

Cypselus melba is figured. J. Gould, B. Gr. Br. pt. xvi.

TROCHILIDÆ.

Doricha lyrura is a new species from the Bahamas, about the size of *D. evelinæ*, but with a distinctly-forked tail, the outer feathers of which are much longer, narrower, and curved outward at the tip, the remainder graduating towards the middle ones, which are very short. J. Gould, Ann. & Mag. N. H. 4th ser. iv. pp. 111, 112.

Lesbia ortonii is described as a new species from Ecuador, of the same form and dimensions as *L. glyceria*, Bp., but with the outer rectrices intermediate in width between those of that species and of *L. amaryllis*. It should be placed perhaps with the former in a new genus. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 269, 270.

Oreonympha is a new genus, allied both to *Oxyopogon* and *Rhamphomicrum*, of which the characters are:—Bill longer than the head, stout, and with a somewhat downward curvature; wings large and sickle-shaped; tail ample

* The author's description was published certainly not later than August 1869; but having had access, as has been mentioned above, to the proof-sheets of Drs. Finsch and Hartlaub's 'Vögel Ost-Afrikas,' which was not published till 1870, he is enabled to quote the page of that work in which this species is also described.

and forked; tarsi clothed nearly to the toes, which are of moderate size; the hinder toe and nail rather shorter than the middle toe and nail. The type is

O. nobilis, sp. nov., from Tinta in Peru. J. Gould, P. Z. S. 1869, pp. 295, 296; P. L. Selater and O. Salvin, *tom. cit.* p. 600.

PASSERES.

PITTIDÆ.

Pitta digglesii is proposed as the name of the Cape-York bird hitherto referred to *P. mackloti* (Zool. Rec. iv. p. 91). G. Krefft, Ibis, 1869, pp. 349, 350. The last figured. J. Gould, B. Austral. suppl. pt. v. [Cf. Ibis, 1870, p. 411.]

Pitta krefftii is described as a new species. T. Salvadori, Atti Soc. Ital. Sc. Nat. 25 Aug. 1869. [Identical with *P. simillima* (Zool. Rec. v. p. 76). *Id.* Ibis, 1870, p. 296.]

FORMICARIIDÆ.

Thamnophilus unduliger, *T. borbœ*, *T. tschudii*, *T. cinereoniger*, *T. sticturus*, *T. cinereiceps*, *T. cinereinucha*, *T. stictocephalus*, *T. punctuliger*, *T. polionotus*, "*T. saturninus*, Natter," and *T. incertus* are described as new species from Brazil. The *first* is nearest to *T. leachi*, but differs in its larger size, much shorter tail, greatly developed hood (cinnamon in the ♀), and finely undulated plumage. The *next* differs from *T. major* by the remiges (in the ♂) not being edged with white and the rectrices, in adults, being nearly black, and in the young less banded, from *T. transandeanus* by its white under tail-coverts, and from *T. melanurus* by the shorter tail, all the wing-coverts being edged with white, and (in the ♀) the lores and ear-regions rufous instead of black. The *third* may possibly be *T. luctuosus*, Tschudi (*nec* Licht.); but the ♂ wants the white spot on the middle of the outer web of the outer rectrix and seems larger; the ♀ also differs somewhat. Of the *fourth* descriptions only are given and no diagnosis. The *fifth* resembles *T. ambiguus*, but is much smaller, the median spots of the rectrices cover the whole outer web, and there is no spot on the inner web, the middle rectrices have a white terminal spot and margin very narrow in the middle; the ♀ also differs by her nearly pure white breast. The *sixth* is like *T. amazonicus*; but the head is not crested, and the ♂ has the crown ash-coloured with the occipital feathers only black in the middle, the ♀ has the lower breast, abdomen, and under tail-coverts brownish white, the last with broad white cross bands. The *seventh* also resembles *T. amazonicus*, but is smaller and wants the black at the beginning of the nape and has the middle of the back a little spotted with black; the ♀ is like *T. ambiguus*, but smaller, with the outer rectrix only having a white median spot, and the whole lower surface, under tail-coverts excepted, slightly washed with ochreous. The *eighth* very much resembles the seventh, but has the feathers of the crown white at the base. The *ninth* is not described comparatively. The ♂ of the *tenth* very much resembles the ninth, but is a little darker, and the feathers of the back are not white at the base. The *eleventh* is only described generally; and the *last*, which is given with doubt, is known from the ♀ alone, which is very like the tenth, but with a narrower bill and a much brighter lower surface. A. von Pelzel, Orn. Bras. pp. 75-78, 139-149.

Thamnophilus mæstus is a new species from Cayenne, resembling *T. luctuosus*, but differing in the shorter bill, less developed crest, and dull white spots on the wing-coverts; it differs also from *T. tschudii* (*vide supra*) in its shorter bill, the bend of the wing and wing-coverts being less white, the want of the white edge of the remiges, and from both species in the broad white terminal portion of the rectrices. *Id. op. cit.* p. 141, note.

Thamnophilus virgatus is described as a new species from New Granada, resembling *T. palliatus* in general coloration; but it is smaller and differs notably in the white markings, in the strongly defined stripes on the crown, and the paler and duller tint of the red. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), p. 360.

Dysithamnus affinis is an undescribed species from Brazil, differing from *D. mentalis* (Temm.) through the want of a yellow lower belly, and through the blackish-grey crown in the ♂, while the ♀ is also sufficiently distinct. From *D. olivaceus*, Tschudi, it also differs through the grey upper surface and the dark ear-spot of the ♂. It resembles *D. semicinereus*, but has a stouter bill and other distinguishing characters. A. von Pelzeln, Orn. Bras. pp. 80, 149, 150.

"*Herpsilochmus atricapillus*, *H. longirostris*, and *H. dorsimaculatus*, Natter.," are three undescribed species from Brazil: the *first* like *H. pileatus* (Licht.), but with longer wings and tail, and the ♀ being ochraceous beneath; in the *second* the ♂ resembles the first, but has a much stronger and higher bill, white lores, and the outer rectrices halfway white, it differs also from *H. pectoralis*, Scl., ♂, by wanting the black pectoral spot; the *third* differs from *H. pileatus* by the feathers of the back being longitudinally spotted with black and white, and the inner rectrices have also two or three white longitudinal spots. *Id. op. cit.* pp. 80, 150-152.

Myrmotherula assimilis, "*M. luctuosa* (Temm.)," and *M. longipennis* are three undescribed species from Brazil. The *first* is very like *M. haurwelli*, Scl., but has a longer tail of twelve rectrices, and the secondaries and upper tail-coverts are not spotted with white, the ♀ is more ash-coloured above and paler below; the *second* differs from *M. avillaris* (Vieill.) by wanting the white sides and by the body being of a darker grey; the *third* resembles *M. menetriesi* (D'Orb.), but has much longer wings. *Id. op. cit.* pp. 81, 82, 152-154.

"*Formicivora melanogaster*, Natter.," *F. leucophthalma*, and "*F. ruficauda* and *F. bicolor*, Natter.," are four undescribed species from Brazil. The ♂ of the *first*, which may possibly be *Myiothera superciliaris*, Pr. Max. (*nec* Licht.), differs from *F. grisea* (Bodd.) by being darker above, the absence of the white beneath, and the last secondaries being edged with white, while the ♀ has the sides of the head brown and is white beneath; from *F. rufatra* it differs by being dark and not reddish above. The *second* and *third* are not comparatively differentiated. The *fourth* differs from *F. quivensis* (Corn.) by the lower surface of the ♀ being rufous, from *F. consobrina*, Scl., by its larger size, and from *F. boucardi*, Scl., by the paler lower surface of the ♀, and from all these by the nearly white lateral rectrices. *Id. op. cit.* pp. 83, 84, 154-157.

Formicivora strigilata (♂ & ♀) is figured. P. L. Sclater & O. Salvin, Ex. Orn. p. 159, pl. lxxx.

"*Terenura melanoleuca* (Natter.)," is an undescribed species from Brazil. A. von Pelzeln, Orn. Bras. pp. 84, 157.

"*Rhamphocœnus collaris*, Natter.," is an undescribed species from Brazil. *Id. op. cit.* pp. 84, 157, 158.

Cercomacra approximans and *C. ruficauda* are two new species from Brazil. The first is very like *C. tyrannina*, Scl., but with a shorter bill and longer wings, and the female has the front and sides of the head rust-colour. The second is very near to *C. melanura* (Ménétr.), but differs in the black breast and abdomen, the rust-coloured flanks, abdomen, and vent, the entirely rufous tail, and in other points. *Id. op. cit.* pp. 85, 158, 159.

Gymnocichla chiroleuca is a new species from Costa Rica and Honduras, resembling *G. nudiceps* (with which it has been confounded), but remarkable for having a stronger bill and the bend of the wing entirely white. P. L. Sclater & O. Salvin, P. Z. S. 1869, pp. 417, 418.

Pernostola minor and "*P. leucostigma*, Natter. & Lafresn.," appear to be two undescribed species from Brazil: the first very like *P. funebris* (Licht.), but smaller, with shorter bill and wings, the head in the ♂ scarcely crested, and the abdomen in the ♀ much paler, the margins of the wing-coverts also being narrower; the second is said to be identical with *Turdus rufifrons*, Gmel., and the reason for changing its specific name is not made clear. A. von Pelzeln, Orn. Bras. pp. 86, 159-161.

Heterocnemis albiventris is an undescribed species from Brazil, though it is possibly the ♂ of *Herpsilochmus argentatus*, Des Murs (Voy. Castelnau, Zool. p. 53, pl. 17. fig. 2). It differs from *H. nœvia* (Gmel.) by the nearly white lower surface and the outer rectrices not being tipped with white. *Id. op. cit.* pp. 87, 161, 162.

"*Myrmeciza squamosa*, Natter.," is an undescribed species from Brazil, like *M. loricata* (Licht.), but with pure white terminal spots on the wing-coverts, the throat black, as is the upper breast, with white edges to the feathers, and narrower greyish-white superciliary streaks. It is *Formicivora loricata*, Ménétr. (Mém. Ac. St. Pétersb. 6 ser. iii. p. 470, pl. 4. fig. 1) (*nee* Licht.). *Id. op. cit.* pp. 87, 162, 163.

Hypocnemis macilicauda and *H. margaritifera* are two undescribed species from Brazil. The first similar to *H. melanopogon*, Scl., but smaller, the mid-dorsal feathers white at the base, and the rectrices more broadly tipped with white; the second resembles *H. nœvia*, but has nearly round white spots on the black back, and the ground-colour beneath white. It is perhaps the ♂ of *Rhopotera punctulata*, Des Murs (Voy. Castelnau, p. 53, pl. 17. fig. 3). *Id. op. cit.* pp. 89, 164-166.

"*Pithys cristata* (Natter.)." and *P. griseiventris* are two undescribed species from Brazil, neither of which is comparatively diagnosed. *Id. op. cit.* pp. 89, 166, 167.

Grallaria princeps is a new species from Veragua resembling *G. guatemalensis*, with which it has been confounded (P. Z. S. 1867, p. 146), but with a stouter bill, the body darker above, and the belly of a deeper rust-colour. A note on the distribution of the five species allied to *G. rex* is added. P. L. Sclater & O. Salvin, P. Z. S. 1869, pp. 418, 419.

MENURIDÆ.

Orthonyx spaldingi is a new species from Queensland, distinguishable from *O. spinicauda* by its greater size and jet-black plumage. E. P. Ramsay, P. Z. S. 1868, p. 386. Figured. J. Gould, B. Austral. Suppl. pt. v.

DENDROCOLAPTIDÆ.

Sclerurus rufigularis is an undescribed species from Brazil, differing from *S. caulacutus* by its inferior size and its entirely ochreous chin and front of the neck. A. von Pelzel, Orn. Bras. pp. 87, 161.

Synallaxis arequipæ is a new species from Western Peru, hitherto confounded (P. Z. S. 1867, p. 986) with *S. orbignii*, which is distinguishable by its rufous wings and more rufescent tinge of the upper surface. P. L. Sclater & O. Salvin, P. Z. S. 1869, p. 417.

SCLATER, P. L. On two new Species of *Synallaxis*. Proc. Zool. Soc. 1869, pp. 636, 637, pl. xlix.

Synallaxis curtata, from New Granada, is the first. It resembles *S. ruficapilla*, but is of the same olive-brown below as above, and has 12 rectrices (not 10); it is also not unlike *S. erythrops*, but has the crown only red.

Leptasthenura andicola, from the Andes of Ecuador, is the second. It resembles *S. flammulata* in general appearance, but has for its nearest allies *S. ægithaloides* and *S. fuliginiceps*, peculiar for their small, short and straight bill, slender tarsi, and sharp-pointed tail of 12 rectrices—the number in typical *Synallaxis* being 10. *S. flammulata* (with which *S. multistriata*, Scl. P. Z. S. 1857, p. 273, is identical), on the other hand, belongs to a group embracing *S. anthoides*, *S. humicola*, *S. orbignii* and their allies, for which group the name *Asthenes* of Reichenbach may possibly be employed.

Thripadectes flammulatus is figured. P. L. Sclater & O. Salvin, Ex. Orn. pp. 185, 186, pl. xciii.

OXYRHAMPHIDÆ.

Oxyrhamphus frater is figured, and the reasons given for making the genus the type of a family (Zool. Rec. v. p. 78). P. L. Sclater & O. Salvin, Ex. Orn. pp. 131, 132, pl. lxvi.

MELIPHAGIDÆ.

Ptilotis cockerelli is a new species, from Cape York, but perhaps not belonging to this genus, having characters allying it also to *Stigmatops* and *Meliphaga*. In colouring it resembles *P. polygramma*, G. R. Gray (P. Z. S. 1861, p. 429). J. Gould, Ann. & Mag. N. H. 4th ser. iv. pp. 109, 110. Figured, as is also *P. notata* (Zool. Rec. iv. p. '93). *Id.* B. Austral. Suppl. pt. v.

Anthornis auriocula (Zool. Rec. iii. p. 88) is certainly a good species, while *A. ruficeps* (*op. cit.* iv. p. 93) may not be so. W. Buller, Trans. & Proc. New Zeal. Inst. i. p. 108.

Mimus carunculatus (Zool. Rec. iii. p. 95), and consequently *Anthochæra bulleri* (*op. cit.* iv. p. 93), is identical with *A. carunculata*. *Id. tom. cit.* pp. 111, 112.

Tropidorhynchus, Vig. & Horsf. (1826), must give place to *Philemon*, Vieill. (1816), of which the type is *Merops moluccensis*, Lath.; and with this *T. bouruensis*, Wall. (P. Z. S. 1863, p. 31), is identical. P. L. Sclater, P. Z. S. 1869, p. 120, note.

NECTARINIIDÆ.

Nectarinia, a specimen from north-east Africa in the Mergentheim collection (Zool. Rec. iv. p. 59), where it bears the name of *N. souimanga* (*nec* Gmel.) is described as belonging possibly to a new species, but it is not

named. It may be *Cinnyris collaris*, Vieill. M. T. v. Heuglin, Orn. Nordost-Afr. i. pp. 233, 234.

Ethopyga christinae and *Arachnechthra rhizophora* are two new species from Hainan. The latter is allied to *A. flammaxillaris*, but has the forehead black, with purple, blue, and green reflections. R. Swinhoe, Ann. & Mag. N. H. 4th ser. iv. p. 436. [The former represents *E. saturata*, but is perfectly distinct. Ld. Walden, Ibis, 1870, pp. 36, 37, pl. i. fig. 1.]

COTINGIDÆ.

"*Tityra (Erator) leucura* (Natter.)" is an undescribed species from Brazil. A. von Pelzel, Orn. Bras. pp. 120, 183, 184.

"*Lipaugus virussu* (Natter.)" is an undescribed species from Brazil; it may be *L. plumbeus*, Scl. (P. Z. S. 1861, p. 211), differing from *L. plumbeus* (Licht.) in its larger size, the light ochre-brown grey under tail-coverts, and the deep ochre-brown tinge of the remiges and rectrices. It may be *L. plumbeus*, Scl. (P. Z. S. 1861, p. 210 *et alibi*) (*nec* Licht.). *Id. op. cit.* pp. 122, 123, 184.

"*Heteropelma rufum* (Natter.)" and *H. chrysocephalum* are undescribed species from Brazil. The *first* is of the form of *H. virescens*, and, according to Messrs. Sclater & Salvin, allied to their *Neopipo rubicunda* noticed below, but identical with *Schiffornis major*; Bp. (Voy. Castelnau, p. 66, pl. 18. fig. 2): the *second* resembles *H. flavicapilla*, Scl., but is much smaller; from *H. aurifrons* (Pr. Max.) it differs by being larger, having a black mandible, and being brighter beneath. *Id. op. cit.* pp. 124, 125, 185, 186.

Heterocercus flavivertex is described as a new species from Brazil, much resembling *H. lineatus* (Strickl.), but with a yellow vertical spot, and no black on the head. *Id. op. cit.* pp. 125, 186. Its distinctness questioned. P. L. Sclater & O. Salvin, P. Z. S. 1869, p. 438, note.

Pipra opalizans and *P. virescens* are undescribed species from Brazil: the *first* resembling *P. nattereri* (Zool. Rec. i. p. 76), but with the vertex shining like mother-of-pearl and opalescent, and other differences; the *second* is not comparatively described. A. von Pelzel, Orn. Bras. p. 128, 186-188.

Pipra (?) *cinnamomea* is a new species from the Upper Amazon, having the wings shorter and the tail longer, relatively, than any other member of the genus known to the author. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), p. 361.

Neopipo is the name proposed for a new genus allied to *Heteropelma*; but the characters are so given that we are unable to make an abstract of them. The type is

N. rubicunda, which is figured and described as a new species, but would seem likely to be identical with *Pipra cinnamomea*, Lawrence (*ut supra*); it is also allied to "*Heteropelma rufum* (Natter.)," Pelz., above mentioned, but is much smaller. P. L. Sclater & O. Salvin, P. Z. S. 1869, pp. 438, 439, pl. xxx. fig. 3.

Ampelion arcuatus is figured and a diagnostic list of the four species of the genus given. *Iid. Ex. Orn.* pp. 171, 172, pl. lxxxvi.

Chasmorhynchus variegatus [*cf.* Zool. Rec. iv. p. 94] occurs in British Guiana. P. L. Sclater, Ibis, 1869, p. 462.

AMPELIDÆ.

Eopsaltria eucura and *E. chrysorrhoa* are two new species: the first, from Cape York, is the largest of the genus, and allied to *E. leucogaster*, but having white at the base of the lateral rectrices; the second, from Eastern New South Wales and Southern Queensland, is rather larger than *E. australis*, under which name it has been figured (B. Austral. iii. pl. 11), and similar in colour, but having the rump, as well as the breast, of a jonquil-yellow. "*E. magnirostris*, Ramsay"*, from Rockingham Bay, is also differentiated as being like *E. chrysorrhoa* in colour, but having a conspicuously larger bill and shorter wings. J. Gould, Ann. & Mag. N. H. 4th ser. iv. pp. 108, 109. The first named of these species figured. *Id.* B. Austral. Suppl. pt. v.

Pardalotus xanthopygus (Zool. Rec. iv. p. 95), note on the original description of it. E. P. Ramsay, Ibis, 1869, p. 346.

TIMALIIDÆ.

Trochalopteron fairbanki is described and figured as a new species from the Pulney Hills in Southern India, very like *T. jerdoni*, and of about the same size, but with the head dusky above, with a distinct boundary, the back olivaceous, from the chin to the breast grey, the abdomen and under tail-coverts ferruginous. W. T. Blanford, J. A. S. B. xxxviii. pp. 175-177, pl. xvii. a.

Drymochares stellatus (Zool. Rec. v. pp. 80, 81) is figured. J. Gould, B. As. pt. xxi.

HIRUNDINIDÆ.

Hirundo fuscicapilla (Zool. Rec. iv. p. 96) is at last described as resembling *H. griseopyga*, Sundev. (Œfvers. k. Vet. Ak. Förhandl. 1850, p. 117), but with a larger and broader bill, the rump of a smoky steel-colour, longer wings, and a differently shaped tail which has white spots on the rectrices. M. T. v. Heuglin, Orn. Nordost-Afr. i. pp. 154, 155.

"*Hirundo domicella*, Hartl. & Finsch," is the name given to *H. melano-crisus*, Hartl. (Orn. Westafr. p. 27) and Antinori (Cat. Ucc. Afr. centr. Nord, p. 26) (*nec* Rüpp.). It much resembles *H. melanocrissa (vera)*, but is smaller, slenderer, and of a purer white beneath. *Id. tom. cit.* pp. 159, 160 †.

Hirundo angolensis (Zool. Rec. v. p. 81) is figured and noticed. R. B. Sharpe, P. Z. S. 1869, p. 567, pl. xliii.

Hirundo aethiopica is a new species from Abyssinia and Nubia, resembling *H. albigularis*, Strickl. (Contr. Orn. 1849, p. 17, pl. xv.), but plainly smaller, with the pectoral band interrupted, and the throat and breast tinged with rufous. It is *Cecropis rufifrons* auctt., ex Abyssinia, and *H. albigularis*, Heugl. (Orn. Nordost-Afr. i. p. 153) (*nec* Strickl.). W. T. Blanford, Ann. & Mag. N. H. 4th ser. iv. p. 327. [Figured, *Id.* Geol. & Zool. Abyss. (1870) pl. ii.]

H. albigularis, Strickl. (*ut supra*), is probably *H. rufifrons*, Vieill., which has been incorrectly described by Stephens. H. B. Tristram, Ibis, 1869, p. 436.

* Mr. Gould does not state whether this name is now used for the first time: it would seem to refer to a specimen mentioned by Mr. Ramsay (P. Z. S. 1868, pp. 384, 385), but not named there by him.

† In this instance, as in one already mentioned, the work of Drs. Finsch and Hartlaub is cited from the unpublished proof-sheets.

Waldenia is proposed as the name of a new genus having *Hirundo nigrita*, G. R. Gray (Gen. B. pl. xx.), as its type. The characters are given at some length, and amount, in brief, to this:—that it is allied to *Atticora* and *Hirundo*; but the former has round nostrils and no overhanging membrane, which last is possessed by the latter; but *Hirundo* has the first primary the longest, whereas the new genus has the second. It also has large, robust feet. R. B. Sharpe, Ibis, 1869, p. 461.

Hirundo horreorum, notes on. A. Fowler, Am. Nat. iii. pp. 8–13.

Hirundo riparia, notes on its habits in Massachusetts. *Id. tom. cit.* iii. pp. 116–119.

Cotyle palustris, Steph. Under this name two distinct species have been confounded,—the Northern one, which should bear the name *C. paludibula* [qu. potius *paludicola*?], Rüpp., being larger than the Southern, and having a large white spot on the inner web of each rectrix except the outer and middle pairs, with some other differences. The Southern form is the true *palustris*. H. B. Tristram, Ibis, 1869, pp. 436, 437.

Chelidon urbica is figured. J. Gould, B. Gr. Br. pt. xv.

VIREONIDÆ.

Hylophilus hypoxanthus is an undescribed species from Brazil, standing nearest to *H. brunneiceps* (Zool. Rec. iii. p. 91), but differing in the yellow of the underside. A. von Pelzeln, Orn. Bras. pp. 71, 136.

Cyclorhis wiedi is regarded as an undescribed species from Brazil, resembling *C. flavipectus*, Schl. (P. Z. S. 1858, p. 448), but with the upper parts brown slightly tinged with grey; the throat, middle of the belly, and vent altogether white. It is also much like *C. subflavescens*, Cab. (J. f. O. 1860, p. 405, 1861, p. 93); but this last shows more yellow beneath. It is *Thamnophilus guianensis*, Pr. Max. (Beitr. iii. no. 1016) (*nec* Gmel.), and, perhaps, *C. viridis*, Baird (Rev. Am. B. p. 392)—*synon. exclus.* *Id. op. cit.* pp. 74, 137, 138.

TYRANNIDÆ.

Attila validus, *A. rufigularis*, and "*A. phœnicurus* (Natter.)" are three undescribed species from Brazil. The first resembles *A. bolivianus*, Lafr., but is larger, with the nape more rufescent and the lower parts paler: the second differs from *A. thamnophiloides* (Spix) by being smaller, olivaceous above, the edges of the wing-coverts rust-coloured, and the abdomen almost whitish; from *A. spadiceus* (Gm.) by being larger, with the throat rust-coloured and the tail rufous; and from *A. uropygialis* by the second of these characters: the third resembles *A. cinereus* in colour, but approaches the genus *Casiornis* in its small bill. A. von Pelzeln, Orn. Bras. pp. 95, 96, 169–172.

Agriornis insolens is a new species from Peru, resembling *A. solitaria* of Ecuador, but much paler below, but with distinct black markings on the white throat. P. L. Slater & O. Salvin, P. Z. S. 1869, p. 153.

A. andicola, Slater (P. Z. S. 1860, p. 78) is called *A. pollens*, the former specific name having been used by Lafresnaye and D'Orbigny. P. L. Slater, *loc. cit.* note.

Ochthaca polionota is a new species from Peru, resembling *O. œnanthoides*, but with an ash-coloured back, the outer rectrices edged with white, and

wanting the rufous margin of the wing-coverts. P. L. Sclater & O. Salvin, P. Z. S. 1869, pp. 599, 600.

Ochthoeca rufomarginata is described as a new species from Ecuador, allied to *O. lessoni*, but wanting the rufous throat and breast and the conspicuous white band encircling the crown; it has also the middle as well as the greater wing-coverts ending with rufous. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, p. 266.

Mecocerculus uropygialis is described as a new species, supposed to come from Ecuador, somewhat resembling *M. leucophrys*, but paler beneath, with a smaller bill and rufous rump. *Id. tom. cit.* pp. 266, 267.

Lichenops perspicillatus. The statement (P. Z. S. 1863, p. 141) that the female has the plumage black contradicted. W. H. Hudson, P. Z. S. 1869, p. 432.

Centrites oreas, from Peru, is differentiated from *C. niger*, with which it was before confounded (P. Z. S. 1867, p. 987, 1868, p. 559), having the webs of the primaries whitish in the male and tinged with cinnamon in the female. P. L. Sclater and O. Salvin, *tom. cit.* p. 154. Figured (♂ & ♀). *Id. Ex. Orn.* pp. 191, 192, pl. xevi.

Todirostrum guttatum is an undescribed species from Brazil, agreeing much with *Triccus illigeri*, Cab. & Heine (Mus. Hein. ii. p. 49); but in the description of that species no mention is made of the large and conspicuous white spot before the eye, nor of the black spots on the sides of the neck and breast; the bill, too, though broad, seems to be weaker. A. von Pelzeln, Orn. Bras. pp. 101, 172, 173.

Todirostrum plumbeum (Gmel.), note on. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 273, 274.

Euscarthmus zosterops, *E. latirostris*, *E. senex*, and *E. inornatus* are undescribed species from Brazil. The *first* is like *E. orbitatus* (Pr. Max.), but has a shorter bill, broader at the base, the mandible for the most part dark, and the breast and the edges of the wing-coverts yellowish; the *second* is like *E. fumifrons*, but with a longer and much broader bill, and a lead-coloured crown; the *third* differs from the second by its shorter and less broad bill, the forehead is not rufescent, the edges of the wing-coverts are whitish, and the mandible and feet darker; the *fourth* is not comparatively described. A. von Pelzeln, Orn. Bras. pp. 101, 102, 173, 174.

Hapalocercus rufomarginatus is an undescribed species from Brazil. *Id. op. cit.* pp. 103, 174, 175.

Pogonotriccus(?) zeledoni is described as a new species from Costa Rica, but may belong to *Leptotriccus*. It is not comparatively diagnosed. G. N. Lawrence, Ann. Lyc. N. H. New York, 1863 (not published till 1869), pp. 114, 145.

Pogonotriccus plumbeiceps is described as a new species from Bogota, but no comparative diagnosis is given. *Id. op. cit.* 1869, p. 267.

"*Phyllomyias subviridis* (Natter.)" and "*P. lividus* (Temm.)" are undescribed species from Brazil. The *first* differs from *P. virescens* by the colour of its iris and being greyer above, besides having a stronger bill nearly wanting rictal bristles, a shorter tail and warty tarsi; the *second*, which was not obtained by Natterer, is not comparatively differentiated. A. von Pelzeln, Orn. Bras. pp. 105, 175, 176.

Elainea spectabilis, *E. cristata*, *E. albivertex*, *E. parvirostris*, *E. elegans*, *E. ruficeps*, "*E. littoralis* (Natter.)," and *E. cinerea* are undescribed species from

Brazil. The *first* is very like *E. pagana* (Licht.), but much larger, and, as is also the case in many examples of that species, no white is visible at the base of the head-feathers; it also comes very near *E. subpagana*, but this is certainly smaller, and differs in the form and colours of the bill: the *second* is like *E. pagana*, but is smaller, and, except on the crown, is paler above, and has the breast less varied with grey; it seems to differ from *E. semipagana*, Scl., in being paler above and inclined to brown, with a white throat only: the *third* differs from *E. albiceps* (Lafr. & D'Orb.) by being a little smaller, with the bill broader at the base, the body brownish above: the *fourth* is very like the third, but has a smaller bill and the body more inclined to olivaceous above: the *fifth* is not unlike *E. griseigularis*, Scl., but is much smaller and differently coloured beneath: the *sixth* and *seventh* are not comparatively described; and the *eighth* is like *E. caniceps* (Sw.), but much larger and of a pure ash-colour. *Id. tom. cit.* pp. 107, 108, 176-181.

Myiozetetes rufipennis and *M. inornatus* are described as new species from Venezuela, the former differing from all others of the genus in the larger and stouter bill and the greater extent of rufous on the wings and tail; of the latter no comparative diagnosis is given. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 267, 268.

Rhynchocyclus assimilis is an undescribed species from Brazil, like *R. sulphureus* (Spix), but smaller and with a shorter, broader and more pointed bill. A. von Pelzel, Orn. Bras. pp. 110, 181.

Rhynchocyclus marginatus is described as a new species from Panama, formerly referred by the author (Ann. Lyc. N. H. New York, vii. p. 473) to *R. sulphureus*; but that is larger, with the head less plumbeous, the yellow beneath deeper and more extended, and other differences. It resembles *R. cinereiceps*, Scl., but is smaller and of a darker green, and may be readily known by the broad yellow margins of the wing-coverts and quills. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), p. 361.

Pitangus parvus is an undescribed species from Brazil. A. von Pelzel, Orn. Bras. pp. 111, 181.

SCLATER, P. L. Note on the Species of the Genus *Hirundinea*. Ibis, 1869, pp. 195-198, pl. v.

Three species are distinguished and figured, *H. ferruginea* (Gmel.), *H. bellicosa* (Vieill.), and *H. rupestris* (Max.), and their geographical range pointed out. So much as is known of their habits is also given.

Empidochanes pœcilocercus is an undescribed species from Brazil. A. von Pelzel, Orn. Bras. pp. 116, 181, 182.

Empidonax griseipectus is described as a new species from Puna Island in the Gulf of Guayaquil, but no comparative diagnosis is given. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 236, 237.

Contopus ochraceus is a new species from Costa Rica, readily distinguishable from every other by its yellowish ochre-coloured belly. P. L. Sclater & O. Salvin, P. Z. S. 1869, p. 419.

Contopus schotti is described as a new species from Northern Yucatan, resembling *C. lugubris* (Zool. Rec. ii. p. 107) in its dull dark colouring, but is smaller and reddish-brown above, the throat and breast being dull ochreous, and the bill much smaller. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, p. 202.

Contopus punensis is described as a new species from Puna Island, in the Gulf of Guyaquil, differing from all others of the genus in the absence of the clouded colouring from the breast; beneath it resembles *Empidonax* in coloration; but its very large bill (which exceeds that of *C. richardsoni*) and short tarsi show its affinity to *Contopus*. *Id. tom. cit.* p. 237.

Myiarchus cantans, "*M. tricolor* (Natter.)," and *M. gracilirostris* are undescribed species from Brazil. The first is like *M. ferox*, but smaller and, for the most part, without any red on the remiges and rectrices; the second differs from *M. nigriceps*, which has a black crown and apparently longer wings; the third resembles the second, but is much larger, with a more slender bill, the crown not so dark, and the middle of the back nearly olivaceous. A. von Pelzeln, Orn. Bras. pp. 117, 182, 183.

Tyrannus verticalis, its habits. R. Ridgway, Am. Nat. iii. pp. 309-312.

LANIIDÆ.

Lanius fallax is proposed as the name of a new species from Abyssinia, to be described in the Zoological 'Transactions'! O. Finsch, P. Z. S. 1869, p. 430. [Is *L. lahtora* juv. *vide* R. B. Sharpe, Ibis, 1870, pp. 434, 435.]

Lanius caudatus is described and figured as a new species from Mombas, in East Africa, in the distribution of colour resembling *L. collaris*; but the long tail agrees with *L. excubitorius*, and the much developed feathers of the forehead point to *Urolestes*. J. Cabanis, J. f. O. 1868 [published in 1869], p. 412; *Id.* Von der Decken's Reisen, iii. 1, p. 28, pl. v.

Lanius personatus, notes on. T. Krüper, J. f. O. 1869, pp. 30-32.

Lanius superciliosus and *L. magnirostris* both occur in Java. The first is *L. phenicurus*, Schrenck (*qu. Pall.?*) (*cf.* Zool. Rec. iv. pp. 97, 98). *Id.* Walden, Ibis, 1869, p. 242.

Collyrio [sc. *Lanius*] *ludovicianus*, its habits. A. Fowler, Am. Nat. ii. p. 659; H. S. Gedney, *op. cit.* iii. pp. 159, 160.

Rhynchastatus lugubris is described and figured as a new species, almost entirely of a blackish slaty grey, much resembling *R. funebris* (Hartl.), but smaller. J. Cabanis, J. f. O. 1868 (published in 1869), p. 149; *Id.* Von der Decken's Reisen, iii. 1, pp. 26, 27, pl. vii.

Dryoscopus leucopsis is described as a new species (from Zanzibar), smaller than *D. affinis*, Gray, with a thicker and broader bill, wings without white markings, and lores and region of the eyes white. *Id.* J. f. O. 1868 [published in 1869], p. 412. Possibly identical with *D. orientalis*, Swains. *Id.* Von der Decken's Reisen, iii. 1, pp. 25, 26.

Dryoscopus thamnophilus is described and figured as a new species from East Africa, in colouring resembling *Thamnophilus ambiguus*, Swains. *Id. tom. cit.* pp. 412 & 26, pls. viii. & ii.

Artamus melanops (Zool. Rec. ii. p. 103) is figured. J. Gould, B. Austral. Suppl. pt. v.

Myiolestes heinii is described as a new species from the Tonga Islands; but it may be *Turdus pacificus*, Gmelin (Syst. Nat. i. p. 813), founded on a bird described by Latham (Synops. ii. 1, p. 38), whose diagnosis is too short and incomplete to admit of recognition. O. Finsch & G. Hartlaub, P. Z. S. 1869, p. 546.

Prionops graculinus is described and figured as a new species from East Africa, entirely wanting the white wing-band of *P. retzii*, Wahlb. J.

Cabanis, J. f. O. 1868 (published in 1869), p. 412, tab. iii.; *Id.* Von der Decken's Reisen, iii. 1, pp. 24, 25.

CAMPEPHAGIDÆ.

"*Campephaga quisqualina*, Finsch," is a new species hitherto confounded (Proc. Ac. Philad. 1859, p. 52, and J. f. O. 1865, p. 173) with *C. nigra* (Vieill.), from which it differs in being generally smaller, and having the sides of the head, neck, and throat of a brilliant purplish-violet, the inner web of the quills wanting the olive-green lustre, and the bill shorter, broader, and more conical. R. B. Sharpe, Ibis, 1869, p. 189.

MUSCICAPIDÆ.

Monarcha albigentris (Zool. Rec. iii. p. 93) is figured. J. Gould, B. Austral. Suppl. pt. v.

Tchitrea paradisi ♂, when breeding, wears the chestnut plumage. A. Hume, Ibis, 1869, pp. 9, 10; W. E. Brooks, *tom. cit.* p. 49.

Elminia longicauda minor (*cf.* Zool. Rec. iv. p. 99) and *Stenostira plumbea* are figured. M. T. v. Heuglin, Orn. Nordost-Afr. tt. xv., xvii.

"*Muscicapa speculigera*, De Selys," Bp. (Consp. Av. i. p. 317), has occurred in Switzerland. L. Olphe-Galliard, R. Z. 1869, pp. 363-365.

Muscicapa atricapilla, its unusual abundance in Norfolk. H. Stevenson, Zool. S. S. pp. 1492, 1493.

Muscicapa minima and *M. aquatica* are figured. M. T. v. Heuglin, Orn. Nordost-Afr. t. xvi.

Erythrostera parva is figured. J. Gould, B. Gr. Br. pt. xvi.

MNIOTILTIDÆ.

Helminthophaga peregrina, supposed to have been said by Mr. Trippe (*cf.* Zool. Rev. v. p. 85) to be rare in New England, is very common in Maine. G. A. Boardman, Ann. Nat. iii. p. 222. Further notes on its distribution; Mr. Trippe's remarks refer to New Jersey. H. A. Purdie, *tom. cit.* p. 331; T. M. Trippe, *tom. cit.* p. 496.

Helminthophaga chrysoptera, notes on. H. A. Purdie, *tom. cit.* p. 497.

Dendroica capitalis is described as a new species from Barbadoes, only needing comparison with *D. petechia* and *D. ruficapilla* (?) (Zool. Rec. ii. pp. 110, 111); but it is smaller than either, and has a different wing-formula, the second, third, and fourth quills being equal and longest, the first being intermediate between the fourth and fifth; it also seems to have more yellow in the tail. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), p. 359.

"*Basileuterus leucophrys* (Natter.)" is a new species from Brazil, resembling *B. leucoblepharus* (Vieill.), but much larger, with the cap marked out by obsolete black stripes, with broad white eyebrows, and more olivaceous above. A. von Pelzel, Orn. Bras. pp. 72, 137.

TURDIDÆ.

Turdus musicus in captivity. K. Müller, Zool. Garten, 1869, pp. 272-280.

Turdus — ?, supposed Siberian species breeding in the Government of Archangel. H. Göbel, J. f. O. 1869, pp. 318, 319.

Turdus confusus (Zool. Rec. i. p. 79) is referred to *T. migratorius*. D. G. Elliot, B. N. Am. Intr. p. 3.

Turdus gigas, *T. albicollis*, *T. leucomelas*, *T. crotopezus*, *T. albiventris*, *T. phaeopygus*, and *T. gymnophthalmus* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pp. 139–152, pls. lxx.–lxxvi.

Turdus viscivorus (ad. & pull.) and *Petrocincla saxatilis* are figured. J. Gould, B. Gr. Br. pt. xv.

Turdus reevii is described as a new species from Puna Island in the Gulf of Guayaquil, coming under the section *Planesticus*; but no comparative diagnosis is given. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, p. 234.

Turdus haurwelli is described as a new species from Pebas in Peru, only needing comparison with *T. leucomelas*, Vieill., than which it is uniformly darker and reddish-brown above, with no olive shades. *Id. tom. cit.* pp. 265, 266.

Turdus nanus (cf. Zool. Rec. v. p. 85), a mistake rectified. C. J. Maynard, Am. Nat. ii. p. 663.

Hylocichla:—The eight North-American species of this section are minutely characterized. *Turdus mustelinus* stands alone: *T. fuscescens*, *T. ustulatus*, *T. swainsoni*, and *T. aliciae* form a second group; and a third comprises *T. pallasi*, *T. auduboni* (which perhaps may not be a good species), and *T. nanus*. R. Ridgway, Proc. Ac. N. S. Philad. 1869, pp. 127–129.

Turdus atrigularis has occurred in Sussex. J. Gould, Ibis, 1869, p. 128; G. D. Rowley, P. Z. S. 1869, p. 4; T. J. Monk, Zool. S. S. p. 1560.

Turdus deckeni is described and figured as a new species from East Africa, smaller and darker than *T. cabanisi*, Bp., with the middle of the belly and the flanks dull, and the under wing-coverts deeper rusty. J. Cabanis, J. f. O. 1868 [published in 1869], p. 412; *Id.* Von der Decken's Reisen, iii. 1, pp. 21, 22, pl. i.

Turdus hodgsoni, *Cichlodes atrigularis* and *Merula bouboul*, descriptions of the different plumages of adult and young. R. S. Tytler, Ibis, 1869, pp. 122–126.

Oreocincla aurea is figured. J. Gould, B. Gr. Br. pt. xvi.

SHARPE, R. B. On the genus *Chaetops*. Proc. Zool. Soc. 1869, pp. 163, 164, pl. xiv.

Three species, including *C. aurantius* (Zool. Rec. v. p. 85), are recognized, whereof one,

C. grayi, from Damara-land, is described and figured as new: it differs from both the others by its smaller size and whitish throat. Identified with *Drymace anchietæ* (Zool. Rev. v. p. 87). G. Hartlaub, Bericht, u. s. w. p. 126.

Crateropus affinis is described as a new species from Mossamedes (W. Africa), but may possibly be *C. plebeius*, Hartl. (Orn. Westaf. p. 79). J. V. Barboza du Bocage, P. Z. S. 1869, p. 436.

Turnagra hectori is described as a new species from New Zealand. W. Buller, Ibis, 1869, p. 39. Probably identical with *Otagon tanagra* (Zool. Rec. ii. p. 112). A. Newton, loc. cit. note.

Cossypha subrufescens is a new species from Caconda (W. Africa), resem-

bling *Bessornis semirufa*, Rüpp., but stouter and differently-coloured above. J. V. Barboza du Bocage, P. Z. S. 1869, p. 436.

SYLVIIDÆ.

Bessornis intermedia is described and figured as a new species from East Africa, smaller, and beneath darker, than *B. heuglini*, Hartl. (the head of which is also figured), and the white superciliary streak narrower and longer. J. Cabanis, J. f. O. 1868 [published in 1869], p. 412; *Id.* Von der Decken's Reisen, iii. 1, p. 22, pl. xii.

Bessornis heuglini is figured. M. T. v. Heuglin, Orn. Nordost-Afr. t. xiii.

Bessornis gutturalis (Zool. Rec. iv. p. 102), notes on. T. Krüper, J. f. O. 1869, pp. 42-45.

Myrmecocichla formicivora, its habits described. G. E. Bulger, P. Z. S. 1869, pp. 637, 638.

Saxicola ferruginea, Heugl. (Sitzungsb. k. Ak. Wissensch. Wien, 1856, p. 278 [*descr. null.*]), is now described as *S. frenata*. It is *S. isabellina* jun., Rüpp. M. T. v. Heuglin, J. f. O. 1869, pp. 158, 159; Orn. Nordost-Afr. pp. 345, 346.

"*Saxicola heuglini*, Finsch & Hartl.," is an undescribed species from Abyssinia, resembling *S. frenata*, but much smaller and more dusky. It is *S. intermedia*, Heugl. (Sitzungsb. k. Ak. Wissensch. Wien, 1856, p. 278) (*descr. null.*). *Id. tomm. cit.* p. 159 & pp. 346, 347.

Saxicola finschi is a new species from Siberia, resembling *S. leucomelena*, but smaller, and having the middle of the back white. *Id.* Orn. Nordost-Afr. p. 350.

Saxicola syenitica, Heugl. (Sitzungsb. k. Ak. Wissensch. Wien, 1856, p. 278), is described as resembling *S. leucocephala*, but smaller. It is perhaps identical with *S. leucuroides*, Guér.* *Id.* J. f. O. 1869, p. 155; Orn. Nordost-Afr. i. pp. 358, 359.

Saxicola modesta and *S. scotocerca* are also described as two new species from North-east Africa. The first is not described comparatively; and the second is admittedly identical with *Ruticilla* (?) *fuscicaudata*, Blanford (Ann. & Mag. N. H. 4th ser. iv. p. 329, 1 Nov. 1869), a name which has priority of publication. *Id. tom. cit.* pp. 362, 363.

Saxicola saltatrix, notes on. T. Krüper, J. f. O. 1869, pp. 35, 36. W. E. Brooks, Ibis, 1869, pp. 234, 235.

Saxicola leucura and *S. leucuroides*, notes on. *Id. loc. cit.*

Saxicola arnotti, *S. atmorii*, and *S. modesta* are described as new species from South Africa. The first, which is figured, is entirely black, except the forehead, a few feathers on the crown, the superciliary streak, and the "scapulars" (?), all these parts being, according to the description (but not the plate), white. The second is the representative of *S. lugubris*, Rüpp., but is much larger, and has a narrow white instead of a broad chestnut rump, and a narrower black bar at the tip of the tail. The third, it is suggested, may be identical with *Erithacus schlegeli*, Wahlberg (K. Sv. Vet.-Ak. Förhandl. 1855, p. 213), a supposition since verified (Ibis, 1870, p. 173). H. B. Tristram, *tom. cit.* pp. 204-207, pl. vi.

Saxicola (*Pratincola*) *semitorquata* is described as a new species from Abyssinia resembling *S. albofasciata*, Rüpp. It is *Pratincola melanoleuca*,

* But the author also quotes for it "*S. leucuroides*, Jerd. (nec Guér.)"!

Heugl. (Sitzungsb. k. Ak. Wissensch. Wien, 1856, p. 279) (*nec* Hodgson), and probably *Parus leucopterus*, Lefebvre. M. T. v. Heuglin, J. f. O. 1869, p. 166. Referred to *Pratincola*. *Id.* Orn. Nordost-Afr. i. pp. 341, 342*. [*♂* & *♀* figured, W. T. Blanford, Geol. & Zool. Abyss. (1870) pl. v.]

Pratincola indica in no respect differs from *P. rubicola*. W. E. Brooks, Ibis, 1839, pp. 56-55.

Ruticilla (?) *fuscicaudata* is a new species from Abyssinia, nearly allied to *R. (Saxicola) familiaris*, Steph., and *R. (Erythacus) sinuata*, Schl. The bill is that of *Ruticilla*, and the tarsi are smooth in front; but the tail is somewhat rounded and the wing less pointed, and the sombre plumage is that of *Sylvia*. W. T. Blanford, Ann. & Mag. N. H. 4th ser. iv. p. 329 (1 Nov. 1869). [Figured, *Id.* Geol. & Zool. Abyss. (1870), pl. iv.] Since described as *Saxicola scotocerca*. M. T. v. Heuglin, *ut supra*.

Luscinia philomela in captivity. K. Müller, Zool. Garten, 1869, pp. 167-175; C Jex, *tom. cit.* pp. 286-288.

Stellula calliope is figured. D. G. Elliot, B. N. Am. pt. xiii.

Gerygone assimilis (Zool. Rec. iii. p. 95) is not distinguishable from *G. flaviventris*. O. Finsch, Ibis, 1869, p. 380.

Acrocephalus arabicus is a new species, from Arabia, resembling *A. turdoides [arundinaceus, L.]*, but with a stouter and blunter bill higher at the base, longer legs, a more conspicuous whitish superciliary streak, the outer web of all the primaries with a narrow and conspicuous margin, and other differences. It is *A. stentorius*, Heugl. (J. f. O. 1861, p. 194) (*nec* H. & E.), and *A. turdoides*, Rüpp. ex Arabia (*nec* Mey.). M. T. v. Heugl. Orn. Nordost-Afr. i. pp. 289, 290.

Acrocephalus obsoletus is a new species, from North-eastern Africa, resembling *A. arundinaceus* (Gm.) (*nec* L.) [*sc. streperus* (Vieill.)], but smaller, with longer wings and tail, shorter and stouter legs, and the colouring of *Chloropeta pallida*. *Id.* *tom. cit.* pp. 291, 292.

Calamodyta and allied genera. Notes on the history of European species. R. Renne, Ber. XVII. Versamml. D. O. G. pp. 40-47.

Calamodyta schænobenus, its occurrence in Finland. A. J. Malmgren, Öfvers. Finska Vet. Salls. Förhandl. 1869, no. 1.

Calamoherpe rufescens (Keyserl. & Blas. Wirbelth. Eur. p. liv), its habits described. T. Ayres, Ibis, 1869, pp. 291, 292.

Sylvia locustella, on its local distribution in Germany in summer. A von Homeyer, J. f. O. 1860, pp. 61-66. In captivity. C. Fickert, J. f. O. 1869, pp. 322-326.

Luscinopsis fluviatilis, its occurrence in Finland. A. J. Malmgren, Öfvers. Finska Vet. Salls. Förhandl. 1869, no. 1.

Aedon familiaris, notes on. T. Krüper, J. f. O. 1869, pp. 38-42.

* It must be observed that this species (as the printed minutes show) was exhibited, described, and named by Mr. Blanford at the meeting of the Zoological Society, 24th June, 1869. Before that description was published, the name only having been printed, the third *Heft* of the 'Journal für Ornithologie,' bearing date "Mai, 1869," but not sent out by the English publishers till August, appeared, containing Dr. von Heuglin's name and description, whereupon Mr. Blanford immediately withdrew the name under which he had publicly designated the species, thereby setting an excellent example, which other naturalists would do, and would have done, well to follow.

Sylvia atricapilla and *S. hortensis* in confinement. K. Müller, Zool. Garten. 1869, pp. 367-374.

Sylvia melanocephala minor is the title given to the East-African and Syrian form of *S. melanocephala*. It is *Curruca momus*, H. & E., *C. luctuosa*, Brehm (Vogelf. p. 229), *Melizophilus nigricapillus*, Cab. (Mus. Hein. i. p. 35), and *S. bowmani*, Tristr. (Zool. Rec. iv. p. 103). M. T. v. Heuglin, Orn. Nordost-Afr. i. pp. 303, 304.

HEUGLIN, M. T. von. The *Malurinæ* of North-eastern Africa.

Ibis, 1869, pp. 79-107, 129-143, pls. i.-iii.

Under this designation the author groups the genera *Aedon*, *Bradypterus*, *Catriscus*, *Oligocercus*, and *Camaroptera*, as well as *Hemipteryx* and *Drymæca*, which last he finally separates into (1) *Drymæca* proper, including the species which have 10 rectrices, and (2) *Cisticola*, those which have 12 (*cf.* Jerdon, B. Ind. ii. pp. 164-187; and P. Z. S. 1865, p. 48)—a character possessed also by *Catriscus*, *Hemipteryx*, and *Oligocercus*. This separation is further maintained when he treats of the group in his general work.

Sphenæacus alexinæ, Heugl. (J. f. O. 1863, p. 166), is "*Catriscus apicalis* (Licht.)," Cab. (Mus. Hein. i. p. 43, note). M. T. v. Heuglin, Ibis, 1869, p. 81. Figured, and its identity with *Bradypterus brevirostris*, Sundev. (K. Sv. V.-A. Handl. 1860), already suggested by Dr. Hartlaub (Ibis, 1866, p. 140), confirmed. *Id.* Orn. Nordost-Afr. i. p. 273, t. ix.

Drymæca murina appears to be described as a new species from Abyssinia, resembling *D. mystacea*, but much smaller, with a more slender bill and other differences. It is *D. mystacea*, pt. Heugl. *Id.* Ibis, 1869, p. 90; Orn. Nordost-Afr. i. p. 241.

Drymæca virgata is described as a new species from the Cape of Good Hope and West Africa, very like *D. simplex* (sp. n., *vide infra*), but distinguished by the peculiar striation on the breast. *Id.* Ibis, 1869, p. 106. Called *D. striolata*. *Id.* Orn. Nordost-Afr. i. p. 262. [The name here first mentioned has priority of publication.]

Drymæca marginata, from North-eastern Africa, is for the first time described and figured. It is like *D. erythrogenys*, Rüpp., but much smaller, the bill rather shorter and much more curved, the feet, wings, and tail considerably shorter; and there are other differences. It is *D. marginalis*, Heugl. (Sitzungsb. Ak. Wissensch. Wien, 1856, p. 274) (*descr. null.*). *Id.* Ibis, 1869, pp. 94, 95, pl. 1. fig. 1. Referred to *Cisticola*. *Id.* Orn. Nordost-Afr. i. pp. 248, 249.

Drymæca iodoptera (Zool. Rec. i. p. 81) and *D. flaveola* are figured. *Id.* Ibis, 1869, pl. i. fig. 2, pl. ii. fig. 2.

Drymæca cantans, Heugl. (Sitzungsb. Ak. Wissensch. Wien, 1856, p. 274), is described. It differs from *Cisticola lugubris*, Rüpp., by the distinct whitish superciliar streak, rather smaller size, more curved bill, and other characters. *Id. tom. cit.* pp. 96, 97. Referred to *Cisticola*. *Id.* Orn. Nordost-Afr. i. pp. 252, 253.

Drymæca concolor is described and figured as a new species from North-eastern Africa, exceedingly like the preceding, but with a stronger bill, more brightly coloured above, and other characters. *Id.* Ibis, 1869, pp. 97, 98, pl. ii. fig. 1. Referred to *Cisticola*. *Id.* Orn. Nordost-Afr. i. pp. 253, 254.

Drymæca malzaci, Heugl. (Sitzungsb. Ak. Wissensch. Wien, 1856, p. 274), is described as differing from *D. robusta*, Rüpp., by its lighter-coloured, shorter,

more curved and higher bill, its coloration above, and its longer under tail-coverts. *Id. Ibis*, 1869, pp. 100, 101. Referred to *Cisticola*. *Id. Orn. Nordost-Afr. i.* pp. 255, 256.

Drymæca bizonura, Heugl. (Sitzungsb. Ak. Wissensch. Wien. 1856, p. 274), is identified first with *D. erythrogenys*, Rüpp., and then with *D. lugubris*, Rüpp. *Id. Ibis*, 1869, pp. 95–101. Referred to *Cisticola*, and the first identification only maintained. *Id. Orn. Nordost-Afr. i.* p. 250.

Drymæcaleucopygia, Heugl. (Sitzungsb. Ak. Wissensch. Wien, 1856, p. 274), is described as doubtfully distinct from *D. ruficeps* (Rüpp.), than which it is stouter, with a longer and stronger bill, besides some differences of coloration. *Id. Ibis*, 1869, p. 104. Referred to *Cisticola*. *Id. Orn. Nordost-Afr. i.* p. 259.

Drymæca cordofana, from Kordofan, is doubtfully described as distinct from *D. ruficeps* (Rüpp.), having the bill more slender, broader at the base, and its culmen more arched, besides a difference in coloration. *Id. Ibis*, 1869, p. 105. Referred to *Cisticola*. *Id. Orn. Nordost-Afr. i.* p. 260.

Drymæca simplex is a new species from North-eastern Africa, at first sight like *D. ruficeps* (Rüpp.), but with the outer toe shorter than the inner, and a different colouration. M. T. v. Heuglin, *Ibis*, 1869, pp. 105, 106. Referred to *Cisticola*. *Id. Orn. Nordost-Afr. i.* p. 261.

Drymæca eximia is described and figured as a new species from North-eastern Africa, in appearance like *Cisticola schænicola*, but with a narrow, longer, and more graduated tail, and brighter coloration. It still more resembles the Australian *D. lineocapilla*, Gould, but has longer tarsi and wings, and shorter and narrower rectrices. It cannot be confounded with any species of its own country. *Id. Ibis*, 1869, pp. 106, 107, pl. iii. fig. 1. Referred to *Cisticola*. *Id. Orn. Nordost-Afr. i.* p. 262.

Drymæca valida (Zool. Rec. i. p. 81) is called *D. pachyrhyncha*, the former specific name being, it is said, preoccupied. *Id. Ibis*, 1869, pp. 130, 131. Referred to *Cisticola*. *Id. Orn. Nordost-Afr. i.* p. 263.

Drymæca (?) *trogodytes* (Zool. Rec. i. p. 81) is identical with *Cisticola ferruginea*, Heugl. (Sitzungsb. Ak. Wissensch. Wien, 1856, p. 273, *descr. null.*; J. f. O. 1864, p. 259, *descr. prim.*), which is figured. *Id. Ibis*, 1869, p. 135, pl. iii. fig. 2. [We cannot determine the priority of these two specific names; the mere bestowal of Dr. von Heuglin's in 1856 goes for nothing, as no description was published with it.]

Cisticola brunnescens, Heugl. (J. f. O. 1862, p. 289), is referred to *Hemipteryx*, and called *H. oligura*, no reason being assigned for the change of name. It is also figured. *Id. Ibis*, 1869, p. 136, pl. iii. fig. 3; *Orn. Nordost-Afr. i.* p. 270.

Hemipteryx immaculata (Zool. Rec. iii. p. 96) is identical with the above. O. Finsch, *Ibis*, 1869, p. 137.

Hemipteryx iodopyga is a new species, from North-east Africa, resembling *H. brunnescens* (Heugl.), but with the head striated like *Cisticola schænicola*, and some other differences. M. T. v. Heuglin, *loc. cit.*; *Orn. Nordost-Afr. i.* pp. 271, 272.

Hemipteryx oligura is figured. *Id. Ibis*, 1869, pl. iii. fig. 3.

Hemipteryx habessinica is a new species resembling *Cisticola schænicola*, but more brightly coloured, and having longer wings, a shorter and more graduated tail, with narrower rectrices, and other differences. *Id. tom. cit.* p. 138; *Orn. Nordost-Afr. i.* p. 272.

Cisticola hæmatocephala is described and figured as a new species from

East Africa, somewhat smaller than *C. lugubris*, Rüpp., the occiput not deep rusty, but subdued by an olive tinge, the sides of the breast and upper tail-coverts not spotted with black, and the rectrices greyish-brown, with a black spot in front of the white tip. J. Cabanis, J. f. O. 1868 [published in 1869], p. 412; *Id.* Von der Decken's Reisen, iii. 1. p. 23, t. ii. fig. 2. Occurs also in West Africa, is referred to *Drymæca*, and receives a new name, "*D. stulta*, Hartl. & Finsch," on account of the inapplicability of the old one!! O. Finsch, J. f. O. 1869, p. 335.

Drymæca tenella is described and figured as a new species from East Africa, differing from *D. mystacea*, Rüpp., in its larger bill, shorter wings and tail, and in being brownish-grey above. From *D. supercilialis*, Swains., it differs in not having rust-coloured flanks. J. Cabanis, J. f. O. 1868 (published in 1869), p. 412; Von der Decken's Reisen, *tom. cit.* pp. 23, 24, t. ii. fig. 1.

Drymæca anchieta (Zool. Rec. v. p. 89): to this is referred *Chætops grayi*, Sharpe (*cf. supra*, "Turdidæ"). G. Hartlaub, Ber. u. s. w. p. 126.

Drymæca ortleppi is described as a new species from the Cape Colony, bearing the same relation to *D. pallida*, A. Smith, that *Phyllopneuste trochilus* does to *P. bonelli*. H. B. Tristram, Ibis, 1869, pp. 207, 208.

Eremomela (?) *elegans* and *E.* (?) *canescens* (Zool. Rec. i. p. 81) are identical, and the species is made the type of a new genus

Tricholais, which is allied to *Camaroptera*, "*Dryodromas*, Finsch & Hartl." (1870!), and *Eremomela*, and its characters given in much detail. M. T. v. Heuglin, Orn. Nordost-Afr. i. pp. 285, 286.

Hypolais cinerascens, *H. elaica*, *H. opaca*, *H. languida*, and *H. pallida* differentiated. *Id. tom. cit.* i. pp. 297, 298.

Phylloscopus habessinicus is a new species from Abyssinia, resembling *P. similis*, but more greenish above, and cream-colour, almost yellowish, beneath. It has also a longer tail. W. T. Blanford, Ann. & Mag. Nat. Hist. 4th ser. iv. pp. 329, 330. [Figured, *Id. Geol. & Zool. Abyss.* (1870), pl. 3. fig. 2.]

Phyllopneuste kennicottii is described and figured as a new species from Alaska, resembling *P. trochilus*, but more olivaceous above and yellow beneath, besides other differences; it also comes very near *P. eversmanni* (Bp.), of which it may be a permanent geographical variety. S. F. Baird, Trans. Chicago Ac. Sc. i. pp. 313, 314, pl. xxx. fig. 2.

Phyllopneuste (?), description of a supposed new species. W. E. Brooks, Ibis, 1869, pp. 235, 236. [*Jerdonia agricolensis*, A. Hume, Ibis, 1870, p. 180.]

Phyllopneuste (?) *macrorhyncha* is the name provisionally (!) given to a species from the Himalayas, resembling *P. rama* in size and plumage, but with an enormous bill. A. Hume, *tom. cit.* p. 357.

Reguloides superciliosus, a second example said to have been obtained in England. J. Gould, Ibis, 1869, p. 128. Its call-note different from that of *R. proregulus*. W. E. Brooks, *tom. cit.* pp. 236, 237. Further notes on these two species. *Id. tom. cit.* pp. 456-458. Figured, J. Gould, B. Gt. Br. pt. xv.

Regulus himalayensis (Zool. Rec. v. p. 87) is figured. *Id.* B. As. pt. xxi.

MOTACILLIDÆ.

Anthus aquaticus and *A. obscurus*, a series of specimens exhibited, and remarks on the seasonal changes to which the former is subject. G. D. Rowley, P. Z. S. 1869, p. 249; Zool. S. S. pp. 1682, 1683.

Anthus spinoletta (L.), its synonyms. Ld. Walden, Ibis, 1869, p. 213, note.

Anthus ricardi at Brighton. T. W. Woufor, Zool. S. S. pp. 1513, 1683; G. D. Rowley, p. 1918. Its occurrence in Somersetshire (*cf.* Zool. Rec. ii. p. 115). G. F. Mathew, *tom. cit.* p. 1561.

Anthus rufescens, its occurrence at Brighton (Zool. Rec. ii. p. 115). T. W. Woufor, *tom. cit.* p. 1918.

Anthus chloris, Licht., has occurred at Graham's Town, Cape Colony. E. L. Layard, Ibis, 1869, p. 368.

Anthus gouldi, Fraser, is distinct from *A. sordidus*, Rüpp., which last is distinct from *A. sordidus*, Blyth (ex India). H. B. Tristram, *tom. cit.* p. 437. [The Indian bird described as *Corydalla griseorufescens*, A. Hume. Ibis, 1870, p. 286.]

Anthus cervinus is figured. J. Gould, B. As. pt. xxi.

Budytes torquatus is the name provisionally (!) given to a supposed new species from Northern China, identified [by M. J. Verreaux?] with *Motacilla indica*, Gmel. A. David, N. Arch. Bull. iii. p. 33 and note.

Budytes calcaratus, Hodgk., its synonymy. Ld. Walden, Ibis, 1869, p. 214.

Budytes flava (L.) occurs in Alaska. W. H. Dall & H. M. Bannister, Trans. Chicago Ac. Sc. i. p. 277. American specimens described, and one figured. S. F. Baird, *tom. cit.* pp. 312, 313, pl. xxx. fig. 1.

TROGLODYTIDÆ.

Thryothorus nisorius is described and figured as a new species from Mexico, resembling *T. pleurostictus*, Scl. (Ibis, 1860, p. 30), but with the body beneath entirely barred. P. L. Sclater, P. Z. S. 1869, pp. 591, 592, pl. xlv.

Thryothorus superciliaris is described as a new species from Puna Island, in the Gulf of Guyana, resembling *T. modestus*, but is larger and has a longer bill, with a broader superciliary stripe, and the sides of the head and throat of a purer white. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, p. 235.

Troglodytes aedon, its breeding habits. M. S. Hill, Am. Nat. iii. p. 49.

Troglodytes alascensis is described and figured as a new species from St. George's Island, Behring's Sea. S. F. Baird, Trans. Chicago Ac. Sc. i. p. 315, pl. xxx. fig. 3. Note on its habits. W. H. Dall, *tom. cit.* p. 280.

CERTHIIDÆ.

Tichodroma muraria, further notes on it (*cf.* Zool. Rec. ii. p. 116). A. Girtanner, Zool. Garten, 1869, pp. 317-319.

Xenicus haastii is described as a new species from Otago, New Zealand, in structure approaching *X. longipes*, but with a hind claw more strongly developed, and exceeding the toe in length. W. Buller, Ibis, 1869, pp. 37, 38.

SITTIDÆ.

Sitella striata is a new species from Cape York, allied to *S. leucocephala*, but having a black head, or in the supposed female the crown at least. J. Gould, Ann. & Mag. N. H. 4th ser. iv. p. 110. Figured, *Id.* B. Austral. Suppl. pt. v.

MALURIDÆ.

Sphenæacus rufescens is a new species from one of the Chatham islands, larger than *S. punctatus*, more strongly built, and of handsomer plumage. W. Buller, Ibis, 1869, p. 38.

Obs. "The *Maherinæ* of North-eastern Africa." M. T. von Heuglin, Ibis, 1869, pp. 79-107, 129-143, pls. i.-iii. This paper is here included under "*Sylviidæ*," q. v.

TANAGRIDÆ.

Chlorophonia calophrys is figured. P. L. Sclater & O. Salvin, Ex. Orn. p. 135, pl. xlvii.

Euphonia chrysopasta is described and figured as a new species from Eastern Peru, not resembling any other known species very closely. *Ibid.* P. Z. S. 1869, p. 438, pl. xxx. figs. 1, 2.

Calliste hannahæ (Zool. Rec. i. p. 83) is possibly identical with *C. cyaneicollis* (Lafr. & D'Orb.). *Ibid. tom. cit.* pp. 252, 253.

Calliste florida is described and figured as a new species from Costa Rica, much resembling *C. schranki*, but having a more slender bill, and wanting the black forehead and yellow breast. *Ibid. tom. cit.* pp. 416, 417, pl. xxviii.

Buthraupis arcei is described and figured as a new species from Veragua, one of the smallest of the group, and in coloration generally resembling the large *B. cucullata*; but, besides the difference in size, the head is of the same colour as the back, and the under surface of a deeper yellow. *Ibid. tom. cit.* pp. 439, 440, pl. xxxi.

Pyranga :—Six uniformly red forms of this genus are minutely characterized, whereof one, *P. cooperi*, from the southern "Middle Province" of the United States and the Pacific slope of Mexico, is described as "a new species or variety." It is most nearly related to *P. æstiva*, but may be distinguished by its larger size, the bill especially being bigger and more swollen, and longer wing. Outlines of the bill in all the six forms are given. R. Ridgway, Proc. Ac. N. S. Philad. 1869, pp. 129-131.

Tachyphonus atricapillus is described as a new species from Trinidad, not resembling any other member of the genus. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), pp. 359, 360.

Tachyphonus chrysomelas is described and figured as a new species from Veragua, distinguished from all its relatives by its black and yellow colour, and is the smallest of the group. P. L. Sclater & O. Salvin, P. Z. S. 1869, p. 440.

Chlorospingus punctulatus is a new species from Veragua belonging to the group with a white postocular spot, but having a black head like *C. pileatus* (Zool. Rec. i. p. 84), which, however, has the under surface pale cinereous, with a yellowish pectoral band and flanks, and no throat-spots. *Ibid. tom. cit.* p. 440.

Buarremon schistaceus (Boissonn.) occurred in Aberdeenshire in 1863! W. C. Angus, Proc. N. H. Soc. Glasgow, i. (1869) p. 207.

Saltator laticlavus is a new species from Peru, resembling *S. aurantirostris*, Lafr. & D'Orb., from La Plata (with which it has been confounded), but with a broad black neck-stripe, and the rectrices more narrowly tipped with white. P. L. Sclater & O. Salvin, P. Z. S. 1869, pp. 151, 152.

Pitylus humeralis (Zool. Rec. iv. p. 106) is figured and a diagnostic list

given of the four species of the section *Caryothraustes* to which it belongs. *Ibid.* Ex. Orn. pp. 167, 168, pl. lxxxiv.

PLOCEIDÆ.

"*Hyphantornis bojeri*, Hartl. & Finsch," is a new species from Mombas. J. Cabanis, Von der Decken's Reisen, iii. 1, p. 32. [Further diagnosed, O. Finsch & G. Hartlaub, *op. cit.* iv. p. 402 (1870). It is *Xanthophilus aureo-flavus*, Reichenb. Singv. p. 84, fig. 312 (*nec* Smith).]

Hyphantornis atrigularis is figured. M. T. v. Heuglin, Orn. Nordost-Afr. t. xix.

Textor intermedius is described and figured as a new species from East Africa, midway between the northern *T. alecto*, Temm., and the southern *T. erythrorhynchus*, Smith. J. Cabanis, J. f. O. 1868 (published in 1869), p. 413; *Id.* Von der Decken's Reisen, iii. 1, pp. 32, 33, pl. xi.

HORNE, C. Notes on *Ploceus baya* and its Nest. Proc. Zool. Soc. 1869, pp. 243-245, pl. xii.

The mode in which it collects materials for its nest and habit of building in society described. The plate shows a date-palm in which more than seventy nests were built. The mystery of the lump of clay found in each is not solved.

Ploceus megarhynchus is a new species from the Indian *terai*, closely resembling *P. baya*, but nearly double its weight, with a bill fully half as large again. A. Hume, Ibis, 1869, p. 356.

Calyphantria [sc. *Foudia*] *comorensis* is described and figured as a new species from Mayotte, differing from *F. algonde* (Zool. Rec. iii. p. 99; iv. p. 107) in its black bill, the greater extension of the red beneath, and the white-bordered wing-coverts. In the compressed form of its bill especially it agrees more with *F. eminentissima*, Bp., than with *F. madagascariensis* (L.). J. Cabanis, J. f. O. 1868 (published in 1869), p. 413; *Id.* Von der Decken's Reisen, iii. 1, pp. 31, 32.

Nigrita uropygialis and *N. emilæ* [lege *æmilæ*] are described and figured as new species from the Fantee country; the former is allied to *N. fusconota*, but is smaller, and has a pale ochreous rump and longer tail; the latter is allied to *N. cinereocapilla*, but is also smaller and has a pale ash-coloured instead of a white rump. R. B. Sharpe, Ibis, 1869, pp. 384, 385, pl. xi. figs. 1, 2.

Munia punctularia (L.), the determination of this and its allied species, about which there has been much confusion. Ld. Walden, *tom. cit.* p. 211, note.

FRINGILLIDÆ.

Cardinalis igneus (Zool. Rec. iii. p. 99) is referred to *C. virginianus*. D. G. Elliot, B. N. Am. Intr. p. 6.

Spermophila badiiventris (Zool. Rec. ii. pp. 118, 119) is figured. S. F. Baird, Trans. Chicag. Ac. Sc. i. pl. xxviii. fig. 3.

Neorhynchus is the name given to the genus *Callirhynchus*, Lesson, which is preoccupied in Ichthyology, and the type *N. nasesus*, as it is suggested that the original "*masesus*" of Bonaparte (C. R. xlii. p. 822) should be written, is figured, though on the plate the word is unhappily "*maseus*." P. L. Sclater, P. Z. S. 1869, p. 147, pl. xii.

Poospiza cesar is described and figured as a new species from Peru, something like *P. thoracica*, but with distinct white superciliaries and no chestnut on the flanks. P. L. Sclater & O. Salvin, *tom. cit.* p. 152, pl. xiii.

Phrygilus gayi and *P. aldunatii* are carefully differentiated. *Ibid.* Ibis, 1869, pp. 285, 286.

Zonotrichia pileata may be the immature form of *Z. canicapilla*. *Ibid. tom. cit.* pp. 284, 285.

Zonotrichia albicollis, its occurrence near Aberdeen in 1867. W. C. Angus, Proc. N. H. Soc. Glasgow, i. (1869) pp. 209-211, pl. iii. Reprinted, Zool. S. S. pp. 1547-1549. [*Cf.* Ibis, 1870, p. 265.]

Zonotrichia melanotis (Zool. Rec. iv. p. 208) should be placed in the genus *Hæmophila*, and much resembles *H. ruficauda*, Bp., but differs in many respects, as it also does from *H. humeralis*, Cab., with which it had been thought to be possibly identical. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), p. 362.

Melospiza insignis is described and figured as a new species, or at least a strongly marked race from Kadiak, allied to *M. melodia*, but apparently very distinct in its much larger size and darker colours, longer bill, and lack of spots or their confluence. S. F. Baird, Trans. Chicago Ac. Sc. i. p. 319; W. H. Dall, *tom. cit.* p. 285.

Pyrgisoma :—The five known species are enumerated, and *P. cabinisi* (Zool. Rec. v. p. 91) and *P. kieneri* are figured. P. L. Sclater & O. Salvin, Ex. Orn. pp. 129, 130, pl. lxx.

Crithagra flavivertex is a new species from Abyssinia. W. T. Blanford, Ann. & Mag. N. H. 4th ser. iv. p. 330. [Allied to *C. butyracea* (L.) and *C. canicollis*, Swains., but differing from the first by the yellow forehead being broader and gradually passing to olivaceous on the crown; and from the second by the back and sides of the neck being olive and the forehead and under parts being brighter. It is greener, larger, and with a less conical bill than *Serinus aurifrons* (Zool. Rec. i. p. 85), and has a smaller bill and wings, and is more yellow than *C. chloropsis*, Cab. *Id.* Geol. & Zool. Abyss. (1870), p. 414, pl. vii.]

Crithagra imberbis is described and figured as a new species, probably from Zanzibar, smaller than *C. butyracea*, but with a bill as strong, and characterized by the want of any dark markings on the head. J. Cabanis, J. f. O. 1868 [published in 1869], p. 412 and note; *Id.* Von der Decken's Reisen, iii. 1, p. 30, pl. ix. [Originally described as *C. chloropsis*; but that name being occupied by a species of Bonaparte's, it was changed for that given above.]

Xanthodira flavigula, Sundev., has occurred near Graham's Town, Cape Colony. E. L. Layard, Ibis, 1869, p. 371.

Coccothraustes vulgaris has occurred in India. A. Hume, *tom. cit.* p. 456.

Ligurinus chloris (cum nid. & pull.) is figured. J. Gould, B. Gr. Br. pt. xv.

Leucosticte littoralis is described and figured as a new species from British Columbia and Alaska, much resembling *L. griseimucha* (for which it seems to have been figured, Elliot, B. N. Am. i. pl. 11), but considerably smaller; its colours, too, are brighter and lighter, the bill shorter and more conical, the dark patch on the head more restricted, the chin more ash-coloured, and the rose-colour of the head less forward. From *L. tephrocotis* it is distinguished by the extension of the ash-colour below the eyes, and from *L. campestris* by having the ear-coverts ash-coloured and more grey on the chin.

S. F. Baird, Trans. Chicago Ac. Sc. i. p. 318, pl. xxviii. fig. 1; W. H. Dall, *loc. cit.* p. 283.

Acrosticte griseinucha (Brandt) occurs on the Aleutian Islands. W. H. Dall, *loc. cit.* Figured, S. F. Baird, *tom. cit.* pl. xxviii. fig. 2.

Pyrhula rosea said to have occurred at Brighton. G. D. Rowley, Zool. S. S. p. 1918.

Pyrhula coccinea, var. *cassini*, is described and figured as a variety from Alaska, agreeing in size and proportions with *P. coccinea*, De Selys, but being beneath of a light cinnamon-grey, and having a white patch on the tail. It has perhaps the closest relationship with *P. griseiventris*, Lafresn.; but that has the cheeks and throat red. S. F. Baird, Trans. Chicago Ac. Sc. i. p. 316, pl. xxix. fig. 1. Note on it, W. H. Dall, *tom. cit.* p. 281. [Judging from the description and figure, this appears to us to be undoubtedly a good species. It singularly resembles *P. murina*, Godm. (Zool. Rec. iii. p. 99.)]

Loxia curvirostra, its extraordinary abundance in Germany in the summer of 1866. H. Schacht, Zool. Garten, 1869, pp. 31, 32. Its occurrence on Bear Island! A. J. Malmgren, Ibis, 1869, p. 230.

Loxia tænioptera, notes on its food. K. Müller, J. f. O. 1869, pp. 105, 106.

EMBERIZIDÆ.

Crithophaga miliaria is figured. J. Gould, B. Gr. Br. pt. xvi.

Emberiza ptyornis near Vienna. V. von Tschusi, J. f. O. 1869, pp. 142, 217-220.

Emberiza passerina (Zool. Rec. iv. p. 109), its repeated occurrence in France. J. Vian, R. Z. 1869, p. 97.

Emberiza alleonis is described as a new species from Dauria. It is *E. schœniclus*, var. β , Pall. (Z. R.-A. ii. p. 48). *Id. tom. cit.* pp. 97-105. Probably identical with *Cynchramus pallasi*, Cab. (Mus. Hein. i. p. 130). L. Olphe-Galliard, *tom. cit.* pp. 180, 181.

Emberiza rustica and *E. melanocephala* said to have occurred near Brighton. J. Gould, Ibis, 1869, p. 128.

Emberiza rustica, *E. fucata*, and *Glycospina huttoni* are figured. *Id.* B. As. pt. xxi.

Emberiza citrinella, on the variation of the song in this species. A. Röse, Zool. Garten, 1869, pp. 19-28, 378-380; J. J. Oppel, *tom. cit.* pp. 280-286. (Cf. G. Brucklacher, *tom. cit.* pp. 88, 89.)

ALAUDIDÆ.

Megalophonus anderssoni is described as a new species from Damaraland and Abyssinia, nearly allied to *M. cinereus* (Vieill.) in coloration; but the rufous is continuous and not interrupted, and the spots of brownish-black on each side of the neck are very distinct. To this species (with which *Alauda spleniata*, Strickl., *A. ruficapilla*, A. Smith, and *A. ruficeps*, Rüpp., are said to be identical) it bears the same relation as *M. africanoides* does to *M. africanus*, and *M. cheniantus* to *M. sabota*. H. B. Tristram, Ibis, 1869, pp. 434, 435.

Alauda prætermisssa is described as a new species from Abyssinia. W. T. Blandford, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 330. [Resembles *A. arvensis*, but has a stronger bill and shorter wings; is also allied to *A. erythropygia*, Strickl., but is smaller, and the rufous of the rectrices differently distributed. *Id.* Geol. & Zool. Abyss. (1870), pp. 388, 389, pl. vi.]

1869. [VOL. VI.]

Alauda calandra said to have again occurred in England. J. H. Gurney, Jun., Zool. S. S. p. 1599.

Alauda arvensis (cum nid. & pull.) and *Calundrella brachyductyla* are figured. J. Gould, B. Gr. Br. pt. xv.

Alauda arborea is figured. *Id. op. cit.* pt. xvi.

Alauda pispollotta (Fall.), its synonymy. Ld. Walden, Ibis, 1869, p. 213, note.

Galerita macrorhyncha, Tristr. (Ibis, 1859, p. 57), occurs in Morocco. C. F. Tyrwhitt Drake, Ibis, 1869, p. 153.

Alamon jessii is proposed as the name of a new species from Abyssinia, to be described in the Zoological 'Transactions'! O. Finsch, P. Z. S. 1869, p. 430.

ICTERIDÆ.

Cassicus icteronotus, notes on, from the Spanish of Dr. Castro. O. Fauvel, Bull. Soc. Linn. Norm. 1868, pp. 155-161.

Icterus abeillei is figured, and a diagnostic list given of the three species of the section *Hyphantes*, to which it belongs. P. L. Sclater & O. Salvin, Ex. Orn. pp. 187, 188, pl. xciv.

Icterus auratus, Bp., and allied species, notes on. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 271-273.

Molobrus [vulgo *Molothrus*] *sericeus* (Licht.), notes on its mode of breeding. C. Sternberg, with additional remarks by J. Cabanis, J. f. O. 1869, pp. 125-136. [See "Oology."]

Molothrus pecoris, its habits. T. M. Trippe, Am. Nat. iii. pp. 291-294; H. S. Kedney, *tom. cit.* p. 550.

Quiscalus fortirostris is described as a new species from Barbadoes, nearest to *Q. lugubris*, Swains., in size, but rather smaller, with a bill wider and fully one-third higher at the base, a less violet gloss, and shorter and more slender legs. G. N. Lawrence, Proc. Ac. N. S. Philad. 1868 (not published till 1869), p. 360.

Quiscalus:—The smaller species of the United States, 3 in number, are minutely characterized, and outline figures of their wing and bill given. R. Ridgway, *op. cit.* 1869, pp. 133-135.

STURNIDÆ.

Sturnus vulgaris, on its faculty of thought. A. Baron Hoyningen-Huene, J. f. O. 1869, pp. 255, 256.

Gracula kreffti is described and figured as a new species from the Solomon Islands, very like *G. dumonti*, but much larger, with a longer tail and no yellow on the middle of the belly. P. L. Sclater, P. Z. S. 1869, pp. 120, 121, pl. ix.

Ptilonorhynchus [lege *Ptilorhynchus*] *rawnsleyi* (Zool. Rec. iv. p. 111) is figured. J. Gould, B. Austral. Suppl. pt. v.

Lamprotornis amethystina, Heugl. (J. f. O. 1863, p. 20, 1864, p. 257) is referred to *Lamprocolius*, and is regarded as a conspecies of *L. auratus* (Gmel.), under the name of *L. auratus orientalis*. M. T. v. Heuglin, J. f. O. 1869, p. 7.

EPIMACHIDÆ.

Notes on the species of this family found in the Malay archipelago. A. R. Wallace, Mal. Archip. ii. pp. 411-420, figs.

PARADISEIDÆ.

Notes on all the species of this family. A. R. Wallace, Mal. Archip. ii. pp. 387-426, *et alibi*, figs.

CORVIDÆ.

Corvus splendens does not occur in the Neilgiris, as previously stated (P. Z. S. 1866, p. 568). G. E. Bulger, P. Z. S. 1869, p. 603.

Psilorhinus morio (Wagl.) and *P. mexicanus* (Rüpp.) are probably distinct, and their characters pointed out. P. L. Selater & O. Salvin, *tom. cit.* p. 363.

Nucifraga caryocatactes in East Prussia. A. Kuwert, J. f. O. 1868, pp. 405, 410 (not published till 1869). In France, L. Olphe-Galliard, *op. cit.* 1869, p. 142. Breeding in Lower Austria, V. von Tschusi, *tom. cit.* pp. 239, 240.

COLUMBÆ.

COLUMBIDÆ.

Columba risoria, its fecundity. C. Stölker, J. f. O. 1869, pp. 339, 340.

Columba calcaria and *C. palumbus*, their fossil remains figured. A. Milne-Edwards, Ois. Foss. Fr. pl. cxli. figs. 10-24.

Funingus madagascariensis, notes on. P. Aquarone, Bull. Soc. Imp. d'Acclim. 1869, pp. 361-363.

Zenaidura yucatanensis is described as a new species from Northern Yucatan, above resembling *Z. carolinensis*, but beneath uniform, with none of the pale ochreous on the abdomen and under tail-coverts; the auricular spot is dark blue, and there is no tinge of gold on the neck; the middle rectrices retain their width to the end, and are of the same colour as the back; the secondaries are conspicuously white. G. N. Lawrence, Ann. Lyc. N. H. New York, 1869, pp. 208, 209.

DIDIDÆ.

NEWTON, ALFRED and EDWARD. On the Osteology of the Solitaire or Didine Bird of the Island of Rodriguez, *Pezophaps solitaria* (Gmel.). Phil. Trans. 1869, pp. 327-362, pls. xv.-xxiv.

The abstract of this paper was noticed last year (Zool. Rec. v. pp. 98, 99). It is now published in full, and illustrated by ten plates, beautifully executed by Mr. Ford. A postscript is added, containing an extract from Pingré's MS. journal, showing that the species possibly existed so late as the year 1761.

NEWTON, EDWARD. Discovery of the Remains of *Didus solitarius* at Rodriguez. Trans. Roy. Soc. Arts & Sc. Mauritius, N. S. iii. pp. 31-38 (read 22 Nov. 1866).

Didus ineptus and *Pezophaps solitaria*, skeletons exhibited. J. W. Clark, P. Z. S. 1869, p. 473.

Didus ineptus, remarks on this and other short-winged birds from the

Mascarene Islands. J. Reinhardt, Overs. K. danske Vidensk. Selsk. Forhandl. 6 Nov. 1868, p. 158. [No particulars published.]

GALLINÆ.

CRACIDÆ.

Ortalida frantzii is described as a new species from Costa Rica, brownish-olivaceous above, paler on the breast, the head and upper part of the neck olive slate-colour, the whole abdomen olivaceous-grey, the lower part of the belly whitish, the primaries entirely and the secondaries internally rufous. It may, however, be identical with *O. cinereiceps*, Gray (Zool. Rec. iv. pp. 114, 115). J. Cabanis, J. f. O. 1869, pp. 211, 212.

Crax alberti and *Gallus domesticus*, hybrids between. P. Aquarone, Bull. Soc. Imp. d'Acclimat. 1869, pp. 357-360.

PHASIANIDÆ.

Gallus, sp. ? , its fossil remains figured. A. Milne-Edwards, Ois. Foss. Fr. pl. cxxxiv. figs. 19-21.

Thaumalea amherstiae very common in Western Yunan. J. Anderson, P. Z. S. 1869, pp. 111, 278. In confinement, J. J. Stone & P. L. Slater, *tom. cit.* p. 468.

Thaumalea picta and *Euplocamus nycthemerus*, a supposed hybrid between these species exhibited. G. F. Westermann, *tom. cit.* p. 149.

Phasianus colchicus naturalized in England prior to A. D. 1059. W. Boyd Dawkins, Ibis, 1869, p. 358. Figured, C. J. Sundevall, Sv. Fogl. pl. lxxiv. fig. 2.

Phasianus colchicus, *P. reevesi*, *Ceriornis temmincki*, and *Pucrasia xanthospila* (Zool. Rec. i. p. 88) are figured. J. Gould, B. As. pt. xxi.

Meleagris gallopavo, senses of sight and smell in. J. D. Caton, Am. Nat. iii. pp. 28, 30.

Gallopavo domesticus, *Pavo cristatus*, and *Numida meleagris* are figured. C. J. Sundevall, Sv. Fogl. pl. lxxiv.

"*Numida eduardi*, J. Verr.," was described as a new species from Natal. G. Hartlaub, J. f. O. 1867, pp. 36, 37. [With this *N. verreauxi*, Elliot (Ibis, 1870, p. 300), is identified. *Id.* Ibis, 1870, p. 443.]

Numida coronata, its breeding in France. J. Cornelly van Heemstra, Bull. Soc. Imp. d'Acclimat. 1869, pp. 404-407.

TETRAONIDÆ.

Pternistes infuscatus is described and figured as a new species from Lake Jipe, in the interior of East Africa, darker than *P. rubricollis*, Rupp., and differing therefrom in the coloration of the upper, and especially of the lower tail-coverts, which are blackish-brown, broadly bordered with white towards the extremity. J. Cabanis, J. f. O. 1868 [published in 1869], p. 413; *Id.* Von der Decken's Reisen, iii. 1. p. 44, pl. xiv.

Francolinus schlegeli is figured. M. T. v. Heuglin, Orn. Nordost-Afr. t. xxx.

Ortyx virginianus, notes on. A. Fowler, Am. Nat. iii. pp. 535-539.

Lophortyx californianus, its breeding in France. A. Geoffroy St.-Hilaire, Bull. Soc. Imp. d'Acclimat. 1869, pp. 509-514.

Palæortyx hoffmanni, *P. blanchardi*, *P. gallica*, *P. brevipes*, *P. phasianoides*, *P. longipes*, *P. pisca* [qu: *prisca*?], *P. sansaniensis*, *P. medius*, *P. altus* and *P. desnoyersi*, *Taoperdix pessietii*, *Tetrao albus*, *T. lagopus* and *T. urogallus*, *Perdix grisea* [sc. *cinerea*], and *Coturnix communis*, their fossil remains figured. A. Milne-Edwards, Ois. Foss. Fr. pls. cxxiv.-cxxxiii., cxxxiv. figs. 1-18, 22-26.

Tetrao tetrix, domestication of. C. Bouchard, Bull. Soc. Imp. d'Acclimat. 1869, pp. 592, 593.

Bonasa umbellus, note on its "drumming." R. Raymond, Am. Nat. iii. p. 105.

Lagopus subalpina [sc. *albus*], observations on. G. R. Barth, J. f. O. 1869, pp. 87-92.

PTEROCLIDÆ.

Pterocles decoratus is described and figured as a new species from Lake Jipe, in the interior of East Africa, distinguishable at once by the markings of its head—the forehead, region round the bill, spot behind the eyes, and throat being black, with a spot on the middle of the forehead, a border to the black of the front of the head, and a superciliary streak white. J. Cabanis, J. f. O. 1868 (published in 1869), p. 413; *Id.* Von der Decken's Reisen, iii. 1, p. 43, pl. xiii.

Pterocles sepultus, its fossil remains figured. A. Milne-Edwards, Ois. Foss. Fr. pl. cxli. figs. 1-9.

Syrnhaptes paradoxus. In July 1863 two were shot on Sandsjö, near Filipstad; and 10th November three were seen at Gräsgård, in Öland, of which one was shot. W. Meves, Öfvers. K. Vet.-Ak. Förhandl. 1868, p. 272. In East Friesland. F. von Droste, J. f. O. 1868, p. 406. At Felin, in Livonia, in 1863. H. Göbel, *op. cit.* 1869, p. 194. In Gothland, in 1863 (*cf.* Ibis, 1864, p. 192). L. Holtz, *tom. cit.* p. 256. In Sicily. H. Saunders, Ibis, 1869, p. 397. In North Germany. B. Borggreve, Vogel-Faun. Norddeutshl. p. 146. Abstract of its invasions of Europe [several particulars incorrect]. E. Newman, Zool. S. S. pp. 1794, 1795; Baron Droste, Vogelw. Borkum, pp. 123-133, 339. In confinement. Ld. Binning, Proc. N. H. Soc. Glasgow, i. p. 151.

TURNICIDÆ.

Turnix dussumieri is figured. J. Gould, B. As. pt. xxi.

MEGAPODIIDÆ.

Megapodius brazieri is the name proposed for a species found in Banks's Island, whence an egg has been sent by Mr. Brazier. P. L. Sclater, P. Z. S. 1869, pp. 528, 529.

Megapodius — (an *sp. nov.*?) is found in Niupo, Friendly Islands. F. W. Hutton, Ibis, 1869, p. 353.

TINAMIDÆ.

Crypturus modestus is a new species from Costa Rica, of small size, coming near *C. meserythrus*, Sclat., dull brown above, brighter on the rump, paler on the breast, and the crown dusky, eyebrows cineraceous, throat white, abdomen brownish-grey tinged with tawny in the middle, lower part of the belly ash-coloured, and under tail-coverts fulvous spotted with dusky. J. Cabanis, J. f. O. 1869, p. 212.

GRALLÆ.

RALLIDÆ.

MILNE-EDWARDS, ALPHONSE. Observations sur les affinités zoologiques de l'*Aphanapteryx* espèce éteinte qui vivait encore à l'île Maurice au xvii^e siècle. Ann. Sc. Nat. 5e sér. x. pp. 325-346, pls. 15-18.

——. Researches into the Zoological Affinities of . . . *Aphanapteryx imperialis*. Ibis, 1869, pp. 256-275, pl. vii.

These are two distinct papers, though, being written about the same time and with the same materials, their similarity is at first sight obvious, and the plate is the same in both, after the *facsimile* in Ritter von Frauenfeld's work (Zool. Rec. v. p. 103); but the second contains woodcuts, from Strickland's 'Dodo and its Kindred,' of Van den Broecke's and Herbert's figures of the bird. By means of the bones found in Mauritius by Mr. Edward Newton, as before mentioned (*loc. cit.*), the author most satisfactorily makes out the affinities of this extinct form, which, he says, should bear the name of *A. broeckii* (Schlegel), and holds the place by the side of *Ocydromus* which that does to the more normal *Rallidæ*. The whole investigation is, as might be expected, most ably conducted. In each paper the bones are figured.

FRAUENFELD, GEORG Ritter von. Ueber den Artnamen von *Aphanapteryx*. Verhandl. k.-k. zool.-bot. Gesellsch. Wien, 1869, pp. 761-764.

The author objects to the substitution (*ut supra*) of the name *A. broeckii* for *A. imperialis*.

Ocydromus lafresnayanus (J. Verr. & Des Murs, R. Z. 1860, p. 437) in confinement. P. L. Selater, P. Z. S. 1869, p. 431.

Ocydromus sylvestris is described and figured as a new species from Lord Howe's Island, readily distinguishable from *O. australis* and *O. earlii* by its small size and rufous wings, which are narrowly banded with black. The second character also separates it from *O. lafresnayanus*. *Id. tom. cit.* pp. 472, 473, pl. xxxv. Its habits described: G. Bennett, *tom. cit.* pp. 471, 472.

Ocydromus australis is attracted by red cloth, in the manner spoken of by old writers with regard to *Aphanapteryx*. J. H. Gurney, Ibis, 1869, p. 463.

Ocydromus nigricans is described as a new species from the south-west coast of the South Island of New Zealand. W. Buller, Trans. & Proc. New Zeal. Inst. i. p. 111.

Gypsornis cuvieri (gen. et. sp. nov.), *Rallus intermedius*, *R. christii*, *R. eximius*, *R. porzanoides*, *R. beaumonti*, *R. dispar*, and *R. major* (spp. novv.) (Zool. Rec. v. p. 104), their remains fully described. A. Milne-Edwards, Ois. Foss. Fr. ii. pp. 140-158.

Rallus crex (?), its femur from a "quaternary" bed described, and the remains of *Gallinula chloropus* and *Fulica atra* from similar deposits figured. *Id. tom. cit.* pp. 158-160, pl. cvi. figs. 1-19.

Rallus intactus is a new species from the Solomon Islands, nearly allied to *R. plumbeiventris*, G. R. Gray (P. Z. S. 1861, p. 432), but with a shorter bill,

darker rufous head and breast, and paler lead-colour belly. P. L. Selater, P. Z. S. 1869, p. 123.

Rallus forsteri, Hartl. (Arch. f. Naturgesch. 1852, p. 136), is a variety of *R. pectoralis*, Less. O. Finsch & G. Hartlaub, *tom. cit.* pp. 544, 548.

Thyrorkhina schomburgki (Zool. Rec. v. p. 105), *Porzana castaneiceps*, *Rallus antarcticus*, and *R. semiplumbeus* are figured, and a diagnostic list given of the three American species of the last-named genus. P. L. Selater & O. Salvin, Ex. Orn. pp. 133, 134, 155, 163-166, pls. lxxvii., lxxviii., lxxxii., lxxxiii.

Gallinula ruficrissa is a new species from Queensland allied to *G. olivacea*, Meyen (Nov. Act. 1834, p. 109, pl. 20), but smaller, and with legs not so disproportionate. *G. phenicura* and *G. akool* are also allied species. J. Gould, Ann. & Mag. N. H. 4th ser. iv. pp. 110, 111. Figured, as is also *Rallina tricolor*. Id. B. Austr. Suppl. pt. v.

Gallinula pusilla is figured. G. J. Sundevall, Sv. Fogl. lxxvi. fig. 5.

Porphyrio alba now extinct. G. Bennett, P. Z. S. 1869, p. 471.

SCOLOPACIDÆ.

Scolopax rusticula, a singular variety. E. Ward, P. Z. S. 1869, p. 473.

Scolopax sumatrana, Raffles (Trans. Linn. Soc. xiii. p. 327), is *Terekia cinerea*. G. Hartlaub, *tom. cit.* p. 436.

Gallinago imperialis is a new species from New Granada, somewhat resembling *Scolopax saturata* in general appearance, but wanting the white tip of the rectrices and the cross bands of the head. Its nearest structural allies are *G. stricklandi* and *G. jamesoni*. P. L. Selater & O. Salvin, *tom. cit.* pp. 419-420. Figured with *G. nobilis*, and a list given of the eight South-American species of the genus, showing their synonymy and distribution. Id. Ex. Orn. pp. 193-196, pls. xevii., xeviii.

Scolopax wilsoni perching on trees (*cf.* Zool. Rec. v. p. 105). W. W. Castle, Am. Nat. ii. p. 663; G. A. Boardman, *op. cit.* iii. p. 222.

Scolopax sabinii (Zool. Rec. v. p. 105), one of its parasites identical with that of *S. gallinago*. J. H. Gurney, Jun., Zool. S. S. pp. 1562, 1563. Its occurrence (twice) in Hampshire. W. Hart, *tom. cit.* pp. 1722, 1917.

Gallinago pusilla is described as a new species from one of the Chatham Islands. W. Buller, Ibis, 1869, p. 41.

HARTING, J. E. On rare or little-known *Limicolæ*. Ibis, 1869, pp. 426-434, pl. xii.

Eurynorhynchus pygmaeus is the subject of this paper, and a very full account is given of all that is known concerning it. Its affinities are certainly with *Tringa*, and it should probably be placed between *Ereunetes petrificatus* and *T. subarquata*. The breeding-plumage of the species is for the first time figured from Mr. Barrow's specimen (P. Z. S. 1859, p. 201).

Tringa wilsoni, its occurrence in England. E. H. Rodd, Zool. S. S. p. 1920 [*cf. op. cit.* p. 2025].

Arquatella maritima is figured. J. Gould, B. Gr. Br. pt. xv.

Calidris arenaria and *Phalaropus fulicarius* are figured. C. J. Sundevall, Sv. Fogl. pl. lxxvi. figs. 3, 4.

Machetes pugnax, a ♂ kept in captivity for four years at each moult assumed a similarly coloured habit. C. Blümel, J. f. O. 1869, p. 67.

Numenius arquata, notes on, with a diagnostic list of all species of the genus. Baron Droste, Ber. XVIII. Versamml. D. O. G. pp. 28-35. [*cf.* Ibis, 1870, p. 130.] Figured (*cum pull.*). J. Gould, B. Gr. Br. pt. xv.

Limosa uropygialis, Gould, is very common at the mouth of the Yukon and further northward. W. H. Dall, Trans. Chicago Ac. Sc. i. p. 293. American specimens described and figured. S. F. Baird, *tom. cit.* p. 320, pl. xxxii.

Glottis canescens is figured. J. Gould, B. Gr. Br. pt. xv.

Actiturus bartramius, its occurrence at Malta. C. A. Wright, Ibis, 1869, pp. 247, 248.

CHARADRIIDÆ.

Hoplopterus spinosus, its occurrence at Malta. C. A. Wright, Ibis, 1869, pp. 246, 247.

Lobivanellus goensis breeds on housetops. C. Horne, *tom. cit.* pp. 454-456.

HARTING, J. E. On rare or little-known *Limicola*. Ibis, 1869, pp. 304-310, pl. viii.

This paper treats of *Anarhynchus frontalis* in a very admirable manner, giving a full account of all that was known of this singular form, which the author seems inclined to regard as related to *Strepsilas*, and as having probably its nearest ally in *Thinornis*. The diverted bill he shows to be a constant character. The species is well figured.

Anarhynchus frontalis, specimens exhibited. *Id.* P. Z. S. 1869, p. 360. Remarks on, taking on the whole much the same view of its affinities as does Mr. Harting (*ut supra*). G. Hartlaub, *tom. cit.* pp. 433-438. Further note on; its affinities are with *Strepsilas* and *Charadrius* [*Egialitis*]. W. Jardine, Ibis, 1869, pp. 461, 462.

Strepsilas interpres (*cf.* Zool. Rec. ii. p. 66) has been obtained in Spitzbergen. A. J. Malmgren, *tom. cit.* p. 230.

Chionis alba, notes on it, with figures and a short account of its digestive organs. R. O. Cunningham, Journ. Anat. & Physiol. Nov. 1869, pp. 87-89, pl. vii.

Ædicnemus vermiculatus is described and figured as a new species from Lake Jipe, in East Africa, resembling *Æ. senegalensis*, but smaller, with a blackish bill, some dark brown zigzag markings above beside the blackish shaft-streaks, and a white longitudinal streak under the blackish upper edge, of the wing, which does not appear at all in *Æ. crepitans*. J. Cabanis, J. f. O. 1868 (published in 1869), pp. 413, 414; *Id.* Von der Decken's Reisen, iii. 1. p. 46, t. xvi.

Ædicnemus crepitans (ad. & pull.) is figured. J. Gould, B. Gr. Br. pt. xv.

Ædicnemus bistriatus in confinement. P. L. Sclater, P. Z. S. 1869, p. 430.

Glareola pratincola shot in Norfolk. H. Stevenson, Zool. S. S. p. 1492.

Glareola lactea is figured. J. Gould, B. As. pt. xxi.

Cursorius gallicus ♀ killed [in Württemberg?] in September 1868 by the writer.—Rapp, Zool. Garten, 1869, pp. 157, 158. The same occurrence, with the [erroneous?] date "8 October" given. M. T. v. Heuglin, J. f. O. 1869, p. 256. [*Cf.* Zool. Rec. v. p. 106.]

Attagis chimborazensis is figured. P. L. Sclater & O. Salvin, Ex. Orn. p. 157, pl. lxxix.

LEGGE, W. VINCENT. Notes on the Habits of *Pedionomus torquatus*. Proc. Zool. Soc. 1869, pp. 236-238.

From its carriage and egg (the latter only *ex ovario*, however) it seems to the author possible that this remarkable form is rather one of the *Gallinæ* than of the *Gallinæ*, though its mode of flight is entirely peculiar. The egg

described does not seem to resemble that mentioned by Mr. Gould (Handb. B. Austral. ii. p. 189)*.

OTIDIDÆ.

Otis tarda, the aperture and sphincter of its gular pouch (cf. Zool. Rec. v. p. 106) figured and elaborately described. J. Murie, P. Z. S. 1869, pp. 140-142. [See "ANATOMY."] Its parasites (cf. Zool. Rec. v. pp. 552, 553). H. Krabbe, Ann. & Mag. Nat. Hist. 4th ser. iv. pp. 47-51, pl. iii. Occurs in Morocco. C. F. Tyrwhitt Drake, Ibis, 1869, pp. 151, 154.

Otis tetrax and *O. houbara* are figured. C. J. Sundevall, Sv. Fogl. pl. lxxv. figs. 1-3.

Otis (Lissotis) maculipennis is described and figured as a new species from East Africa, differing from *O. melanogastra* by its longitudinally streaked neck, with the middle of the feathers pale, blackish-brown at their sides, the back variegated, the tips of the feathers pale, with a black v-shaped pale mark, the wings black, most of them having white transverse spots on the inner or both webs. J. Cabanis, J. f. O. 1868 (published in 1869), p. 413; *Id.* Von der Decken's Reisen, iii. 1. p. 45, t. xv.

GRUIDÆ.

Grus cinerea, its migration in Southern Russia (Kiev). H. Göbel, J. f. O. 1869, pp. 193, 194. Occurred several times in Great Britain during 1869. H. L. Saxby, Zool. S. S. pp. 1763, 1764; J. H. Gurney, Jun., W. Hart, H. Stevenson and H. Nicholls, jun., *tom. cit.* pp. 1803, 1841, 1842, 1866.

ARDEIDÆ.

Ardea perplexa (sp. nov.) (Zool. Rec. v. p. 107) described from a fragmentary humerus. A. Milne-Edwards, Ois. Foss. Fr. ii. pp. 108, 109.

Ardea (Herodias) procerula is described as a new species from East Africa, much like *A. garzetta*, but larger. J. Cabanis, J. f. O. 1868 (published in 1869), p. 414; *Id.* Von der Decken's Reisen, iii. 1. pp. 48, 49.

Ardea (Herodias) cineracea is described and figured as a new species from East Africa, of a paler grey than *A. schistacea*, but, like that, with a white chin; the bill, however, is more slender and nearly black, and all the proportions are less. *Id. tom. cit.* pp. 414 et 49, 50, t. xvii.

Ardea novæ-hollandiæ occurs in New Zealand. W. Buller, Trans. & Proc. New Zeal. Inst. i. p. 110.

Ardea purpurea, *Butorides javanicus*, and *Nycticorax griseus*, notes on their nidification in India. A. Hume, Ibis, 1869, p. 238.

Butorides atricapilla (Afzel.), from the Cape, is said to be inseparable from *B. javanica* (Horsf.). H. B. Tristram, *tom. cit.* pp. 437, 438. [The contrary opinion adopted, Ibis, 1870, p. 151.]

Ardea minuta and *A. nycticorax* are figured. C. J. Sundevall, Sv. Fogl. pls. lxxvi. figs. 1, 2, lxxv. figs. 4, 5.

* Though on a former occasion (Zool. Rec. iv. p. 116) we placed this genus among the *Turnicidæ*, we have now little doubt, after (through the kindness of Prof. Flower) inspecting its osteology in the Museum of the College of Surgeons, that it really belongs to the *Limicolæ*. Its sternal apparatus has a great resemblance to that of *Attagis*; and it is possible that both these forms, with perhaps some others, should be separated as a distinct family.

Nycticorax leuconotus (Wagl.) is figured. J. Cabanis, Von der Decken's Reisen, iii. l. t. xviii.

Botaurus pinnatus and *Tigrisoma fasciatum* (ad. & imm.) are figured, and a diagnostic list of the three species of the last-named genus given. P. L. Sclater & O. Salvin, Ex. Orn. pp. 181-184, pls. xci., xcii.

Botaurus stellaris breeding in Norfolk (Zool. Rec. v. p. 107). H. Stevenson, Zool. S. S. p. 1491

Botaurus lentiginosus, its occurrence in Ireland. Ld. Clermont, Zool. S. S. p. 1517.

Botaurus —? , a species new to New Zealand, is mentioned as occurring there, but no name is applied to it. W. Buller, Trans. & Proc. New Zeal. Inst. i. pp. 110, 112.

ENDICOTT, W. E. Bitterns. American Naturalist, iii. pp. 169-179.

A popular account of the various species of *Botaurus* and its allies.

Botaurus capensis only differs from *B. stellaris* in size. J. H. Gurney, Ibis, 1869, p. 301.

CICONIIDÆ.

Ciconia abdimii in confinement. P. L. Sclater, P. Z. S. 1869, p. 468.

ANSERES.

PHÆNICOPTERIDÆ.

GRAY, G. R. Notes on the Bills of the species of Flamingo (*Phænicopterus*). Ibis, 1869, pp. 438-443, pls. xiii.-xv.

From a consideration of this feature, the author comes to the conclusion that there exist 8 good species, which he groups in four sections:—(a) *Phænicopterus* proper, with *P. antiquorum*, *P. erythræus*, *P. glyphorhynchus* (sp. nov.), and *P. ignipalliatu*s; (b) *Phæniconaias*, with *P. rubidus* and *P. minor*; (c) *Phænicorodias* (nom. nov.); and (d) *Phænicoparrus*, formed by *P. ruber* and *P. andinus* respectively. The synonyms and localities of each of them are concisely given, and the bill figured.

Phænicopterus glyphorhynchus is said to be a new species from the Galapagos, having the bill somewhat slender, its culmen transversely grooved at the base, and the naked space beneath the basal arch of the mandible large, with the apex of the lateral arch angulated. No description is given; but the bill is figured. *Id. tom. cit.* pp. 439, 442, pl. xiv. fig. 5.

Phænicopterus rubidus (Zool. Rec. v. p. 107) probably identical with *P. minor*, Vieill. T. C. Jerdon, Ibis, 1869, pp. 220-232; A. Hume, *tom. cit.* pp. 355, 356. Distinct from *P. minor*: G. R. Gray, *loc. cit.* note, and its bill figured with that of *P. minor*, *tom. cit.* pp. 440, 442, pl. xiii. fig. 3, pl. xv. fig. 8.

Phænicopterus ejects from its mouth a bloody secretion, a habit which may possibly be the origin of the well-known legend of the Pelican feeding its young with its own blood. A. D. Bartlett, P. Z. S. 1869, p. 146.

ANATIDÆ.

EYTON, T. C. A Synopsis on [*sic*] the *Anatidæ*, or Duck tribe. Wellington, Salop: 1869. Small 8vo, pp. 144.

Announced by the author as a second edition of his 'Monograph of the *Anatidæ*' (published in 4to, with plates, 1838), with additions bringing his "knowledge of that family down to the present time," and printed in the present form for the use of travellers and students; it, however, gives a very poor idea of the knowledge now possessed by most ornithologists of this family, and we would fain let its deficiencies pass in silence. The author has been most unfortunate in his printer, and we have seldom of late years seen a work of scientific pretension brought out with so many errors.

MALMGREN, A. J. Anteckningar om Finlands och Skandinaviska halföns *Anseridæ*. Notis. Sällsk. pro Faun. et Flor. fennica förhandl. 1869, pp. 389-401.

Of *Anser* proper 5 species are included, and of *Bernicla* 3, very full bibliographical references being given. [*Cf.* *Ibis*, 1870, p. 132.]

Cereopsis novæ-hollandiæ, *Dendrocygna arcuata*, *Biziura lobata* (♂ & ♀), and *Erismatura australis*, their skeletons figured, with the osteological plates from the 'Monograph of the *Anatidæ*.' J. C. Eyton, Suppl. Osteol. Av. [See "ANATOMY."]

Chen caerulescens is figured. D. G. Elliot, B. N. Am. pts. xiv., xv.

Cygnus olor:—Out of a brood of four Cygnets hatched in 1868 on the Lake of Geneva, one only was of the normal brownish-grey colour, the others being pure white*: F. A. Forel, R. Z. 1869, p. 334 (extract from Bull. Soc. Vaudoise Sc. Nat. x. no. 61, 1869). Its occurrence at Malta. C. A. Wright, *Ibis*, 1869, pp. 248-250.

Cygnus olor and *Anser ferus* (vel *cinereus*), further notes on hybrids between them (Zool. Rec. iv. p. 121, v. p. 108). J. P. van Wickevoort-Crommelin, *tom. cit.* p. 127.

Cygnus. A species with red legs occurs in Northern China. A. David, N. Arch. Bull. iii. p. 41. [*Cygnus* (*Coscoroba*) *davidi*, Swinh. P. Z. S. 9 June 1870.]

Camptolæmus labradorus, its disappearance of late years from part of the east coast of North America. G. A. Boardman, Am. Nat. iii. pp. 383, 384.

Anas crecca ♀ with the under surface of a brilliant crimson. A. Cretté de Palluel, R. Z. 1869, p. 128.

Anas carolinensis (P) and *A. penelope* [qu. *americana*?], description of a supposed hybrid between them obtained in California. J. G. Cooper, Proc. Calif. Acad. Sc. iv. (1868) p. 9.

Anas gracilis is described as a new species from New Zealand. W. Buller, *Ibis*, 1869, pp. 41, 42. Identical with *A.* (*Querquedula*) *gibberifrons*, S. Muller (Verh. Land en Volkenk. p. 159). O. Finsch, *tom. cit.* p. 380.

* Some years ago we were told of a very similar case which had been observed in the Zoological Garden at Amsterdam; whether the particulars are anywhere recorded we know not. It seems very likely that the supposed species *C. immutabilis*, Yarr. (P. Z. S. 1838, p. 19), has thus originated, though when once established the breed is often perpetuated, as happens with so many other white varieties of birds and beasts.

Dafila acuta, *Histrionicus torquatus*, and *Clangula glaucion* are figured. J. Gould, B. Gr. Br. pt. xv.

Tadorna vulpanser (ad. & pull.), *Casarca rutila*, and *Fuligula marila* are figured. *Id. op. cit.* pt. xvi.

Querquedula puna is figured. P. L. Sclater & O. Salvin, Ex. Orn. p. 197, pl. xcix.

Somateria:—The common American form seems to differ from the European *S. mollissima* (L.) more than do some other so-called American species of *Anatideæ*. A. Newton & H. Reeks, Zool. S. S. p. 1758, note.

Somateria v-nigrum is figured. D. G. Elliot, B. N. Am. pts. xiv., xv.

Anas rufina, its habits in semi-confinement. E. Baldamus, Zeitschr. gesamt. Naturwissensch. xxxiv. (1869) p. 154. Bred in confinement at Dresden. A. Schöppf, Zool. Garten, 1869, p. 120.

Pelionetta troubridgii, its head figured. D. G. Elliot, B. N. Am. Intr. p. 11.

Merganetta turneri is a new species from the Peruvian Andes, differing from *M. columbiuna* in its larger size and black breast and flanks, and from *M. armata* in the white edges of its scapulars and black throat and fore neck. *M. leucogenys* (Tsch.) is probably identical with *M. columbiana*. P. L. Sclater & O. Salvin, P. Z. S. 1869, pp. 600, 601. Figured, and a diagnostic list of the three species of the genus given. *Id.* Ex. Orn. pp. 199, 200, pl. c.

LARIDÆ.

Stercorarius catarrhactes is figured. D. G. Elliot, B. N. Am. pts. xiv., xv.

Bruchigavia melanorhyncha is described as a new species from the South Island of New Zealand, differing from *B. scopulina* by its black bill, dark feet, and the marking of its primaries. W. Buller, Ibis, 1869, p. 43. Possibly identical with *L. andersoni*, Bruch (J. f. O. 1853, p. 102); but if not then a good species. O. Finsch, *tom. cit.* p. 381.

Larus glaucus and *L. glaucescens*, the tips of their primaries figured. D. G. Elliot, B. N. Am. Intr. p. 12.

Rissa tridactylus and *Hydrocolæus minutus* are figured. J. Gould, B. Gt. Br. pt. xvi.

Larus minutus, notes on its eggs and nidification in Russia, the latter from the information of Herr W. Meves. H. E. Dresser, P. Z. S. 1869, pp. 530, 531. Its frequent occurrence on the English coast in 1868-69. Zool. S. S. pp. 1495, 1518, 1563, 1603, 1803, 1908, 1921. [It has occurred in still greater abundance during the past winter, 1869-70.]

Larus atricilla, said to be a regular winter visitant at Palermo [!]. H. Saunders, Ibis, 1869, p. 396. [*L. melanocephalus* juv., T. Salvadori, Ibis, 1870, p. 153.]

Sterna, *Haliplana*, and *Anous*, their oological characters. Baron von König-Warthaussen, Ber. XVII. Versamml. D. O. G. pp. 36-39.

Haliplana discolor is figured. D. G. Elliot, B. N. Am. pt. xiii.

Sterna fuliginosa, its second recorded occurrence in England. J. E. Harting, Zool. S. S. pp. 1867, 1868.

Sterna aleutica is described and figured as a new species from Kadiak, differing so much from other species as scarcely to require a comparison, the pure white tail [taken in combination with the general slaty-blue of the

body] forming an important character. S. F. Baird, Trans. Chicago Ac. Sc. i. p. 321, pl. xxxi, fig. 1; W. H. Dall, *tom. cit.* p. 307.

Sterna forsteri, its tail figured. D. G. Elliot, B. N. Am. Intr. p. 13.

PROCELLARIIDÆ.

HUTTON, F. W. On the Mechanical Principles involved in the Sailing Flight of the Albatros. [See "GENERAL SUBJECT."]

GIGLIOLI, H. H., and SALVADORI, T. On some new *Procellariidæ* collected during a voyage round the world 1865-68, by H.I.M.'s.S. 'Magenta.' Ibis, 1869, pp. 61-68.

An English version (and the first actually printed) of the paper noticed last year (Zool. Rec. v. pp. 109, 110).

Pelecanoides berardi, Q. & G., note on. H. H. Giglioli, *tom. cit.* pp. 241, 242.

Fulmarus rodgersi, Cass. (Proc. Ac. N. S. Philad. 1862, p. 290), occurs at St. George's Island. W. H. Dall, Trans. Chicago Ac. Sc. i. p. 303. American specimen described and figured. S. F. Baird, *tom. cit.* p. 323, pl. xxxiv. fig. 1.

Thalassoica [lege *Thalassæca*] *glacialioides*, its head figured. D. G. Elliot, B. N. Am. Intr. p. 13.

Majaqueus parkinsoni (G. R. Gray, Ibis, 1862, p. 245) is fully described, with notes on other *Procellariidæ*. F. W. Hutton, Ibis, 1869, p. 351, 352.

Æstrelata [lege *Æstrelata*] *gouldi* is described as a new species from the Little Barrier Island, New Zealand. It is *Pterodroma macroptera*, Gould (Handb. B. Austral. ii. p. 449) (*nec* A. Smith). *Id. loc. cit.*

Nectris tenuirostris (Temm.) has occurred at Kotzebue Sound. W. H. Dall, Trans. Chicago Ac. Sc. i. p. 303. American specimen described and figured. S. F. Baird, *tom. cit.* pp. 322, 323, pl. xxxiv. fig. 2.

Puffinus cinereus [?], its occurrence on the Devonshire coast. A. de Hügel, Zool. S. S. p. 1720.

Puffinus opisthomelas (Zool. Rec. i. p. 96), its head figured. D. G. Elliot, B. N. Am. Intr. p. 15.

Thalassidroma pelagica (ad. & pull.) and *T. leachi* are figured. J. Gould, B. Gr. Bt. pt. xvi.

Thalassidroma pelagica, var. [?], "of a uniform sooty black, without white rump or white on the wings," breeds on the islands outside the Mar Menor in Murcia. H. Saunders, Ibis, 1869, p. 171.

PELECANIDÆ.

ELLIOT, D. G. A Monograph of the Genus *Pelecanus*. Proc. Zool. Soc. 1869, pp. 571-591, pl. xlv.

The author's materials have been found in the collections of Philadelphia, London, and Paris. After a very extensive review of the literature relating to the genus, he gives at some length the characters of the subfamily, then an analytical table of the 9 species he recognizes, and, finally, a description of the species, which contains a full account of each, and enters largely upon

their confused nomenclature, thus forming a very excellent monograph. *P. molinæ* is figured.

Pelecanus onocrotalus, its occurrence in the Pas de Calais. J. H. Gurney, Ibis, 1869, p. 463.

Pelecanus trachyrhynchus yearly sheds the bony process of its maxilla. R. Ridgway & S. F. Baird, *tom. cit.* p. 350.

Graculus bicristatus (Pall.) occurs at St. George's Island. W. H. Dall, Trans. Chicago Ac. Sc. i. p. 303. American specimen described and figured. S. F. Baird, *tom. cit.* pp. 321, 322, pl. xxxiii.

Graculus cinnamatus and *G. perspicillatus* are figured. D. G. Elliot, B. N. Am. pts. xiv., xv.

Plotus anlinga, its brain commonly infested by a species of *Eustrongylus*. J. Wyman, Proc. Boston Soc. N. H. 1868; Am. Nat. iii. pp. 41, 42.

COLYMBIDÆ.

Colymbus septentrionalis, *C. glacialis*, and *C. arcticus*, notes on. H. Blake-Knox, Zool. S. S. pp. 1499-1510.

SPHENISCIDÆ.

Aptenodytes chrysocome, the destruction of it in the Crozette Islands. E. L. Layard, Ibis, 1869, p. 378.

Spheniscus undinus occurs on the New-Zealand coasts. W. Buller, Trans. & Proc. New Zeal. Inst. i. p. 112.

PODICIPIDÆ.

Podiceps cristatus, examples from the Lake of Geneva have more and whiter down than those from the other Swiss lakes. F. A. Forel, R. Z. 1869, pp. 334, 335 (extract from Bull. Soc. Vaudoise Sc. Nat. x. no. 61, 1869).

Podiceps hectori (Zool. Rec. iii. p. 115) not distinct from *P. australis*, Gould (i. e. *P. cristatus*). O. Finsch, Ibis, 1869, pp. 380, 381.

Podiceps affinis (Zool. Rec. iii. p. 115, v. p. 111), its head figured. D. G. Elliot, B. N. Am. Intr. p. 16.

Centropelma is a new genus proposed for *Podiceps micropterus* (Zool. Rec. v. p. 111), which is figured, and woodcuts of the head and tarsus added, but is not characterized formally. A synonymatic and distributional list of the other four South-American species of the family is given. P. L. Sclater & O. Salvin, Ex. Orn. pp. 189, 190, pl. xcv.

ALCIDÆ.

Alca impennis, notes on [several of the statements incorrect]. J. Orton, Am. Nat. iii. pp. 539-542, fig. Note on its eggs [the number of specimens existing put at 30, which is manifestly incorrect (cf. Zool. Rec. v. p. 112; Ibis, 1870, pp. 256-261)]. E. Baldamus, *tom. cit.* p. 550. Suggested origin of the name "Penguin." A. Newton, Ann. & Mag. N. H. 4th ser. iv. p. 133. Miscellaneous notes on. J. H. Gurney, Jun., Zool. S. S. pp. 1603, 1639-1643, 1684 [several of the statements incorrect]. G. D. Rowley, *tom. cit.* p. 1645. On its former occurrence in the Newfoundland seas. H. Reeks,

tom. cit. pp. 1854–1856 [*cf. op. cit.* pp. 1982, 2065]. Its eggs in the Edinburgh Museum. H. W. Feilden, *Ibis*, 1869, pp. 358–360. Specimens in Italy. H. Saunders, *tom. cit.* p. 393; A. Newton, *loc. cit.*, note. Figured, C. J. Sundevall, *Sv. Fogl. pl.* lxxvi. fig. 2.

Alca bruenichii is figured. *Id. tom. cit.* figs. 3, 4.

Lomvia troile and *L. californica*, Bryant, the head of each figured. Regarded as identical. D. G. Elliot, *B. N. Am. Intr.* p. 16.

Uria mandti (*cf. Zool. Rec.* ii. p. 137), the original description reprinted. J. Reinhardt, *Ibis*, 1869, pp. 239–241.

Uria grylle is figured. J. Gould, *B. Gr. Br.* pt. xvi.

Simorhynchus cassini (*Zool. Rec.* v. p. 112). Note on the capture of the type-specimen. W. H. Dall, *Trans. Chicago Ac. Sc.* i. p. 309. Figured, S. F. Baird, *tom. cit.* pl. xxxi. fig. 2. Its head figured with that of *Phaleris kamtschatica*. D. G. Elliot, *B. N. Am. Int.* p. 18.

Ceratorhina monocerata and *C. suckleyi* (ad. & juv. ?), the head of each figured. *Id. tom. cit.* p. 17.

Uria craveri (*Zool. Rec.* iii. p. 115, v. p. 112) is referred to *Brachyrhamphus*, and its head is figured. *Id. tom. cit.* p. 19.

Sagmatorhina lathamii and *Fratercula glacialis* are figured. *Id. op. cit.* pts. xiv., xv.

STRUTHIONES.

CASUARIIDÆ.

Casuarus johnsoni, its identity with *C. australis* (*Zool. Rec.* iii. p. 116, iv. p. 125, v. p. 113) still considered questionable. G. Krefft, *Ibis*, 1869, pp. 348, 349. Beautifully figured (under the name of *C. australis*), as is also *C. uniappendiculatus*, Blyth. J. Gould, *B. Austral. Suppl.* pt. v. (4 pls.).

Casuarus — ? is found on the Solomon Islands. F. W. Hutton, *Ibis*, 1869, pp. 352, 353.

DINORNITHIDÆ.

Dinornis. Remarks on the craniology of the genus, since published (1870) in the Zoological 'Transactions.' R. Owen, *P. Z. S.* 1869, p. 59.

Dasornis londinensis is the name given to a fossil cranium from the London Clay, which presents combinations of Dinornithic and modern Struthious characters. *Idem, loc. cit.*

Dinornis casuarinus, *D. didiformis*, *D. gracilis*, *D. struthioides*, *D. elephantopus*, *D. crassus*, *D. maximus*, *D. giganteus*, and *D. robustus*, and *Palapteryx ingens*, tables showing the measurements of their bones. J. Haast, *Trans. & Proc. New Zeal. Inst.* i. pp. 80–89.

Dinornis:—Remarks on the period at which the various species became extinct. W. B. Mantell, J. Hector, and W. T. L. Travers, *tom. cit.* pp. 18–20; W. Colenso, *ibid.* part iii.; Essay on Maori Races, pp. 58, 59.

Dinornis:—The structure of its egg-shell is essentially similar to that of other *Struthiones*, and agrees most nearly with *Rhea*. W. von Nathusius, *Zeitschr. wissensch. Zool.* xx. p. 118.

Dinornis:—The discovery in Australia, by Mr. W. B. Clarke, of a bone attributed to a bird of this genus, has, we are informed by Prof. Flower, been recorded; but we are unable to refer to the passage. [*Cf. Amer. Journal Sc. & Arts*, March 1870, p. 273.]

ÆPYORNITHIDÆ.

MILNE-EDWARDS, A., et GRANDIDIER, A. Nouvelles Observations sur les caractères zoologiques et les affinités naturelles de l'*Æpyornis* de Madagascar. Ann. Sc. Nat. 5e sér. xii. pp. 167-196, pls. 6-16. Abstract, Comptes Rendus, lxi. pp. 801-805. Translated, Ann. & Mag. N. H. 4th ser. iv. pp. 437, 438.

After a concise abstract of what had previously been known on the subject, the authors proceed to describe, in great detail, the remains recently sent to Paris (Zool. Rec. v. p. 113), namely:—a perfect tibia and some fragments of another, a nearly perfect femur, and two detached vertebræ of *Æ. maximus*; a nearly entire femur and some fragments of a smaller species, called *Æ. medius*; and a very imperfect femur of a third species, smaller still, named *Æ. modestus*. They consider *Æpyornis* to be the type of a family quite distinct from the other *Struthiones*, and that it probably lived after Madagascar was inhabited by man. The remains of the two larger species are beautifully figured, of the natural size.

APTERYGIDÆ.

Apteryx oweni in confinement. P. L. Sclater, P. Z. S. 1869, p. 468.

Apteryx, in the structure of its egg-shell, does not much agree with other *Struthiones*. W. von Nathusius, Zeitschr. wissenschaft. Zool. xx. p. 128.

REPTILIA

BY

ALBERT GÜNTHER, M.A., M.D., PH.D., F.R.S., &c.

A. Separate Publications.

JAN, G., et SORDELLI, F. *Iconographie générale des Ophidiens.*
Paris. Plates, 4to.

We gave descriptions of this work in the 'Record,' i. p. 99, ii. p. 139, iii. p. 117, iv. p. 126, and v. p. 114. Four parts of plates, Nos. 30-33, were published in the year 1869. No continuation of the text.

KREFFT, G. *The Snakes of Australia; an illustrated and descriptive Catalogue of all the known species.* Sydney, 1869, 4to, pp. 100, with 12 plates.

This publication treats of all the species of Snakes known to inhabit Australia, about eighty in number. All are described, the descriptions being partly reproductions of the original accounts. In order to facilitate the study of Ophidians, and to diffuse their knowledge among naturalists and residents in Australia, the author has added an introduction treating of the general characteristics of the order. He has collected every thing that is known of the habits of these animals. All the species (with one exception) are described elsewhere by the author himself or his predecessors. The plates are very creditably drawn by two ladies, Miss Scott and Mrs. E. Forde.

PETERS, W. C. H. *Amphibien gesammelt von Baron C. C. von der Decken auf seinen Reisen im äquatorialen Ost-Africa,* pp. 11-18, with two plates.

This forms an appendix to "von der Decken's Reisen in Ost-Africa." Band 3. Leipzig, 1869, 8vo. A preliminary abstract was given by the author in 1866 (see Zool. Record, iii. pp. 11, 119).

B. Papers published in Journals.

ALLEN, J. A. *Catalogue of the Reptiles and Batrachians found in the vicinity of Springfield, Mass., with notices of all the other species known to inhabit the State.* Proc. Bost. Soc. Nat. Hist. xii. 1869 (1868), pp. 171-204, 248-250. 1869. [VOL. VI.]

- COPE, E. D. Sixth contribution to the Herpetology of Tropical America. Proc. Ac. Nat. Sc. Philad. 1868, pp. 305-313.
- . Observations on Reptiles of the Old World. Art. ii. Ibid. pp. 316-323.
- . A Review of the species of *Plethodontidæ* and *Desmognathidæ*. Proc. Ac. Nat. Sc. Philad. 1869, pp. 93-118.
- . Seventh contribution to the Herpetology of Tropical America. Proc. Am. Philos. Soc. 1869, xi. pp. 147-169, with three plates.
- FRIEDEL, E. Entdeckung lebender Crocodile in Palæstina. Zool. Gart. 1869, pp. 129-135, 161-166.
- GRANDIDIER, A. Description de quelques animaux nouveaux découverts, pendant l'année 1869, sur la côte ouest de Madagascar. Rev. et Mag. Zool. 1869, pp. 339-342.
- GRAY, J. E. Notes on the families and genera of Tortoises (*Testudinata*), and on the characters afforded by the study of their skulls. Proc. Zool. Soc. 1869, pp. 165-225, with woodcuts and a plate.
- GÜNTHER, A. Report on two collections of Indian Reptiles. Proc. Zool. Soc. 1869, pp. 500-507, with three plates and woodcuts.
- MEYER, A. B. Ueber den Giftapparat der Schlangen, insbesondere über den der Gattung *Callophis*, Gray. Monatsber. Ak. Wiss. Berlin, 1869, pp. 193-215, with two plates; or Wiegman. Arch. 1869, pp. 224-246.
- MIVART, ST. G. On the Classification of the Anurous Batrachians. Proc. Zool. Soc. 1869, pp. 280-295.
- NOLL, F. C. Die Würfelnatter (*Tropidonotus tessellatus*) eine deutsche Schlange. Zool. Gart. 1869, pp. 299-304.
- O'SHAUGHNESSY, A. W. E. Notes on Lizards of the Group *Anolis*.—The characters and synonymy of *Norops*. Ann. & Mag. Nat. Hist. 1869, iii. pp. 183-192, iv. pp. 274-277.
- PETERS, W. Ueber neue Gattungen und Arten von Eidechsen. Monatsber. Ak. Wiss. Berlin, 1869, pp. 57-66, with a plate.
- . Ueber neue Gattungen und neue oder weniger bekannte Arten von Amphibien. Ibid. pp. 432-447, with a plate.
- . Note on *Anolis auratus*, Daudin. Ann. & Mag. Nat. Hist. 1869, iv. pp. 273-274.
- . Förteckning på de af J. Wahlberg i Damaralandet insamlade Reptilierna. Öfvers. Vet. Akad. Förhandl. 1869, pp. 657-662.

- PETERS, W. Ueber mexicanische Amphibien. Monatsber. Ak. Wiss. Berlin, 1869, pp. 874-881.
- PREUDHOMME DE BORRE, A. Description d'une nouvelle espèce américaine du genre Caiman (*Alligator*). Bull. Ac. Belg. xxviii. 1869, pp. 109-116, with a plate.
- REINHARDT, J. I Anledning af det af Dr. A. B. Meyer opdagede særregne Forhold af Gif kjertlen hos visse Arter af Slægten *Callophis*. Vid. Medd. ntrhist. Foren. Kjöbnh. for 1869 (1870), pp. 117-120.
- STEENSTRUP, J. Bidrag til Bestemmelsen af de nordiske Arter af *Rana* og *Bufo*. I. Hvad er *Rana temporaria*, Linné? II. Hvad er *Rana rubeta*, Linné? Vid. Medd. ntrhist. Foren. Kjöbnh. for 1869 (1870), pp. 1-27, 235-238, with woodcuts.
- STRAUCH, A. Synopsis der Viperiden, nebst Bemerkungen über I. die geographische Verbreitung dieser Giftschlangen-Familie. Mém. Ac. Sc. St. Pétersb. xiv. 1869, no. 6. pp. 144, with two plates.

C. *Anatomical and Physiological Publications.*

- FRITSCH, G. Zur vergleichenden Anatomie der Amphibienherzen. Arch. f. Anat. Physiol. etc. v. Reichert und Du Bois-Reym. 1869, pp. 654-758, with four plates.
- HULKE, J. W. Note on the fine anatomy of the skin of Lizards. Journ. Anat. & Physiol. iv. 1869, pp. 417-419, with a plate.
- HUXLEY, T. H. On the representatives of the Malleus and the Incus of the Mammalia in the other Vertebrata. Proc. Zool. Soc. 1869, pp. 391-407, with woodcuts.
- MACALISTER, A. On the arrangement of the Pronator Muscles in the limbs of Vertebrate Animals. Journ. Anat. & Phys. iv. 1869, pp. 335-340.
- MIVART, ST. G. Notes on the myology of *Menopoma alleghaniense*. Proc. Zool. Soc. 1869, pp. 254-271, with woodcuts.
- Notes on the myology of *Menobranchius lateralis*. Ibid. pp. 450-466, with woodcuts.
1. PETERS, W. Ueber die Gehörknöchelchen der Eidechsen, Schildkröten und Schlangen, so wie über die Höhlen des Unterkiefers der Crocodile. Monatsber. Ak. Wiss. Berlin, 1869, pp. 6-8. [On the auditory ossicles of Tortoises, Lizards, and Snakes, as well as on the cavities of the lower jaw of the Crocodiles.]

- ROLLESTON, G. On the homologies of certain muscles con-

- nected with the shoulder-joint. Trans. Linn. Soc. 1869, xxvi. pp. 609-630, with a plate.
- SAVORY, W. S. On the structure of the red Blood-corpuscle of Oviparous Vertebrata. Proc. R. Soc. 1869, pp. 346-350.
- VAN BAMBEKE, —. Recherches sur le développement du Pélobate brun (*Pelobates fuscus*). Mém. Cour. Ac. Belg. xxxiv. pp. 66, with five plates.

GENERAL NOTES AND FAUNÆ.

Prof. PETERS's researches into the homologies of the auditory ossicles have been mentioned in Zool. Record, iv. p. 40, and v. p. 117. In another communication (Monatsber. Ak. Wiss. Berl. 1869, pp. 6-8), he states that the terminal dilated portion of the columella of Tortoises is the malleus, that the malleus is connected by a cartilaginous cord with the posterior end of Meckel's cartilage, and that a duct by which (as stated by Stannius) the pneumatic cavity of the os articulare of crocodiles communicates with that of the quadrate bone does not exist.—The statements and arguments contained in this and the previous papers are controverted by Prof. HUXLEY (Proc. Zool. Soc. 1869, pp. 391-407). He describes in detail and figures the stapes and the parts connected with it in young crocodiles, *Hatteria*, fowl, and foetal mammal; whilst still maintaining that these parts are modifications of the skeleton of the second visceral arch, he demonstrates that the incus cannot be the homologue of the quadratum (as previously maintained by Reichert and himself), but that this bone is represented by the malleus. The articulare of lower vertebrates is not preserved in mammals; but the incus is represented in fishes by the hyomandibular or suspensorial element.

Algeria. M. Paul Gervais enumerates the names of 6 Tortoises, 17 Snakes, 29 Saurians, and 6 Batrachians as inhabiting Algeria. Zool. & Paléont. Génér. sér. 1^{re}, pp. 199, 200.

East Africa. On the Reptiles and Amphibians collected by Von der Decken, see above under PETERS (p. 105) and Zool. Record, iii. p. 121.

South Africa. Prof. Peters gives a list of 51 Reptiles and Batrachians collected by Wahlberg in the Damara-country. Celfvers. Vet. Ak. Förhandl. 1869, pp. 657-662.

British India. Dr. Günther enumerates the species contained in two collections from various parts of India. They were nearly 70 in number, five of them new. Proc. Zool. Soc. 1869, pp. 500-507.

Massachusetts. Mr. J. A. Allen has given a list of the species inhabiting this State, with much information on their distribution, mode of life, propagation, &c. The list comprises 8 tortoises, 1 lizard, 15 snakes, 11 frogs and toads, and 10 salamanders. Proc. Bost. Soc. Nat. Hist. xii. 1868 (1869), pp. 171-204, 248-250.

Mexico. Prof. Peters reports on a collection made by Hr. Berkenbusch in

Mexico. The list comprises 31 species, several of which are regarded as new. Berlin. Monatsber. 1869, pp. 874-881.

Upper Amazons. Mr. Cope describes a collection made at Pebas, in which he distinguishes about 40 species. Proc. Am. Phil. Soc. 1869, pp. 147-156.

CHELONIA.

Dr. GRAY has examined the skulls of a considerable number of Tortoises and Turtles with the object of finding characters which would assist towards a more natural arrangement of these animals (Proc. Zool. Soc. 1869, pp. 165-225). He describes in his notes the peculiarities of the skulls examined, and indicates the modifications of the system formerly proposed by him. This study led also to the establishment of several new genera and species. In the following abstract all the species examined will be mentioned:—

I. TESTUDINIDÆ.

1. *Testudo*: indica, planiceps, tabulata, radiata, and *Testudo falconeri*, sp. n., p. 169, fig. 1, established from a skull, probably from India, and the type of a subgenus, *Scapia*.
2. *Peltastes*: *T. elongata* (fig. 2), *sulcata*, *græca*, *geographica*.
4. *Pyxis arachnoidea*. 5. *Chersina angulata*. 6. *Kinyxis belliana*. 7. *Manouria fusca*.

II. FRESHWATER-TORTOISES.

A. CISTUDINIDÆ.

1. *Cistudo clausa* (fig. 3). 2. *Pyxidea mouhotii*. 4. *Cuora amboinensis* (fig. 4). 8. *Cyclemys orbiculata*.

B. CHELYDRADÆ.

Sect. 1. *Crucisterna*.

Tribe 1. Chelydraina, with 1. *Macrochelys*. 2. *Chelydra*.

Tribe 2. Staurotypina, with 3. *Staurotypus* (skull, fig. 5). 4. *Stauroremys*.

Tribe 3. Aromochelyina, with 5. *Aromochelys*.

Sect. 2. *Kinosterna*.

Tribe 4. Kinosternina, with 7. *Swanka*: *scorpioides* (p. 181); *maculata*, sp. n., from Mexico (p. 182); *fasciata*, sp. n., hab. —?, p. 183; 8. *Kinosternum*.

C. EMYDIDÆ.

Sect. 1. *Amphibioclemmys*.

Tribe 1. Geoemydina, with 1. *Geoemyda*. 2. *Melanochelys*, g. n. for *Emys trijuga* (p. 187, fig. 6).

Tribe 2. Geoclemmydina, with 3. *Geoclemmys*. 4. *Nicoria*. 5. *Rhinoclemmys* (annulata and scabra, p. 189).

Tribe 3. Emydina, with 6. *Emys* (*japonica* and *tristrami*, p. 190); 7. *Clemmys caspica*; 8. *Chrysemys picta*; 9. *Graptemys*; 10. *Callichelys*; 11. *Deirochelys*.

Tribe 4. Malaclemmydina, with 12. *Malaclemmys concentrica* (fig. 7). 13. *Damonia*, g. n., for *macrocephala* (fig. 8), *reevesii*,

hamiltonii, nigricans; 14. *Glyptemys pulchella* (fig. 9); 15. *Bellia*, g. n., for *E. crassicolis* (p. 197, fig. 10).

Tribe 5. Batagurina, with 16. *Tetraonyx* (fig. 11); 17. *Kachuga* (*Batagurella*) *peguensis*, sp. n. (p. 200, fig. 12), *trilineata* (fig. 13); *oldhami* (fig. 14), *affinis*, *berdmorei*; 18. *Pangshura* *tecta*, *tenitorium*, *dura*.

Tribe 6. *Pseudemys*, with 19. *Pseudemys serrata* (fig. 15); 20. *Trachemys holbrookii* (fig. 16); 21. *Dermatemys*.

D. PLATYSTERNIDÆ.

E. CHELYDIDÆ: skull of *Chelodina collicii*, figured on p. 209.

F. TRIONYCHIDÆ: 1. *Amyda*. 2. *Landemania*, g. n., for *T. perocellatus* and *L. irrorata*, sp. n., from Shanghai (p. 216). 3. *Tryonix* *gangesicus*, *jeudi*, sp. n., from Java (p. 217, fig. 19), *formosus*, sp. n., from Pegu (p. 217, pl. 15. fig. 1). 4. *Fordia* (g. n.) *africana*, sp. n., from the Upper Nile. 5. *Sarbieria*, g. n., for *T. frenatus* (p. 220). 6. *Aspilus*. 7. *Rafetus*. 8. *Potamochelys*. 9. *Dogania*. 10. *Platypeltis*. 11. *Tyrse*. 12. *Callinia*, g. n. (p. 221), for *T. microcephalus* and *spicifer*. 12. *Baikiea elegans*, sp. n., from West Africa (p. 222, pl. 15. fig. 2).

III. SEA-TURTLES.

Skull of young *Sphargis mercurialis* figured p. 224.

Testudo leithii described and figured as a new species from Sindh by Dr. Günther, Proc. Zool. Soc. 1869, p. 502, [will probably prove to be the young of *T. marginata*].

Testudo desertorum is described as a new species from Madagascar by Grandidier. Rev. et Mag. Zool. 1869, p. 257.

Emys. Dr. Gray describes as a new species *Emys laniaria*, habitat unknown. Proc. Zool. Soc. 1869, p. 499, pl. 37. By inadvertence it is referred there to a new generic division, *Mauremys*, which ought to be restricted to *Emys fuliginosa*, as the only type known at present.

Emys grayi, sp. n., Günther, Proc. Zool. Soc. 1869, p. 504, pl. 38, from Bus-sora.—*Emys flavipes*, sp. n., Gray, ibid. p. 643, pl. 50, hab. —?—*Emys fraseri* is indicated as a new species from North Africa by Gray, ibid.

Hydromedusa tectifera, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 147, Parana or Uruguay.

[*Geoclemmys*] *Chelopus rubidus*, sp. n., Cope, l. c. p. 148, Mexico.

Claudius angustatus figured by Cope, l. c. pl. 9.

Dermatemys mawii. A very young example described by Preudhomme de Borre, Bull. Ac. Belg. xxviii. 1869, pp. 116-122.

CROCODILIA.

Crocodylus niloticus. Ernst Friedel has collected the historical evidence of the existence of the Crocodile in Palestine. The most recent traveller who has seen it (in the river Gischon) is Mr. MacGregor. Zool. Gart. 1869, pp. 129-135, 161-166.

Crocodylus. M. Bocourt (Nouv. Arch. Mus. iv. Bull. pp. 19-21) describes as new species:—*C. pacificus* from Guatemala [= *Molinia americana*, Gray], *C. lewyanus* from Columbia, and *C. mexicanus* [= *Molinia americana*, var., Gray]. The animals and skulls are figured on two plates.

Perosuchus, g. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 203. Toes 5-4.

with claws 2-3. No osseous nasal septum or bony eyelid. Belly protected by series of osseous plates, as well as the back. *Perosuchus fuscus*, sp. n., Cope, l. c., from New Granada.

- *Alligator lacordairei*, sp. n., Preudhomme de Borre, Bull. Ac. Belg. xxviii. 1869, p. 109, with a plate, from British Honduras.

RHYNCHOCEPHALIA.

Hatteria. Dr. Gray remarks that he described this genus first as *Sphenodon* (Zool. Misc. p. 14) and afterwards as *Hatteria* (ibid. p. 72). Ann. & Mag. Nat. Hist. 1869, iii. p. 167. [The name *Sphenodus* being used otherwise, the other name may have, perhaps, preference.]

LACERTILIA.

Amphisbæna antillensis (Rnhdt. & Ltk.) = *Diphalus fenestratus* (Cope), according to Cope, Proc. Am. Phil. Soc. 1869, p. 164.

Varanus semiremex, sp. n., Peters, Berlin. Monatsber. 1869, p. 65, from Cape York.

Ameiva analifera, sp. n., Cope, l. c. p. 158, island of St. Martins, West Indies.

Cnemidophorus. Prof. Peters describes as a new species *Cn. mexicanus*, Berl. Monatsber. 1869, p. 62, and remarks that *Cn. deppei* belongs to this genus, and not to *Ameiva*, and perhaps = *Cn. gracilis* (Baird & Gir.); that *Cn. tigris* (Baird & Gir.) = *Cn. sackii* (Wiegman.); and that *Cn. guttatus* (Wiegman.) has the tongue dilated and bilobed at the base, and consequently does not belong to *Ameiva*. Ibid. p. 63.

Cnemidophorus multilineatus, sp. n., Philippi, Wiegman. Arch. 1869, p. 41, from Mendoza.—*Cnemidophorus grandensis*, sp. n., Cope, l. c. p. 158, Rio Grande do Sul.

Cnemidophorus hyperythrus (Cope) and *Cn. heterolepis* (Tschudi) are referred to a new genus, *Verticaria*, by Mr. Cope, l. c.

[*Cnemidophorus*] *Holcosus bridgesii*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 306, New Granada.

Dicrion celestis (D'Orb.) is not = *Cnemidophorus lacertoides* (D. & B.), Peters, Berlin. Monatsber. 1869, pp. 64 & 433; it is = *Acrantus viridis*, ibid. p. 720.

Centropyx rengerii, sp. n., Peters, l. c. p. 63, from Paraguay. The author adds remarks on the other species of this genus.

Acanthodactylus dorsalis, sp. n., Peters, l. c. p. 62, hab. — ?

Eremias suborbitalis, sp. n., Peters, Öfvers. Vet. Ak. Förhandl. 1869, p. 658, from the Damara country.—The *Eremias serripes* described as a new species, ibid. p. 659, is, according to a communication of the author, identical with *Scapteira reticulata* (Bocage).

Saurites is a new subgenus of *Eremias*, established by Prof. Peters for *Podarcis cuneirostris* (Strauch), Berlin. Monatsber. 1869, p. 60.—*Scapteira grammica* is not from Egypt or Nubia, Peters, ibid. p. 61.—*Eremias argus*, sp. n., Peters, l. c. p. 61, fig. 3, from Chefoo (China).—*Eremias brenneri*, sp. n., Peters, l. c. p. 432, from the Somali country.

Zonurus tropidosternum is described as a new species from Madagascar by Mr. Cope, Proc. Am. Phil. Soc. 1869, p. 169.

Gerrhosaurus validus (Sundev.) = *G. robustus* (Peters.), and *G. trivittatus*

(Ptrs.) = *G. trivirgatus* (Gray). Peters, *Æfvers. Vet. Akad. Förhandl.* 1869, p. 659.

Gerrhosaurus laticaudatus and *karsteni* are noticed as new species from Madagascar by Grandidier, *Rev. et Mag. Zool.* 1869, p. 341.

Gerrhonotus auritus, sp. n., Cope, *Proc. Ac. Nat. Sc. Philad.* 1868, p. 306, from Vera Paz.

Tracheloptychus petersi is described as a new species from Madagascar by Grandidier, *Rev. et Mag. Zool.* 1869, p. 339.

Loxopholis, g. n. Ecleopodid., Cope, *Proc. Ac. Nat. Sc. Philad.* 1868, p. 305. Scales imbricate, arranged in oblique rows or quincuncially; the exposed portion triangular, strongly keeled. Prefrontals, fronto-parietals, parietals, and interparietals distinct. Lateral and gular scales like dorsal; ventral broad, smooth; no gular collar, no lateral fold. Toes 5.5, all with claws. Eyelid with transparent disk.—*Loxopholis rugiceps*, sp. n., Cope, *l. c.*, from New Granada.

Panaspis, g. n., Scincid., Cope, *Proc. Ac. Nat. Sc. Philad.* 1868, p. 317. Allied to *Morethia*, differing only in the distinctness of the fronto-parietals from each other and from the interparietal. No eyelid; a supranasal. Limbs short; toes 5-5. Scales smooth.—*P. æneus*, sp. n., Cope, *l. c.*, from Swan River or South-west Africa?

Heteropus rhomboidalis, sp. n., Peters, *Berlin. Monatsber.* 1869, p. 446, North-east Australia.

Tropidolepisma richardi, sp. n., Peters, *l. c.* p. 787, North Australia.

Euprepes. Prof. Peters describes the following new species from the Damara-country:—*Eu. variegatus*, *damaranus*, *polylepis*, and *wahlbergii*, *Æfvers. Vet. Ak. Förhandl.* 1869, pp. 660, 661.

Euprepes grützneri, sp. n., Peters, *Monatsber. Ak. Wiss. Berlin*, 1869, p. 433, from South-eastern Africa.—*Euprepes (Mabouya) lævigatus*, sp. n., Peters, *ibid.* p. 434, from South-eastern Africa.—*Euprepes venustus* (Girard) = *Euprepes delalandii* (Dum. & Bibr.), Peters, *ibid.*

Euprepes bilineatus is described as a new species from Madagascar by Grandidier, *Rev. et Mag. Zool.* 1869, p. 340.

Eumeces perdicicolor is described as a new species from Zanzibar by Cope, *Proc. Ac. Nat. Sc. Philad.* 1869, p. 317.

Lygosoma (Mococa) nigrofasciolatum, sp. n., Peters, *Berlin. Monatsber.* 1869, p. 435, New Caledonia.

Scelotes fierinensis is noticed as a new species from Madagascar by Grandidier, *Rev. et Mag. Zool.* 1869, p. 340.

Gongylus polleni is described as a new species from Madagascar by Grandidier, *l. c.* p. 340.

Sepsina grammica, sp. n., Cope, *l. c.* p. 318, South-west Africa.

Acontias rubrocaudatus noticed as a new species from Madagascar by Grandidier, *l. c.* p. 342.

Celura verillii is described as a new species from Australia by Mr. Cope, *l. c.* p. 318.

Diplodactylus furcosus (Ptrs. 1863) = *D. ornatus* (Gray). Peters, *Berlin. Monatsber.* 1869, p. 446.

Phyllodactylus galapagensis, sp. n., Peters, *l. c.* p. 720, Gallapagos Islands.

Hemulactylus variegatus figured by Peters in *Von der Decken's Reisen, Amphibien*, taf. 2.

Hemidactylus longiceps, from Manilla, and *H. hexaspis*, from Madagascar, are described as new species by Cope, *l. c.* p. 320.

[*Peripia*.] Mr. Cope describes as new *Peropus packardii*, from Pinang, *P. rosous*, hab.—?, and *P. pusillus*, from South-west Australia. *L. c.* p. 319.

Pentadactylus brunneus, sp. n., Cope, *l. c.* p. 320, Australia.

Platydictylus mutabilis noticed as a new species from Madagascar by Grandidier, *Rev. et Mag. Zool.* 1869, p. 341.

Naultinus lineatus, sp. n., Gray, *Ann. & Mag. Nat. Hist.* 1869, iii. p. 243, from New Zealand.

Gymnodactylus steudneri, sp. n., Peters, *Berlin. Monatsber.* 1869, p. 788, Sennar.

Ptenopus maculatus is a Geckoid, not an Agamoid. Cope, *l. c.* p. 321.

Colopus, g. n. Geckonid., Peters, *Berl. Monatsber.* 1869, p. 57. *Palmæ plantæque pentadactylæ*; *digiti breviores inungues, antici apice vix dilatati, subtus granulati, apice subtus squamis transversis, supra squama lamnæformi munito.* Reliqua ut in *Pachydactylo*.—*Colopus wahlbergii*, sp. n., Peters, *l. c.* fig. 1, Damara-country.

Rhoptropus, g. n. Geckonid., Peters, *l. c.* p. 58. *Habitus Ptyodactyli*; *palmæ plantæque pentadactylæ, digiti longiores unguiculati, apice dilatati, depressi, subtus squamis transversis muniti; digitus posticus 2^{dus} tertio a basi ultra medium coadunatus; ungues minimi; nares tubuliformes, inter scutella 3 vel 4 erecta aperti; (notæum granulatum).*—*Rhoptropus afer*, sp. n., Peters, *l. c.* p. 59, fig. 2, Damara-country.

Teratolepis, g. n. Geckonid., Günther, *Proc. Zool. Soc.* 1869, p. 504. Form of the head geckoid, covered with small, non-imbricate scales. Apparently no external ear. Trunk somewhat depressed, covered with imbricate scales, those on the back being keeled, of moderate size, and about twice as large as those on the abdomen. Legs well developed; five clawed toes in front and behind; each toe dilated, with a double series of rounded lamellæ below, the last phalanx being free. Tail about as long as the trunk, thick and flattened at the base, and tapering behind; it is covered with imbricate irregular scales, those on the upper surface being very large, much larger than the under ones.—The type of this singular genus is *Homonota fasciata* (Blyth).

Polychrus (Chaunolæmus) multicarinatus, nov. subgen. et sp., Peters, *l. c.* p. 786, from Costa Rica.

Læmanctus alticoronatus, figured by Cope, *Proc. Am. Phil. Soc.* 1869, pl. 11.

Cyclura quinquecarinata occurs in Tehuantepec, Cope, *l. c.* p. 161.

Anolis. Mr. Cope states that *A. dominicensis* (Ltk.) = *A. distichus* (Cope), *A. rüsei* (Rnhdt. & Ltk.) = *A. cybotes* (Cope), *A. trinitatis* (Rnhdt. & Ltk.) = *A. alligator* (D. & B.) = *A. grahmi* (Gray) = *A. iodurus*, *A. porcatus* = *A. principalis*, and that *A. stenodactylus* is not a valid species. *Proc. Am. Phil. Soc.* 1869, p. 164.

1. *Norops*. Mr. O'Shaughnessy has given an account of the species of this genus in *Ann. & Mag. Nat. Hist.* 1869, iii. pp. 183–192. He distinguishes:—
1. *N. auratus* (Daud., D. & B.) = *Anolis tropidonotus* (Ptrs.); 2. *N. 12-striatus* (Berth.) = *N. macrodactylus* (Hallow.) = *N. auratus* (Ptrs.).—Prof. Peters states (*ibid.* iv. p. 273) that Mr. O'Shaughnessy has not rightly interpreted the descriptions of previous authors, that he has examined several of the typical specimens, and that his *A. tropidonotus* is a distinct second species,

the others being identical with *N. auratus*.—Mr. O'Shaughnessy (*l. c.* iv. p. 274), in reply, states the reasons which induce him to adhere to his former opinion.

Sceloporus siniferus, sp. n., Cope, *l. c.* p. 159, Tehuantepec.

Hoplurus montanus, *savicola*, and *fierinensis* are noticed as new species from Madagascar by Grandidier, Rev. et Mag. Zool. 1869, pp. 340, 341.

Cachryx defensor figured by Cope, *l. c.* pl. 10.

Calotes nemoricola occurs in Ceylon. Günther, Proc. Zool. Soc. 1869, p. 507.

Agama hartmanni, sp. n., Peters, Berlin. Monatsber. 1869, p. 65, from Dongola.—*Agama savignyi* (Audouin)=*A. flavimaculatus* (Rüpp.), Peters, *l. c.* p. 66.

Chamaleo vulgaris. Notes on the Chameleon of Sicily by Prof. A. Aradas, Atti Soc. Ital. Sc. Nat. xi. 1869, pp. 439–446.

Chamaleo kersteni figured by Peters in Von der Decken's Reisen, Amphibien taf. I. fig. 1.

Chamaleo basiliscus is described as a new species from Nubia by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 316.

Chamaleo calcaratus, sp. n., Peters, Berlin. Monatsber. 1869, p. 445, Madagascar.

OPHIDIA.

Australia. Mr. Krefft's 'Snakes of Australia' have been mentioned above (p. 105). The work contains descriptions of 8 *Typhlops*, 1 *Coronella*, 1 *Tropidonotus*, 1 *Cerberus*, 1 *Myron*, 2 *Dendrophis*, 1 *Dipsas*, 6 *Pythonidae*, 6 *Diemenia*, 1 *Pseudonaja*, 1 *Pseudechis*, 2 *Brachysoma*, 2 *Furina*, 1 *Brachyuropsis*, 19 *Hoplocephalus*, 1 *Tropidechis*, 1 *Petrodymon*, 4 *Cacophis*, 2 *Vermicella*, 1 *Acanthophis*, 1 *Denisonia*, and 15 Sea-Snakes. Thirty occur in New South Wales, 21 being poisonous; 12 in Victoria, 8 being poisonous; 15 in South Australia, 13 being poisonous; 15 in West Australia, 11 being poisonous; 42 in Queensland, 28 being poisonous; and 3 *Hoplocephalus* inhabit Tasmania.

A. E. VERRILL has observed one of those rare cases in which a poisonous snake (*Cenchris contortrix*) was overpowered and swallowed by a non-poisonous (*Coluber constrictor*). Amer. Natur. iii. 1869, p. 158.

Typhlops perditus, sp. n., Peters, Berlin. Monatsber. 1869, p. 435, Orizaba.

Lethocobis is proposed to form a new genus for *Onychocephalus cæcus* (Dum.) and *L. pallida*, sp. n., from Zanzibar. Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 322.

Conopsis nasus. Notes by Peters, Berlin. Monatsber. 1869, p. 875. *Conopsis*=*Oxyrhina*=*Toluca*=*Chionactis* (Cope)=*Cemophora* (Cope).—On the other hand, Mr. Cope proposes a new name for *Oxyrhina*, *Ogmis*. Proc. Am. Phil. Soc. 1869, p. 162.

Picimnia olivacea=? *Gyalopion canum* (Cope), Peters, *l. c.* p. 875.

Symphimus leucostomus, g. et sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 150, Oaxaca.

Bergenia mexicana (Steindachner) is referred by Mr. Cope to his genus *Chilomeniscus*, *l. c.*

Achalinus, g. n. Calamarid., Peters, Berlin. Monatsber. 1869, p. 436. Allied to *Haplocercus*, but distinguished by paired prefrontals.—*Achalinus spinalis*, sp. n., Peters, *l. c.* fig. 1, from Japan.

Elapomorphus nigrolineatus, sp. n., Peters, *l. c.* p. 439, hab.—?

Rhynchoonyx, g. n. Calamarid., Peters, Berlin. Monatsber. 1869, p. 437. Posterior maxillary tooth grooved. Small teeth on the palate. End of the snout projecting, covered by the large rostral. Eyes small, with round pupil. Nasal single. Scales smooth, in 15 rows. Loreal none; one præ- and one postorbital; one pair of frontals only. Anal and subcaudals double.—*Rh. ambiniger*, sp. n., Peters, *ibid.* p. 438, from Paraguay (?).

Rhynchocalamus melanocephalus (Gthr.) has been identified with *Homalotosoma melanocephalum* (Jan) by Prof. Peters, who states that it ought to be referred to *Coronella*, with which it agrees in pholidosis and dentition. Berlin. Monatsber. 1869, p. 439. [The typical specimen of *Rhynchocalamus* is 17½ inches long, and in excellent condition; the rostral shield is produced backwards as in *Simotes*; there is one nasal shield only; there are no teeth on the palate.]

Cyclophis. Messrs. Jan & Sordelli (part 31) figure, on pl. 5, *Liopeltis astivus*, *sagittifer* (Jan), and *vernalis*; and on pl. 6, *L. brevicauda* (Jan) and *tricolor*.

Styporhynchus truncatus (Peters, 1863). Head figured by Peters, Berlin. Monatsber. 1869, p. 445, fig. 5.

Tachymenis=*Coniophanes*, Peters, *l. c.* p. 876.

Tachymenis melanocephala, sp. n., Peters, *l. c.*, Mexico.

Coniophanes piceivittis, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 149, Western Mexico.

Teleolepis striaticeps, g. et sp. n., Cope, *l. c.* p. 153, from Brazil.

Lygophis lachrymans, Cope, *l. c.* p. 154, hab.—?

Ophiomorphus minus is described as a new species by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 307, from New Granada.

Liophis flavitorques, from New Granada, and *L. persimilis*, from Rio de Janeiro, are described as new species by Mr. Cope, *l. c.* pp. 307, 308.

Conophis pulcher is described as a new species from Peten by Mr. Cope, *l. c.* p. 308.

Coryphodon rhombifer (Gthr.) is figured by Jan & Sordelli under the name of *Herpetodryas dendrophis*, part 31, pl. 3 (at least the old example).

Spilotes fasciatus, sp. n., Peters, *l. c.* p. 443, Surinam.

Cynophis malabaricus. Notes on an old example by Dr. Günther, Proc. Zool. Soc. 1869, p. 505.

Dromicus chamissonis (Wiegman) occurs in the Gallapagos Islands, Peters, Berlin. Monatsber. 1869, p. 719. [The Recorder remarks that he can confirm Prof. Peters's observation, having now seen a series of examples of this snake from these islands. There were two varieties, one very similar to the common continental form, the other identical with the snake described by him from a young specimen under the name of *Herpetodryas biserialis*. Some examples were intermediate between the varieties, so that there is no doubt about their specific identity. The syncranterian character of the dentition is not well developed in this species.]

Dromicus unicolor (D. & B.)=*D. angulifer* (Bibr.). Peters, *l. c.* p. 440.

Alsophis rygersmæi, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 154, Island of St. Martins.

Dromicus fugitivus. *Liophis andreae* (Rnhdt. & Ltk.) is said to be the young of it. Cope, l. c. p. 164.

Alsophis sancticrucis (Cope) = *A. melanichnus* (Cope). Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 312.

Dromicus margaritiferus figured by Jan & Sordelli, part 31, pl. 6. fig. 3.

Xenodon isolepis, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 155, Pebas.

Heterodon platyrhinus. S. S. Rathvon states that he has observed this species to bring forth over one hundred live young ones at a time. Amer. Natur. iii. 1869, p. 555.

Ischnognathus kirtlandi, *occipitomaculatus*, and *dekayi* figured by Jan & Sordelli, part 30, pl. 1.

Tropidonotus viperinus, var. *tessellatus*, has been discovered by Dr. Noll on the Rhine; it appears to be indigenous in the middle course of this river. Zool. Gart. 1869, p. 299.

Tropidonotus ruficeps, sp. n., Peters, Berlin. Monatsber. 1869, p. 444, from California.

Tropidonotus ferox (Gthr.) = *T. mortuarius* (Kuhl), Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 309.

Tropidonotus seychellensis (D. & B.). A yellowish variety of this well-known snake has been described as *Thrasops citrinus*, sp. n., by Mr. Cope, l. c. p. 322.

Tretanorhinus variabilis (D. & B.) = *Helicops wagleri* (Jan), according to Cope, l. c. p. 309.—*Tretanorhinus nigroluteus* (Cope) = *Helicops agassizii* (Jan), Cope, ibid.

Messrs. Jan & Sordelli figure in part 30:—*Calopisma quinquevittatum*, *Hypsirhina dussumieri*, *enhydriis*, *sieboldii*, *plumbea*, and *alternans*, and *Cam-pylodon prevostianum*.

Helicops fumigatus, from Surinam, and *H. cyclops*, from Bahia, are described as new species by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1863, pp. 308, 309.

Herpetodryas carinatus, *bernieri*, and *bilineatus* (Schleg.) figured by Jan & Sordelli, part 31, pls. 2 and 4.

Philothamnus punctatus. Heads figured by Peters, in Von der Decken's Reisen, Amphib. taf. 1. figs. 2 A, B, C.—Prof. Peters thinks that *Ahetulla kirkii* is identical with this species [but from a comparison of a sufficient number of examples of both, the Recorder is inclined to regard the latter as distinct, as it has the scales narrower, much more imbricate and lanceolate].

Gonyosoma oxycephalum figured by Jan & Sordelli, part 31, pl. 1.

Hapsidophrys lineatus figured by Jan & Sordelli, part 33, pl. 1. fig. 2.

Bucephalus typus figured by Messrs. Jan & Sordelli, part 32, pl. 4.

Chrysopelea. The species of this genus are figured by Jan & Sordelli, parts 32 & 33.

Chrysopelea præornata. Prof. Peters proposes for this snake the generic name of *Dromophis*, l. c. p. 447.

Dendrophis. Messrs. Jan & Sordelli (part 32) figure *D. picta* (pl. 1), *D. caudolineata* (pl. 2. fig. 1), *D. punctulata* (pl. 3) (= *D. fuscus*, Jan).—The *D. subcarinatus* (Jan) and *D. melanostigma* (Jan), from Mossambique (on pl. 2), belong evidently to *Ahetulla*.

Dendrophis caudolineolata, sp. n., Günther, Proc. Zool. Soc. 1869, p. 506, pl. 40, fig. 1, Ceylon.

Thrasops præstans is described as a new species from Peten by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 309.

Dryophis. The more common species of this genus are figured by Messrs. Jan & Sordelli, parts 32 & 33.

Passerita mycterizans and *fusca* are figured by Jan & Sordelli, part 32, pl. 5 (the latter under the name *Dryophis pulverulentus*, Jan).

Langaha nasuta and *crista galli* figured by Messrs. Jan & Sordelli, part 33, pl. 4.

Tropidococcyx perroteti figured by Jan & Sordelli, part 33, pl. 5, fig. 2.

Psammophis leithii, sp. n., Günther, Proc. Zool. Soc. 1869, p. 505, pl. 39, Sindh.

Leptodira pacifica and *L. personata* are described as new species from Matatlan by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 310.

Leptodira mystacina, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 151, Western Mexico.

Phimothyra decurtata, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 310, Lower California.

Dipsas biscutata is for Mr. Cope the type of a genus, *Trimorphodon*; he distinguishes from it three other species, *T. tau*, *T. upsilon*, and *major*, all from Mexico. Proc. Am. Phil. Soc. 1869, pp. 151-153.—Prof. Peters indicates a variety of this species, Berlin. Monatsber. 1869, p. 877.

Xenopholis, g. n. Dipsad., Peters, l. c. p. 440. Anterior maxillary teeth not enlarged, posterior grooved. Head flat, much broader than neck. Nostril between two nasals; three posterior frontals. Pupil round. One loreal, one præorbital. Scales smooth, in seventeen rows. Anal single, subcaudals double.—*Xenopholis braconnieri*, sp. n., Peters, l. c. p. 441, fig. 3, hab.—? [A triple postfrontal has been observed in *Coronella anomala*; it has proved to be an anomalous division of these plates.]

Dipsas barnesii, sp. n., Günther, l. c. p. 506, pl. 40, fig. 2, Ceylon.

Anoplodipsas, g. n. Amblycephal., Peters, l. c. p. 442. None of the teeth grooved; subcaudals simple; nasals double. Body long, compressed, with smooth scales, in 17 rows, those of the vertebral series hexagonal.—*Anoplodipsas viridis*, sp. n., Peters, l. c. fig. 4, New Caledonia (?).

Lichanura roseofusca and *myriolepis* are indicated as two new species by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 2, from Lower California.

Hoplocephalus spectabilis, sp. n., Krefft, Snakes of Austral. p. 61, pl. 12, fig. 4, from Port Lincoln.

Cacophis. Mr. Krefft describes three new species from Queensland (Proc. Zool. Soc. 1869), viz. *C. fordei*, p. 318, figs. 1 & 2; *C. harriettae*, p. 319, fig. 3; and *C. blackmanii*, p. 320, fig. 4. The descriptions and figures are reproduced in 'Snakes of Australia.'

1. *Denisonia* is described by Mr. Krefft as a new genus, Proc. Zool. Soc. 1869, p. 321, fig. 7, or Austral. Snakes, p. 82, pl. 11, fig. 4. It would appear to differ from all Colubrine venomous snakes in having a loreal shield. Scales in 17 rows [whether smooth or keeled is not stated]. Subcaudals entire. *Denisonia ornata*, sp. n., from Rockhampton.
- 2.

Elaps corallinus. A variety from Mexico described by Peters, Berlin. Monatsber. 1869, p. 877.

Elaps maregravii. A variety from Mexico described by Peters, l. c.

Elaps batesii (Gthr.) = *E. imperator* (Cope), Cope, Proc. Am. Phil. Soc. 1869, p. 156.

Elaps scutiventris, sp. n., Cope, l. c., Pebas.

Callophis. Dr. Meyer has discovered extremely large poison-glands in *C. intestinalis* and *C. bivirgatus*; they extend far into the abdominal cavity. Monatsber. Ak. Wiss. Berl. 1869, pp. 193-215, pls. 1 & 2 (also in Wiegman. Arch. 1869, pp. 224-246). He enters on this occasion into the history of the poison-apparatus of snakes generally. [The Recorder may add that Dr. Meyer has since examined the other species of *Callophis* and some other allied Ophidians, without finding the glands unusually developed.]

Prof. Reinhardt has examined *Callophis gracilis* and *C. macdellandii*, which have the glands of the usual size. Vid. Meddel. ntrh. Foren. Kjöbnh. f. 1869, pp. 117-120.

Vermicella lunulata is described as a new species from the Upper Burdekin by Mr. Krefft, Proc. Zool. Soc. 1862, p. 320, figs. 5 & 6; or Snakes of Austral. p. 79, pl. 12. fig. 14. [*V. bertholdi* (Jan) is not mentioned by Mr. Krefft.]

Atractaspis fallax. Head figured by Peters in Von der Decken's Reisen, Amphib. taf. 1. fig. 3.

Trigonocephalus arboreus, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 157, Bahia.—*Trigonocephalus pubescens*, sp. n., Cope, l. c., Rio Grande do Sul.

Dr. STRAUCH's *Synopsis of Viperidæ* (Mém. Ac. Sc. St. Pétersb. xiv. no. 6) is a very careful monograph of the snakes of this group. The author revises critically the divisions proposed by his predecessors for the venomous snakes, and adopts finally that proposed by Wiegmann as the only one which is based on generally true characters. In the *Viperidæ* he admits three genera only, *Vipera*, *Echis*, and *Atheris*, the first with 17, the second with 2, and the third with 3 species. The synonymy, descriptive part, and geographical distribution of the species are very industriously worked out; the synoptical tables facilitate their determination. General remarks on the distribution of the *Viperidæ* in the eastern hemisphere, and of the venomous snakes over the earth's surface generally, conclude this memoir. A list of the examples in the St. Petersburg Museum is added.

Vipera xanthina and *persica* figured by Strauch, l. c. pls. 1 & 2.

Echis carinata = *arenicola*, Günther, Proc. Zool. Soc. 1869, p. 502.

BATRACHIA SALIENTIA.

Prof. PETERS states that the collection of the Berlin Museum contains 325 species (Monatsber. Ak. Wiss. Berlin, 1869, p. 447).

Mr. ST. G. MIVART (Proc. Zool. Soc. 1869, p. 280) has proposed a classification of the tailless Batrachians, which, as the author says, is derived from, and in all the most important points agrees with, that of Dr. Günther, but which differs from it in certain minor respects, while it adopts from the labours of Mr.

Cope osteological characters noticed by him, but which are here restricted in their application to the limitation of more subordinate groups than those for which he uses them. The author passes in review the various characters used for the classification of these animals, the so-called "adaptive" characters being regarded by him as less important than those of which the connexion with physiological functions is at present not apparent. The views of the author with regard to the value of these characters will be sufficiently explained by the following sketch of his arrangement:—

A. Without maxillary teeth at any time of life, but with a tongue.

I. Ear imperfect.

- a. Tongue free in front. RHINOPHRYNIDÆ.
- b. Tongue fixed in front PHRYNISCIDÆ.
 - a. *Phryniscina* (Phryn., Pseudophryne, Brachyceph.).
 - β. *Hemisina* *.
 - γ. *Micrylina*.

II. Ear perfect.

- a. Sacral vertebra not dilated HYLAPLESIDÆ.
- b. Sacral vertebra dilated.
 1. Parotoids BUFONIDÆ.
 - a. *Halophryna*.
 - β. *Bufo*.
 2. No parotoids.
 - a. Tongue free in front. XENORHINIDÆ.
 - β. Tongue fixed in front ENGYSTOMIDÆ.
 - aa. *Engystomina*, with coracoids abutting, no precoracoids; no arciform cartilages.
 - bb. *Brevicipitina*, with coracoids abutting, precoracoids present; no arciform cartilages.
 - cc. *Paludicola*, with coracoids and precoracoids and arciform cartilages.

B. With maxillary teeth at some time of life, and with a tongue.

I. Ear imperfect BOMBINATORIDÆ.

- a. *Bombinatorina*.
- b. *Pelobatina*.
- c. *Alsodina* (Alsodes and Telmatobius).
- d. *Cacotina*.
- e. *Liopelmatina*.

II. Ear perfect.

- a. Parotoids.
 1. Sacral vertebra not dilated PLECTROMANTIDÆ.
 2. Sacral vertebra dilated.
 - a. No digital disks ALYTIDÆ.
 - aa. *Alytina*.
 - bb. *Scaphiopodina*.
 - cc. *Uperoliina*.
 - β. Digital disks. PELODRYADIDÆ.

* Ought to be *Hemisotina*.

b. No parotoids.

1. Sacral vertebra dilated; digital disks HYLIDÆ.
2. Sacral vertebra undilated; digital disks POLYPEDATIDÆ.
 - a. *Polypedatina*.
 - β. *Acridina*.
 - γ. *Hylodina*.
 - δ. *Calostethina*.
3. Sacral vertebra undilated; no digital disks RANIDÆ.
 - a. *Ranina*.
 - β. *Cystignathina*.
 - γ. *Hemiphractina*.
4. Sacral vertebra dilated; no digital disk DISCOGLOSSIDÆ.
 - a. *Chiroleptina*.
 - β. *Asterophrydina*.
 - γ. *Pelodytina*.
 - δ. *Discoglossina*.
 - ε. *Arthroleptina*.
 - ζ. *Gryptiscina*.

C. No tongue.

- A. No maxillary teeth PIPIDÆ.
- B. Maxillary teeth DACTYLETHRIDÆ.

Rana temporaria. As is well known, several races are distinguished by Prof. Steenstrup, considered by him to be entitled to specific rank. The subject is reexamined by him in Vid. Medd. ntrh. Foren. Kjöbnh. for 1869, p. 1. He shows that:—

1. *Rana platyrrhinus* (Stp.) = *R. flaviventris* (Millet) = *R. temporaria* (auct., but not Linn.).

2. *Rana oxyrrhinus* (Stp.) = ♀ *R. temporaria* (Linn.) = *R. arvalis* (Nilss.).

3. *Rana agilis* (Thomas, Fatio) = *R. temporaria* (Millet).

? 4. *Kana middendorffi* (Stp.) = *R. temporaria* (typica), Middend.

Tomopterna natalensis. Madagascar specimens of this frog appear to have been described as *Tomopterna labrosa* (sp. n.) by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1863, p. 133.

Pachybatrachus. This name (see Zool. Record, v. p. 127) is changed into *Cliotarsus*. Mivart, Proc. Zool. Soc. 1869, p. 227.

Cystignathus (*Cyclorhamphus*) *fasciatus*, sp. n., Peters, Berlin. Monatsber. 1869, p. 789, Chile; referred to *Cystignathus*, ibid. p. 881.

Lystris has been distinguished as a new genus from *Pleurodema*, on account of "the presence of two strong shovel-like metatarsals." *L. brachyops*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1863, p. 312, New Granada.

Gomphobates notatus (Rnhrdt. & Ltk.) = *Liuperus biligonigerus* (Cope), according to Cope, Proc. Am. Phil. Soc. 1869, p. 168.

Liuperus nitidus, sp. n., Peters, Berlin. Monatsber. 1869, p. 878, Mexico.

Cacotus maculatus is supposed to be *Cystignathus nebulosus* (Girard) by Mr. Cope, who thinks it scarcely necessary to observe that this genus has not the least affinity to *Bombinator*. Proc. Am. Phil. Soc. 1869, p. 168.

Pelobates fuscus. On its development, Van Bambeke in Mém. Cour. Ac. Belg. xxxiv. pp. 66, with 5 plates.

Engystoma mexicanum, sp. n., Peters, Berlin. Monatsber. 1869, p. 881.

Stereocyclops incrassatus, g. et sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 165, from Rio Janeiro. Placed with *Hypopachus* and *Calophrynus*, "the first type among the Raniformia which betrays even a remote resemblance to *Pipa*."

Hypopachus inguinalis, sp. n., Cope, l. c. p. 166, from Vera Paz.—*Hypopachus seebachii* (Keferst.) = *Engystoma variolosum* (Cope), Cope, l. c.

Bufo calamita (Laur.) is the *Rana rubeta* (Linné). Steenstrup, Vid. Medd. ntrhist. Foren. Kjöbnh. for 1869 (1870), p. 20.

Peltaphryne lemur is described as a new species by Mr. Cope, Proc. Ac. Nat. Sc. Philad. 1868, p. 311, from Porto Rico.—*Peltaphryne empusa* is the type of a distinct genus, *Otaspis*. Cope, l. c. p. 312.

Bufo mendocinus is described as a new species by Dr. R. A. Philippi, Wieg. Arch. 1869, p. 44.

Phyllobates melanorhinus. A secretion of this frog is used by the Indians to poison their arrows. Escobar, Compt. Rend. 1869, lxviii. p. 1488.

Liyla rugulosa, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 160, Mexico.

Hylodes sallæi (Gthr.) = *Lithodytes rhodopsis*, Cope, l. c.—*Hylodes rüsei* (Rnhdt. & Ltk.) = *Lithodytes lentus* (Cope), and *Hylodes antillensis* (Rnhdt. & Ltk.) = *H. auriculatus* (Cope). Cope, l. c. p. 164.

Hylodes berkenbuschii, sp. n., Peters, Berlin. Monatsber. 1869, p. 879, Mexico.

Platymantis unilineata, sp. n., Peters, l. c. p. 447, Great Viti.

Hyla gracilentia, sp. n., Peters, l. c. p. 789, North-east Australia.—*Hyla pulchrrilineata*, sp. n., Cope, Proc. Am. Phil. Soc. 1869, p. 163, San Domingo.

Hyla rubicundula [Rnhdt. & Ltk.] (Gthr.) = *H. polytenia* (Cope), Cope, ibid. p. 164.

Scytotis allenii, sp. n., Cope, l. c. p. 162, Pará.

Hyla eximiu (Baird) = *H. euphorbiacea* (Gthr.), Peters, l. c. p. 880.

Hyla microtis, sp. n., Peters, l. c. p. 880, Mexico.

BATRACHIA GRADIENTIA.

Mr. E. D. COPE has reviewed the genera and species of *Plethodontidae* and *Desmognathidae*; he characterizes the genera, describes the less-known species, and adds their synonymy (Proc. Ac. Nat. Sc. Philad. 1869, pp. 93–118). The arrangement of *Plethodontidae* followed by him is the following:—

Sect. I. *Plethodontæ*. Tongue attached from the central or posterior pedicel to the anterior margin in narrower or wider band.

A. Two premaxillary bones.

1. Digits 4–5: *Plethodon*, with five species.
2. Digits 4–4: *Hemidactylum*, with one species.

B. One premaxillary.

3. Digits 4–4: *Batrachoseps*, with three species (*B. nigriventris*, sp. n., p. 98, from California).
 4. Digits 4–5, teeth small: *Stereochilus*, g. n., p. 100, for *Pseudotriton marginatus* (Hallow.).
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5. Digits 4-5, teeth knife-shaped: *Anaides*, with two species (*A. ferreus*, sp. n., p. 109, from Oregon).

Sect. II. *Spelerpes*. Tongue free all around, attached by its central pedicel only.

A. Two premaxillary bones.

1. Digits 4-5, closely united: *Geotriton*, with one species.
2. Digits 4-5, entirely free: *Gyrinophilus*, g. n., p. 108, for *S. porphyritica*.

B. One premaxillary.

3. Digits 4-4: *Manculus*, g. n., p. 101, for *S. quadridigitata*.
4. Digits 4-5, little distinct; parietal cartilages not ossified: *Ophiobatrachus*, with two species.
5. Digits 4-5, entirely confounded; cranial bones well ossified: *Ædipus*, with four species (*Æ. rufescens*, sp. n., p. 104, from Mexico).
6. Digits 4-5, all free, cranial bones well ossified: *Spelerpes*, with nine species (*Sp. leprosus*, sp. n., p. 105, from Mexico; *Sp. multiplicatus*, sp. n., p. 106, from Arkansas).

Thorius pennatulus, g. et sp. n., Cope, *l. c.* p. 111, from Orizava, Mexico; it is the type of a distinct family.

Desmognathus. Three species of this genus described by Cope, *l. c.* pp. 113-118.

Desmognathus fuscus attaches its large ivory-white eggs in patches upon the underside of stones. The young retain their external gills until they are nearly full-grown. A. E. Verrill, *Amer. Natur.* iii. 1869, p. 158.

Diemictylus viridescens. On its propagation, Verrill, *l. c.* p. 158.

Ophiobatrachus vermicularis (Gray) = *Spelerpes lineolus* (Cope). Cope, *Proc. Ac. Nat. Sc. Philad.* 1868, p. 313.

Triton punctatus. J. Jullien states that specimens of this Newt spawned whilst in a larval state. *Compt. Rend.* 1869, lxxviii. p. 938.

Menopoma alleghaniense. The details of its myology have been worked out by Mr. St. G. Mivart. *Proc. Zool. Soc.* 1869, pp. 254-271, with woodcuts.

Siredon. One out of five Axolotls kept by Prof. Kölliker went through a metamorphosis. *Verhandl. phys. medic. Gesellsch. Würzburg*, 1869, Feb. 13.

Menobanchus lateralis. The details of its myology worked out by Mr. St. G. Mivart. *Proc. Zool. Soc.* 1869, pp. 450-466.

PISCES

BY

ALBERT GÜNTHER, M.A., M.D., PH.D., F.R.S.

A. Separate Publications.

BLEEKER, P. Atlas Ichthyologique des Indes Orientales Néerlandaises. See Zool. Record, i. p. 134, and ii. p. 163.

With pleasure we see that the continuation of this work has been resumed after an interruption of nearly four years. Expense appears to have been the chief obstacle to its continuance; therefore it is intended to publish in future only two parts each year, to shorten the letterpress, and to figure only new or little-known species. In the year 1869 livr. 21 has been issued, which completes the fifth volume of the work, and contains the remainder of the descriptions of the Plectognaths and figures of the species of Scombresocides.

B. Papers published in Journals.

AMBROSE, J. On the Fishes of St. Margaret's Bay. Proc. & Trans. N. Scot. Instit. Nat. Sc. ii. 2, 1869, pp. 87-94.

ANDREWS, W. On the Ichthyology of the South-west coast of Ireland, and a collection of zoological specimens obtained for the Society during the summer and autumn of 1868. Journ. R. Dublin Soc. 1869, pp. 379-389.

BLAKE, J. On the nourishment of the fœtus in the Embiotocoid Fishes. Prof. Calif. Acad. Nat. Sc. iii. pp. 314-317, with woodcuts.

———. On the organs of copulation in the male of the Embiotocoid Fishes. Ibid. pp. 371-372.

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- BONIZZI, P. Sulle varietà della specie *Gasterosteus aculeatus*. *Arch. per la Zool. l'Anat. &c. ser. 2. vol. i.* 1869, pp. 156-163, with a plate.
- . Prospetto sistematico e catalogo dei Pesce del Modenese. *Annuaire. Soc. Natur. Modena*, iv. 1869, pp. 239-266.
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- CANESTRINI, G. Sopra alcuni pesci dell' Australia. *Archiv. per la Zool. l'Anat. &c. ser. 2. vol. i.* 1869, pp. 151-155, with a plate.
- CAPELLO, F. DE BRITO. Catalogo dos peixes de Portugal que existem no Museu de Lisboa. *Jorn. Acad. Sc. Lisb.* no. vi. 1869, pp. 131-153, with a plate. (Continuation and conclusion; see *Zool. Record*, iv. p. 151, v. p. 134).—A supplement to this Catalogue, *ibid.* no. vii. 1869, pp. 223-228.
- . Memoria relativa a um exemplar de *Squalus maximus*, L., pescado nas costas de Portugal. *Ibid.* no. vii. 1869, pp. 233-238, with a plate.
- DAY, F. Remarks on some of the Fishes in the Calcutta Museum. *Proc. Zool. Soc.* 1869, pp. 511-527, 548-560, 611-614.
- . On the Freshwater Fishes of Burma.—Part I. *Ibid.* pp. 614-623.
- . On the Fishes of Orissa.—Part I. *Ibid.* pp. 296-310. Part II. pp. 369-387.
- DUMÉRI, AUG. Note sur trois poissons de la collection du Muséum, un Esturgeon, un Polyodonte, et un Malarmat, accompagnée de quelques considérations générales sur les groupes auxquels ces espèces appartiennent. *Nouv. Arch. Mus.* iv. pp. 93-116, with 2 plates.
- DYBOWSKY, B. N. Vorläufige Mittheilungen über die Fisch-Fauna des Onon-Flusses und des Ingoda in Transbaikalien. *Verh. zool.-bot. Ges. Wien*, 1869, pp. 945-958, with 5 plates.
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GÜNTHER, A. Report of a second collection of fishes made at St. Helena by J. C. Melliss, Esq. Proc. Zool. Soc. 1869, pp. 238, 239, with a plate.

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GUICHENOT, —. Révision du genre des Pagels (*Pagellus*, *Lithognathus*, *Calamus*). Mém. Soc. Sc. Nat. Cherbourg, xiv. 1869*, pp. 97-123.

KNER, R. IV. Folge neuer Fische aus dem Museum der Herren Joh. Cæs. Godeffroy und Sohn in Hamburg. Sitzgsber. Akad. Wiss. Wien, 1868, lviii. pp. 293-356, with nine plates.

This paper contains full descriptions of the species mentioned in a preliminary list, see Zool. Record, v. p. 135.

LÜTKEN, CH. Om Ganoidernes Begrændsning og Inddeling. Vid. Meddel. ntrh. Foren. Kjöbenh. f. 1868 (1869), pp. 1-82, with woodcuts.

On the limitation and division of Ganoids. A chiefly palæontological paper, a sort of abstract of which appeared in the 'Geological Magazine,' 1868, vol. v., under the title, "Prof. Kner on the classification of the Ganoids."

MACDONALD, J. D. On the characters of the type of a proposed new genus of *Mugilidæ* inhabiting the fresh waters of Viti Levu, Feejee group; with a brief account of the native mode of capturing it. Proc. Zool. Soc. 1869, pp. 38-40, with plate 1.

MARTENS, E. VON. Ueber einige ostasiatische Süßwasserthiere. Wieg. Arch. xxxiv. 1. pp. 17.

NOLL, F. C. Bitterling und Malermuschel. Zool. Gart. 1869, pp. 257-265, with a plate. [*Rhodeus amarus* and *Unio*.]

PLAYFAIR, R. L. Further contributions to the ichthyology of Zanzibar. Proc. Zool. Soc. 1869, pp. 239-241.

IEBOLD, C. TH. VON. Ueber die Acclimatisation der Salmoneer in Australien und Neu Seeland. Zeitschr. wiss. Zool. 1869, xix. pp. 349-380.

STEINDACHNER, F. *Polypterus lapradei*, n. sp., und *Polypterus senegalus* (Cuv.) aus dem Senegal. Sitzgsber. Ak. Wiss. Wien, 1869, lx. pp. 103-108, with two plates.

* "1869" on the outer cover of the volume, "1868" on the inner!

STEINDACHNER, F. Ichthyologische Notizen. (VIII.) Ibid. pp. 120-139, with seven plates. (IX.) Ibid. pp. 290-318, with eight plates.

VAN BENEDEN, P. J. Le commensalisme dans le Règne animal. Bull. Ac. Belg. xxviii. 1869, pp. 621-648.

The author distinguishes from true parasites those which merely profit by the greater power of locomotion of their host, not drawing their means of subsistence from its body, but partaking of the food brought within their reach. These animals are called Commensals by the author, and they are either free or fixed to the host. The class of fishes offers several instances of the former kind, and one (*Echeneis*) of the latter.

C. Anatomical and Physiological Publications.

GEGENBAUR, C. Ueber das Skeletgewebe der Cyclostomen. Jena. Zeitschr. Medic. u. Ntrwiss. 1869, v. pp. 43-53, with a plate. [On the histology of the skeleton of Cyclostomes.]

GREHANT, —. Recherches physiologiques sur la respiration des Poissons. Ann. Sc. Nat. 1869, xii. pp. 371-382.

GULLIVER, G. On certain nondescript bones in the skull of Osseous Fishes. Ann. & Mag. Nat. Hist. 1869, iv. pp. 397, 398.

HYRTL, J. Ueber Ampullen am Ductus cysticus der Fische. Denkschr. Ak. Wiss. 1868, xxviii. pp. 185-190, with three plates.

——. Ueber die Blutgefäße der äussern Kiemendeckel-Kieme von *Polypterus lapradei* (Steind.). Sitzgsber. Ak. Wiss. Wien, 1869, lx. pp. 109-113, with a plate.

KOWALEWSKY, A., OWSJANNIKOW, PH., und WAGNER, N. Die Entwicklungsgeschichte der Störe. (Preliminary notice.) Bull. Acad. Sc. St. Pétersb. xiv. 1869, pp. 317-325. [The history of the development of the Sturgeons.]

OWSJANNIKOW, PH. See KOWALEWSKY, A.

——. Die Entwicklungsgeschichte der Fluss-Neunauger (*Petromyzon fluviatilis*). Bull. Acad. Sc. St. Pétersb. xiv. 1869, pp. 325-329. [The history of the development of the Lampern.]

SAVORY, W. S. On the structure of the red Blood-corpuscle of Oviparous Vertebrata. Proc. R. Soc. 1869, pp. 346-350.

WAGNER, N. See KOWALEWSKY, A.

CONTRIBUTIONS TO FAUNÆ.

Finmarken. Prof. Esmark (Forh. Vid. Selsk. Christiania, 1869) enumerates 66 species—that is, 13 more than are contained in Malmgren's list (1867). Four are new to the fauna of Norway, viz. *Centridermichthys uncinatus*, *Lycodes vahlii*, *Hippoglossus pinguis*, and *Triglops pingelii*—the three first having been known from Greenland, and the last from Spitzbergen.

Modena. Dr. Bonizzi enumerates 26 species of freshwater fishes from this province, adding a very complete synonymy from Italian authors. *Annuaire Soc. Nat. Modena*, iv. 1869, pp. 239–266.

Portugal. M. Capello has concluded his catalogue of the Fishes of Portugal contained in the collection of the Lisbon Museum (see *Zool. Record*, iv. p. 156, v. p. 138). *Jorn. Acad. Sc. Lisb.* vi. 1869, pp. 131–153, & vii. 1869, pp. 223–228. The list comprises 243 species altogether.

Algeria. We noticed in *Zool. Record*, iii. p. 138, M. P. Gervais's labours on the freshwater fishes of Algiers; they are reproduced in "*Zoologie et Paléontologie générales*." Paris, 4to (without date), pp. 201–211.

Nova Scotia. Dr. Gilpin and the Rev. J. Ambrose have continued their observations on the Fishes of this colony (*Proc. & Trans. N. Scot. Inst. Nat. Sc.* ii. 2, 1869): see *Zool. Record*, iv. p. 157.

St. Helena. Dr. Günther has examined another collection made by Mr. Melliss (see *Zool. Record*, v. p. 138); it contained 21 species, raising the total number of species collected by that gentleman to 56. *Proc. Zool. Soc.* 1869, p. 238.

Mazatlan. Dr. Steindachner gives a list of 45 species from this locality. *Wien. Sitzgsber.* ix. p. 314.—Prof. Peters describes also some species from the same locality. *Berlin Monatsber.* 1869, p. 709.

Montevideo. Dr. Steindachner describes ten freshwater fishes, *Wien. Sitzgsber.* ix. pp. 290–301.

Transbaikalia. Dybowski has published a valuable list of fishes observed by him in the Onon and Ingoda rivers; it comprises 27 species, several of which are new and figured. Short as the descriptions are, they are very instructive, as species described by Pallas are referred to and characterized. *Verh. zool.-bot. Ges. Wien*, 1869, pp. 945–958.

Zanzibar. Lieut.-Col. Playfair has added four species to its ichthyological fauna, *Proc. Zool. Soc.* 1869, p. 239.

Continental India. Surgeon Day has examined the specimens in the Calcutta Museum, which contains the types of the species described by Blyth. He regards many as synonymous with known species, whilst others appeared to him to be undescribed. *Proc. Zool. Soc.* 1869, pp. 511–527, 548–560, 611–623*.

* The author states that he intended to offer remarks on Hamilton Buchanan's MS. drawings, but that he has reserved them, having found that objections exist to this course, as it is advanced that the observations should be addressed to the Society to whom those drawings belong." It may be questioned whether it is desirable to utilize drawings, the types of which are lost, in any other way but as a help to supplement the insufficient published descriptions; but objections like those made on behalf of the Asiatic Society of Bengal could only have been made by men ignorant of the fact that those drawings exist in triplicate, one copy being in the British Museum, where their free use is allowed.

Burmah. Surgeon Day describes seventeen new or imperfectly known species from Burmah. *L. c.* pp. 614-623.

Orissa. The same author describes or notices 146 species from this province. *L. c.* pp. 296-310, 369-387.

Borneo. Several remarks on freshwater fishes of this island and some other parts of the East-Indian archipelago, by Dr. Ed. von Martens, Wiegmann. Arch. xxxiv. vol. 1.

ACANTHOPTERYGII.

PERCIDÆ.

Acerina rossica. On a specimen from the Bukowina, Frauenfeld, Verh. Z.-B. Ges. Wien, 1869, p. 933.

Serranus lanceolatus. Surgeon Day reiterates that this is the young of the fish figured by him as *S. horridus*—and certainly not of *S. suillus* and *S. bontoo*, which have from 50 to 60 pyloric appendages, whilst he has "discovered that cæcopyloric appendages are invariably absent" in *S. lanceolatus*. Proc. Zool. Soc. 1869, p. 512. [The Recorder has dissected a *S. lanceolatus* in the presence of Mr. Day, and shown him that numerous pyloric appendages are present.]

Serranus. Mr. Day has found from 50 to 60 pyloric appendages in the species determined by him as *S. suillus* and *S. bontoo*, 32 in *S. hexagonatus*, and 12-13 in *S. sonneratii* and *cyanostigmatoides*. Proc. Zool. Soc. 1869, p. 514.

Serranus humeralis, var. ? from Peru, described by Kner, Wien. Sitzgsber. lviii. p. 296.

Anthias richardsonii, sp. n., Günther, Proc. Zool. Soc. 1869, p. 429, from Tasmania.

Genyoroge canina, sp. n., Steindachner, Wien. Sitzgsber. lx. p. 305, Lagos.

Genyoroge bengalensis. Dr. Bleeker states that three species have been confounded under this name, viz. *Labrus octovittatus* (Lac.), *Holoc. quinque-lineatus* (Bl.), *Holoc. bengalensis* (Bl.). Versl. en Meded. Ak. Wet. Amsterd. iii. 1869, pp. 64-77.

Mesoprion. Prof. Peters (Berlin. Monatsber. 1869) describes as new *M. ehrenbergii*, p. 704, Red Sea; *M. argentiventris*, p. 704, Mazatlan; and *M. inermis*, p. 705, Mazatlan.—*Mesoprion guttatus*, sp. n., Steindachner, *l. c.* p. 307, taf. 8, Mazatlan.

Mesoprion tharapon is described as a new species by Surgeon Day, from Ceylon and the Andaman Islands. *L. c.* p. 514. [It is *M. decussatus*.]

Bogota infuscata (Blyth) may be the fry of *Priacanthus*. Day, *l. c.* p. 515.

Priacanthus niphonius is the type of *Pseudopriacanthus*, Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 241.

Ambassis notatus (Blyth) = *A. baculis* (H. B.). Day, *l. c.* p. 515.

Ambassis. Surgeon Day gives diagnoses of species which he has determined as *A. alta*, *phula*, *dussumieri*, *nama*, and *lala*. *L. c.* pp. 297 & 298.

Ambassis brevipinnis, Kner, Wien. Sitzgsber. lviii. p. 298, taf. 1. fig. 2.

PRISTIPOMATIDÆ.

Tharapon. Kner (Wien. Sitzgsber. lviii. p. 299) figures *Th. argenteus*, var. ?, taf. 1. fig. 3, and *Th. unicolor*, var. ?, taf. 2. fig. 4.

Therapon brevispinis (Ptrs.). The name changed into *Th. brachycentrus*, Peters, Berlin. Monatsber. 1869, p. 705.

Histiopaterus recurvirostris described and figured by Canestrini, Arch. per la Zool. 1869, p. 152, tav. 2.

Pristipoma. Dr. Steindachner (Wien. Sitzgsber. lx.) describes *P. boucardi*, sp. n., p. 120, taf. 1, *P. knerii*, sp. n., p. 122, taf. 2. *P. nitidum*, sp. n., p. 124, taf. 3, *P. axillare*, sp. n., p. 126, taf. 4, *P. corvinæforme* (Steind.), p. 128, *P. brevipinne*, sp. n., p. 129, taf. 5; all from Central America, the four last species belonging to the subgenus *Hæmulopsis* (Steind.).

Pristipoma notatum, sp. n., Peters, Berlin. Monatsber. 1869, p. 706, Mazatlan.

Pristipoma hasta = *Polotus indicus* (Blyth) = *Coius gudgutia* (H. B.), Day, l. c. p. 613.

Hæmulon mazatlanum, sp. n., Steindachner, l. c. p. 131, taf. 6.—*Hæmulon maculosum*, sp. n., Peters, l. c. p. 705, Mazatlan.

Diagramma alta [ought to be *altum*] described as a new species from Akyab by Surgeon Day, Proc. Zool. Soc. 1869, p. 514.

Scolopsis trilineatus, Kner, Wien. Sitzgsber. lviii. p. 301, taf. 2. fig. 5.

Chælopterus microlepis, sp. n., Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 80, from Amboyna; also *Ch. pristipoma* = *Dentex pristipoma* (Blkr.) is redescribed, p. 83.

Cæcio xanthurus, sp. n., Bleeker, l. c. p. 78, Nossibé.

Sparopsis elongatus, Kner, l. c. p. 302, taf. 3. fig. 6.

SQUAMIPINNES.

Chatodon layardi (Blyth) = *Ch. vittatus* (Bl. Schn.). Day, l. c. p. 613.

Chatodon dichrous, sp. n., Günther, Proc. Zool. Soc. 1869, p. 239, pl. 16, from St. Helena.—*Ch. peleuensis*, Kner, Wien. Sitzgsber. lviii. p. 306.

Scorpiæ oblongis, sp. n., Canestrini, Arch. per la Zool. 1869, p. 153, from Australia.—D. $\frac{9}{33}$. A. $\frac{3}{23}$.

NANDIDÆ.

Plesiops meleagris, sp. n., Peters, Berl. Monatsber. 1869, p. 708, South Australia.

MULLIDÆ.

Upeneus griseofrenatus, Kner, Wien. Sitzgsber. lviii. p. 305, taf. 3. fig. 7.—*Upeneus tæniatus*, Kner, ibid.

Upeneoides doriae, sp. n., Günther, Ann. & Mag. Nat. Hist. 1869, iii. p. 445, from the Persian Gulf.

SPARIDÆ.

Pachymetopon guentheri, sp. n., Steindachner, Wien. Sitzgsber. 1869, lx. p. 135, Cape of Good Hope.

Doydirodon. Prof. Peters refers *Pimelepterus lavifrons* (Tschudi) to this genus. Berlin. Monatsber. 1869, p. 707.

Pagellus. M. Guichenot redescribes the species known from Cuvier and Valenciennes's work. Mém. Soc. Sc. Nat. Cherbourg, xiv. p. 97.

Chrysophrys calamus. M. Guichenot distinguishes *Calamus megacephalus* (Swains.), *penna* (C. & V.), *pennatula* (sp. n.), *microps* (Guich.), and *plumatula* (sp. n.). L. c. pp. 111-121.

Pimelepterus elegans, sp. n., Peters, Berlin. Monatsber. 1869, p. 707, Matatlan.

CIRRHITIDÆ.

Chilodactylus nigricans. Notes by Canestrini, Archiv. per la Zool. 1869, p. 155.

SCORPÆNIDÆ.

Sebastes inermis described by Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 243.

Agriopus spinifer figured by Steindachner, Wien. Sitzgsber. 1869, lx. p. 134, taf. 7.

Prosopodasys leucogaster described by Playfair from a specimen from Zanzibar, Proc. Zool. Soc. 1869, p. 240.

Amphiprionichthys apistus (? Blkr.), Kner, Wien. Sitzgsber. lviii. p. 309, taf. 3. fig. 8.

Amphiprionichthys ceylonensis, sp. n., Day, Proc. Zool. Soc. 1869, p. 515.

TEUTHIDIDÆ.

Teuthis oligosticta, Kner, Wien. Sitzgsber. lviii. p. 345, taf. 7. fig. 23.

BERYCIDÆ.

Anomalops græffei, Kner, Wien. Sitzgsber. lviii. p. 204, taf. 1. fig. 1.

SCIENIDÆ.

Paralanchurus petersii, g. et sp. n., Bocourt, Nouv. Arch. Mus. iv. Bull. p. 21, Salvador.

Polycirrus dumerilii, g. et sp. n., Bocourt, l. c. p. 23, Salvador.

Umbrina phalena (Girard) described by Steindachner, Wien. Sitzgsber. lx. p. 309.

Corvina cuja. *Sciænoides asper* (Blyth) is the young. Day, Proc. Zool. Soc. 1869, p. 516.

Corvina neilli (Day) = *C. albida* (C. & V.). Day, l. c. p. 300.

Collichthys pama (H. B.) = *Sciænoides hardwickii* (Blyth). Day, l. c. p. 516.

Otolithus submaculatus (Blyth) = *O. ruber* (Bl. Schn.). Day, l. c. p. 516.

POLYNEMIDÆ.

Galeoides microps, sp. n., Steindachner, Wien. Sitzgsber. 1869, lx. p. 137, China.

TRICHIURIDÆ.

Nesiarchus nasutus. We have stated in Zool. Record, iv. 1868, p. 162, that *Prometheus paradoxus* (Capello) is identical with this species. M. Capello appears now to adopt this view without referring to our previous statement, Jorn. Ac. Sc. Lisb. no. vi. p. 154. [M. Capello is also not just in attributing his error to the author of the 'Catalogue of Fishes,' as the "Addenda" of that work were never intended to contain recent additions made to the literature of previous volumes.]

CARANGIDÆ.

Caranx micraspis, Kner, Wien. Sitzgsber. lviii. p. 321, taf. 5. fig. 13.

Micropus polycentrus, Kner, l. c. p. 323, taf. 5. fig. 14.

Neptomenus dobula, sp. n., Günther, Proc. Zool. Soc. 1869, p. 429, from Tasmania.—This genus has 24 vertebrae, and therefore belongs to the *Carangidæ*.

Equula. Surgeon Day describes a species determined by him as *E. ruconius* (H. B.). Proc. Zool. Soc. 1869, p. 302.

STROMATEIDÆ.

Stromateus medius is described as a new species by Prof. Peters, Berlin. Monatsber. 1869, p. 707, Mazatlan.

CORYPHENIDÆ.

Brama raschi and *B. longipinnis* are not the same species. Esmark, Förh. Vid. Selsk. Christian. 1869.

TRACHINIDÆ.

Uranoscopus fuscomaculatus, Kner, Wien. Sitzgsb. lviii. p. 319.

Opisthognathus punctatus is described as a new species by Prof. Peters, Berlin. Monatsber. 1869, p. 708, Mazatlan.

BATRACHIDÆ.

Batrachus gigas, sp. n., Günther, Ann. & Mag. Nat. Hist. 1869, iii. p. 131. It is one of the largest Acanthopterygians, the "Vielles Crabe" of the Seychelles. Ward, ibid. p. 352.

PEDICULATI.

Antennarius nigromaculatus, sp. n., Playfair, Proc. Zool. Soc. 1869, p. 239, from Zanzibar.

COTTIDÆ.

Cottus szanaga and *C. haitej*, spp. nn., Dybowski, Verh. Z.-B. Ges. Wien, 1869, p. 949, figs. 1 & 2, from Transbaikalia.

Kner (Wien. Sitzgsber. lviii.) describes and figures *Cottus teniopterus*, p. 310, taf. 4. fig. 10, *C. polyacanthocephalus*, p. 312. fig. 11, and *C. tentaculatus*, p. 314, taf. 5. fig. 12.

Bunocottus apus, Kner, l. c. p. 316, taf. 3. fig. 9.

Centridermichthys uncinatus found in Finmarken by Esmark, Förh. Vid. Selsk. Christian. 1869.

Icelus hamatus described from Finmarken specimens by Esmark, l. c.

Triglops pingelii found in Finmarken by Esmark, l. c.

Platycephalus macracanthus, sp. n., Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 253, c. fig., from Amboyna.

Trigla kumu, from the Cape of Good Hope, Kner, l. c. p. 318.

CATAPHRACTI.

Peristethidion prionocephalum, sp. n., Duméril, Nouv. Arch. Mus. iv. p. 115, pl. 23, India.

GOBIIDÆ.

Gobius. A species from fresh waters of Algeria, not determined, is figured by Gervais in Zool. et Paléontol. génér. pl. 45. fig. 2.

Gobius semifasciatus, Kner, Wien. Sitzgsber. lviii. p. 326, taf. 5. fig. 15.

Gobius olivaceus (Schleg.) described by Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 244.

Gobius gobiodon, sp. n., Day, Proc. Zool. Soc. 1869, p. 516, from the Andaman Islands.

Periophthalmus kölreuteri (Pall.) = *P. scintillans* (Blyth). Day, l. c. p. 516.

Boleophthalmus boddarti has been described by Surgeon Day as *Apocryptes punctatus* (1867). Day, Proc. Zool. Soc. 1869, p. 303.

Boleophthalmus pectinirostris (Gm.) = *B. inornatus* (Blyth). Day, l. c. p. 516.

Eleotris. Surgeon Day describes three species, named by Blyth *E. feliceps*, *cavifrons*, and *scintillans*, and states that *E. incerta* (Blyth) = *E. fusca* (Bloch), l. c. p. 517.

Eleotris heterolepis, sp. n., Günther, Ann. & Mag. Nat. Hist. 1869, iii. p. 445, from Sarawak.

Asterropteryx semipunctatus from the Samoa Islands, Kner, l. c. p. 329.

Orthostomus amblyopinus, Kner, l. c. p. 329, taf. 6. fig. 16.

Amblyopus cæculus (Bl.) = *A. cirrhatus* (Blyth). Day, l. c. p. 518.

BLENNIIDÆ.

Blennius varus figured by Gervais, Zool. et Paléont. génér. pl. 44. fig. 5.

Petroscirtes lineolatus, Kner, Wien. Sitzgsber. lviii. p. 331, taf. 6. fig. 17.

Petroscirtes japonicus, sp. n., Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 246, with woodcut.

Salarias. *Alticus monochrus* and *Alticus aspilus*, spp. nn., Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, pp. 234, 235, from Madagascar.—*Salarias leopardus*, sp. n., Day, Proc. Zool. Soc. 1869, p. 518, Ceylon.—*Salarias andamensis*, sp. n., Day, l. c. p. 611.

Salarias brevis, Kner, l. c. p. 334, taf. 6. fig. 18.

Andamia expansa (Blyth) described by Surgeon Day, l. c. p. 518.

Myxodes viridis, var., described by Kner, l. c. p. 334.

Clinus nuchipinnis, *geniguttatus*, and *variolosus* are, perhaps, one species, found on both sides of America. Kner, l. c. p. 336.

Stichæus hexagrammus, var., and *Stichæus enneagrammus* described by Kner, l. c. pp. 337, 338; the latter figured on taf. 6. fig. 19.

Centronotus cristagalli, from Decastis Bay, Kner, l. c. p. 339; *Centronotus quinquemaculatus*, Kner, l. c. p. 340, taf. 7. fig. 20.

Urocentrus pictus, Kner, l. c. p. 343, taf. 7. fig. 21.

Zoarces elongatus, Kner, l. c. p. 344, taf. 7. fig. 22.

MASTACEMBELIDÆ.

Mastacembelus zebrinus (Blyth) described by Surgeon Day, Proc. Zool. Soc. 1869, p. 521.

MUGILIDÆ.

Mugil hamiltonii, sp. n., Day, Proc. Zool. Soc. 1869, p. 614, Burmah.

Gonostomyzus lou-lou, g. et sp. n., Macdonald, Proc. Zool. Soc. 1869, p. 38.

pl 1, from Viti Levu.—Distinguished from *Agonostoma* by having the anterior margin of the mandible sharp.

GASTEROSTEIDÆ.

Gasterosteus aculeatus. Dr. Bonizzi shows that the Sticklebacks of Italy belong to one species only, and that its varieties have been unduly raised to the rank of species by French ichthyologists, especially Blanchard. Arch. per la Zool. 1869, pp. 156-163, tav. 3.—Mr. L. Tait describes peculiar tumours with which the Stickleback is sometimes affected. Journ. Anat. & Physiol. v. 1869, pp. 12-14.

Gasterosteus [*brachycentrus*] from Algiers, figured by Gervais, Zool. et Paléont. génér. pl. 45. fig. 1.

LABYRINTHICI.

Macropus. Specimens of this fish, imported from China, have bred in Paris. Carbonnier, Compt. Rend. 1869, lxi. pp. 481-491, or Bull. Soc. Acclim. Paris, 1869, pp. 408-414.

Osphromenus. Surgeon Day describes what he states to be the *Ctenops nobilis* of McClelland. Proc. Zool. Soc. 1869, p. 519.

Trichogaster. Surgeon Day distinguishes *T. fasciatus* (Bl.), *lalius* (H. B.), and *chuna* (H. B.). L. c. p. 520.

ACANTHOPTERYGII PHARYNGOGNATHI.

Premnas biaculeatus uses Actiniæ as a hiding-place. De Crespigny, Proc. Zool. Soc. 1869, p. 248.

Pomacentrus unifasciatus, Kner, Wien. Sitzgsber. lviii. p. 348, taf. 8. fig. 24.—*Pomacentrus latifrons* (Tschudi) described by Kner, l. c. p. 350.

Glyphidodon hemimelas, Kner, l. c. p. 351, taf. 8. fig. 25.

Glyphidodon rhyncholepis, sp. n., Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 231, from Réunion.—*Glyphidodon notatus*, sp. n., Day, Proc. Zool. 1869, p. 521, Andaman Islands.

Labrichthys cyanotenia (Blkr.) = *Thysanochilus ornatus* (Kner). Gunther, Proc. Zool. Soc. 1869, p. 241.

Pseudoscarus spilonotus and *spinus*, Kner, Wien. Sitzgsber. lviii. pp. 352, 354, figs. 26 & 27.

Pseudoscarus gracilis, sp. n., Steindachner, Wien. Sitzgsber. lx. p. 138, China.

Gerres macrosoma has the lower pharyngeals separated. Kner, Wien. Sitzgsber. lviii. p. 301.

Ditrema. Dr. J. Blake has examined the gravid uterus of these fishes, and found in it a fluid containing a considerable portion of animal matter; he believes that this fluid furnishes the foetus with the elements of nourishment, which are absorbed through numerous capillary vessels spread over vascular digitated processes of the interradial membrane of the vertical fins. Proc. Calif. Acad. Nat. Sc. iii. pp. 314-317.—The same author describes the organs of copulation of the male fish. Ibid. p. 371.

Coptodus zillii is now considered to be identical with *Chromis niloticus*. Gervais, Zool. et Paléont. génér. p. 204, pl. 45. fig. 3.

Heros facetus (Jenyns) described by Steindachner, Wien. Sitzgsber. lx. p. 290, taf. 1.—*Heros jenynsii*, sp. n., Steindachner, l. c. p. 292, taf. 2, from Montevideo.

ANACANTHINI.

Lycodes vahlii, found in Finmarken by Esmark, Förh. Vid. Selsk. Christian. 1869.

Gadus. G. O. Sars has published "Indberetninger til Departementet for det Indre om de af ham i Aarene 1864-69 anstillede praktisk-videnskabelige Undersøgelser angaaende Torskefiskeriet i Lofoten." Christiania, 1869, 8vo, pp. 61. [Report for the Home-department on the practical and scientific inquiries into the Cod-fishery in Lofoten, instituted by him in the years 1864-69].

Bregmaceros altipinnis, sp. n., Day, Proc. Zool. Soc. 1869, p. 522, Burmah?

Hippoglossus vulgaris. Dr. Gilpin gives a full account of his observations on the Halibut in Nova Scotia. Proc. & Trans. N. Scot. Inst. Nat. Sc. ii. 2, 1869, p. 20.

Hippoglossus pinguis found in Finmarken by Esmark, Förh. Vid. Selsk. Christian. 1869.

Rhombus. On a supposed hybrid between *Rh. maximus* and *Rh. lævis*, Quélch, Proc. Zool. Soc. 1862, p. 473.

Solea (Monochir) pilosa, sp. n., Peters, Berl. Monatsber. 1869, p. 709, Mazatlan.—*Solea mazatlanica*, sp. n., Steindachner, Wien. Sitzgsber. lx. p. 312, taf. 5.

Cynoglossus buchani, sp. n., Day, Proc. Zool. Soc. 1869, p. 522, India.

Synaptura lusitanica, sp. n., Capello, Journ. Ac. Sc. Lisb. no. v. 1868, p. 62, and no. vi. 1869, p. 153, tab. 9. fig. 1.

Apionichthys nebulosus, sp. n., Peters, l. c. p. 709, Surinam.

PHYSOSTOMI.

SILURIDÆ.

Saccobranchus singio = *S. fossilis*, according to Day, Proc. Zool. Soc. 1869, p. 612.

Eutropiichthys has teeth on the palatines and vomer. Day, Proc. Zool. Soc. 1869, p. 306. [Mr. Day has thought proper to create the impression as if the Recorder had overlooked those teeth. The truth is, that no specimen was available for examination at the time when the generic diagnosis was compiled in the 'Catalogue of Fishes' after Hamilton Buchanan and Bleeker, a fact of which Mr. Day was well aware. Having received an example from Col. Playfair some years ago, the Recorder has found the palatine teeth, which may be distinguished on a very "superficial examination."]

Callichrous macrophthalmus (Blyth) described by Day, l. c. p. 613.—*Callichrous notatus* and *C. nigrescens*, spp. nn., Day, l. c. p. 616, from Burmah.

Pseudeutropius. Surgeon Day states that *Hypophthalmus goongwaree* (Sykes) = *Eutropius macrophthalmus* (Blyth), and describes as new *Pseudeutropius acutirostris* from Burmah. l. c. p. 618.

Pseudeutropius longimanus is identified with *Hypophthalmus taakree* (Sykes) by Surgeon Day, Proc. Zool. Soc. 1869, p. 617. [The position of the barbels in the figure given by Sykes indicates a *Eutropius*, and not a *Pseudeutropius*, a circumstance left unexplained by Mr. Day.]

Pseudeutropius murius (H. B.) described by Day, l. c. p. 306.

Macrones. Hara malabarica (Day) belongs to this genus. Day, l. c. p. 524.

Macrones corsula (H. B.) described by Day, l. c. p. 307.

Pimelodus sapo (Val.), Steindachner, Wien. Sitzgsber. lx. p. 294.

Arius sona (H. B.) described by Day, l. c. p. 523.

Arius burmanicus, sp. n., Day, l. c. p. 618.

Hemipimelodus cenia (H. B.) = *Phractocephalus itchkeea* (Sykes) described by Day, l. c. pp. 308, 613.

Hara. Surgeon Day describes *H. buchanani* (Blyth), l. c. p. 369, and states that *H. filamentosa* (Blyth) = *Pimelodus conta* (H. B.), ibid. p. 614.

Callomystax gagata has the air-bladder enclosed in a bony capsule. Day, l. c. p. 309.

Plecostomus commersonii described by Steindachner, l. c. p. 295.

Chaetostomus heteracanthus, sp. n. Günther, Proc. Zool. Soc. 1869, p. 425, figs. 3 & 4; and *Chaetostomus latifrons*, sp. n., Günther, l. c. p. 426: both from the Upper Amazons.

Loricaria macromystax, sp. n., Günther, l. c. p. 426, figs. 5 & 6, Upper Amazons.

Evostoma andersoni and *E. blythii*, spp. nn., Day, Proc. Zool. Soc. 1869, pp. 524, 525.

Stegophilus nemurus, sp. n., Günther, l. c. p. 429, Upper Amazons.

CYPRINIDÆ.

Dangila bermorei (Blyth) described by Surgeon Day, Proc. Zool. Soc. 1869, p. 554.

Labeo. Surgeon Day (l. c.) describes *L. goniis* (H. B.) = *L. microlepidotus* (C. & V.), p. 372; *L. calbasu* (H. B.) = *L. affinis* (Jerd.), p. 372, and makes remarks on several other species of the genus.

Tylognathus. This genus is not adopted by Surgeon Day, l. c. p. 373; [but he does not explain how he is able to maintain *Labeo* as distinct from *Barbus*, without this intermediate division].

Crossochilus rostratus (Gthr.) = *Cyprinus bata* (H. B.), according to Day, Proc. Zool. Soc. 1869, p. 371. [Mr. Day is evidently again too hasty in this identification. First, Hamilton Buchanan's fish has more than nine branched dorsal rays (a character the value of which Mr. Day will by-and-by learn to appreciate), his description and MS. drawing agreeing in this respect. Secondly, without attempting to say what Mr. Day's fish may be, it cannot be the *Crossochilus rostratus*, as the latter has a pair of upper barbels only, but no maxillary barbels (provided Mr. Day knows how to distinguish between these two kinds of barbels).]

Crossochilus mosario (H. B.) described by Surgeon Day, Proc. Zool. Soc. 1869, p. 554.

Dybowski proposes for *Cyprinus labeo* (Pall.) the generic name of *Gobio-barbus*, Verh. Z.-B. Ges. Wien, 1869, p. 951, fig. 3.

Barbus. Surgeon Day (Proc. Zool. Soc. 1869) describes the following species:—on p. 555, *B. blythii*, sp. n., from Tenasserim, *B. compressus*, sp. n., from Cashmere; on p. 556, *B. innominatus*, sp. n. (= *Leuciscus binotatus*, Blyth), *B. macrocephalus* (M'Clell.); on p. 557, *B. macularius* (Blyth) and *B. unimaculatus* (Blyth); on p. 619, *B. malabaricus* (Jerdon) and *B. m'clellandi*, sp. n., from Burmah.

Barbus sarana (H. B.) = *chrysopoma* (C. V.) = *russellii* (G thr.); and *Barbus chola* (H. B.) = *B. sophoroides* (G thr.), according to Mr. Day, *l. c.* p. 374.

Barbus beavani. Mr. Day thinks that this might be the *Cyprinus chagunio* (H. B.), *l. c.* p. 373, [but a fish described as having large scales and minute barbels is not likely to be the *B. beavani*].

Barbus sophore. Mr. Day describes a specimen in the Calcutta Museum which he found there "without any label," nevertheless supposed to be the type of the species. *L. c.* p. 376.

Barbus phutunio. According to Mr. Day's observations, this species would have a serrated ray when young, and an entire one when older. *L. c.* p. 375.

Schizothorax labiatus (M'Clell.) described by Day, *l. c.* p. 558.

Ladislavia, g. n., near *Gobio*, Dybowski, *l. c.* p. 954. Pharyngeal teeth knife-shaped, 5/2-2/5; lower jaw with cutting, cartilaginous edge; mouth transverse, inferior, with a short barbel on each side. *Ladislavia taczanowskii*, sp. n., fig. 7, from Transbaikalia. D. 3/7, A. 3/6, L. lat. 39, L. trans. 4/4.

Sarcohilichthys variegatus, described by Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 249.

Nuria albolineata (Blyth) described by Day, *l. c.* p. 558

Amblypharyngodon. Its distinctness from *Thynnichthys* is questionable, according to Day, *l. c.* p. 370.

Leuciscus. *Cyprinus leptcephalus* (Pall.) figured by Dybowski, *l. c.* p. 953, fig. 6; he proposes the generic name of *Pseudaspis* for it.

Idus waleckii, sp. n., Dybowski, *l. c.* p. 953, fig. 5, Transbaikalia.

Micraspis mianowskii, g. et. sp. n., Dybowski, *l. c.* p. 954, Transbaikalia.

Phoxinus lagowskii (fig. 4), *jelskii*, and *czekanowskii*, spp. nn., Dybowski, *l. c.* pp. 952, 953, from Transbaikalia.

Rhodeus amarus. Dr. Noll has made the very interesting observation that the fish-ova which are frequently found in the gills of *Unios* and *Anodontas* are the product of *Rhodeus amarus*—an observation by which the function of the long urogenital tube of this fish is easily explained. Zool. Gart. 1869, pp. 257-265, with a plate.

Danio. Surgeon Day states that *Perilampus osteographus* (M'Clell.) is identical with *Danio micronema*, *l. c.* p. 560. *Perilampus fulvescens* (Blyth) belongs to the same genus, p. 559, and is stated to be merely a variety of *Perilampus laubuca* (H. B.), p. 614.—*Danio stoliczkae* and *D. spinosus*, spp. nn., Day, *l. c.* p. 621, from Burmah.

Danio devario, described by Mr. Day, *l. c.* p. 377.

Perilampus. Notes by Mr. Day, *l. c.* p. 380.

Barilius papillatus, sp. n., Day, *l. c.* p. 378, Cossye River.—*Barilius interrupta*, sp. n., Day, *l. c.* p. 559, Hotha.—*Barilius nigrofasciatus*, sp. n., Day, *l. c.* p. 620, Burmah.—*Opsarius guttatus*, sp. n., Day, *l. c.* p. 620, Irawaddy.

Opsarüchthys platypus. *Leuciscus minor* (Schleg.) is described as *Barilius minor* by Bleeker, Versl. en Meded. Ak. Wet. Amsterd. 1869, p. 248.

Abramocephalus, g. n., Steindachner, Wien. Sitzgsber. lx. p. 302. Near *Hypophthalmichthys*, but with the abdomen compressed into a trenchant scaleless edge. Pharyngeal teeth 4-4, with the masticatory surface transversely striated. *Abramocephalus microlepis*, sp. n., Steindachner, *l. c.*, from China. D. 3/8, A. 3/13, L. lat. 115.

Osteobrama rapax. Mr. Day considers *Rohtee vigorsii* (Sykes) identical with it; also the name *Rohtee* is preferred by him to *Osteobrama*, *l. c.* p. 379.

Chela untrachi, sp. n., Day, *l. c.* p. 311, Orissa.

Chela sladoni, sp. n., Day, *l. c.* p. 622, Irawaddy.

Nemachilus. Surgeon Day describes *N. zonalternans* (Blyth), *N. phoxocheila* (McClell.), *N. serpentarius*, sp. n., *N. blythii*, sp. n., *N. cincticauda* (Blyth). Proc. Zool. Soc. 1869, pp. 551, 552.—*Nemachilus mugah*, sp. n., Day, *l. c.* p. 382, Cossye River.

Cobitis berdmorei (Blyth) described by Surgeon Day, *l. c.* p. 550.

Cobitis toni, sp. n., Dybowski, *l. c.* p. 957, fig. 10, Transbaikalia.

Botia. Surgeon Day describes the following species established by Blyth:—*B. nebulosa*, *B. berdmorei*, and *B. histrionica*, *l. c.* pp. 549 & 550.

Apua fusca (Blyth) described by Surgeon Day, *l. c.* p. 549.

CHARACINIDÆ.

Megalobrycon, g. n., technically distinguished from *Bryconops* by the presence of a maxillary series of teeth. *Megalobrycon cephalus*, sp. n., Günther, Proc. Zool. Soc. 1869, p. 423, fig. 1, from the Upper Amazons.

Chirodon alburnus, sp. n., Günther, *l. c.* p. 424, fig. 2, from the Upper Amazons.

Tetragonopterus. Dr. Steindachner (Wien. Sitzgsber. lx.) describes *T. fasciatus* (Cuv., not Val., Gthr.), p. 297, taf. 3. fig. 1; *T. rutilus* (Jen), p. 299, taf. 3. figs. 2 & 3, and *T. mexicanus* (Filippi), p. 299, taf. 4.

CYPRINODONTIDÆ.

Cyprinodon [calaritanus], figured by Gervais, Zool. et Paléont. génér. pl. 45, fig. 5.

Tellia apoda figured by Gervais, *l. c.* fig. 6.

SCOMBRESOCIDÆ.

Dr. BLEEKER's 21st part of the 'Atlas Ichthyologique,' which contains figures of the East-Indian species, has been noticed above, p. 123.

Hemirhamphus. Surgeon Day describes *H. plumatus* (Blyth), Proc. Zool. Soc. 1869, p. 526; and *H. neglectus*, as a new Indian species, *ibid.* Also *H. ectunctio* (H. B.), p. 310.

SALMONIDÆ.

Salmo. Prof. v. Siebold reports on the attempts at acclimatizing Salmonoids in Australia and New Zealand; he regards the reports of adult salmon having been seen in the Tasmanian rivers as conclusive evidence with regard to the complete success of the undertaking. Zeitschr. wiss. Zool. 1869, xix. pp. 349-380.

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Brachymystax coregonoides (Pall.) rediscovered by Dybowski, Verh. Z.-B. Ges. Wien, 1869, p. 955.

Osmerus sergeanti is a [very doubtful] new species from the Schuylkill River, named by Th. Norris, Proc. Ac. Nat. Sc. Philad. 1868, p. 93.

Coregonus chadavy, sp. n., Dybowski, Verh. Z.-B. Ges. Wien. 1869, p. 954, fig. 8, Onon River.

Thymallus grubii, sp. n., Dybowski, l. c. p. 955, fig. 9, Transbaikalia.

ESOCIDÆ.

Esox reichertii, sp. n., Dybowski, Verh. Z.-B. Ges. Wien, 1869, p. 956, Transbaikalia.

CLUPEIDÆ.

Alosa præstabilis is fully described by Dr. Gilpin. Proc. & Trans. N. Scot. Instit. Nat. Sc. ii. 2, 1869, p. 17.

Clupea (Alosa) notacanthoides and *Clupea setosa*, spp. nn., Steindachner, Wien. Sitzgsber. lx. pp. 309, 311, taf. 7 & 6, from Mazatlan.

Clupea variegata, sp. n., Day, Proc. Zool. Soc. 1869, p. 623, Irawaddy.

Chatoëssus modestus, sp. n., Day, l. c. p. 622, Bassein River, Burmah.

Pellona sladeni, sp. n., Day, l. c. p. 623, Irawaddy.

MURÆNIDÆ.

Leptocephalus. Dr. Steindachner describes as two new species from Peru *L. multimaculatus* and *L. peruanus*, Wien. Sitzgsber. lx. pp. 316, 317.

LOPHOBANCHII.

Trachyrhamphus cultrirostris described as a new species by Peters, Berlin. Monatsber. 1869, p. 710 [= *Syngnathus serratus*].

Hippocampus breviceps, sp. n., Peters, l. c. p. 710, South Australia.

PLECTOGNATHI.

Dr. BLEEKER's 21st part of the 'Atlas Ichthyologique,' which contains the end of the descriptions of *Balistidæ*, has been noticed above, p. 123.

GANOIDEI.

Dr. LÜTKEN has criticised Prof. Kner's paper on the classification of Ganoids (see Zool. Record, iv. p. 179), Vid. Meddel. ntrh. Foren. Kjöbnh. f. 1868 (1869), pp. 1-82. In order to define this subclass in precise terms, it is necessary to exclude the Sturgeons, *Amia*, and others—that is, to abandon the character assigned to it by Müller from its living representatives. The author would define it thus:—Every fish of the order Phytostomi is a Ganoid which has either the rhomboidal articulating scales of a *Lepidosteus*, the interlocked scales attached

to the dermal ribs of a Pycnodont, the lobate fins and jugular plates of a *Polypterus*, or that combines several of these characters. (See also Geolog. Magaz. 1869, vol. v.)

Polypterus. Dr. Steindachner has made the highly interesting discovery that certain specimens found by him in the Senegal are provided with an external gill, which is lost with age. He regards them as belonging to a distinct species, *P. la-pradei*. Wien. Sitzgsber. 1869, lx. pp. 103-108, with two plates. [The Recorder considers all the *Polypteri* known at present to be one and the same species.]—This gill is homologous to the opercular gill of *Acipenser*, showing the same arterial and venous relations. Hyrtl, *ibid.* p. 109, with plate.

Acipenser. Prof. Brandt has reexamined the Europæo-Asiatic Sturgeons, Mélang. Biolog. vii. 1869, pp. 110-116. He distinguishes twelve species only, two being new, viz. *A. bærü* and *A. schrenckii*, a great part of the forms named by Heckel, Fitzinger, and Duméril being regarded as nominal species.

Acipenser dabryanus is a very doubtful species from China, described as new by A. Duméril, Nouv. Arch. Mus. iv. p. 98, pl. 22*.

Polyodon gladius figured by Duméril, *l. c.* p. 100, pl. 22. fig. 2.

CHONDROPTERYGII.

Carcharias tigris described as a new species by Atwood, Proc. Bost. Soc. Nat. Hist. xii. 1869, p. 268, Gulf of Mexico.

Selache maxima. A detailed description and figure of an example from the coast of Portugal is given by M. Capello, under the name of *Cetorhinus blainvillii*. Journ. Ac. Sc. Lisb. no. vii. 1869, p. 233.

Laemargus rostratus figured by Capello, Journ. Acad. Sc. Lisboa, no. vi. 1869, p. 146, tab. 9. fig. 2.

Raja. M. Capello describes and figures a small Ray from Lisbon under the name of *R. mosaica* (Lacép.), Journ. Ac. Sc. Lisb. no. vi. 1869, p. 150, tab. 9. fig. 3. Afterwards (*ibid.* no. vii. 1870, p. 228) it is referred to *R. undulata*.

Pteroplatea crebripunctata is described as a new species from Mazatlan by Prof. Peters, Monatsber. Berl. Ak. Wiss. 1869, p. 703.

CYCLOSTOMATA.

Petromyzon fluviatilis. On its development, Owsjannikow in Bull. Acad. Sc. St. Petersb. xiv. pp. 325-329.

* This author dates the establishment of this species from the year 1868, adding as reference "Hist. Nat. Poiss. ii. p. 193." The book quoted may have been *in the press* at that time; but to refer in 1869 to a publication issued in 1870, as if published in 1869, is a proceeding very unusual in Zoological Literature.

Petromyzon japonicus described by Martens as a new species in Wiegman. Arch. xxxiv. p. , taf. 1. fig. 2 [does not appear to be specifically distinct from *P. fluviatilis*].

Petromyzon reissneri described as a new species from Transbaikalia by Dybowski, Verh. Z.-B. Ges. Wien, 1869, p. 958.

ARACHNIDA

BY

W. S. DALLAS, F.L.S.

BESSELS, E. Note sur le développement des Acarides. Bull. Acad. Roy. de Belgique, sér. 2. tome xxvii. pp. 276-280 (with some remarks by P. J. Van Beneden).

—. Bemerkungen über die in unseren Najaden schmarotzenden *Atax*-Arten. Württemb. naturw. Jahreshafte, xxv. pp. 146-151.

Relates to the development and embryology of the species.

CAMBRIDGE, O. P. Descriptions and sketches of some new species of Araneidea, with characters of a new genus. Annals and Magazine of Natural History, ser. 4. vol. iii. pp. 52-74, plates 4-6 (January 1869).

—. Descriptions of a new genus and six new species of Spiders. Journ. Linn. Soc. vol. x. Zool. pp. 264-275, plate 9.

—. Part I. of Catalogue of a Collection of Ceylon Araneidea lately received from Mr. J. Nietner, with descriptions of new species and characters of a new genus. Journal of the Linnean Society, vol. x. Zoology, pp. 373-397, plates 11-13 (August 10).

—. Notes on some Spiders and Scorpions from St. Helena, with descriptions of new species. Proc. Zool. Soc. 1869, pp. 531-544, pl. 42 (June 1870).

Contains a list of a few species of Arachnida collected in St. Helena by Melliss, with remarks upon the habits of some of them, and descriptions of new forms.

CANESTRINI, GIOV., & PAVESI, P. Araneidi Italiani. Atti Soc. Ital. Sci. Nat. vol. xi. pp. 758-872.

A synonymic list of species, preceded by an historical summary and followed by some general remarks, and with descriptions of new species.

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GIEBEL, C. G. Ueber einige Spinnen aus Illinois. Zeitschr. ges. Naturwiss. Band. xxxiii. pp. 248-253.

HILL, RICHARD. Notes on the natural history of the Scorpion. Annals Lyc. Nat. Hist. New York, vol. viii. pp. 387-393 & p. 486.

KOCH, L. Die europäischen Arten der Arachnidengattung *Cheiracanthium*. Abhandl. naturhist. Gesellsch. zu Nürnberg, 1864.

———. Die Arachnidengattungen *Amaurobius*, *Caelotes*, und *Cybæus*. Abhandl. naturhist. Gesellsch. zu Nürnberg, 1868.

These two papers the Recorder has not seen. They are cited by Thorell in the Bibliography of his work on "European Spiders."

LUCAS, H. Quelques Remarques sur les articles additionnels observés dans les palpes des *Actinopus*, les pattes des *Hersilia*, et description d'une nouvelle espèce d'Aranéide appartenant à cette dernière coupe générique. Revue et Magasin de Zoologie, 1869, pp. 160-170, plate 11.

MENGE, A. Ueber einen Scorpion und zwei Spinnen im Bernstein. Schriften naturf. Gesellsch. in Danzig. Neue Folge, Band. ii. pp. 9, with woodcuts.

———. Preussische Spinnen. III. Abtheilung. Schriften der naturf. Gesellsch. in Danzig. Neue Folge, vol. ii. pp. 219-264, plates 44-49.

This is the continuation of Menge's elaborate monograph of the Spiders of the Province of Prussia. It contains descriptions of species of Linyphiidæ and Theridiidæ, and includes the characters of several new genera.

SHIMER, HENRY. Descriptions of two Acarians bred from the white Maple (*Acer dasycarpum*). Trans. Amer. Entom. Soc. vol. ii. pp. 319-320 (May 1869).

Includes the characters of a new genus.

SORDELLI, FERDINANDO. Sui Ragni Lombardi. Atti Soc. Ital. Sci. Nat. vol. xi. pp. 459-476.

A list of the Spiders hitherto discovered in Lombardy.

STOLICZKA, FERDINAND. Contribution towards the knowledge of Indian Arachnoidea. Journal of the Asiatic Society of Bengal, vol. xxxviii. part 2. pp. 201-251, plates 18-20.

This paper contains some general remarks on the Arachnida, with indications of the characters of the families and descriptions of new species.

THOMAS, FRIEDRICH. Ueber *Phytoptus*, Duj., und eine grössere Anzahl neuer oder wenig gekannter Missbildungen, welche diese Milben an Pflanzen hervorbringen. Zeitschr. ges. Naturwiss. Band xxxiii. pp. 313-366, plate 4.

THORELL, T. On European Spiders. Part I. Review of the European Genera of Spiders, preceded by some observations on Zoological Nomenclature. Nova Acta Regiæ Soc. Sci. Upsal. ser. 3. vol. vii. pp. 1-242 (November 13, 1869, pp. 1-108, and February 16, 1870). Also published separately under the above title.

This is undoubtedly the most valuable contribution to the knowledge of the Araneida that has appeared of late years. The author discusses in it the general classification of the group, and the bibliography and literature of the subject generally; and many remarks upon extra-European forms of Spiders will be found scattered through it, or in the notes appended to the text. The author has also discussed the general question of zoological nomenclature and synonymy, his remarks upon which are exceedingly valuable. A great number of generic names are changed by the author on account of their having been preoccupied in other groups (see especially p. 37). Thorell also gives a notice of Fossil Spiders, including descriptions of some new forms.

WOOD, H. C. On the Phalangeæ of the United States of America. Communications of the Essex Institute, vol. vi. pp. 10-40 (1868).

——. On the Phalangia and Pedipalpi collected by Professor Orton in Western South America, with the description of new African species. Trans. Amer. Phil. Soc. n. s. vol. xiii. pp. 435-442, plate 24.

ARANEIDA.

THORELL (European Spiders, part I.) proposes to divide this order (which he calls *Araneæ*) into 7 suborders, nearly corresponding to the families of Latreille, namely the *Orbitelariæ*, *Retitelariæ* (= *Inæquitelæ*, Lat.), *Tubitelariæ*, *Territelariæ*, *Citigradæ*, *Laterigradæ*, and *Saltigradæ*. These include in all 22 families (16 of which are represented in Europe), of which the author gives a scheme or diagram showing their mutual relations in accordance with the hypothesis of evolution—that is to say, on the principle of “propinquity of descent,” which he regards, with Darwin, as the sole cause of the similarity of organic beings. This diagram we cannot reproduce here; but its general indications may be understood from the following statement. The whole genealogical tree of the true Spiders springs from the *Opiliones*; it forms two branches, one of which is simple, the

other very complex. The simple branch bifurcates, leading to the families *Enyoidæ* and *Scytodoidæ*; from the latter spring the *Theridiodæ*, and from these again the *Epeiroidæ*. The direct line of the second branch forms the family *Filistatoidæ*; but the families *Urocteidæ* and *Omanoidæ* (= *Æcobiidæ*, Blackw.) are supposed to be given off from this branch before the discrimination of the *Filistatoidæ*. From the latter springs a branch which gives off the *Dysderoidæ* close to its origin, and leads up directly, after a longish interval, to the *Theraphosoidæ* (= *Mygalidæ*); and from these the *Catadysoidæ* (founded for *Catadysas*, Hentz) spring on one side, pointing towards the *Thomisoidæ*, and the *Liphistioidæ* (founded for the genus *Liphistius*, Schiödte) on the other, pointing in the direction of the *Phrynoïdæ*. Another branch, originating from the *Filistatoidæ*, bifurcates near its base into the *Hersilioidæ* and *Drassoidæ*; from the latter spring directly the *Agalenoidæ*, *Thomisoidæ*, and *Lycosoidæ*, and from the last the *Oxyopoidæ*, pointing towards the Saltigradæ group. The *Saltigradæ* likewise spring from the *Drassoidæ*; their direct line terminates in the *Myrmecioïdæ*, and gives off the *Attoïdæ*; another branch is formed by a new family, *Othiothopoidæ* (founded by the author for the reception of M'Leay's genus *Othiothops*); a third branch bifurcates and bears the families *Dinopoidæ* and *Eresoidæ*.

These 22 families are placed by the author in his suborders as follows:—I. ORBITELARIÆ: 1. *Epeiroidæ*; II. RETITELARIÆ: 2. *Theridiodæ*, 3. *Scytodoidæ*, 4. *Enyoidæ*; III. TUBITELARIÆ: 5. *Urocteidæ*, 6. *Omanoidæ*, 7. *Hersilioidæ*, 8. *Agalenoidæ*, 9. *Drassoidæ*, 10. *Dysderoidæ*, 11. *Filistatoidæ*; IV. TERRITELARIÆ: 12. *Theraphosoidæ*, 13. *Liphistioidæ*, 14. *Catadysoidæ*; V. LATRIGRADÆ: 15. *Thomisoidæ*; VI. CITIGRADÆ: 16. *Lycosoidæ*, 17. *Oxyopoidæ*; VII. SALTIGRADÆ: 18. *Myrmecioïdæ*, 19. *Othiothopoidæ*, 20. *Dinopoidæ*, 21. *Eresoidæ*, 22. *Attoïdæ*.

CANESTRINI and PAVESI (Atti Soc. Ital. Sci. Nat. xi.) publish a catalogue of the known Italian species of this order (l. c. pp. 759–829), to which they append some general considerations (pp. 830–844), chiefly relating to the numerical proportions of the families and genera, and of the Italian to other European faunas. The number of species recorded by them in the different families as inhabiting Italy are:—

Mygalidæ	6 species.
Filistatidæ	1
Scytodidæ	4
Dysderidæ	15
Drassidæ	70
Therididæ	77
Epeiridæ	50
Cimiflonidæ	11

Agelenidæ.....	28 species.
Lycosidæ	42
Chersidæ	2
Attidæ	65
Thomisidæ	33

Total 404

The comparison with other countries of which the Spider-fauna is best known is as follows:—

Sweden, according to Westring	308 species.
Britain, according to Blackwall	304
France, according to Walckenaer	about 280
Austrian Empire, according to Doleschal	205
Prussia, according to Ohlert.....	153
Italy	404

LUCAS (Rev. et Mag. Zool. 1869, pp. 160–164) discusses the nature of the additional joint which occurs in the palpi of *Actinopus*, and occasionally in the tarsi of *Hersilia*.

BREYER (Comptes Rendus Soc. Ent. Belge, 1867, pp. liii–lvi) discusses the means by which Spiders unite distant places by means of threads, and communicates a letter from Terby on the same subject (*l.c.* p. lxii).

GIEBEL (Zeitschr. ges. Naturw. xxxiii. pp. 248–253) notices a few species of Spiders from the State of Illinois. The known species referred to are *Attus auridens* (Bosc) and *Epeira apoclista* (Walck.).

SORDELLI has published (Atti Soc. Ital. Sci. Nat. xi. pp. 459–476) a list of Lombardian Spiders, with a few preliminary remarks.

A list of the Spiders collected on the Gotska Sandön is given by THORELL (Öfvers. Kongl. Vet.-Akad. Förh. xxv. p. 379).

MYGALIDÆ.

THORELL (European Spiders, part I.), as already stated, includes three families under his suborder *Territelariæ*; but of these only one, his *Theraphosoidæ*, representing the *Mygalidæ* of most authors, is represented in Europe. He gives the following table of the European genera (*l.c.* p. 164):—

I. Maxillæ versus basin dilatatæ; palpi dilatationi lateris affixi; cephalothorax anteriora versus dilatatus 1. *Atypus* (Latr.).

II. Maxillæ angustæ, subcylindratæ; palpi apice earum inserti.

A. Area oculorum $2\frac{1}{2}$ –3-plo latior quam longior; cephalothorax antice alte elevatus; pedes breves, robusti, 3^{tti} paris reliquis breviores.

2. *Cyrtachenius*, g. n.

B. Oculi conferti, eminentiæ communi parvæ impositi; area quam occupant, circa dimidio-duplo tantum latior quam longior.

1. Mandibulæ ad apicem dentibus vel lamellis corneis liberis, rastellum vel pecten formantibus, armatæ .. 3. *Nemesia* (Sav. & Aud.).

2. Mandibulæ rastello carentes.

a. Pedes versus apicem attenuati, unguibus ipsi apici tarsorum insertis.

* Mamillæ superiores (posteriores) articulis quaternis.

4. *Diplura* (Koch).

† Mamillæ superiores articulis trinis.

5. *Trechona* (Koch).

[b. Pedes robusti, versus apicem vix vel parum attenuati, unguibus supra apicem tarsi insertis, retrahendis.

6. *Avicularia* (Lam.).]

The type of *Atypus* is *A. piceus* (Sulzer); the type of *Nemesia* (= *Cteniza*) is *N. cellicola* (Sav. & Aud.); *Diplura* has *D. macrura* (Koch) as its type, and includes also *Myg. calpeiana* (Walck.) and *M. luctuosa* (Luc.); of *Trechona* the type adopted by Thorell is *Myg. valentina* (Duf.); *Avicularia* is represented by *Ar. avicularia* (Linn.) = *vestiaria* (De G.) = *Avic. cancridea* (Lam.).

Cyrtachenius, g. n., Thorell, *l. c.* p. 165 (= *Cyrtocephalus*, Luc.). (See Table, p. 145.) Type *C. walckenaerii* (Luc.).

Clostes, g. n., Menge, Schr. naturf. Ges. in Danzig, neue Folge, ii. p. 6. Between *Clotho* and *Mygale*; eyes on a quadrangular elevation, frontal and vertical eyes forming a square; falces projecting, moving vertically downwards; spinners 4, anterior very small, posterior 3-jointed, very long; no cushions on the claw-joints, claws pectinate. Sp. *C. priscus*, sp. n., Menge, *l. c.* p. 7, in amber.

Mygale radialis, sp. n., Cambridge, Journ. Linn. Soc. x. p. 373, figs. 1-8, Ceylon.

Eriodon formidabile, sp. n., Cambridge, *l. c.* p. 267, pl. 9. figs. 1-6, New Holland?; *E. granulatum*, sp. n., Cambr. *l. c.* p. 268, pl. 9. figs. 7-13, Swan River; and *E. crassum*, sp. n., Cambr. *l. c.* p. 269, pl. 9. figs. 14-16, Swan River.

SCYTODIDÆ.

The Spiders of this family are referred by Thorell (European Spiders, part I.) to his suborder *Retitelariæ*, which is chiefly made up of the *Theridiidæ*. For convenience, and in order to keep Thorell's results as much as possible together, the analysis of the whole of this suborder is given under the last-mentioned family.

Syctodes propinqua, sp. n., Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 232, pl. 19. fig. 4, Calcutta.

Syctodes unicolor, sp. n., Canestrini, Atti Soc. Ital. Sci. Nat. xi. p. 845, Tuscany.

LYCOSIDÆ.

THORELL'S suborder *Citigradæ* (European Spiders, part I.) corresponds with this group, and is divided by him into the following two families:—

- I. **LYCOSOIDÆ**: Oculi in series transversas tres vel duas dispositi; oculi 4 posteriores in trapezium postice latius, vel in lineam fortiter recurvam dispositi.
- II. **OXYPLOIDÆ**: Oculi in series transversas 4 vel 3 dispositi; oculi 4 posteriores in trapezium postice angustius vel in seriem procurvam dispositi.

The European genera of *Lycosoidæ* are tabulated by THORELL as follows (*l. c.* p. 189):—

- I. Series oculorum antica ex oculis 4 formata.

- A. Oculi medii seriei anticæ a margine clypei spatio remoti quod diametrum oculorum non vel paullo tantum superat.
- I. Mamillæ superiores reliquis saltem dimidio longiores.
1. *Aulonia* (Koch).
2. Mamillæ superiores reliquis vix vel non longiores.
- a. Series oculorum antica paullo brevior quam media; area oculorum æque saltem longa atque lata; facies alta.
 - * Facies subquadrata, versus mandibulas non vel parum latior, lateribus rectis 2. *Lycosa* (Lat.).
 - † Facies versus mandibulas multo latior, lateribus fortiter convexus 3. *Tarentula* (Sund.).
 - b. Series oculorum antica plerumque paullo longior, saltem non brevior quam media; area oculorum plerumque latior quam longior; facies humilis.
 - * Oculi medii seriei anticæ majores, vix vel non minores quam oculi seriei posticæ; cephalothorax plerumque densius appresso-pubescent 4. *Trochosa* (Koch).
 - † Oculi medii seriei anticæ parvi, evidenter minores quam oculi seriei posticæ; cephalothorax parce pubescens.
 5. *Pirata* (Sund.).
- B. Oculi medii seriei anticæ a margine clypei spatio remoti, quod diametro oculorum maximorum duplo saltem majus est.
1. Oculi 4 seriei anticæ subæquales; pedes robustiores.
 6. *Dolomedes* (Lat.).
 2. Oculi 2 laterales seriei anticæ evidenter majores quam medii ejusdem seriei; pedes graciles 7. *Ocyale* (Sav. & Aud.).
- [II. Series oculorum antica ex duobus tantum oculis constans; oculi laterales seriei mediæ ab oculis 2 seriei posticæ longe disjuncti.
8. *Ctenus* (Walck.).]

The *Oxyopoidæ* include only 2 genera, namely:—

1. *Peucetia*, g. n. (= *Pasithea*, Blackw.): oculi in series 3, sectorem circuli fere formantes, ordinati.
2. *Oxyopes* (Lat.): oculi in series 4 ordinati.

The type of *Aulonia* is *Lycosa albimana* (Walck.); the type of *Lycosa* is *L. lugubris* (Walck.) = *silvicola* (Sund.) = *alacris* (Koch); *Tarentula* has *L. apulica* (Walck.) for its type; *Trochosa* has *A. ruricola* (De G.) as its type, and includes *T. intricaria* (Koch), also *Lyc. leopardus* (Sund.) and the rest of Koch's genus *Aretosa*; *Pirata* (= *Potamia*, Ohl.) has for its type *A. piraticus* (Cl.), and includes *P. uliginosus* (Thor.); *Dolomedes* is typically represented by *A. fimbriatus* (Cl.); the type of *Ocyale* is *A. mirabilis* (Cl.); the type of *Ctenus* is *C. dubius* (Walck.). *Peucetia*, substituted for *Pasithea* (the latter name being preoccupied) has *P. viridis* (Blackw.) = *Ox. littoralis* (Sim.) as its type; and *Oxyopes* has *O. variegatus* (Lat.). The Brazilian genus *Idiops* (Perty), combined with *Oxyopes* by Walckenaer, probably belongs to the Mygalidæ.

Hersilia. Lucas (Rev. et Mag. Zool. 1869, p. 165) states that the species of this genus may be divided into two groups, in the first of which, including *H. caudata* (Sav.), *H. savignyi* (Luc.), *H. indica* (Luc.), *H. edwardsii* (Luc.), and a new species, the third pair of spinners are very long and the third pair of legs very short, whilst in the second, which includes only *H. oraniensis*

(Luc.), the third pair of spinners are short and the third pair of legs long. He figures the fore part of the head and the spinners of *H. oraniensis* (pl. 11. figs. 6 & 7).

Hersilia oraniensis is made the type of a new genus by Thorell (see p. 156).

Pasitheia pulchra (Blackw.) is figured by Cambridge from St. Helena, Proc. Zool. Soc. 1869, pl. 42. fig. 7.

New species :—

Dolomedes striatus, Giebel, Zeitschr. ges. Naturw. xxxiii. p. 252, and *D. convexus*, Giebel, ibid., Illinois.

Dolomedes longimanus, Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 218, pl. 20. fig. 3, Calcutta.

Lycosa ligata, Cambridge, Proc. Zool. Soc. 1869, p. 540, pl. 42. fig. 8, and *L. inexorabilis*, Cambr. l. c. p. 541, pl. 42. fig. 9, St. Helena.

Hersilia calcuttensis, Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 216, pl. 20. fig. 9.

Hersilia vinsonii, Lucas, Rev. et Mag. Zool. 1869, p. 167, pl. 11. figs. 1-5, Madagascar.

SALTICIDÆ.

THORELL (European Spiders, part I.) combines *Eresus* with the *Salticidæ* to form his suborder *Saltigradæ*, which he divides into two families as follows (l. c. p. 198) :—

1. *Eresoidæ*: cephalothorax antice valde elevato-convexus; oculi 2 postici inter se multo longius distantes quam sunt 2 proxime antecedentes; tarsi unguibus trinis aut binis instructi, fasciculo unguiculari carentes.
2. *Attoidæ*: cephalothorax deplanatus, parte cephalica non vel paullo tantum altiore quam parte thoracica; oculi 2 postici inter se non multo longius quam 2 antecedentes remoti; oculi 4 majores inter se proximi, medii (antici) eorum reliquis omnibus multo majores; tarsi unguibus tantum binis et fasciculo unguiculari instructi.

The *Eresoidæ*, including only the two genera *Eresus* and *Palpimanus*, are divided into the subfamilies

Eresinæ with an infra-mammillary organ and calamistrum, and *Palpimaninæ*, in which those organs are wanting. Each, of course, includes a single genus, the type of *Eresus* being *E. cinnabarinus* (Oliv.), and that of *Palpimanus* *P. gibbulus* (Duf.).

The European genera of *Attoidæ* are tabulated by THORELL as follows (l. c. pp. 206-208) :—

- I. Pars cephalica parte thoracica abrupte altior. . . 1. *Salticus* (Lat.).
- II. Pars cephalica parte thoracica non altior.
 - A. Quadrangulus oculorum longior quam lator; oculi seriei 3^{tiæ} fere medio cephalothorace siti; corpus longum et angustum; pedes tenues. 2. *Leptorchestes*, g. n.
 - B. Quadrangulus oculorum saltem postice lator quam longior.
 1. Metatarsi et tibiæ omnes aculeis carentes. . . 3. *Epiblemum* (Hentz).
 2. Metatarsi pedum saltem anteriorum evidenter aculeati.
 - a. Oculi seriei 3^{tiæ} non longius a margine cephalothoracis quam inter se remoti

* Cephalothorax plerumque duplo fere longior quam latior.

4. *Heliophanus* (Koch).

† Cephalothorax non duplo longior quam latior.

a. Cephalothorax humilis valde, dorso subplano; oculi seriei 3^{tiæ} plerumque multo longius inter se quam a margine cephalothoracis remoti.

a. Quadrangulus oculorum postice evidenter latior quam antice; oculi seriei 3^{tiæ} non multo ante medium cephalothoracis siti 5. *Ballus* (Koch).

b. Quadrangulus oculorum postice vix vel non latior quam antice; oculi seriei 3^{tiæ} longe ante medium cephalothoracis siti 6. *Marpessa* (Koch).

β. Cephalothorax altus, antice non angustatus, dorso evidenter arcuato 9. *Euophrys* (Koch).

b. Oculi seriei 3^{tiæ} longius a margine cephalothoracis quam inter se remoti.

* Cephalothorax minus altus, dorso leviter tantum arcuato, parte cephalica parum declivi, ita ut oculi seriei 3^{tiæ} vix diametro sua altius quam oculi laterales seriei 1^{mæ} sint siti 7. *Menemerus* (Sim.).

† Cephalothorax altus, immo altissimus, parte cephalica adeo declivi ut oculi seriei 3^{tiæ} multo altius quam oculi laterales seriei 1^{mæ} siti sint.

a. Metatarsi pedum posteriorum circa apicem tantum aculeis armati 8. *Dendryphantes* (Koch).

β. Metatarsi pedum posteriorum non tantum ad apicem aculeanti.

a. Oculi medii seriei 1^{mæ} ante frontem eminentes.

** Mandibulæ facie circa duplo longiores.

10. *Phileus*, g. n.

†† Mandibulæ facie non vel paullo tantum altiores.

11. *Attus* (Walck.).

b. Frons adeo prominens, ut oculi medii seriei 1^{mæ} a margine frontis occultentur.

** Tibia pedum 4^{ti} paris evidenter brevior quam metatarsus cum tarso 12. *Ælurops*, g. n.

†† Tibia pedum 4^{ti} paris æque saltem longa ac metatarsus cum tarso 13. *Yllenus* (Sim.).

The type of *Salticus* is *A. formicaria* (De G.), and the genus = *Pyrophorus* (Koch) = *Pyroderes* (Sim.); that of *Epiblemum* is *E. faustum* (Hentz), and the genus nearly represents *Calliethera* (Koch), which is a later name; *Heliophanus* has *Attus cupreus* (Walck.) for its type; *Ballus* has for its type *Attus heterophthalmus* (Reuss), and includes *A. depressus* (Walck.) = *S. brevipes* (Hahn) and *S. obscurus* (Blackw.); the type of *Marpessa* is *A. muscosus* (Cl.), and the genus includes *M. radiata* (Grube), *M. hamata* (Koch), *Salticus pulchellus* (Hahn), *Menemerus fulsificus* (Sim.), and *Attus lucasii* (Sim.); the type of *Menemerus* is *Salt. semi-limbatus* (Hahn); that of *Dendryphantes* is *A. hastatus* (Cl.); *Euophrys* has *Attus frontalis* (Walck.) as its type; the type of *Attus* is *A. terebratus* (Cl.); and the type of *Yllenus* is *Y. arenarius* (Sim.).

New genera and species :—

Leptorchestes, g. n., Thorell, *l. c.* p. 209 = *Salticus* (Koch). (See Table, p. 148.) Type *Attus formicaformis* (Luc.).

Philæus, g. n., Thorell, *l. c.* p. 217 = *Philia* (Koch). (See Table, p. 149.) Type *A. sanguinolenta* (Linn.).

Ælurops, g. n., Thorell, *l. c.* p. 219 (= *Dia* and *Parthenia*, Koch). (See Table, p. 149.) Type *A. v-insignitus* (Cl.).

Lyssomanes tenuipes, Cambridge, Ann. & Mag. Nat. Hist. ser. 4. iii. p. 65, pl. 5. figs. 50–52, Ceylon.

Salticus coccinelloides, Cambridge, *l. c.* p. 66, pl. 5. figs. 53–56, New Fribourg; *S. bicurvatus*, Cambr. *l. c.* p. 67, pl. 6. figs. 57–60, Ceylon; *S. plataleoides*, Cambr. *l. c.* p. 68, pl. 6. figs. 61–65, Ceylon.

Salticus nigro-limbatus, Cambridge, Proc. Zool. Soc. 1869, p. 542, pl. 42. fig. 10, St. Helena.

Eresus bicolor, Cambridge, Ann. & Mag. N. H. ser. 4. iii. p. 70, pl. 6. figs. 66–69, Damara Land; *E. tibialis*, Cambr. *l. c.* p. 71, pl. 6. figs. 70, 71, Mysore.

Sphasus viridanus, Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 220, pl. 20. fig. 1, and *S. similis*, Stoliczka, *l. c.* p. 222, pl. 20. fig. 2, Calcutta.

Attus brendeli, Giebel, Zeitschr. ges. Naturw. xxxiii. p. 249, Illinois.

Pyrophorus venetiarum, Canestrini, Atti Soc. Ital. Sci. Nat. xi. p. 864, Veneto; *P. flaviventris*, Can. & Pavesi, *l. c.* p. 865, Veneto and Lombardy.

Marpissa canestrinii (Ninni, MS.), Canestrini & Pavesi, *l. c.* p. 866, Veneto; *M. nardoi* (Ninni, MS.), Can. & Pav. *l. c.* p. 868, Veneto.

Euophrys obscurioides, Canestrini & Pavesi, *l. c.* p. 869, Trentino.

Plexippus montrouzieri, Lucas, Rev. et Mag. Zool. 1869, p. 209, pl. 11. figs. 8–12, New Caledonia.

THOMISIDÆ.

THORELL (European Spiders, part I.) adopts the suborder *Late-rigradæ* and includes in it only the family *Thomisoidæ*, in which he admits the following European genera (*l. c.* pp. 173–175) :—

I. Mamillæ ut et unguis in apice tarsorum adsunt.

A. Pedes 4 posteriores reliquis non vel parum graciliores, sæpissime iis non vel parum breviores; tarsi in apice sub unguibus fasciculis 2 pilorum plus minus dilatatorum instructi Subf. I. PHILODROMINÆ.

1. Utraque oculorum series ex oculis 4 composita.

a. Oculi medii antici vix vel non longius a margine clypei quam a mediis posticis remoti; maxillæ plerumque rectæ et parallelæ.

* Series oculorum antica paullo recurva, postica paullo procurva.

1. *Micrommata* (Lat.).

† Series oculorum antica paullo recurva, postica subrecta.

2. *Sparassus* (Walck.).

[† Series oculorum antica subprocurva vel recta, postica paullo recurva vel subrecta; oculi laterales antici mediis anticis non manifeste majores 3. *Heteropoda* (Lat.).]

b. Oculi medii antici evidenter longius a margine clypei quam a mediis posticis remoti; maxillæ in labium inclinatæ.

* Pedum proportio 2, 1, 4, 3 (vel 2, 1, 3, 4); cephalothorax breviter ovatus, vel suborbiculatus.

a. Series oculorum antica modice, postica levius recurva; abdo-

- men depressum, breviter et inverse ovatum vel subpentagonum 5. *Artanes*, g. n.
- β. Series oculorum ambæ modice et æqualiter recurvæ; abdomen plerumque ovatum vel inverse ovatum.
6. *Philodromus* (Walck.).
- † Pedum proportio 2, 4, 1, 3 (vel 2, 4, 3, 1); series oculorum ambæ fortiter recurvæ; cephalothorax et abdomen oblonga.
7. *Thanatus* (Koch).
2. Series oculorum antica ex oculis 6, postica ex 2 tantum oculis constat.
4. *Selenops* (Duf.).
- B. Pedes 4 posteriores reliquis graciliores et breviores multo; tarsi fasciculis unguicularibus carent Subf. II. THOMISINÆ.
1. Frons cum mandibulis declivis, subporrecta; oculi medii antici a margine clypei longius distantes quam a mediis posticis.
- a. Series oculorum antica levius, postica fortius recurva; laterales antici evidenter majores quam medii antici.
8. *Monæses*, g. n.
- b. Series oculorum antica fortius, postica levius recurva; laterales antici non majores quam medii antici. 9. *Thomisus* (Walck.).
2. Frons et mandibulæ subverticales; oculi medii antici non longius a margine clypei quam a mediis posticis remoti.
- a. Series oculorum antica plus minus recurva.
- * Oculi laterales postici vix vel non majores quam medii postici; aculei tibiæ graciles.
- a. Series oculorum anticorum fortius, posticorum levius recurva; laterales antici non vel parum majores quam intermedii antici 10. *Misumena* (Lat.).
- β. Series oculorum anticorum levius, posticorum fortius recurva; laterales antici manifeste majores quam intermedii antici.
11. *Dica*, g. n.
- † Oculi laterales postici evidenter majores quam medii postici; tibiæ et metatarsi anteriores subtus aculeis robustis armati.
12. *Xysticus* (Koch).
- b. Series oculorum antica subrecta, oculi laterales inter se manifeste longius distantes quam medii antici a mediis posticis; oculi 4 medii in rectangulum latiore quam longiorem dispositi; corpus valde depressum 13. *Coriarachne*, g. n.
- II. Mamillæ et ungues desunt Subf. III. ANETINÆ.
- Oculi laterales longe remoti 14. *Anetes* (Menge).

The type of *Micrommata* is *A. virescens* (Cl.); the species placed under this genus by Hentz do not belong to it; *Sparassus* has *S. argelasii* (Walck.) = *Oecypete tersa* (Koch) as its type; *Heteropoda* is represented by *A. venatoria* (Linn.) = *Olios leucosios* (Walck.); *Selenops* has only *S. homalosoma* (Duf.) in Europe; the type of *Philodromus* is *A. aureolus* (Cl.); that of *Thomisus* is *T. abbreviatus* (Walck.) = *T. diadema* (Hahn); *Misumena* has *A. vatus* (Cl.) = *A. citrea* (De G.) as its type, and includes *A. truncata* (Pall.) = *horrida* (Fab.), *T. lateralis* (Koch), and *T. villosus* (Lat.); the type of *Xysticus* is *X. kochii*, sp. n. = *X. viaticus* (Koch nec Linn.), and the genus includes also *A. viatica* (Linn.) = *X. audax* (Koch), and *Thom. claveatus*

(Walck.), and *T. scabriculus* (Westr.) forming part of *Oxyptila* (Sim.); *Anetes*, of which the author makes a distinct subfamily, includes only one species, *A. caelestrum* (Menge).

New genera and species:—

Artanes, g. n., Thorell, *l. c.* p. 180 (= *Artamus*, Koch). (See Table, p. 151.) Type *A. margaritatus* (Cl.).

Monases, g. n., Thorell, *l. c.* p. 182 (= *Monastes*, Luc.). (See Table, p. 151.) Type *M. paradoxus* (Luc.). Other species, *Thom. piochardi* (Sim.) and *Xysticus cuneolus* (Koch).

Dicaa, g. n., Thorell, *l. c.* p. 184. (See Table, p. 151.) Type *A. dorsata* (Fab.). Other species *A. globosa* (Fab.), and *A. tricuspidata* (Fab.) = *Thom. diana* (Walck.).

Coriarachne, g. n., Thorell, *l. c.* p. 186. (See Table, p. 151.) Type *Xysticus depressus* (Koch).

Stephanopsis, g. n., Cambridge, Ann. & Mag. Nat. Hist. ser. 4. iii. p. 60. Eyes 8, unequal, in a circle round a cephalic eminence; maxillae nearly straight, inclined towards labium, labium longer than broad; palces long, strong, inclined backwards towards labium; body, legs, and palpi with tubercles and tuberculate spines; legs 1, 2, 4, 3. Sp. *S. altifrons*, Camb. *l. c.* p. 61, pl. 5. figs. 33–39, South Australia; *S. nigra*, Camb. *l. c.* p. 62, pl. 5. fig. 40, north of New Holland; *S. clavata*, Camb. *ibid.* pl. 5. fig. 41, Australia (?); *S. lata*, Camb. *l. c.* p. 63, pl. 5. figs. 42–43, Van Diemen's Land; *S. (?) camelina*, Camb. *l. c.* p. 64, pl. 5. figs. 44–49, Amazons.

Thlaosoma, g. n., Cambridge, Journ. Linn. Soc. x. Zool. p. 271. Abdomen globular and elevated, with a deep impression on hinder part as if bruised inwards; eyes 8, four in a square at the extremity of the head, lateral eyes nearly contiguous, seated obliquely in a tubercle; legs 2, 1, 4, 3. Sp. *T. dubium*, sp. n., Cambridge, *l. c.* p. 272, pl. 9. figs. 25–35, Australia; *T. distinctum*, sp. n., Cambridge, *l. c.* p. 274, pl. 9. figs. 36–38, Australia.

Thomisus (Xysticus) pugilis, Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 225, pl. 19. fig. 3, and *T. (X.) elongatus*, Stoliczka, *l. c.* p. 227, pl. 20. fig. 6, Calcutta; *T. pealians*, Stoliczka, *l. c.* p. 229, pl. 20. fig. 4, Assam.

Thomisus trigonus, Giebel, Zeitschr. ges. Naturw. xxxiii. p. 367, Halle.

Ocypte nigritarsis, Canestrini & Pavesi, Atti Soc. Ital. Sci. Nat. xi. p. 870, Naples.

Philodromus generalii, Canestrini, *l. c.* p. 871, Modenese.

Philodromus signatus, Cambridge, Proc. Zool. Soc. 1869, p. 537, pl. 42. fig. 5, St. Helena.

Olios tridentiger, Cambridge, *l. c.* p. 538, pl. 42. fig. 6, St. Helena.

DRASSIDÆ.

THORELL (European Spiders, i. p. 109) divides his suborder *Tubitelariæ* into the following six families:—

I. *Stigma tubi trachealis* utrinque pone stigma sacci trachealis in latere ventris non adest.

A. Tarsi articulo unguifero aucti; mamillæ superiores reliquis multo longiores, articulis trinis aut binis: subtus tubulis textoriis præditæ; series oculorum 8 ambæ recurvæ; tarsorum ungues trini.

II. HERSILOIDÆ.

B. Tarsi articulo unguifero distincto carentes.

1. Pars cephalica impressionibus lateralibus a parte thoracica sæpissime distincta; mamillæ superiores inferioribus plerumque multo longiores.

a. Cephalothorax brevis, subreniformis vel inverse cordatus, parte cephalica parva; mamillæ superiores reliquis multo longiores, artic. binis, 2^{do} longo, compresso; mandibulæ parvæ, debiles; maxillæ in labium valde inclinatæ; oculi 8; tarsorum ungues trini.

I. UROCTEIDÆ.

b. Cephalothorax oblongus, parte cephalica majore, sæpissime elevata, convexa; mamillæ superiores reliquis plerumque longiores et tum subtus tubulis textoriis præditæ; oculi 8, rarissime 0; tarsorum ungues trini (exc. in *Agræca*) . . . III. AGALENOIDÆ.

2. Pars cephalica a parte thoracica non distincta; mamillæ superiores inferioribus non vel parum longiores.

a. Mandibulæ inter se liberæ, ungue mediocri vel longo; labium non cum sterno coalitum; oculi 8, rarissime (in gen. *Thysa*) 6; ungues tarsorum bini IV. DRASSOIDÆ.

b. Mandibulæ versus basin interse unitæ; labium cum sterno coalitum; oculi 8; ungues tarsorum trini VI. FILISTATOIDÆ.

II. Stigmata 4, bina in utroque latere ad basin ventris; oculi 6, rarissime (in *Stalita*) 0; ungues tarsorum trini aut bini . . V. DYSDEROIDÆ.

To the first three of these families reference will be made under *Agelenidæ*; the other three form the group which has been included under the name of *Drassidæ* in these 'Records.' Their genera are tabulated as follows by THORELL.

Under the *Drassoidæ* we have (*l. c.* p. 139) :—

I. Oculi 8.

A. Maxillæ convexæ, non impressæ.

1. Series oculorum postica, desuper visa, recurva.

a. Pedes aculeati.

* Oculi laterales inter se longius quam medii antici a mediis posticis distantes 1. *Zora* (Koch).

† Oculi laterales inter se non longius remoti, quam medii antici a mediis posticis 2. *Apostenus* (Westr.).

(?) b. Pedes non aculeati 3. *Trachelas* (L. Koch).

2. Series oculorum postica procurva vel recta.

a. Abdomen subtus pone plicam genitalem aliam plicam transversam præbet 5. *Anyphæna* (Sund.).

b. Abdomen plica pone plicam genitalem caret.

* Mandibulæ ad basin inermes.

a. Pedes 4^{ti} paris reliquis longiores.

a. Labium ad summum dimidium maxillarum longitudinem æquat 4. *Liocranum* (L. Koch).

b. Labium $\frac{1}{2}$ brevius quam maxilla 6. *Clubiona* (Lat.).

β. Pedes 1^{mi} paris reliquis longiores 7. *Chiracanthium* (Koch).

† Mandibulæ ad basin aculeo armatæ 8. *Phrurolithus* (Koch).

B. Maxillæ in medio impressæ.

1. Cephalothorax linea media impressa caret 9. *Micaria* (Westr.).

2. Cephalothorax linea media impressa præditus.
- a. Series oculorum postica plus minus procurva, et evidenter longior quam series antica. 10. *Drassus* (Walck.).
 - b. Series oculorum postica recta vel recurva.
 - * Series oculorum postica subrecta, non recurva, parum longior quam series antica. 11. *Melanophora* (Koch).
 - † Oculi laterales inter se evidenter longius distantes quam medii antici a mediis posticis; series oculorum posticorum sæpiissime evidenter recurva 12. *Gnaphosa* (Lat.).
- II. Oculi 6 13. *Thysa* (Kempel.).

The type of the genus *Zora* is *Z. lycæna* (Walck.)=*spinimana* (Sund.); the genus also includes *Dolomedes spinimanus* (Duf.), *D. errans* (Duf.), and *D. hippomane* (Sav. & Aud.). *Apostenus* has as its type *A. fuscus* (Westr.) and includes *Agelena celans* and *gracilipes* (Blackw.), *Apostenus saxatilis* (Auss.), and probably *Ar. spinicrus* (Duf.) and *Drassus subniger* (Cambr.). *Liocranum* is represented by *Clubiona domestica* (Reuss), and probably includes *Drassus prælongipes* (Cambr.). The type of *Anyphæna* is *Club. accentuata* (Walck.), that of *Clubiona* is *A. holosericea* (De G.), that of *Chiracanthium* is *Club. nutrix* (Walck.), and that of *Phrurolithus* is *P. festinus* (Koch). *Micaria* has as its type *Drassus fulgens* (Walck.). *Aranea quadripunctati* (Linn.) is the type of *Drassus* as restricted by Thorell, which includes *Drassodes* (Westr.). *Melanophora*, the distinctness of which from *Gnaphosa* is considered to be doubtful, has *Drassus ater* (Lat.) as its type. *Gnaphosa* (= *Pythonissa*, Koch) is typified by *Drassus lucifugus* (Walck.); and *Thysa* includes only its original species *T. pythonissæformis* (Kempelen).

The following is the table of genera of *Dysderoidæ* given by THORELL (*l. c.* p. 153) :—

- I. Oculi 6 perfecte explicati.
- A. Series oculorum antica ex 4, postica ex 2 oculis constans; oculi non omnes valde appropinquantes.
 1. Maxillæ longæ, rectæ, subparallelæ; unguis tarsorum trini.
 1. *Segestria* (Lat.).
 2. Maxillæ brevæ, latæ, basi gibbosæ, in labium paullo inclinatæ.
 2. *Schænobates* (Blackw.).
 - B. Series oculorum antica ex 2, postica ex 4 oculis constans.
 1. Oculi laterales seriei posticæ subrectæ, longius ab oculis mediis ejusdem seriei disjuncti; oculi duo antici inter se longe remoti; unguis tarsorum trini. 3. *Ariadne* (Sav. & Aud.).
 2. Oculi saltem seriei posticæ inter se valde appropinquantes.
 - a. Oculi duo anteriores reliquis plerumque manifeste majores, plus minus longe disjuncti; series oculorum postica procurva.
 - * Mandibulæ subporrectæ, ungue longo et valido.
 5. *Dysdera* (Lat.).
 - † Mandibulæ verticales, ungue brevi; unguis tarsorum trini.
 6. *Harpactes* (Temp.).
 - b. Oculi omnes inter se valde appropinquantes, in tria paria dispositi, 2 utrinque, 2, reliquis majores, in medio; tarsi articulo libero unguifero aucti; unguis bini. 7. *Oonops* (Temp.).

II. Oculi aut 6 valde imperfecti, aut 0; unguis tarsorum trini.

4. *Stalita* (Schiodte).

The type of *Segestria* is *A. senoculata* (Linn.). *Schcenobates* includes only *S. walkeri* (Blackw.). *Ariadne* is represented by *A. insidiatrix* (Forsk.). The type of *Stalita* is *S. tanaria* (Schiodte), and the species described under that name by Keyserling is distinct. The type of *Dysdera* is *A. punctoria* (Vill.); that of *Harpactes* is *A. hombergii* (Scop.); and that of *Oonops* is *O. pulcher* (Temp.).

Thorell's family *Filistatoidæ* includes only the genus *Filistata*.

New species :—

Stalita schiodtii, Thorell, Europ. Spiders, i. p. 156, = *S. tanaria* (Keys. nec Schiodte).

Dysdera ninnii, Canestrini, Atti Soc. Ital. Sci. Nat. xi. p. 845, Trentino, Veneto, and Emilia; *D. grisea*, Can. l. c. p. 846, Trentino and Emilia; *D. tessellata*, Can. & Pavesi, l. c. p. 847, Lugano.

Micaria aurata, Canestrini, l. c. p. 848, Modenese and Lombardy; *M. exilis*, Can. ibid., Modenese.

Drassus laticeps, Canestrini, l. c. p. 849, Modenese and Trentino.

Melanophora kochi, Canestrini, l. c. p. 850, Emilia; *M. gracilis*, Can. ibid., Modenese.

Cheiracanthium italicum, Canestrini & Pavesi, l. c. p. 851, Modenese.

Cheiracanthium incertum, Cambridge, Journ. Linn. Soc. x. p. 275, pl. 11. fig. 9, Ceylon.

Clubiona pulchella, Canestrini, l. c. p. 853, Trentino.

Clubiona dubia, Cambridge, Proc. Zool. Soc. 1869, p. 532, pl. 42. fig. 1, St. Helena.

AGELENIDÆ.

Under his suborder *Tubitelariæ*, THORELL (European Spiders, part I.) includes six families, the characters of which will be found under *Drassidæ* (p. 152). The first two families, which are newly established by Thorell, may be referred to in this place. The *Urocteoidæ*, according to the author, "stand just upon the boundary-line between *Tubitelariæ* and *Retitelariæ*;" they include :—

1. *Uroctea* (Duf.) = *Clotho* (Walck.), the latter name previously employed : Oculi omnes rotundati, convexi; cephalothorax subreniformis; pedes robusti; mamillæ superiores subtus tubulis textoriis vestiti; type *Clotho durandi* (Walck.); and

Æcobius (Luc.): Oculi intermedii postici subtrianguli, deplanati; cephalothorax inverse subcordatus; pedes graciliores; type *Æ. domesticus* (Luc.); also included *Æ. annulipes* (Luc.); both species possess eight eyes.

The family *Hersilio* of which the genus *Hersilia* (Sav. & Aud.) is the type, includes only one European species, *Hersilia*

2. Cephalothorax linea media impressa præditus.

a. Series oculorum postica plus minus procurva, et evidenter longior quam series antica..... 10. *Drassus* (Walck.).

b. Series oculorum postica recta vel recurva.

* Series oculorum postica subrecta, non recurva, parum longior quam series antica..... 11. *Melanophora* (Koch).

† Oculi laterales inter se evidenter longius distantes quam medii antici a mediis posticis; series oculorum posticorum sæpissime evidenter recurva..... 12. *Gnaphosa* (Lat.).

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A. Series oculorum antica ex 4, postica ex 2 oculis constans; oculi non omnes valde appropinquantes.

1. Maxillæ longæ, rectæ, subparallelæ; unguis tarsorum trini.

1. *Segestria* (Lat.).

2. Maxillæ breves, latæ, basi gibbosæ, in labium paullo inclinatæ.

2. *Schænobates* (Blackw.).

B. Series oculorum antica ex 2, postica ex 4 oculis constans.

1. Oculi laterales seriei posticæ subrectæ, longius ab oculis mediis ejusdem seriei disjuncti; oculi duo antici inter se longe remoti; unguis tarsorum trini..... 3. *Ariadne* (Sav. & Aud.).

2. Oculi saltem seriei posticæ inter se valde appropinquantes.

a. Oculi duo anteriores reliquis plerumque manifeste majores, plus minus longe disjuncti; series oculorum postica procurva.

* Mandibulæ subporrectæ, ungue longo et valido.

5. *Dysdera* (Lat.).

† Mandibulæ verticales, ungue brevi; unguis tarsorum trini.

6. *Harpactes* (Temp.).

b. Oculi omnes inter se valde appropinquantes, in tria paria dispositi, 2 utrinque, 2, reliquis majores, in medio; tarsi articulo libero unguifero aucti; unguis bini..... 7. *Oonops* (Temp.).

II. Oculi aut 6 valde imperfecti, aut 0; unguis tarsorum trini.

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Cheiracanthium italicum, Canestrini & Pavesi, l. c. p. 851, Modenese.

Cheiracanthium incertum, Cambridge, Journ. Linn. Soc. x. p. 275, pl. 11. fig. 9, Ceylon.

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1. *Uroctea* (Duf.) = *Clotho* (Walck.), the latter name previously employed : Oculi omnes rotundati, convexi; cephalothorax subreniformis; pedes robusti; mamillæ superiores subtus tubulis textorii vestiti; type *Clotho durandi* (Walck.); and

2. *Æcobius* (Luc.): Oculi intermedii postici subtrianguli, deplanati; cephalothorax inverse subcordatus; pedes graciliores; type *Æ. domesticus* (Luc.); also includes *Æ. annulipes* (Luc.); both species possess eight eyes.

The family *Hersilioidæ*, of which the genus *Hersilia* (Sav. & Aud.) is the type, includes only one European species, *Hersilia*

oraniensis (Luc.), which Thorell makes the type of a new genus, characterized as follows (*l. c.* p. 115):—

Hersiliola: Tarsorum articulus unguiferus ipso tarso multo brevior; mamillarum superiorum articuli bini, primus et secundus subæquales; pedes 3ⁱⁱ paris reliquis non valde breviores.

Of his *Agalenoidæ*, THORELL (*l. c.* p. 119) gives the following table of genera:—

I. Nulla stigmata trachealia in medio ventris paullo pone plicam genitalem.

A. Organum inframamillare et calamistrum adsunt.

Subf. I. AMAUROBIINÆ.

1. Maxillæ in labium subtriangulum inclinatæ; pedes omnes aculeis carentes.

a. Oculi laterales inter se contingentes; antici eorum a mediis anticis longius distantes 1. *Dictyna* (Sund.).

b. Oculi laterales et omnes oculi seriei anterioris inter se valde et æque appropinquant 2. *Argenna*, g. n.

2. Maxillæ subparallelae.

a. Oculi laterales disjuncti.

* Pedes saltem 6 posteriores aculeis carentes; labium semiovale.

3. *Titanæca*, g. n.

† Pedes omnes aculeati; labium ad basin constrictum, apice truncatum vel subemarginatum; oculi seriei 1^{mæ} subæquales, medii postici paullo longius a lateralibus posticis quam inter se distantes 5. *Amaurobius* (Koch).

b. Oculi laterales subcontingentes 4. *Lethia* (Menge).

B. Organum inframamillare et calamistrum desunt.

Subf. II. AGALENINÆ.

1. Mamillæ superiores reliquis longiores, articulis binis, 2^o acuminato, in latere inferiore, non in apice tantum, tubulis textorii instructo.

a. Oculi 8.

* Mandibulæ ad basin geniculato-convexæ.

7. *Calotes* (Blackw.).

† Mandibulæ dorso recto vel leviter modo convexæ, non ad basin geniculatæ.

a. Series oculorum posticorum plus minus recurva vel subrecta.

a. Series oculorum anticorum subrecta vel recurva, posticorum fortiter recurva 13. *Textrix* (Sund.).

b. Series oculorum anticorum procurva vel subrecta, posticorum subrecurva vel recta 12. *Histopona*, g. n.

β. Series oculorum posticorum procurva vel saltem recta.

a. Mamillæ superiores et inferiores in trapezium postice paullo latius vel in aream subrectangulum dispositæ.

** Series oculorum anticorum fortiter procurva.

aa. Series oculorum posticorum procurva; mamillarum superiorum articulus 2^{dus} 1^{mo} longior.

11. *Agalena* (Walck.).

ββ. Series oculorum posticorum subrecta; mamillarum superiorum articulus 2^{dus} 1^{mo} saltem dimidio brevior.

9. *Cryphæa*, g. n.

- †† Series oculorum anticorum subrecta vel paullo procurva; mamillarum superiorum articulus 2^{us} 1^{mo} sæpissime multo brevior 8. *Tegenaria* (Lat.).
- b. Mamillæ longæ, superiores inter se valde remotæ, cum inferioribus in lineam transversam recurvam dispositæ, et iis fere dimidio longiores 10. *Hahnia* (Koch).
- b. Oculi nulli; mamillæ superiores valde longæ, articulo 2^{do} æque fere longo atque 1^{mo} 14. *Hadites* (Keys.).
2. Mamillæ superiores inferioribus non vel parum longiores, in ipso apice tantum tubulis textoriis præditæ.
- a. Mamillæ superiores articulis distinctis binis; ungues tarsorum bini. 15. *Agræca* (Westr.).
- b. Mamillæ superiores articulo 2^{do} exserto nullo; ungues tarsorum trini. 6. *Cybæus* (L. Koch).
- II. Pone plicam genitalem alia plica, stigmata trachealia duo in medio ejus sita continens, ad basin ventris adest. Subf. III. ARGYRONETINÆ.
16. *Argyroneta* (Lat.).

Thorell's *Amaurobiina* nearly correspond with the *Ciniflonidæ* of Blackwall after the removal of those genera, such as *Veleda*, which agree with *Ciniflo* only in possessing an inframamillary organ and a calamistrum. The type of *Dictyna* is *A. arundinacea* (Linn.); *Lethia* includes only *Ciniflo humilis* (Blackw.) = *L. varia* (Menge); and the type of *Amaurobius* (= *Ciniflo*, Blackw.) is *A. fenestralis* (Ström) = *atrox* (De G.). Of the *Agalenina*, *Cybæus* includes *C. tetricus* and *angustiarum* (L. Koch); the type of *Cælotes* is *C. saxatilis* (Blackw.); the type of *Tegenaria* is *T. civiks* (Walck.), and the genus includes most of the species referred to *Philoica*, the relations of which are discussed (p. 130); *Hahnia* has for its type *Ag. montana* (Blackw.) = *H. pusilla* (Koch), and includes *Ag. elegans* (Blackw.) and other species; *Agalena* (changed from *Agelena* on etymological grounds) has as its type *A. labyrinthica* (Cl.); the type of *Textrix* is *A. denticulata* (Oliv.) = *T. lycosina* (Sund.); *Hadites* (Keys.) includes only *H. teganarioides* (Keys.); the type of *Agræca* * is *Agel. brunnea* (Blackw.) = *linotina* (Koch). The *Argyronetina* require no notice.

Argenna, g. n., Thorell, *l. c.* p. 123. (See Table, p. 156.) Type *A. mengei*, sp. n., Thorell, *l. c.* p. 123, note, Upsal.

Titanæca, g. n., Thorell, *l. c.* p. 124. (See Table, p. 156.) Type *Theridium 4-guttatum* (Hahn) = *Amaurobius kochii* (Auss.) = ? *Ther. obscurum* (Walck.).

Cryphæca, g. n., Thorell, *l. c.* p. 131. (See Table, p. 156.) Type *Hahnia silvicola* (Koch).

Histopona, g. n., Thorell, *l. c.* p. 133. (See Table, p. 156.) Type *Agelena torpida* (Koch), incl. also *Textrix montana* (Koch).

Agelenopsis †, g. n., Giebel, Zeitschr. ges. Naturw. xxxiii. p. 250. Allied to *Agelena*, but having the two frontal eyes larger and further apart than the rest, the eyes of the second row about as far as their diameter apart, and the middle ones forming nearly a square with the two hindmost. Sp. 1. *albipilis*, sp. n., Giebel, *l. c.* p. 250, Illinois.

* The name of this genus ought to have been changed, as *Agræcus* was employed by the Recorder as early as 1851 for a genus of Rhynchota.

† Evidently a misprint for *Agelenopsis*.

Tegenaria circumflexa, Canestrini & Pavesi, Atti Soc. Ital. Sci. Nat. xi. p. 863, near Vicenza.

Tegenaria torva, sp. n., Cambridge, Journ. Linn. Soc. x. p. 376, pl. 11. figs. 10-12 and 14-20, Ceylon.

Dictyna mandibulosa, Canestrini & Pavesi, Atti Soc. Ital. Sci. Nat. xi. p. 861, Veneto.

Amaurobius 12-maculatus, Canestrini, l. c. p. 862, Modenese.

Theridiidæ (including Linyphiidæ).

As already indicated (p. 144), THORELL (European Spiders, part I.) places this family under his suborder *Retitellaræ*, which he divides into families as follows (l. c. p. 72) :—

- I. Mamillæ inferiores (anteriores) reliquis non vel parum longiores.
 - A. Tarsi articulo unguifero libero carentes; labium liberum; mandibulæ non ad basin coalitæ 1. THERIDIOIDÆ.
 - B. Tarsi articulo libero unguifero aucti; labium cum sterno plerumque sine sutura coalitum; mandibulæ versus basin plerumque inter se unitæ 2. SCYTODOIDÆ.
- II. Mamillæ inferiores reliquis multo longiores . . . 3. ENYROIDÆ.

THORELL'S *Theridioidæ* include the following European genera :—

- I. Abdomen petiolo longo, nodoso cum cephalothorace unitum.
 - 2. *Formicina* (Canestr.).
- II. Petiolum brevissimum, angustum.
 - A. Oculi non in tres turmas dispositi, neque inter se valde inæquales.
 - 1. Oculi laterales inter se spatio minore disjuncti, quam quo distant medii antiqui a mediis posticis.
 - a. Pedes aculeis sparsis armati.
 - * Oculi medii in trapezium antice angustius dispositi.
 - a. Oculi medii antiqui a margine clypei spatio non breviori distantes, quam quo a mediis posticis distant.
 - 6. *Linyphia* (Lat.).
 - β. Oculi medii antiqui a margine clypei multo minus distantes, quam quo a mediis posticis distant.
 - 5. *Tapinopa* (Westr.).
 - † Oculi medii in quadratum dispositi. 10. *Ero* (C. Koch).
 - b. Pedes aculeis carentes (rariissime serie aculeorum subtus instructis).
 - * Mandibulæ femore plus duplo crassiores, usque a basi divergentes.
 - 1. *Pachygnatha* (Sund.).
 - † Mandibulæ non vel apice tantum divergentes.
 - a. Mandibulæ non vel parum crassiores quam femora anteriorum maxillæ paralleliter porrectæ; pedum prop. 1, 2, 4, 3.
 - 4. *Argyrodes* (Sim.).
 - β. Mandibulæ plerumque femore crassiores et apice divergentes; pedum prop. 4, 1, 2, 3.
 - a. Maxillæ subparallelæ vel in labium inclinatæ, ad basin non vel parum latiores 8. *Walckenaera* (Blackw.).

- δ. Maxillæ ad basin valde dilatatæ. 7. *Erigone* (Sav. & Aud.).
- † Mandibulæ sæpissime femore angustiores et subcylindratæ; maxillæ plerumque in labium fortiter inclinatæ.
- a. Oculi laterales contingentes.
- a. Oculi medii trapezium antice duplo angustius formantes, maxillæ latæ 9. *Nesticus*, g. n.
- b. Oculi medii aream antici non vel parum angustiore quam postici occupantes; maxillæ plerumque angustæ et sublineares.
- aa. Spatium inter oculos posticos medios et laterales duplo circiter majus, quam spatium, quo distant oculi medii inter se 11. *Phyllonethis*, g. n.
- ββ. Spatium inter oculos posticos medios et laterales non vel paullo tantum majus, quam quo distant illi inter se.
- ** Series oculorum postica, desuperne visa, procurva vel subrecta.
- aa. Oculi minores 13. *Theridium* (Walck.).
- bb. Oculi majores 14. *Steatoda* (Sund.).
- †† Series oculorum posticorum, evidenter recurva.
- aa. Pedes 1^m paris reliquis longiores; abdomen subglobosum 12. *Dipæna*, g. n.
- bb. Pedes 4^u paris reliquis longiores; series oculorum posticorum fortiter recurva; abdomen ovatum.
17. *Euryopsis* (Menge).
- β. Oculi laterales disjuncti.
- a. Spatium inter oculos anticos medios et laterales vix majus, quam spatium quo distant laterales inter se.
3. *Episinus* (Walck.).
- b. Spatium inter oculos anticos medios et laterales multo majus, quam quo distant hi inter se.
- aa. Clypeus humilior; oculi medii in rectangulum dispositi.
15. *Lithyphantes*, g. n.
- ββ. Clypeus altus; oculi medii aream antice paullo angustiore occupantes 18. *Asagena* (Sund.).
2. Oculi in duas series subparallelas dispositi.
16. *Lathrodectus* (Walck.).
- B. Oculi in tres turmas dispositi, duas laterales ex oculis trinis magnis constantes, tertiam ex oculis duobus minutissimis inter illas sitis.
19. *Pholcomma*, g. n.

THORELL'S *Scytodoidæ* are divided by him as follows (*l. c.* 101):—

- I. Bri. Oculi aut 8, aut 6, et tum tres in utroque latere frontis. (Palpi marium valde incrassati, clava complicata.) Subf. 1. PHOLCINÆ.
- A. Oculi 8; pedes omnium longissimi. 1. *Pholcus* (Walck.).
- B. Oculi 6. 2. *Spermophora* (Hentz).
- II. Oculi 6, in tria paria dispositi, duo in utroque latere frontis. (Palpi marium tenues, clava parum complicata.) Subf. 2. SCYTODINÆ.
- A. Cephalothorax postice alte convexus; mandibulæ parvæ, debiles; ungues tarsorum *trini*. 3. *Scytodes* (Lat.).

- B. Cephalothorax plus minus depressus; mandibulae fortiores; ungues tarsorum *bini*. 4. *Loxosceles* (Lowe).

The *Enyoidæ* include only two genera, namely:—

- I. Series oculorum anticorum procurva. 1. *Zodarium* (Walck.).
 II. Series oculorum anticorum subrecta 2. *Enyo* (Sav. & Aud.).

Of *Pachygnatha* the type is *P. clerckii* (Sund.), and of *Formicina*, *F. mutinensis* (Canest.); the type of *Episinus* is *E. truncatus* (Walck.), that of *Argyrodes* is *A. epeiræ* (Sim.)=*Linyphia argyrodes* (Walck.), and that of *Tapinopa* is *Linyphia longidens* (Reuss). *Linyphia* has for its type *A. triangularis* (Cl.), and to it Thorell restores all the species which have lately been formed into new genera, especially by Menge, with the exception of *A. cellulanus* (Cl.), of which he makes the type of a new genus. *Neriene* (Blackw.) consists of species which Thorell refers to *Linyphia*, *Walckenaera*, and *Erigone*. The type of *Erigone* is *E. vagans* (Sav. & Aud.). *Walckenaera*, which has for its type *W. acuminata* (Blackw.)=*Erigone cornuta* (Reuss), includes many of the genera proposed by Menge. *Ero* has for its type *A. tuberculata* (De G.); *E. saxatilis* (Koch) is a *Theridium*. Of *Theridium*, as restricted by him, Thorell regards *A. sisyphium* (Cl.) as the type; the genus corresponds to Walckenaer's third family. *Steatoda* has as its type *A. castaneus* (Cl.), and is very nearly synonymous with *Eucharia* (C. Koch). The type of *Lathrodectus* is *A. 13-guttata* (Rossi), and that of *Euryopis*, *Micryphantes flavo-maculatus* (Koch); the latter genus also includes *Therid. latum* (Westr.) and *T. acuminatum* (Luc.). *Asagena* has as its type *Ph. phaleratum* (Panz.).

In Thorell's family *Scytodoidæ*, the genus *Pholcus* has *Aranea phuchii* (Scop.) for its type, and *Spermophora* (= *Rachus*, Walck.) has *S. meridionalis* (Hentz). *Scytodes* is represented by *S. thoracica* (Lat.) and *Loxosceles* (= *Omosites*, Walck.) has as its type *L. citigrada* (Hein. & Lowe), and includes *Scytodes rufescens* (Duf.).

The *Enyoidæ* include only the genera *Zodarium* and *Enyo*,—the former having as its type *Enyo longipes* (Sav. & Aud.) and including *E. græca* (Koch) and *E. occitanica* (Dug.), which may all form one species; and the type of the latter being *E. nitida* (Sav. & Aud.), with which *E. germanica* (Koch) is probably identical, and a second (or third) species, *E. italica* (Canestr.). *E. amaranthina* (Luc.) ought probably to form the type of a third genus.

The following known species of this family are described and figured by Menge (Preussische Spinnen, iii.):—*Phalops* (*Erigone*) *conicus* (Westr.)=*Micryphantes conifer* (Ohlert), p. 219, pl. 43. tab. 118; *P. (E.) gibbicollis* (Westr.)=*M. gibbus* (Ohl.), p. 220, pl. 43. tab. 119; *P. fuscillatus* (Menge), p. 220, pl. 43. tab. 120; *Dictyna arundinacea* (Linn.)=*benigna* (Walck.), p. 245, pl. 47. tab. 143; *D. uncinata* (Thorell), p. 246, pl. 47. tab. 144; *IIAN NIA pusilla* (Koch)=*Agelena montana* (Blackw.), p. 252, pl. 48. tab. 149; *H. pratensis* (Koch)=*elegans* (Blackw.), p. 253, pl. 48. tab. 150; *H. silvicola* (Koch), p. 254, pl. 48. tab. 151; *Asagena serratipes* (Schr.)=*4-signatum* (Hahn), p. 256, pl. 49. tab. 152; *EUCHARIA bipunctata* (Linn.), p. 260, pl. 49. tab. 153; *E. castanea* (Clerck), p. 263, pl. 49. tab. 154; and *E. albomaculata* (De G.)=*corollata* (Thorell), p. 264, pl. 49. tab. 155.

Storena (Walck.). Cambridge (Ann. & Mag. Nat. Hist. ser. 4. iii. p. 52) remarks upon the position of this genus, which he regards scarcely distinct from *Lachesis* (Sav.) and as most nearly allied to *Enyo*. The tarsi have three terminal claws, although one of these is very minute in some species.

Pholcus phalangioides (Walck.). P. Bonizzi describes the phenomena attending the reproduction of this species. Annuario Soc. Natural. in Modena, iii. pp. 179-181; abstract in Ann. & Mag. Nat. Hist. ser. 4. iv. p. 296.

New genera :—

Nesticus, Thorell, Europ. Spiders, i. pp. 76 & 88. (See Table, p. 159.) Type *A. cellulanus* (Cl.).

Phyllonetlis, Thorell, l. c. pp. 76 & 90. (See Table, p. 159.) Type *A. lineatus* (Cl.).

Dipæna, Thorell, l. c. pp. 77 & 91. (See Table, p. 159.) Type *Atea melanogaster* (Koch) = *Th. congener* (Cambr.).

Lithyphantes, Thorell, l. c. pp. 77 & 91. (See Table, p. 159.) Type *A. corollata* (Linn.).

Pholcomma, Thorell, l. c. pp. 77 & 98. (See Table, p. 159.) Type *Therid. projectum* (Cambr.).

Gerdia, Menge, Schr. naturf. Ges. in Danzig, n. F. ii. p. 8. Allied to *Hersilia* (?); head with a rounded elevation bearing the large vertical eyes (on its anterior portion) and the hinder lateral eyes; frontal and anterior lateral eyes at the base of the elevation; legs 1, 2, 4, 3; spinners 4, superior as long as abdomen, 2-jointed, ringed and curved downwards. Sp. *G. myura*, sp. n., Menge, l. c. p. 8, in amber.

Dicyphus, Menge, l. c. p. 221. Two elevations of the head, in front of which are the eyes; vertical eyes more distant and larger than the frontal, lateral eyes contiguous; claws small. Sp. *D. bicuspidatus* (Koch?), p. 223, pl. 44. tab. 123; *D. tumidus*, sp. n., Menge, l. c. p. 221, pl. 43. tab. 121; and *D. cilunculus*, sp. n., Menge, l. c. p. 222, pl. 44. tab. 122, Prussia.

*Elaphidion**, Menge, l. c. p. 224. Eyes on an obtuse elevation of the head, vertical far more distant and larger than frontal, frontal and lateral eyes contiguous in pairs.—Sp. *E. flagelliferum*, sp. n., Menge, l. c. p. 224, pl. 44. tab. 124, Prussia.

Cornicularia, Menge, l. c. p. 226. Frontal and vertical eyes wider apart than the latter from each other, between them in ♂ a short conical horn. Sp. *Theridion monoceros* (Wider), l. c. p. 226, pl. 44. tab. 125.

Microneta, Menge, l. c. p. 227. Vertical eyes wider apart than the frontal. Sp. *Micryphantes ochropus* (Koch), p. 228, pl. 44. tab. 127; *Erigone quisquiliarum* (Westr.), p. 229, pl. 45. tab. 129; *M. tessellatus* (Koch) = *lichenis* (Wid.) = ? *parasitica* (Westr.), p. 230, pl. 45. tab. 129; *Erigone sundevalli* (Westr.), p. 232, pl. 45. tab. 131. N. sp. *Microneta scrobiculata*, Menge, l. c. p. 227, pl. 44. tab. 126; *M. gracilis*, Menge, l. c. p. 233, pl. 45. tab. 132; *M. signæa*, Menge, l. c. p. 234, pl. 45. tab. 133; *M. bifida*, Menge, l. c. p. 235, pl. 46. tab. 134 (*M. biloba*); Prussia.

Leptothrix, Menge, l. c. p. 240. Vertical eyes distant, twice as large as

* Name long preoccupied among Longicorn Coleoptera.

frontal, which are as far from the vertical as these from each other; lateral eyes contiguous, as large as the vertical. Sp. *L. clavipes*, sp. n., Menge, l. c. p. 240, pl. 47. tab. 140, Prussia.

Drepanodus, Menge, l. c. p. 241. Frontal eyes as far from each other as the vertical and nearly of the same size, forming with them nearly a square; lateral eyes contiguous, forming with the frontals a curved line on the frontal margin; falces in ♂ with a large two-pointed tooth and a smaller triangular one. Sp. *D. obscurus*, sp. n., Menge, l. c. p. 242, pl. 47. tab. 141, Prussia.

Pronopius, Menge, l. c. p. 243. Frontal eyes larger than the vertical, and about the same distance apart, frontals far from the verticals; lateral eyes contiguous. Sp. *P. providus*, sp. n., Menge, l. c. p. 243, pl. 47. tab. 142, Prussia.

Lethia, Menge, l. c. p. 249. Frontal eyes scarcely half as large as verticals, forming with them a quadrangle of which the anterior side is the shortest; legs 1, 4, 2, 3, claws pectinate. Sp. *L. varia*, sp. n., Menge, l. c. p. 249, pl. 47. tab. 145, and *L. stigmatisata*, sp. n., Menge, l. c. p. 250, pl. 48. tab. 146, Prussia.

Dolichognatha, Cambridge, Journ. Linn. Soc. x. p. 387. Allied to *Theridion*; falces very long; anterior central pair of eyes very large, approximate, on a strong circular tubercle; first and second pairs of legs longest and strongest, third pair shortest. Sp. *D. nietneri*, sp. n., Cambr. l. c. p. 388, pl. 12. figs. 39-45, Ceylon.

New species :—

Micryphantes lividus, Menge, l. c. p. 236, pl. 46. tab. 135, *M. hirsutus*, Menge, l. c. p. 237, pl. 47. tab. 136, *M. tenuipalpus*, Menge, l. c. p. 238, pl. 46. tab. 137, *M. crassipes*, Menge, l. c. p. 239, pl. 46. tab. 138, and *M. tener*, Menge, ibid., pl. 46. tab. 139, Prussia.

Dictyna major, Menge, l. c. p. 247, pl. 48. tab. 147, and *D. albopunctata*, Menge, l. c. p. 248, pl. 48. tab. 148, Prussia.

Eucharia bimaculata, Menge, l. c. p. 264, pl. 49. tab. 155, Prussia.

Pholcus ruber, Pavesi, Atti Soc. Ital. Sci. Nat. xi. p. 863, Pavia.

Pholcus ceylonicus, Cambridge, Journ. Linn. Soc. x. p. 378, pl. 11. figs. 13 & 21-27, Ceylon.

Argyrodes fissifrons, Cambridge, l. c. p. 380, pl. 12. figs. 31-38, Ceylon.

Enyo italica, Canestrini, Atti Soc. Ital. Sci. Nat. xi. p. 854, Veneto and Modenese.

Formicina mutinensis, Canestrini, l. c. p. 855, Modenese and Lombardy; *F. pallida*, Can. l. c. p. 856, Modenese.

Theridium nicolucci, Canestrini & Pavesi, l. c. p. 856, Sora.

Theridion luteipes, Cambridge, l. c. p. 382, pl. 12. figs. 46-51, Ceylon and Beirut; *T. annulipes*, Cambridge, l. c. p. 384, *T. spiniventre*, Cambr. ibid. pl. 12. figs. 52-56, and *T. albomaculosum*, Cambr. l. c. p. 386, pl. 12. figs. 57-60, Ceylon.

Linyphia rubecula, Canestrini, l. c. p. 858, Lombardy, Veneto, Trentino; *L. lithobia*, Can. & Pavesi, l. c. p. 859, Trentino and South of France.

Storena. Cambridge (Ann. & Mag. Nat. Hist. ser. 4. iii.) describes 5 new species of this genus from New South Wales, namely:—*S. variegata*, l. c. p. 53, pl. 4. figs. 1-6; *S. scintillans*, l. c. p. 54, pl. 4. figs. 7-11; *S. bradleyi*, l. c.

p. 56, pl. 4. figs. 12-20; *S. australiensis*, l. c. p. 58, pl. 4. figs. 21-26, and *S. maculata*, l. c. p. 59, pl. 4. figs. 27-32.

Ariadne mellissii, Cambridge, Proc. Zool. Soc. 1869, p. 534, pl. 42. fig. 2, St. Helena.

Phoroncidia thwaitesii, Cambridge, Journ. Linn. Soc. x. Zool. p. 270, pl. 9. figs. 17-22, Ceylon.

EPEIRIDÆ.

THORELL (European Spiders, part I.) excludes the genera *Eresus* and *Deinopis* from this family, but includes in it the genera *Uloborus* (= *Veleda*, Blackw.), *Hyptiotes* and *Zosis* (= *Orithyia*, Blackw.). He gives the following Table¹ (l. c. p. 49) of the European genera which he admits into his *Epeiroidæ*:—

I. Organum inframaxillare nullum; metatarsi postici calamistro carent.

Subf. I. EPEIRINÆ.

A. Maxillæ breves, latitudine non vel parum longiores.

1. Series oculorum postica, desuperne visa, fortiter procurva². Cephalothorax subplanus, parte cephalica parva, humili.

1. *Argiope* (Sav. & Aud.).

2. Series oculorum postica, desuperne visa, subrecta vel recurva. Cephalothorax modice convexus, parte cephalica (in feminis saltem) sat magna.

a. Oculi laterales postici a mediis posticis multo longius distantes quam hi inter se.

* Pedes 1^{mi} paris reliquis longiores.

a. Oculi laterales antici ab anticis mediis sæpissime evidenter, plerumque dimidio—duplo longius distantes quam hi inter se 2. *Epeira* (Walck.).

b. Oculi laterales antici ab anticis mediis non vel paullo tantum longius distantes quam hi inter se.

a. Oculi laterales sæpissime sat late disjuncti. Abdomen postice in formam coni productum vel ibi tuberculatum.

3. *Cyrtophora* (Simon).

b. Oculi laterales subcontingentes; abdomen cute molli tectum, cylindrato-ovali .. 4. *Singa* (Koch).

† Pedes 4^{ti} paris reliquis longiores. Abdomen cute duriuscula tectum 5. *Cercidia*, g. n.

b. Oculi laterales postici non vel (in ♂) parum longius a mediis posticis distantes quam hi inter se. 6. *Zilla* (Koch).

B. Maxillæ dimidio—duplo vel ultra longiores quam latiores.

1. Series oculorum anticorum fortiter recurva; oculi laterales subcontingentes 7. *Meta* (Koch).

2. Series oculorum anticorum subrecta; oculi laterales disjuncti.

8. *Tetragnatha* (Lat.).

II. Organum inframaxillare adest; metatarsi postici calamistro instructi.

Subf. II. ULOBORINÆ.

¹ This Table is here slightly abridged in some of the characters.

² Having the convexity directed *backwards*; when the convexity is *forward*, the author calls the series *recurva*.

- A. Series oculorum antica margini frontis proxima, procurva, postica recurva. 9. *Uloborus* (Lat.).
 B. Oculi a margine frontis longe remoti, spatium magnum occupantes; series antica procurva, postica recurva, longa.
 10. *Hyptiotes* (Walck.).

The type of *Argiope* is *A. lobata* (Pall.), and the genus also includes *A. brünnickii* (Scop.)=*fasciata* (Oliv.), and probably *Ep. ambagiosa* (Walck.), which is referred by Simon to *Nephila*. The type of *Epeira* is *E. diademata* (Cl.); the values of the genera established at the expense of *Epeira* are discussed by the author (pp. 53-56). The type of *Cyrtophora* is *Ep. opuntiae* (Duf.); it includes also *A. conica* (Pall.), for which Menge has established the genus *Cyclosa*, which falls, as later in date than *Cyrtophora*. Of Simon's *Cyrtophoræ* the author rejects *Ep. mexicana* (Luc.), *Ep. paradoxa* (Luc.), probably a *Cyrtarachne* (Thor.)=*Cyrtogaster* (Keys.), and *E. mitralis* (Vins.), which belongs to *Cerostris* (Thor.), including also *C. tuberculata* (Vins.) and *C. imperialis* (Walck.). The type of *Singa* is *A. hamata* (Cl.). *Cercidia* is proposed instead of *Cerceis* (Menge), the latter name being previously employed; its type is *Ep. prominens* (Westr.). *Zilla* has for its type *A. x-notata* (Cl.)=*calophylla* (Walck.); it includes also *Z. montana* (Koch) and *Ep. atrica* (Koch). The type of *Meta* is *Ep. menardi* (Lat.); it includes also *M. merianæ* and *M. muraria* (Koch), and *A. segmentatus* (Cl.)=*reticulata* (Linn.). *Tetragnatha* has for its type *A. extensa* (Linn.). The type of *Uloborus* (= *Phillyra*, Hentz = *Veleda*, Blackw.) is *U. walckenaerii* (Lat.); it includes *U. latreillii* and *U. costæ* (Thor.). The type of *Hyptiotes* (*Uptiotes*, Walck.) is *Mithras paradoxus* (Koch); and the position of this genus is discussed at great length (pp. 67-71).

Tetragnathu decorata (Blackw.). Cambridge describes and figures specimens of this species from Ceylon. Journ. Linn. Soc. x. p. 389, pl. 13. figs. 61-63.

New species:—

Epeira annulipes, Giebel, Zeitschr. ges. Naturw. xxxiii. p. 250, Illinois.

Epeira ornata, Canestrini, Atti Soc. Ital. Sci. Nat. xi. p. 860, Modenese;

E. biocellata, Can. l. c. p. 861.

Epeira mengei, Blackwall, Ann. & Mag. Nat. Hist. ser. 4. iv. p. 398, Denbighshire.

Epeira (Argyopes) stellata, Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 234, pl. 13. fig. 6, Sunderbunds; *E. (A.) mammillaris*, Stoliczka, l. c. p. 236, pl. 20. fig. 12, Assam; *E. braminica*, Stoliczka, l. c. p. 238, pl. 20. fig. 8, Calcutta; *E. hirsutula*, Stoliczka, l. c. p. 239, pl. 20. fig. 13, Calcutta.

Epeira (Nephila?) cicatrosa, Stoliczka, l. c. p. 242, pl. 20. fig. 5, Calcutta.

Nephila angustata, Stoliczka, l. c. p. 241, pl. 20. fig. 7, Calcutta and Assam.

Meta gracilis, Stoliczka, l. c. p. 244, pl. 19. fig. 2, Calcutta.

Tetragnatha irridescent (sic), Stoliczka, l. c. p. 246, pl. 18. fig. 3, Calcutta.

Tetragnatha culta, Cambridge, Journ. Linn. Soc. x. p. 390, pl. 13. figs. 69-75, *T. argentata*, Cambr. l. c. p. 392, pl. 13. figs. 76-82, and *T. ceylonica* Cambr. l. c. p. 394, pl. 13. figs. 83-88, Ceylon.

Tetragnatha digna, Cambridge, Proc. Zool. Soc. 1869, p. 535, pl. 42. fig. 3, and *T. indigna*, Cambridge, l. c. p. 536, pl. 42. fig. 4, St. Helena.

Gastracantha (Isacantha) canningensis, Stoliczka, *l. c.* p. 248, pl. 18. fig. 1, Port Canning.

PEDIPALPI.

SCORPIONIDÆ.

R. HILL (Ann. Lyc. Nat. Hist. N. Y. viii. pp. 387-393, and p. 486) publishes some notes on the natural history of Scorpions as observed by him in Jamaica.

The occurrence in St. Helena of *Lychas maculatus* and *L. americanus* (Koch) is recorded by Cambridge, Proc. Zool. Soc. 1869, p. 543.

Tityus eogenus, sp. n., Menge, Schriften naturf. Gesellsch. in Danzig, neue Folge, ii. p. 1, in amber.

Buthus grontii, sp. n., Wood, Trans. Amer. Phil. Soc. n. s. xiii. p. 442, pl. 24. fig. 4, Zooloo Country.

PHRYNIDÆ.

Telyphonus assamensis, Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 205, pl. 19. fig. 1, Assam.

Phrynus gorgo, Wood, Trans. Amer. Phil. Soc. n. s. xiii. p. 440, pl. 24. fig. 1, Peru; *P. annulatipes*, Wood, *l. c.* p. 441, pl. 24. fig. 2, Zooloo Country.

ADELARTHROSOMATA.

PHALANGIIDÆ.

H. C. WOOD (Communications of the Essex Institute, vol. vi. pp. 10-40) publishes a synopsis of the species of this group found in the United States. He gives a general account of the structure and habits of these animals, which he regards as forming an order of Arachnida (*Phalangeæ*), divided into the two families *Phalangide* and *Gonyleptidæ*. The descriptions are illustrated by woodcut figures.

The following known North-American species are described and figured by H. C. Wood:—*Phalangium dorsatum* (Say), *l. c.* p. 9; *P. vittatum* (Say), p. 11; *P. grande* (Say), p. 25; *P. nigrum* (Say), *ibid.*; *Acanthocheir armata* (Lucas), p. 28; and *Gonyleptes armatum* (Say), p. 28.

Gagrella, g. n., Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 212. Allied to *Leiobunum* (= *Acanthonotus*, Koch); abdomen spined, margins of eyes smooth. Sp. *G. atrata*, Stol. *l. c.* p. 213, pl. 18. fig. 2, and pl. 20. fig. 11, Calcutta; *G. signata*, Stol. *l. c.* p. 214, pl. 20. fig. 10, Assam.

Ortonia, g. n., Wood, Trans. Amer. Phil. Soc. n. s. xiii. p. 438. Allied to *Gonyleptes*; eyes 2, last joint of mandibles reniform, attached laterally by its centre; tarsal joints of second pair of legs very numerous. Sp. *O. bilunata*, sp. n., Wood, *l. c.* p. 438, pl. 24. fig. 3, and *O. ferox*, sp. n., Wood, *l. c.* p. 439, pl. 24. fig. 8, Ecuador.

Octophthalmus, g. n., Wood, *l. c.* p. 439. Allied to preceding; eyes four on each side of the eye-eminence; last joint of mandibles attached by its end. Sp. *O. marginatus*, sp. n., Wood, *l. c.* p. 440, pl. 24. fig. 7 (Ecuador?).

Phalangium. H. C. Wood (Contrib. Essex Inst. vi.) describes the following New North-American species:—*P. nigropalpi*, p. 13, Pennsylvania; *P. exilipes*, p. 14, California and Nevada; *P. cinereum*, p. 16, North New York; *P. calcar*, p. 17, Virginia; *P. bicolor*, p. 19, Delaware; *P. favosum*, p. 19, Nebraska; *P. verrucosum*, p. 20, origin unknown; *P. formosum*, p. 21, Columbia and Philadelphia; *P. pictum*, p. 21, Massachusetts; *P. maculosum*, p. 22, Pennsylvania and Virginia; and *P. ventricosum*, p. 23, Pennsylvania, and Nebraska.

Phalangium ortonii, Wood, Trans. Amer. Phil. Soc. n. s. xiii. p. 435, Ecuador.

Gonyleptes prado, Wood, l. c. p. 435, pl. 24. fig. 5, *G. injucundus*, Wood, l. c. p. 436, pl. 24. fig. 9, *G. spinipalpus*, Wood, l. c. p. 437, pl. 24. fig. 6, and *G. multimaculatus*, Wood, l. c. p. 438, pl. 24. fig. 10, Ecuador.

SOLPUGIDÆ.

Galeodes orientalis, sp. n., Stoliczka, Journ. Asiat. Soc. Beng. xxxviii. 2. p. 209, pl. 18. figs. 4 & 5, Bengal.

ACARINA.

Phytoptus. F. Thomas (Zeitschr. ges. Naturw. xxxiii. pp. 313-366) publishes a general bibliographical history of our knowledge of the *Phytopti*, and of the effects produced by them upon plants and trees, and then describes, in considerable detail, a number of such deformities observed by himself.

FRAUENFELD (Verh. zool.-bot. Ges. in Wien, xix. pp. 938 & 939) describes and figures a deformity of *Bromus erectus*, produced by a species of *Phytoptus*.

BESSELS (Württemb. naturw. Jahresh. xxv. pp. 146-151) notices some points in the development of the species of *Atax* parasitic in the freshwater Mussels. See also Bull. Acad. Roy. Belg. 2^e sér. xxvii. pp. 276-280.

LUCAS (Bull. Soc. Ent. Fr. 1869, pp. lxiii-lix) notices some points in the habits of *Tetranychus lintearius*.

J. E. VIZE notices the habits of the Mite parasitic on the Wood-pigeon. Proc. Lit. Phil. Soc. Manchester, vii. p. 211.

Vasates, g. n., Shimer, Trans. Amer. Ent. Soc. ii. p. 319. Abdomen long, tapering to a point, with two long anal setæ; legs four in number. Sp. *V. quadripedes* (sic), sp. n., Shimer, l. c. p. 319, inhabits pedicellated galls on the upperside of the leaf of the white maple. (Probably the young of some *Phytoptide*.)

Acarus aceris, sp. n., Shimer, l. c. p. 320, on the leaves of the white maple.

MYRIOPODA

BY

W. S. DALLAS, F.L.S.

HUMBERT, A., et SAUSSURE, H. DE. Description de divers Myriapodes du Musée de Vienne. Première Série, comprenant la famille des Polydesmides. Verhandl. zool.-bot. Gesellsch. in Wien, xix. pp. 669-692.

—, —. Myriapoda nova Americana. Revue et Mag. de Zoologie, 1869, pp. 149-159.

CHILOPODA.

New species—

Lithobius aztecus, Humbert & Saussure, Rev. et Mag. Zool. 1869, p. 156, *L. mystecus*, Humb. & Sauss. *ibid.*, and *L. toltecus*, Humb. & Sauss. *l. c.* p. 157, Mexico.

Lithobius curtirostris, Boheman, Öfvers. Kongl. Vet. Akad. Förh. xxv. p. 376, on the Gotska Sandön.

Scolopendra olmeca, Humbert & Saussure, Rev. et Mag. Zool. 1869, p. 157, *S. mysteca*, Humb. & Sauss. *ibid.*, and *S. sumichrasti*, Humb. & Sauss. *ibid.*, Mexico.

Scolopocryptops mexicana, Humbert & Saussure, *l. c.* p. 158.

Newportia azteca, Humbert & Saussure, *l. c.* p. 158, Mexico.

Geophilus pachymeropus, Boheman, Öfvers. Kongl. Vet. Akad. Förh. xxv. p. 377, on the Gotska Sandön.

Geophilus aztecus, Humbert & Saussure, Rev. et Mag. Zool. 1869, p. 159, Mexico.

Arthronomalus toltecus, Humbert & Saussure, *l. c.* p. 159, Mexico.

CHILOGNATHA.

POLYDESMIDÆ.

Polydesmus. Of this genus Humbert and De Saussure describe numerous species (Verh. zool.-bot. Ges. in Wien, xix. pp. 669-692). Many of the species are new; and the authors give a tabular arrangement of the subgenera admitted by them, which will be found exceedingly useful. These subgenera are:—*PARADESMUS* (SAUSS.), incl. *P. beaumontii* (Le Guill.), and *coar-*

ctatus (Sauss.); *EURYURUS* (Koch), incl. *P. erythropygus* (Brandt); *OXYDESMUS* (subg. n.), incl. *P. tricuspidatus* (Pet.) and *flavomarginatus* (Pet.); *PACHYURUS* (subg. n.), incl. *P. klugii* (Br.), *P. margaritaceus* and *squam-matus* (Koch), and a new species; *STENONIA* (Gray), incl. *Odontodesmus* (Sauss.), with *P. denticulatus* (Le Guill.), *meyenii* (Br.), *margaritiferus* (Eydoux & Gerv.), *javanus* (Sauss.), and ? *fuscus* (Koch), *Platyrrhacus* (Koch), with *P. fimbriatus* (Pet.), and three new species, and *Acanthodesmus* (Pet.), with the species described by Peters; *FONTARIA* (Gray), incl. *P. virginiensis* (Drury), *limax* (Sauss.), *montezuma* (Sauss.), &c.; *RHACHIDOMORPHA* (Sauss.), incl. *P. tarascus* (Sauss.); *OXYURUS* (Koch) = *Leptodesmus* (Sauss.) and incl. *Rhacophorus* (Sauss.),—of this subgenus the species are *P. gracilipes* (Humb. & Sauss.), *thwaitesii* and *saussurii* (Humb.), *kelaarti* (Humb.), *carneus* and *subterraneus* (Sauss.), *couloni* (Humb. & Sauss.), *sallei*, *aztecus*, and *ver-miformis* (Sauss.), *nattereri* and *zelebori* (Humb. & Sauss.), and two new species; *STRONGYLOSOMA* (Brandt), incl. *P. pallipes* (Oliv.), *guerinii* (Gerv.), and four new species; *ICOSIDESMUS* (subg. nov.) with one new species; *POLYDESMUS* (sens. str.) with *P. complanatus* (De G.) and *collaris* (Koch); *ODONTOTROPIS* (subg. nov.), incl. *P. clarazianus* (Humb. & Sauss.); and *RHACHIS* (Sauss.), incl. *P. viridis* (Sauss.).

Cyclodesmus, g. n., Humbert & Saussure, Rev. et Mag. Zool. 1869, p. 149. Body suboval, much elongate, rolling up into a compressed globe, broader in front, subcompressed at apex; first two segments flattened, first trapezoidal, nearly as broad as head; third very large, with lateral lobes produced downwards; pygidium compresso-fornicate. Sp. *C. aztecus*, sp. n., Humb. & Sauss. l. c. p. 149, Mexico.

Polydesmus. The new species described by Humbert and Saussure (l. c.) are:—*P. (Pachyurus) granosus*, p. 674, Moluccas; *P. (Stenonia) annectens*, p. 677, Moluccas; *P. (S.) insularis*, p. 678, Moluccas; *P. (S.) pfeifferæ*, p. 680, Batavia; *P. (Oxyurus) haastii*, p. 683, Auckland, N.Z.; *P. (O.) cyprius*, p. 684, Cyprus; *P. (Strongylosoma) syriacus*, p. 686, Syria; *P. (S.) persicus*, p. 687, Persia; *P. (S.) bataviæ*, p. 688, Java; *P. (S.) novaræ*, p. 689, Auckland, N.Z.; and *P. (Icosidesmus) hochstetteri*, p. 690, Auckland.

Sphæriodesmus gracilis, sp. n., Humbert & Saussure, Rev. et Mag. de Zool. 1869, p. 149, Mexico.

Polydesmus. Humbert and Saussure (l. c.) describe the following new species of this genus:—*P. (Fontaria) simillimus*, p. 150, *P. (F.) mystecus*, ibid., *P. (F.) acolhuus*, ibid., *P. (F.) zendalus*, ibid., and *P. (F.) nahuus*, ibid., Mexico; *P. (Oxyurus) couloni*, p. 151, Cuba; *P. (O.) sumichrasti*, ibid., *P. (O.) orizabæ*, ibid., and *P. (O.) intermedius*, ibid., Mexico; *P. (Odontotropis) clarazianus*, p. 152, La Plata; *P. (Tropisoma) coccineus*, ibid., Mexico; *P. (Rachidomorpha) uncinatus*, ibid., Mexico; and *P. (Scytonotus) woodianus*, ibid., Mexico.

Platydesmus mexicanus, sp. n., Humbert & Saussure, l. c. p. 156.

JULIDÆ.

Spirobolus. Humbert & Saussure (Rev. et Mag. Zool. 1869, pp. 153–154) tabulate the Mexican species of this genus.

Parajulus, g. n., Humbert & Saussure, Rev. et Mag. Zool. 1869, p. 155. Allied to *Julus*; joint 2 of mandible in ♂ tumid; labium in ♂ with median

lamina large, ovate; lateral lobes of first segment in ♂ broad, rounded or subquadrate; in ♀ narrow, subangularly coarctate; legs on segments (1) 1, (2) 0, (3) 0, (4) 1, on the rest 2; in ♂ with no arolii. Sp. *P. olmecus*, sp. n., Humb. & Sauss. *l. c.* p. 155, Mexico.

Julus anceps, sp. n., Boheman, Öfvers. Kongl. Vet. Akad. Förh. xxv. p. 378, on the Gotska Sandön.

Craspedosoma mexicanum, sp. n., Humbert & Saussure, Rev. et Mag. Zool. 1869, p. 153, Mexico.

Spirobolus nahuus, sp. n., Humbert & Saussure, *l. c.* p. 154, and *S. heteropygus*, sp. n., Humb. & Sauss. *ibid.*, Mexico.

SIPHONOPHORIDÆ.

Siphonophora mexicana, sp. n., Humbert & Saussure, Rev. et Mag. Zool. 1869, p. 155.

INSECTA.

THE GENERAL SUBJECT

By E. C. RYE.

A. *Works in progress.*

BULLETTINO DELLA SOCIETÀ ENTOMOLOGICA ITALIANA. Anno primo. Fasc. i.-iv. 1869. Florence.

The Italian Entomological Society has appointed a provisional Committee, consisting of A. Targioni-Tozzetti, A. H. Haliday (since dead), P. Stefanelli, and F. Piccioli, under whose direction a volume, consisting of four parts, has been published for 1869, containing 344 pages and six plates, of which two are coloured. The main object of this volume appears naturally to be the elucidation of Italian Entomology, catalogues of *Coleoptera*, *Rhynchota*, *Lepidoptera*, and other minor divisions being commenced in it; but there are (besides descriptions of new species of various orders) some highly interesting anatomical papers. Each fasciculus contains biographical notes, and notices of descriptive and applied entomology.

PETITES NOUVELLES ENTOMOLOGIQUES. Paris.

This little publication, commenced on the 1st July, 1869, and thence issued every fortnight, under the editorship of E. Deyrolle, fils, appears to have been originally intended as a medium for facilitating the exchange of specimens, and for diffusing news on entomological subjects that would be uninteresting unless immediately printed. But by degrees it has been made a vehicle for the descriptions, or rather of hurried and abbreviated sketches of descriptions, of new species, to which names are attached, with the avowed object of snatching priority,—at the expense of precision and dignity (*cf.* Kraatz, Berl. ent. Zeit. 13, vi.). Some of these *ébauches*, if held to be sufficient, will, although the species to which they are meant to refer may be subsequently described in the 'Annales,' necessitate the quotation of the 'Petites nouvelles' as their original record.

De Marseul has in a measure adopted the scheme of this pamphlet in his "Nouvelles et faits divers," exclusively relating to *Coleoptera*.

B. *Separate Works.*

HARRIS, THADDEUS WILLIAM, Entomological Correspondence of. (Occasional Papers of the Boston Society of Natural History, i.) Edited by Samuel H. Scudder. Boston, 1869, pp. 375.

This volume contains:—a memoir of Harris by T. W. Higginson; a list (with titles, dates, and references) of Harris's writings, and his entomological correspondence with Hentz, Melsheimer, Doubleday, Herrick, Le Conte, Morris, Say, Zimmerman, Darling, Le Baron, and Higginson. As appendices, it also contains:—descriptions of the larvæ of many American insects, with memoranda of their metamorphoses, habits, &c.; descriptions of a few species (*Orthoptera*, *Neuroptera*, *Hemiptera* and *Diptera*), selected from Harris's MS.; reprints of the original descriptions in the 'New England Farmer' (1826-30) of several species, chiefly *Coleoptera*; and some passages of the first edition of the 'State Report on Insects,' omitted from the third edition. There are 46 woodcuts, reproduced from Harris's drawings, a portrait of Harris, and 4 plates, relating chiefly to the earlier stages of *Lepidoptera*, of which the first two are coloured.

PACKARD, JR., A. S. A guide to the study of Insects, and a Treatise on those injurious and beneficial to crops. For the use of Colleges, Farm Schools, and Agriculturists. Ten plates and about 600 woodcuts. 8vo. Salem.

This work, noticed at some length in the 'Record' for 1868, was completed by the issue, in October, 1869, of part x. (part v. having appeared in January, 1869).

— Record of American Entomology for the year 1868.

This work, published by the Peabody Academy of Sciences, Salem, Mass., is edited by Packard, who undertakes the *Hymenoptera*, *Lepidoptera* (*Heterocera*), and *Arachnida*. He is assisted by Scudder in the *Lepidoptera* (*Rhopalocera*) and *Orthoptera*; by Osten-Sacken in *Diptera*, Leconte in *Coleoptera*, Uhler in *Hemiptera* and *Neuroptera*, and Hagen in Pseudo-scorpions. This volume refers to 402 new species of North-American insects, described in American journals during 1868; and it is intended that subsequent volumes shall also contain notices of such American species as are published in Europe.

PACKARD, JR., A. S. First Annual Report of the Trustees of the Peabody Academy of Science, Salem, Mass., Jan. 1869; Appendix to Report on Articulata (p. 56 *et seq.*).

Contains a List of Hymenopterous and Lepidopterous Insects

collected by the Smithsonian Expedition to South America, under Professor James Orton, and descriptions of 24 new species.

PEABODY, SELIM H. Cecil's Book of Insects. Chicago, 1868. pp. 228, 11 plates.

An introductory work.

RILEY, CHAS. V. First Annual Report on the noxious, beneficial, and other Insects of the State of Missouri. Jefferson City, Mo., 1869: 2 coloured plates, and many woodcuts.

Contains much interesting matter of a practical nature, with accounts of the economy of many species not before published, and descriptions of new species (5 *Lepidop.*, 2 *Dipt.*, 1 *Homop.*, 1 *Col.*, 3 *Hymenop.*).

STANTON, H. T. The Entomologist's Annual for 1870. Van Voorst, London, 1869: pp. 159, 1 pl.

Contains:—observations on European *Tineina* and notices of new British *Tineina* (five, including one new species) by the Editor; notes on British *Hymenoptera*, with description of one new species, by Smith; notices of new British species of *Coleoptera* (about 90 in number, including about 40 new to science) by the Recorder; notes on new British *Macro-Lepidoptera* (9) &c. by Knaggs; and a paper on Sericulture by Wallace.

THE INSECT-HUNTER'S YEAR-BOOK for 1868. Published and printed by Edward Newman, London: pp. 16.

This anonymous pamphlet, which purports to be "*instituted as an attempt to establish a chronological and systematic record of discoveries and observations in British Entomology*," contains brief references to the captures of individual specimens of certain well-known British *Lepidoptera*, and of eleven species of *Diptera* and *Hymenoptera*. From it, it would appear that 18 species only had been added to the list of the British Insect-fauna in all orders during the year to which it refers; and some of these are avowedly reproduced from the prior-published 'Annual' of Stainton. No reference to *Coleoptera* is made in it.

THOMPSON, R. Report on Insects destructive to woods and forests. Allahabad (Government Press, N.W. Provinces), 1868, pp. 42.

This has reference to the ravages of insects, more especially *Coleoptera*, in the Kumaon and Gurhwal Forests, and is illustrated by seven rough plates of the borings of different larvæ, and nine equally rough photographs of *Coleoptera* in all their stages, and of a few *Hymenoptera*. The author somewhat unnecessarily gives an introduction on the *Insecta* generally; and from his reference to Cuvier's (new!) classification, his giving the name of the European *Lucanus cervus* to the Indian *Lucanus lunifer*, and his evident ignorance of the existence of such works

as those of Kollar, Ratzburg, &c., it may easily be believed that his treatise is of the crudest nature.

C. *Papers published in Journals &c.*

BALSAMO-CRIVELLI, ANTONIO VILLA ed EMILIO CORNALIA. Sopra gl'insetti che devastano i campi della bassa Lombardia. Reale Istit. Lombardo di Scienze e Lettere (Rendic.), ser. 2. vol. i. fasc. xii. 1868, pp. 620-628.

This is the report of a Commission upon insect-ravages in the provinces of Milan, Pavia and Cremona, and especially refers to *Phytonomus punctatus*, *Chrysomela staphylæa*, *Adimonia rustica* and *Acridium biguttatum*. Remedies are suggested.

BECKER, D. Reise nach dem Kaukasus. Bull. Soc. Imp. des Nat. de Moscou, 1868, pp. 191-233.

Contains notices of localities for many insects of all orders.

BOHEMAN, CARL H. Bidrag till Gottlands Insekt-fauna. Öfversigt af Kongl. Vetenskaps-Akademiens Förhandl. 1867 (pub. 1868), pp. 611-636.

Contains references to localities for and dates of captures of *Coleoptera*, *Hemiptera* and *Lepidoptera*, and some synonymic notes, in continuation of the author's former paper on the same subject in 1849. In the first-mentioned order, he especially draws attention to his capture of *Acrognathus mandibularis* and *Planeustomus politus*.

BRAUER, FRIEDRICH. Betrachtungen über die Verwandlung der Insekten in Sinne der Descendenz-Theorie. Verh. zool.-bot. Gesellsch. in Wien, Band xix. pp. 299-318.

The author calls attention to the metamorphoses of insects as bearing upon the Darwinian hypothesis. He tabulates the different orders into four groups, characterized by the different degrees of resemblance or organization afforded by their respective members, both in their early and perfect stages, when compared with *Campodea*, which he takes as a "stem-form." He gives an outline plate (Taf. x. figs. 1-26) of the different gradations of larvæ of the *Insecta*.

BRISCHKE, G. Kleinere Beobachtungen über Insekten. Schriften d. Naturforsch. Gesellsch. in Danzig, 2nd ser. Bd. 2, Heft. 1, 1868, art. 6, pp. 1-5.

Contains:—notices of *Campoplex uncinatus* (Gr.), bred from a *Pithecia*; water-drinking larvæ of *Nematus variabilis* (Zadd.); and various species of *Diptera*. (Cf. Heft 2, 1869, for slight corrections in this.)

— Kleinere Mittheilungen über Insecten. Ibid., Heft. 2, 1869, art. 7.

Contains:—description of a new species of *Cecidomyia*; notes on Cecidomyian galls on *Athamanta oreoselinum*; leaf-mines in 1869. [VOL. VI.]

lime and elder trees; and abnormal antennal formation in *Syromastes marginatus*.

COHN, FERDINAND. Untersuchungen über Insectenschaden auf den schlesischen Getreidefeldern in Sommer 1869. Abhandlungen der Schlesischen Gesellsch. für vaterl. Cult. (Naturwiss. u. Med.) 1868-9, pp. 177-199.

Describes the economy and ravages of species of *Oscinis*, *Jassus*, *Cecidomyia*, *Chlorops*, *Aphis*, *Sirex*, *Thrips*, and *Tipula*.

CORNELIUS, C. Vogelnester und Insecten. Stettiner entom. Zeitung, 1859, pp. 407-410.

The author records the occurrence of numerous species of insects, principally *Coleoptera*, in the nests of birds (chiefly swallows).

CURIONI, GIULIO. Notizie sopra un insetto che danneggia i campi del grano turco. Reale Istit. Lomb. Scienze e Lett. (Rendic.), ser. 2, vol. i. fasc. xiii. 1863, pp. 670, 671.

Insect not known. except in larval state.

DARWIN, CHARLES. Notes on the fertilization of Orchids. *Annals & Mag. Nat. Hist.* 4th series, iv. pp. 141-159.

These notes are supplementary to Darwin's great work on the same subject, and consist of fresh facts and observations, corrections of errors, and confirmations of statements. They are divided into paragraphs to be added to specified portions of the original work, and especially treat of *Hymenoptera* and *Diptera*.

DOHRN, C. A. Linnæana. Stettiner entom. Zeitung, 1869, pp. 411-425; 1870 (pub. Nov. 1869), pp. 90-97.

Dohrn gives biographical particulars &c. of Linné.

GANIN, —. Beiträge zur Erkenntniss der Entwicklungsgeschichte bei den Insecten. *Zeitschr. f. wissensch. Zoologie* (Siebold und Kolliker), xix. 1869, pp. 381-451, Tab. xxx.-xxxiii.

The author enters at length upon the question of development in insects, giving in detail the earlier stages of *Platygaster*, *Polynema*, *Teleas*, and *Ophioneurus*, which are copiously illustrated under high powers.

GHILIANI, VITTORE. Acclimatazione spontanea. *Bull. della Società Entom. Italiana*, i. fasc. iv. pp. 268-270.

The author makes some short remarks upon the emigration of insects, giving particulars of the invasion of western Piedmont by an enormous swarm of *Anax mediterraneus*, which species appears to have become naturalized there, and to occupy a space of two years for its metamorphosis.

GIRARD, MAURICE. Études sur la chaleur libre dégagée par les animaux invertébrés, et spécialement les insectes. *Ann.*

des Sciences Naturelles (Zoologie), 5^{ème} sér. xi. 1869, pp. 135-274.

The author, after reviewing former observations on the animal heat of the *Invertebrata*, and especially those of Newport, discusses:—the different modes of detecting that heat; the results of experiments on isolated insects of different orders, *Myriopoda* and *Arachnida*; the influences of “humming” and muscular contraction in the *Hymenoptera*, and, generally, of sex; the superficial temperature of naked larvæ and of pupæ; the comparative external and internal temperature of larvæ; the heat of enclosed pupæ, and the differences in various parts of the body of perfect insects. He treats these subjects at considerable length, with much detail of experiment, and considers that the following rule is established, viz. that, in insects capable of flight, heat is concentrated in the thorax in a focus of intensity proportional to the effective power of flight.

GREDLER, VINCENZ. Beitrag zu den monströsen Erscheinungen thierischer Organe. Correspondenz-Blatt des zool.-min. Ver. in Regensburg, 1869, xxiii. pp. 34-36.

The author adds further instances of abnormal development to those mentioned in the same publication by him in 1858. In the *Insecta* he specifies *Rhyparachromus pedestris*, *Megalonotus chiragra*, *Miris holsatus*, *Mormidea nigricans*, *Otiorynchus armadillo*, *Liophlæus nubilus*, *Philonthus æneus*, *Cetonia morio*, *Ceruchus tenebrioides*, *Aromia moschata*, *Saperda carcharias*, *Magdalinus aterrimus*, *Tinea granella*, and *Bombyx mori*.

GRIMM, O. VON. Recherches anatomiques sur les antennes des insectes. Bulletin de l'Acad. Imp. des Sci. de St. Pétersb. xiv. no. 1, pp. 66-73, tab. xiv. figs. 1-7.

Contains observations on antennæ of *Oryctes nasicornis*, *Aphodius porcus*, *Geotrupes vernalis* and *stercorarius*, *Ateuchus latcollis*, *Formica rufa*, and *Cimbex variabilis*, especially with reference to the works of Landois and Leydig, and with the result of conviction to the author that the antennæ of insects generally act solely as organs of touch, and that only in some, as in *O. nasicornis*, have they an additional, but as yet undetermined, function.

GUÉRIN-MÉNEVILLE, F. E. Études sur les Insectes considérés comme la cause de la maladie des cannes à sucre dans les îles Maurice et de la Réunion (1^{re} Partie). Annales Soc. Entom. France, 4^e sér. tome ix. pp. 89-92.

The author deplors his inability to suggest any remedy for the ravages of the insects that feed on the sugar-cane, in spite of the foundation by the planters of Mauritius of a prize of 50,000 francs for efficient scientific help. He says he can only give the scientific names of these insects, and proceeds to men-

tion the different species confounded under the designation of "Pou à pouche blanche," which are four in number, viz: *Coccus sacchari* (Guér.), *Lecanium iceryi* (Guér.), *L. guerinii* (Signoret) and *Aleurodes bergii* (Sign.). He also refers to *Delphax saccharivora* (Westw.), and the "Borer," *Diathraea sacchari* (GUILDING).

HEUZÉ, GUSTAVE. Animaux et Insectes nuisibles au blé dans les greniers. Journal d'Agricult. Pratique, 1869, pp. 731-734 (extracted from the work by the same author entitled "Les Plantes alimentaires," in course of publication).

Refers to the economy of *Calandra*, *Alucita cerealella*, *Tinea granella* and *Trogosita mauritanica* (woodcuts).

HEYDEN, L. VON. Ueber neue von Herrn v. Frivaldszky in den Schriften der ungarischen Academie 1865 beschriebenen Insekten-Arten. Berlin. ent. Zeitschr. xiii. pp. 53-64.

Von Heyden abstracts, from the Abhandlungen of the Hungarian Academy, 1865, Frivaldszky's contributions, under the title "*Jellemző Adatok Magyarország Faunájához*," to the Hungarian fauna, nearly all of which refer to the *Insecta*, represented by the orders *Lepidoptera* and *Coleoptera* in about equal proportions. Food-plants are given for many of the *Lepidoptera*, but the *Coleoptera* receive the greatest attention, and will be noticed seriatim in the present Record. Frivaldszky's descriptions of his new genera and species are reproduced, with comments; and full references to his plates &c. are given.

HOFMANN, ERNEST. Beiträge zur biologischen Insektensammlung. Corresp.-Blatt zool.-min. Ver. Regensburg, 1869, xxiii. p. 42.

• Refers to incidents in the economy of *Calotormes castaneus*, *Oestrus gastris* and *Noctua piniperda*.

HOFMANN, OTTMAR. Beiträge zur Kenntniss der Parthenogenesis. Stettiner entom. Zeitung, 1869, pp. 299-303.

Hofmann adduces instances of parthenogenesis (*Solenobia*, *Lepidop.*).

KAWALL, J. H. Entomologische Anmerkungen. Stettin. entom. Zeitung, xxxi. 1870 (but published in Nov. 1869), pp. 108-110.

Contains observations on the economy &c. of eleven species of *Diptera*, *Hymenoptera*, *Lepidoptera* and *Coleoptera*.

KIESENWETTER, H. VON. Eine Excursion nach der Babia Go. und in das Tatragebirge im Sommer 1868. Berlin. ent. Zeitschr. xiii. pp. 305-320.

Contains an enumeration of alpine species, chiefly *Coleoptera*, taken in the Carpathians. The author adds two tables referring to localities for certain of the species.

KRAATZ, G. Ueber den neuen Zeichnungs-Apparat von Dr. J. R. Schiner in Wien. Berlin. entom. Zeitschr. xiii. pp. 302-304, Taf. i.

The author abstracts Schiner's paper on the same subject, and reproduces his plate.

MÄKLIN, W. Några notiser om insekt-faunan i trakten af Staden Petrosawodsk. Öfvers. af Finska Vetenskaps-Societ. Förhandl. xi. 1868-69, pp. 71-78.

Contains local references to *Coleoptera*, *Hymenoptera*, and *Diptera*.

MÄREY, —. Mémoire sur le vol des Insectes et des Oiseaux. Ann. des Sciences Nat. (Zool.) 5^{me} sér. xii. 1869, pp. 49-150 (42 cuts).

In the first portion of this paper (pp. 49-80) the author enters fully into the movements of the wings in insects, giving copies of diagrams obtained from the actual contact of wings in motion with smoke-blackened paper placed on a cylinder moved by regulated clock-work.

——. Reproduction mécanique du vol des Insectes. Comptes rendus, lxviii. p. 667.

MEYER-DÜR, L. R. Skizze des entomologischen Charakters von Corsica. Mittheilungen der schweizer. entom. Gesellsch. iii. pp. 7-14.

The author briefly sketches the entomological aspect of Corsica, especially as regards the *Rhynchota*. His deductions are:—1, its poverty in species, and endless richness in individuals; 2, that, as regards number of species, Corsica is surpassed by the neighbouring continents, and in a higher degree by any Swiss locality; 3, that, as a whole, the peculiar conditions and flora of the island produce only a few peculiar insect-forms; 4, that cultivation, from its result in Corsica, is likely to have an inordinate effect in dispersing insects to undisturbed localities; and, 5, that the insect-fauna of Corsica is a mixture of southern French and Sicilian forms with those of Central Europe.

ROJAS, CARLOS E. Observaciones entomologicas. Vargasia, Bol. de cienc. fis. y nat. de Caracas, 1868, pp. 36-38.

Contains notices of rare *Coleoptera*, parasitic *Diptera*, &c.

POSTER, GIORGIO. Di alcuni mezzi ed apparati destinati a riprodurre in disegno le immagini microscopiche applicabili in speciale modo alle minute investigazioni entomologiche. Bull. della Società Entom. Italiana, i. fasc. iv. pp. 306-315, with five woodcuts.

The author mentions different instruments for drawing with accuracy and ease under the microscope, especially referring to the method employed by Schiner. His chief object, however,

is to describe a modification by himself of an instrument constructed by Pacini in 1862, which, though a little more complicated than Schiner's, has the advantage of combining all the properties of an ordinary, solar, or photographic microscope, together with greater ease when used for designing, as the focus can be readily ascertained and varied, a tube and prism being added to the main body of the instrument, which is virtually constructed on the same principles as Schiner's.

SCHINER, J. R. Ueber einen neuen Zeichnungs-Apparat. *Verh. zool.-bot. Gesellsch. in Wien*, Band xix. pp. 3-8. (Supplement. Ueber meinen mikroskopischen Zeichnen-Apparat. *L. c.* pp. 723-724.)

The author, after referring to the method used by Winnertz, and Fraunfeld's more complicated modifications of it, describes his own very simple apparatus, which practically consists of a reversal of the ordinary method of observation. His instrument consists of a dark chamber formed by a flat box of which the front side is removed and in the middle of the top of which is a large round hole. To this hole a cone or funnel is fitted, having a diaphragm in its middle, and the object-glass of a microscope (or other modifications of magnifying-power) fitted to its apex, the remainder being the stand of a simple microscope turned upside down, and fixed by the usual moveable arm to the object-glass. The ordinary bottom reflector is thus at the top, and throws the light from a lamp on the object to be designed, which is on the usual stage; the magnified image thus being thrown *down* the cone and through the diaphragm, and finally resting on the bottom of the dark chamber. Schiner gives a figure of the whole apparatus.

SHIMER, H. Insects injurious to the Potato. *The American Naturalist*, iii. pp. 91-99.

The author treats of the same species as those described and figured in Bailey's First Report of Noxious Insects of Missouri, 1869, and reproduces figures from the 'American Entomologist' (also utilized in Riley's Report). He differs from Walsh and Riley in his estimate of the value of the insect enemies of the "Potato-bug," and thinks climatic influence the only important check.

SNELLEN VAN Vollenhoven, S. C., and De SELYS Longchamps. E. *Récherches sur la Faune de Madagascar, &c.*, 5^{me} partie. 1^r livr. Leyden, 1869, pl. 1, 2.

Contains a list of insects of different orders found by Polle and Van Dam at Réunion, the Comorres and Madagascar, with descriptions and figures of new species.

SPEYER, A. Nachtrag zu den Bemerkungen über den Hermaphroditismus der Insecten. *Stettin. entom. Zeit.* xxxi. 1870 (but published in Nov. 1869), p. 77.

The author briefly refers to observations upon hermaphrodite honey-bees, especially bearing upon the connexion between external and internal combinations of male and female characters.

WEIJENBERGH, Jr., H. *Prodromus en Algemeene Beschouwing der fossiele Insekten van Beijeren*. Tijdschr. v. Entom. xii. pp. 230-248. (*Obs.* Pp. 230-234 are erroneously printed 130-134; and pp. 231-234 are reprinted, with some slight alterations, with this error uncorrected.)

Contains a list of 100 fossil Insecta found in the lithographic oolite of Solenhofen, and consisting of the following orders and species:—*Coleoptera*, 26 spp. (of which the *Elateridæ* are the family best represented); *Hemiptera*, 12 spp. (*Heterop.* 9, *Homop.* 3); *Orthoptera*, 10 spp.; *Neuroptera*, 42 spp. (whereof 28 belong to the *Odonata*); *Lepidoptera*, 1 sp. (a *Sphinx*); *Hymenoptera*, 4 spp.; *Diptera*, 5 spp. The author adds *Arachnida* (3 spp.) and *Myriopoda* (1 sp.). References are given to the different publications in which these species are described, and comparisons are made with the English fossil insects.

WESTWOOD, J. O. Notice of a new Order of Hexapod Insects. *Entomologist's Monthly Magazine*, vi. pp. 118, 119 (1 Oct. 1869).

The author finds an order, *Achreioptera*, containing a single genus, which he characterizes under the name *Platypsyllus*, for the reception of a species described as *P. castorinus*. This insect is parasitic upon the Canadian beaver, and is oval, flat, possessed of maxillæ, a labium and four palpi, three-jointed antennæ, a large prothorax, triangular scutellum, two short, veinless, elytriform anterior wings (posterior obsolete), and robust spinous legs, with five-jointed tarsi and two claws to the apical joints. The author appears to have read a paper on the subject of this insect before the Asilimolean Society, Oxford, at Michaelmas, 1868, and to have intended that his description of it should appear in the Transactions of that Society: but the long delay attending the publication of those Transactions compelled him to send the above notice to the Ent. Monthly Mag., with the idea of obtaining priority. In this he is forestalled by Ritsema, who read a short description of the same insect on July 31, 1869, at a meeting of the Société Entomologique Néerlandaise, under the name of *Platypsyllus castoris*, and published a notice of it in Brijeyrolle's "Petites nouvelles Entomologiques," No. 6, 15 Sept. 1869. Ritsema regards the insect as undoubtedly belonging to the order *Suctoria*, Deg., and (Pet. nouv. Ent. No. 10) hesitates to found even a family (*Platypsyllidæ*) on this single species.

BICKFORD (Americ. Naturalist, ii. p. 665) gives an instance of an insect losing its life through entanglement in pollen of *Asclepias*. Kirkpatrick (*l. c.* iii. p. 110) mentions other instances (especially in the honey-bee), and states that the plant, needing external aid to free its pollen-masses, has the latter attached to cleft-glands, by which hairs or claws of an insect are held fast. Leggett (*l. c.* p. 388) mentions similar instances.

PASCOE (Proc. Ent. Soc. Lond. 1869, p. xxv) notes the existence on an undescribed species of *Saragus* (*Heteromera*) of a fungoid growth, stated to occur on the living insect and on the trees frequented by it. This growth was stated to be an *Isaria*, the early stage of a *Sphaeria*. Wallace (*ibid.*) is of opinion that the growth, if habitually found on the beetle when alive, was not vegetable; and remarks that, as an allied species has a hairy covering, it is but one step further towards protective resemblance if that covering assume a fungoid appearance.

KNEELAND (Proc. Boston Soc. Nat. Hist. xi. p. 120) describes the growth &c. of a fungoid parasite, or caterpillar fungus, from the Philippine Islands.

WALSH and RILEY (Amer. Entom. i. pp. 91, 186 and 207) remark on fungoid growths, especially in connexion with insects (figs. 129 & 144).

FRAUENFELD (Verh. zool.-bot. Gesellsch. in Wien, xix. p. 235, Zoologische Miscellen) describes two new galls:—one (figured) sent by Schrader from Shanghai, and which is formed, on a *Rhamnus* allied to *frangula*, by the larva of a new species of the Homopterous genus *Psylla*, according to Schrader, but which is referred to *Arytana* (Först.) by Frauenfeld, who retains Schrader's proposed specific name of *cornicola*; and the other sent by Tauscher from Ercsi, Donau, and formed by an unknown larva (apparently Lepidopterous) on *Polygonum aviculare*.

COUPER (Canadian Entom. i. p. 68) records an apparently undescribed gall on the leaf of *Crataegus crus-galli*. WALSH (*l. c.* p. 79) thinks it most probable this gall is produced by a *Cecidomyia*.

COUPER (*l. c.* p. 81) notes another unknown gall on *Abnus incana*. OSTENSACKEN (*l. c.* p. 89) thinks this is produced by his *Cecidomyia serratulæ*.

WALSH and RILEY (Amer. Entom. i. pp. 101–110, and ii. pp. 45–50 and pp. 70–74) figure and describe various American galls caused by *Cynips*, *Cecidomyia*, *Aphis*, *Nematus*, &c.

MÜLLER (Proc. Ent. Soc. Lond. 1869, p. xxi) notes galls on *Acer campestre*, made by unknown insects, and points out that insect-agency can produce, on thornless plants, excrescences resembling natural thorns.

KIDD and MÜLLER (Ent. Mo. Mag. v. p. 216) publish a second list of plants known or reputed to bear galls in Great Britain. Kidd (*l. c.* vi. p. 8) remarks, also, upon an unknown willow-gall.

HAECKEL (Palæontology of Illinois, Articulate fossils of the Coal-Measures, from Report of Illinois State Survey, Sept. 1868) speculates upon the ancestors of the *Articulata*. Cf. Amer. Naturalist, iii. p. 45.

SCUDDER (Proc. Boston Soc. Nat. Hist. xi. p. 117) makes observations on fossil insects from the Tertiary beds of Green River, Colorado, not agreeing in the aggregation of species, with any of the insect-beds of Europe.

REED (Proc. Bristol Nat. Soc. iii. p. 66) notes the paucity of insects at Bahia, as compared with Para and Rio, between which it is situated.

SOUTHWELL (Hardwicke's 'Science Gossip,' no. 58, p. 231) remarks on insect visitations. MOTT (*l. c.* p. 267) writes on the same subject.

MERRIFIELD (Entom. no. 66, p. 276) discusses the question why certain kinds of insects are in some years so much more plentiful than in others.

WALLENGREN (Öfv. Kongl. Vet.-Ak. Förh. p. 23), in his "Nordöstra Skånes Fauna," pp. 5-14, gives a list of insects of various orders found in N.E. Sweden.

HORNE, WALLACE, and others (Proc. Ent. Soc. Lond. 1869, p. vii) discuss the question of the relationship between the colour and the edibility of larvæ. Horne subsequently (*l. c.* p. xii) states the results of his observations in India, on various insects, as regards their liability to or freedom from attack.

WALSH and RILEY (Amer. Entom. i. p. 160) give instances of insects exhibiting a preference for certain varieties of a particular species of plant.

KIRSCH (Isis, 1869, p. 84) refers to a monocular honey-bee; to the local name of *Macrodontia cervicornis*, the habits of *Dynastes hercules* and *Theogenes neptunus*, and the position of the genus *Phengodes*.

BREYER (Ann. Soc. Ent. Belg., Comptes-rendus, pp. xxiv-xliii) discusses the question of parthenogenesis at some length, in opposition to the views of Plateau, as enunciated in his inaugural thesis on being admitted as Doctor of Zoology at the University of Ghent.

WALSH and RILEY (Amer. Entom. i. p. 194) figure insects that prey upon the "Chinch Bug" (*Micropus leucopterus*, Say), and make observations on their habits.

PACKARD, A. S., junr., in a paper on insects inhabiting salt water (Proc. & Comm. of Essex Institute, vi. p. 41, 1869), gives a list of references to prior writers on the same subject.

GUYON (Hardwicke's 'Science Gossip,' no. 51, p. 57) suggests reasons for insects flying to light. W. H. (*l. c.* no. 54, pp. 137 & 188) reverts to this subject.

In Hardwicke's 'Science Gossip,' no. 52, pp. 77 & 78, is an anonymous paper on the influence of light on insects.

R. G. (Hardwicke's 'Science Gossip,' no. 51, p. 65) remarks upon "Entomology in Coalpits."

In the American Entomologist, i. pp. 84-88, is an article by Walsh and Riley on "The Parasites of the Human Animal." The authors specify the habits of three *Pediculi*, an *Astrus*, two species of *Pulex*, the too well-known *Acanthia lectularia*, and *Conorhinus sanguisuga* (Leconte), giving figures of the latter and of *Reduviu*s. They also refer to certain *Acari* and *Entozoa*.

WALSH and RILEY (Amer. Entom. i. p. 99) note insects injurious to drugs.

BISCHOFF-EHINGER (Mittheil. schweiz. entom. Gesellsch. iii. pp. 73-81) gives a notice of the works of the late L. Imhoff.

MÜLLER (Ent. Mo. Mag. vi. p. 17) refers also to that author's manuscripts and collections.

Bri Westwood (Proc. Ent. Soc. Lond. 1869, p. xxii) communicates a paper from STÅL on the type-collections in Sweden, viz. :—at Stockholm those of De Geer, Paykull, Fallén, Schönherr (including some of Gyllenhal's), Dalman, Fries, Billberg, Sahlberg, Boheman, Stål, Holmgren, Thomson (partly), Wallengren and Wahlberg; at Upsala, those of Thunberg, Gyllenhal and (partly) Linnaeus; and at Lund, those of Zetterstedt, Dahlbom, Thomson and Ljungb.

MARSHALL (Ent. Mo. Mag. v. pp. 208-234) replies to Dunning on the gender of *Acanthosoma*.

DUNNING (*l. c.* pp. 230, 254) rejoins.

DOHRN (Stettin. ent. Zeit. 1869, pp. 304-306) addresses a farewell letter to Hagen, on the appointment of the latter to the directorship of the Cambridge Museum, Massachusetts.

DOHRN (*l. c.* p. 307), under the heading "Curiosum," ridicules a mistake in Griesbach's Book-Catalogue, wherein certain of his entomological "Pre-digten" are referred to the section containing theological works.

MEYER-DÜR (Mittheil. schweiz. entom. Gesellsch. iii. pp. 22-28), under the heading of "Ein Wort über die verschiedenen Methoden kleinste Insekten in Sammlungen aufzustellen," discusses the different methods of mounting minute insects for the cabinet. Kriechbaumer (*l. c.* p. 151) adds a note on the same subject.

WESTWOOD (Proc. Ent. Soc. Lond. 1869, p. iii) describes the method used by Green for preparing microscopic objects in Canada-balsam.

HORNE (*ibid.* p. vi) states that the inner bark of *Pinus longifolia* is useful as a substitute for cork.

Verrill's solutions for preserving larvæ and other soft forms are referred to in Entom. no. 62, p. 219.

LECONTE (Amer. Natural. iii. p. 307), in a short paper on the preservation of entomological cabinets, suggests the use of the "atomizer" (vapour-spray instrument), with a fluid composed of alcoholic solution of arsenious acid, strychnine, carbolic acid, naphtha or benzine, and alcohol.

DADANT (Amer. Entom. i. p. 99) refers to Raspail's solution of aloes and black pepper, to be mixed with the paste used in lining boxes, as a preservative against insects.

LABOULBÈNE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxii) states that specimens prepared with a solution of corrosive sublimate in alcohol are not injured by damp.

LICHTENSTEIN (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxviii) points out the advantage of using young laurel-shoots both for killing insects and keeping them flexible; and mentions, on the part of Souverbie (*sic*), that a sponge containing essential oil of bitter almonds has the same effects. Aubé objects that *Cicindela maritima*, under the action of laurel, does not keep flexible, but turns greasy: Laboulbène also does not believe in the entire efficacy of this agent. British entomologists, and especially coleopterists, however, have for many years found laurel indispensable.

GERVAIS (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xlv) refers to a solution of *Quassia amara* employed by Cloëz for the destruction of insects injurious to vegetation.

WALSH and RILEY (Amer. Entom. i. p. 220) describe and figure an ingenious contrivance for ridding fruit-trees of insect-pests. It consists of a stout frame, running on a single wheel, and from which ribs supporting a canvas frame diverge—the whole instrument resembling an enormous inverted umbrella, with two handles, like those of a wheelbarrow, and an opening in front to allow it, in a measure, to surround the tree-trunk, against which it is driven sharply, the insects falling into the frame.

COLEOPTERA

By E. C. RYE.

A. *Works in progress.*

FAUVEL, A. Faune Gallo-Rhénane, ou Species des Insectes qui habitent La France, La Belgique, La Hollande, Le Luxembourg, La Prusse Rhénane, Le Nassau et Le Valais. Coléoptères. Tome premier; 2^{ième} livraison. Caen.

The concluding portion of the first volume of this work has, after considerable delay, appeared; it completes the introductory portion, and contains chapters on external anatomy, biology and terminology, species and varieties, the laws of nomenclature and classification. The two plates (3 and 4) accompanying it contain examples of all the stages of existence in the Coleoptera, with anatomical details. The length of this first volume (281 pages) appears to have given occasion to somewhat disparaging remarks from French critics. The work was originally published in Bull. de la Soc. Linn. de Normandie, 1868, p. 175 *et seq.*

GEMMINGER, B., und HAROLD, E. von. Catalogus Coleopterorum hucusque descriptorum synonymicus et systematicus. Tom. iv.-vi. 8vo. Munich, 1869.

The portion published in 1869 contains from the *Scarabæidæ* to the *Cioidæ*.

Harold, in Coleopt. Hefte, v. pp. 105-119, gives a list of corrections and additions to vols. i.-v. of this Catalogue, which, where practicable, will be noticed in their proper places. Crotch has supplied upwards of 200 corrections &c. in the Geodephaga alone, mostly referring to dates and media of publication. Harold (*l. c.* p. 117) fully acknowledges his obligations to Crotch, and (pp. 122-125) explains his changes in the names of certain genera and species. Gemminger (*ibid.*) also adds a note to the same purpose. (*Cf.* Wagner, in Sitz. kön. bay. Akad. Wiss. München, 1869, i. H. iv. p. 415; Dorn, Stett. ent. Zeit. 1869, p. 123; Rye, Ent. Mo. Mag. v. p. 247.)

L'ABEILLE. Mémoires d'Entomologie par M. S.-A. de Marseul, avec la collaboration de plusieurs membres de la Société Entomologique de France et autres entomologistes distingués.

The publication of this work is so complicated that its editor (Nouvelles et faits divers, no. 1, Sep. 1869, p. iv) has been compelled to correct an attempt to enlighten its subscribers made in Deyrolle's "Petites nouvelles Entomologiques." According to this correction, of the then published livraisons of 1869, nos. 1,

2, 4, and 6 belong to tome vi., and nos. 3 and 5 to tome v. The only safe guide appears to be the press-mark at the bottom of each separate sheet, the wrapper being evidently untrustworthy. To add to the difficulty, a new series of the work has been commenced, of which vol. vii. of the old series forms vol. i. The first and second livraisons of this volume, respectively dated outside January and February 1870, are dated inside 1869, as the volume is supposed to be for 1869-1870. Under this new arrangement a livraison is to be published every month, the quantity of pages being, of course, diminished from the old standard.

LACORDAIRE, TH. *Genera des Coléoptères, ou exposé méthodique et critique de tous les Genres proposés jusqu'ici dans cet Ordre d'Insectes.* Tome ix^{me}, première partie, pp. 409. Paris, 1869.

This part entirely treats (in continuation) of the *Longicornia*. The plates of both the parts of vol. ix., with those of vol. viii., will appear with the second part of vol. ix.; and vol. x. (the last), but for the death of the author, would have been published in 1871 at the latest.

NOUVELLES ET FAITS DIVERS. Paris.

Under the editorship of M. S.-A. de Marseul, this little pamphlet contains current information, notes, reviews, &c. No. 1 appeared in September 1869; and the publication has continued thence monthly to December.

B. *Separate Works.*

CHAPUIS, F. *Synopsis des Scolytides.* Liège, 1869, pp. 61.
Contains descriptions of new genera and species.

DIECK, G. *Diagnosen neuer blinder Käfer aus Südeuropa und von der Nordküste Maroccos.* Merseburg, June 1869.

Contains the diagnoses of and localities for twenty new species and one new genus: these are afterwards fully described in *Berl. ent. Zeitschr.* xiii. p. 336 *et seq.*

KRAATZ, G. *Verzeichniss der Käfer Deutschlands.* 8vo, 1869. Berlin (Beiheft to Jahrg. 1869 of *Berl. ent. Zeitschr.*).

PEREZ ARCAS, LAUREANO. *Revista crítica de las Especies Españolas del género Percus (Bon.).* Madrid, 1869, pp. 30.

Contains general and historical notices, and very full descriptions of the Spanish species of *Percus*, six in number, with a synoptical table and synonymic catalogue.

SCHAUFUSS, L. W. *Beitrag zur Kenntniss der Colcopteren-Fauna der Balcaren.* Prague, January 1869.

This little pamphlet, of 31 pages (published anonymously by the Archduke Luis Salvador of Austria), is virtually the work of Schaufuss, who has determined the species and described such as are new (16 in number). The 332 species enumerated in it result from a stay of some months during 1867 in the Balearic isles by the Archduke, and from a visit of a few days to Majorca and Minorca by Schaufuss and Sam. Brannan in 1866.

C. Papers published in Journals &c.

** Descriptive.*

ABEILLE DE PERRIN, ELZÉAR. Nouveaux Coléoptères français. Annales Soc. Entom. France, 4^e sér. tome ix. pp. 39-46.

———. Description de deux espèces nouvelles de Coléoptères du bassin circum-méditerranéen, et quelques observations sur divers Malachiars, suivies de la description d'*Anophthalmus* nouveaux. *L. c.* pp. 401-409.

———. Quelques observations sur l'habitat en France de divers Coléoptères. *L. c.* p. 410.

ALLARD, E. Remarques sur le genre *Sitones*. Berlin. ent. Zeitschr. xiii. pp. 321-328.

Contains descriptions of two new species.

———. Notes sur les *Bruchites*. *L. c.* pp. 326-330.

———. Révision du genre *Asida* (Latr.), L'Abeille, tom. vi. pp. 159-304.

Intended as a supplement to Solier's Monograph. Contains descriptions of 15 new species.

BALY, J. S. Characters of some undescribed species of *Phytophaga* belonging to the families *Cassididae* and *Hispidae*. Trans. Ent. Soc. Lond. April 1869, pp. 83-90.

———. Descriptions of new genera and species of *Hispidae*, with notes on some previously described species. *Ibid.* (Decr.), pp. 363-382.

BATES, H. W. Notes on *Cicindelidae* from Tropical America, with descriptions of four new species (gen. *Odontocheila* and *Pseudoxycheila*). The Entomologist's Monthly Magazine, v. pp. 286-291 (1 May, 1869).

———. On *Coptodera* and the allied genera. *Ibid.* vi. pp. 69-72, 1 August, 1869; pp. 73-80, 1 Sept. 1869.

———. Contributions to an Insect-fauna of the Amazon Valley

(*Coleoptera*, *Prionides*). Trans. Ent. Soc. Lond. 1869 (April), pp. 37-58.

In the notes at pp. 43, 49, and 57 of this paper are descriptions of new species of *Acanthinodera*, *Mallaspis* and *Holonotus*, from Mendoza, Nicaragua, and Costa Rica.

BATES, H. W. New species of Coleoptera from Chontales, Nicaragua. Ibid. (Dec.) pp. 383-389.

BAUDI, F. Coleopterorum messis in insula Cypro et Asia minore ab Eugenio Truqui congregatæ recensitio: de Europæis notis quibusdam additis (Pars altera). Berlin. ent. Zeitschr. xiii. pp. 369-418.

Contains descriptions of many new species of *Brachelytra*, *Pselaphidæ*, and *Scydmanidæ*, chiefly from Cyprus; and also descriptions, in the notes, of other new species from Italy and France, with observations by Kraatz.

BECKER, A. Ueber Apion artemisiæ, Cossyphus tauricus, und Bryaxis furcata. Horæ Soc. Entom. Rossicæ, vi. 1869, p. 108.

BETHE, —. Throscus exul, Bonv. Stettin. entom. Zeit. xxxi. 1870 (pub. in Nov. 1869), p. 111.

BRISOUT DE BARNEVILLE, HENRI. Monographie du genre Nanophyes, d'Europe et d'Algérie. L'Abeille, t. vi. pp. 305-352.

Contains descriptions of 4 new species.

BROWN, E. On the Australian species of Tetracha. Trans. Ent. Soc. Lond. 1869 (Aug.), pp. 351-353.

BURMEISTER, H. Synonymische Berichtigung. Stettin. entom. Zeit. xxxi. 1870 (but published in Nov. 1869), p. 125.

Contains a description of a new species of *Odontoscelis* (*Carabidæ*) from Buenos Ayres.

CANDEZE, E. Diagnoses de quelques Rutélides nouvelles. Coleopt. Hefte, v. pp. 41-45, 1869.

CASTELNAU, COUNT F. DE. Description du nouveau genre Nepharis, Coleoptère de la famille des Colydiens, tribu des Synchitites. Rev. et Mag. de Zoologie, 1869, p. 356. pl. xviii. figs. 4 & 5.

CHAUDOIR, BARON MAXIMILIEN DE. Descriptions de Calosoma nouveaux des collections de MM. de Chaudoir et Sallé. Annales Soc. Entom. France, 4^e sér. tome ix. pp. 367-378.

— Mémoire sur les Thyréoptérides. Annales Soc. Entom. Belgique, tome xii^{ème}, pp. 113-160; Table, pp. 161 & 162.

CHAUDOIR, BARON MAXIMILIEN DE. Mémoire sur les Coptodérides. *L. c.* pp. 163-253; Table, pp. 255 & 256.

——. Notes sur les Carabiques (Remarques synonymiques). *L'Abeille*, vi. pp. 148-150.

——. Descriptions de Cicindélètes et de Carabiques nouveaux. *Rev. et Mag. de Zoologie*, 1869, pp. 22-28, 64-70, 114-122, 170-173, 203-208.

CROTCH, G. R. Berichtigungen und Zusätze zum Catalogus Coleopterorum synonymicus et systematicus. *Coleopt. Hefte*, v. pp. 105-112.

Contains upwards of 200 notices referring to vol. i. of Gemminger and von Harold's Catalogue, being chiefly corrections in nomenclature.

DESBROCHERS DES LOGES, J. Description de Polydrosus et autres Curculionides nouveaux et d'un genre nouveau de la même famille. *Annales Soc. Entom. France*, 4^e sér. tome ix. pp. 389-400. (NB. Some of these are already described by the same author in Deyrolle's 'Petites nouvelles Entomologiques'.)

DIECK, G. Beiträge zur subterranean Käferfauna Südeuropas und Maroccos. (Erstes Stück.) *Berlin. ent. Zeitschr.* xiii. pp. 337-360.

Contains descriptions of 20 new species (*Trechides*, *Bembidiades*, *Silphides*, *Silvanides*, *Lathridiides*, *Cossonides*), and one new genus (*Silvanides*).

EICHHOFF, W. Ueber die Gattungen Corthylus (auctorum Erichson, Lacordaire, Ferrari), Corthiomimus, Morizus, Cosmocorynus, Ferr., und Monarthron, Kirsch. *Berlin. ent. Zeitschr.* xiii. pp. 297-301, Taf. ii. figs 1-3.

FAIRMAIRE, L. Notes sur les Coléoptères recueillis par Charles Coquerel à Madagascar et sur les côtes d'Afrique, 2^e partie. *Annales Soc. Entom. France*, 4^e sér. tome ix. pp. 179-260.

——. *Coleoptera Europæ nova*. *Stettiner entom. Zeitung*, 1869, pp. 231-233.

FAUVEL, A. Note sur les Brachélytres. *L'Abeille*, t. vi. pp. 150-152.

Bri Consists of synonymical corrections.

FERRARI, J. A. Drei neue westasiatische Käfer. *Verh. zool.-bot. Gesellsch. in Wien*, Band xix. pp. 193-200.

GAUTIER DES COTTES, C. IX^e et X^e Recueil (Duplicata). *Mittheil. schweiz. entom. Gesellsch.* vol. iii. pp. 130-150: August 1869.

The original of this part, stated to have been sent to Stierlin in June or July 1868, appears to have been lost in the post.

GERHARDT, J. Ueber vier für Schlesien seltene oder neue Käfer. 45. Jahres-Ber. d. Schles. Gesellsch. f. vaterl. Cult. 1868 (for 1867), p. 146.

Contains notes on *Ceuthorhynchus javetii* (Bris.), *Hydroporus geniculatus* (Thoms.), *Acalles pyrenæus* (Sch.), and *Amphibolus striatellus* (Bris.).

——. Die Wasserkäferfauna der weissen Wiese im Riesengebirge. *L. c.* pp. 259 & 260.

Contains an account of an excursion to the vicinity of the source of the Elbe in pursuit of *Hydradephaga*.

GERNET, C. VON. Beiträge zur Käferlarvenkunde. (Zweiter Beitrag.) Horæ Soc. Entom. Rossicæ, t. vi. 1868, pp. 3-16, Taf. 1 & 2.

The author describes and figures in detail the larvæ of (?) *Dendrophagus crenatus*, *Antherophagus pallens*, *Hoplocephala hæmorrhoidalis*, and *Gnathocera cornuta*.

GRAAF, N. H. DE. Mededeeling betreffende de Carabici der Verzameling. Tijdschr. v. Entom. uitg. d. d. Nederl. Ent. Ver. xii. 1869, pp. 87, 88.

Contains a list of desiderata among the reputed Netherland *Geodephaga*.

HAROLD, E. VON. Die Arten der Gattung Glaphyrus, Latr., monographisch bearbeitet. Berlin. ent. Zeitschr. xiii. pp. 425-445.

Contains descriptions and a table of the known species, and also descriptions of three new species.

——. Ueber coprophage Lamellicornien mit besonderer Berücksichtigung der Pariser Sammlungen. Coleopt. Hefte, v. pp. 45-70, 1869.

Contains references to the chief Parisian cabinets, synonymical notes, descriptions of four new species, and re-descriptions of some others.

——. Tabula synoptica specierum generis Onthophagus ex Australia. *L. c.* pp. 78-78.

Contains descriptions of ten new species.

——. Bemerkungen zu den Elateridæ im Stein'schen Cataloge. *L. c.* pp. 88-94.

——. Diagnosen neuer Coprophagen. *L. c.* pp. 95-104.

Contains the characters of four new genera and descriptions of thirty-four new species, the names of all but five of which have already been published in the author's Catalogue.

HAROLD, E. VON. Berichtigungen und Zusätze zum Catalogus Coleopterorum synonymicus et systematicus. *L. c.* pp. 112-119 (*cf.* pp. 122-125).

Contains corrections of errors in and additions to vols. i.-v. of Gemminger & v. Harold's Catalogue.

——. Révision des espèces qui rentrent dans le genre *Pinotus*, Erichs. *L'Abeille*, t. vi. pp. 123-144.

Contains descriptions of eleven new species.

HIGGINS, E. T. Description of a new genus and species of *Prionidae*. *Trans. Ent. Soc. Lond.* 1869 (April), pp. 11 & 12, pl. ii.

JONES, J. MATTHEW. Nova Scotian Coleoptera.—Part I. *Proc. & Trans. of Nova Scotian Inst. of Nat. Science of Halifax*, vol. ii. pt. 3, 1868-9, art. xii. pp. 141-155.

Consists of a list of names and localities. Several undetermined species are indicated; and a few are described as new, but not named.

JOSEPH, G. Ueber entomologische Excursionen in Krain und dem Küstenlande im Sommer 1864. 45^{er} Jahres-Ber. Schles. Gesellsch. 1868 (for 1867), pp. 148-168.

Relates almost exclusively to *Coleoptera*, especially those frequenting caves.

——. Zur Morphologie von *Sphodrus schreibersii*, Küst. 46^{er} Jahr.-Ber. Schles. Ges. 1869 (for 1868), pp. 155-170.

——. Ueber eine Excursion nach dem Landecker Schneeberg im Spätherbste 1867. *Ibid.* pp. 170-173 (also recorded in *Berl. ent. Zeitschr.* 1868).

Two short notes on alpine and grotto beetles are added to this paper.

——. Beiträge zur Kenntniss der *Sphodrus*-Arten in dem Krainer Gebirgsgrotten. *Berlin. ent. Zeitschr.* xiii. pp. 243-256.

Relates chiefly to *Sphodrus schreibersii* and its varieties.

KAUP, J. Prodomus zu einer Monographie der Passaliden. *Coleopt. Hefte*, v. pp. 1-40: 1869.

KING, R. L. Description of the Anthicidae of Australia. *Trans. Brit. Entom. Soc. of New South Wales*, 1869, vol. ii. pt. 1. pp. 1-24.

Contains notices of 48 species (of which 40 are treated as undescribed) belonging to 5 known genera, with indications of the necessity of establishing one or two new genera. The author thinks the number of species may eventually at least be doubled. The length of time that has elapsed between the reading (7 January, 1867) and publication of this paper would seem not 1869. [vol. vi.]

unlikely to endanger the stability of the names given to the new species.

KING, R. L. Description of new species of *Articerus*. *L. c.* pp. 54-57.

Refers to 2 new species from New South Wales, and contains a list of the known members of the genus.

——. On the Byrrhides of Australia. *L. c.* pp. 71-75.

The author describes 5 species (of which 3 are new) belonging to 3 genera, whereof one is characterized for the first time.

——. Description of *Hiketes*, a new genus of Formicicolous Coleoptera. *L. c.* pp. 76-78.

Contains one new genus, referred to the *Colydiadae*, and two new species.

KIRSCH, THEODOR. Beitrag zur Kenntniss der Gattung *Omo-phlus*, Sol. Berlin. ent. Zeitschr. xiii. pp. 97-128.

——. Beiträge zur Käferfauna von Bogotá (Fünftes Stück: Phanerognathe Curculionen aus der Gruppe der Apostasi-meriden). *L. c.* pp. 187-224.

KITTNER, THEODOR. Ergänzung des Verzeichniss der bei Boskowitz aufgefundenen Coleopteren. Verhandl. d. naturforsch. Ver. in Brünn, vi. 1868 (for 1867), pp. 146-152.

Completes the author's former list.

KRAATZ, G. Ueber deutsche Donacien. Berlin. ent. Zeitschr. xiii. pp. 263-272.

——. Ueber die deutschen *Coninomus*-Arten. *L. c.* pp. 273-275.

——. Ueber einige deutsche *Blaps*-Arten (*Blaps reflexicollis*, Mill., und *viatica*, Mill. i. litt.). *L. c.* pp. 276-280.

——. Synonymische Bemerkungen über *Blaps*-Arten. *L. c.* pp. 281 & 282.

——. Ueber die europäischen Arten der Gattungen *Sacium*, *Leconte*, und *Arthrolips*, Woll. *L. c.* pp. 283-287.

——. Einige Bemerkungen über Allard'sche *Bruchus*. *L. c.* pp. 331-334.

——. Synonymische Bemerkungen über einige *Dorcadien*-Arten. *L. c.* pp. 335 & 336.

——. Bemerkungen über einige *Sphodrini*. *L. c.* pp. 365-371.

——. Aufzählung der neu beschriebenen Arten (zum Theil wahrscheinlich in Deutschland einheimisch) in Thomson's Skandinaviens Coleoptera, tom. ix., x. *L. c.* pp. 419-424.

Contains lists of the new species, synonymy, and changes of nomenclature described and contained in the completing vols. of Thomson's work.

KRAATZ, G. Einige für die europäische Fauna neue Carabiden.
L. c. pp. 447 & 448.

Contains references to localities for *Cicindela lacteola* (Pall.) and *luctuosa* (Dej.) and *Pterostichus vermiculosus* (Ménéti.).

LECONTE, J. L. List of Coleoptera collected in Vancouver's Island by Henry and Joseph Matthews, with descriptions of some new species. *Annals & Mag. of Nat. Hist.* (4th ser.), vol. iv. pp. 369-385.

The author gives a list of 187 species, some of which are remarkable for having extended their known range in northern and western directions. Notes on other remarkable species are given by the author, who describes 13 as new (characterizing briefly one new genus), and leaves a few still undetermined.

——. (See ZIMMERMANN, C.)

LETZNER, K. Ueber die Naturgeschichte des *Lixus myagri*, Oliv. 45^{er} Jahresber. der Schlesischen Gesellsch. f. vaterl. Cult. 1867 (pub. 1868), pp. 141 & 142.

——. Ueber die schlesischen Arten der Gattung *Cryptohypnus*, insbesondere über *C. tetragraphus*, Germ., und *dermestoides*, Hbst. *L. c.* pp. 142-146.

——. Mittheilung der von Lehrer Gerhardt in Liegnitz übersandten Beschreibung eines neuen *Lathrobium* (L. Letzneri). *L. c.* 46^{er} Jahresb., 1868 (pub. 1869), pp. 176-178.

MACLEAY, W. On the Scaritidæ of New Holland. *Trans. Entom. Soc. of New South Wales*, 1869, vol. ii. pt. 1. pp. 58-70.

Contains descriptions of 20 new species.

MARSEUL, S. A. DE. Histérides du sud de l'Afrique recueillis par M. le Dr. Fritsch énumérés et décrits. *Berlin. ent. Zeitschr.* xiii. pp. 288-292.

——. Notes diverses. *L'Abeille*, t. vi. pp. 154-158.

Contains observations on synonymy, with an abstract of similar notes by Reiche (in *Col. Hefte*, iii.) and Seidlitz (*Otiorrh.*).

MOTSCHOULSKY, VICTOR. Énumération des nouvelles espèces de Coléoptères rapportés de ses voyages (6^{me} article). *Bull. Soc. Imp. des Nat. de Moscou*, 1868 (pub. in 1869), no. 3. I. Trichoptiliens, pp. 170-192; II. Sur le genre *Parateneus*, Spinola, et formes voisines, pp. 192-196; III. Monotomides, pp. 196-201; IV. Sur le genre *Nilina*, Motsch. p. 201, tab. viii. figs. 1 & 11.

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KIRSCH, THEODOR. Beitrag zur Kenntniss der Gattung *Omphalus*, Sol. Berlin. ent. Zeitschr. xiii. pp. 97-128.

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KITTNER, THEODOR. Ergänzung des Verzeichniss der bei Boskowitz aufgefundenen Coleopteren. Verhandl. d. naturforsch. Ver. in Brünn, vi. 1868 (for 1867), pp. 146-152.

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——. Ueber die deutschen *Coninomus*-Arten. *L. c.* pp. 273-275.

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——. Ueber die europäischen Arten der Gattungen *Sacium*, *Leconte*, und *Arthrolips*, Woll. *L. c.* pp. 283-287.

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——. Bemerkungen über einige *Sphodrini*. *L. c.* pp. 365-3

——. Aufzählung der neu beschriebenen Arten (zum Theil wahrscheinlich in Deutschland einheimisch) in Thomson'skandinaviens Coleoptera, tom. ix., x. *L. c.* pp. 419-424.

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L. c. 46^{er} Jahresb., 1868 (pub. 1869), pp. 176-178.

MACLEAY, W. On the Scaritidæ of New Holland. *Trans.*
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MARSEUL, S. A. DE. Histerides du sud de l'Afrique recueillis
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MOTSCHOUJSKY, VICTOR. Enumération des nouvelles espèces de
 Coléoptères rapportés de ses voyages (6^{me} article). *Bull.*
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 notomides, pp. 196-201; IV. Sur le genre *Nilina*, Motsch.
 p. 201, tab. viii. figs. 1 & 11.

— Synonymische Bemerkungen. *Horæ Soc. Ent. Rossicæ*,
 vi. 1869, p. 94.

MULSANT, E., and REY, CL. Tribu des Floricoles. Annales Soc. Linn. de Lyon, nouvelle série, tome xvi. pp. 83-231, pls. i.-xix. : 28 Dec. 1868.

This is the concluding portion of the authors' monograph.

——. Tribu des Piluliformes. *L. c.* tome xvii. pp. 201-378, pls. 1 & 2 : 28 Dec. 1869.

MULSANT, E., and GODART, E. Description de trois Coléoptères nouveaux. *L. c.* t. xvi. pp. 277-281 (*Helops* and *Hedypheanes*).

MULSANT, E., and MAYET, VALÉRY. Description des Métamorphoses de l'*Anomala vitis*. Ibid. pp. 297-300.

PANDELLÉ, L. Etude monographique sur les Staphylins Européens de la tribu des Tachyporini, Erichson. Annales Soc. Entom. France, 4^e sér. tome ix. pp. 261-366.

PASCOE, FRANCIS P. Descriptions of new genera and species of Tenebrionidæ from Australia and Tasmania. Annals and Magazine of Natural History (4th ser.), vol. iii. (no. 13, Jan. 1869), pp. 29-45, pl. x.; (no. 14, Feb. 1869), pp. 132-153, pl. xi.; (no. 16, April 1869), pp. 277-296, pl. xii.; (no. 17, May 1869), pp. 344-351.

——. Description of some new species of Lamiidæ. *L. c.* vol. iv. (no. 21, Sept. 1869), pp. 203-211.

——. On some new Australian genera and species of Curculionidæ belonging to the Otiorhynchinae. Entom. Monthly Mag. vol. vi. (Oct. 1869), pp. 99-105 (with a cut).

——. Longicornia Malayana; or a Descriptive Catalogue of the species of the three Longicorn Families Lamiidæ, Cerambycidæ and Prionidæ, collected by Mr. A. R. Wallace in the Malay Archipelago. Trans. Ent. Soc. Lond. 3rd ser. vol. iii. pp. 497-552, Jan. 1869; pp. 553-712, Oct. 1869 (pp. 683-689, being a Summary and Tables of Geographical distribution of species by Dunning, and pp. 691-696 containing localities by Wallace), pls. 20-24.

This work is now completed, its publication having extended from September 1864 to October 1869, and forms in itself vol. iii. of the 3rd series of the Transactions of the Ent. Soc. London, which are henceforth to be published in annual volumes and not in series. The present volume contains descriptions of 291 genera and 1046 species, of which 132 genera and 711 species are new; and 179 species are figured in its 24 plates.

PICCIOLI, FERDINANDO. Catalogo sinonimico e topografico dei Coleotteri della Toscana. Bullet. della Società Entomolog. Italiana, fasc. i. 1869, pp. 56-66; fasc. iii. pp. 205-220.

The author, with the assistance of Piero Bargagli, commences

a synonymical and topographical list of Tuscan *Coleoptera*, which, during 1869, has reached from *Cicindela* to *Blechnus*, inclusive.

FIOCHARD DE LA BRÛLERIE, CHARLES. Nouvelles espèces de Coléoptères de la famille des Carabiques provenant d'Espagne et des Iles Baléares. Annales Soc. Entom. France, 4^e sér. tome ix. pp. 21-30 (with corrections of errors in the "Rapport sur l'excursion d'Espagne," Ann. 1866; see p. 30).

——. Descriptions de nouvelles espèces espagnoles du groupe des Pandarites de la famille des Ténébrionides. *L. c.* pp. 31-38.

PREUDHOMME DE BORRE, A. Notice sur les femelles à élytres lisses du *Dytiscus marginalis*, Linn. Annales de la Soc. Entom. de Belgique, tome 12^{ème}, 1868-9, pp. 107-111.

PUTZEYS, J. Note sur le genre *Reicheia*. *L'Abeille*, t. vi. pp. 145-147.

Contains description of one new species.

——. *Trechorum oculatorum Monographia*. Stettin. ent. Zeit. 31^{er} Jahrg. (1870, but published in Nov. 1869), pp. 7-48, Taf. i.

This first instalment of a proposed monograph of the *Trechides* contains notices of 60 species, of which 13 are described as new.

REICHE, LOUIS. Notes sur quelques espèces du genre *Athous* des Coléoptères Élatérides. Annales Soc. Entom. France, 4^e sér. tome ix. pp. 379-387.

REITTER, E. *Trechus spelæus*, nov. sp. Berlin. ent. Zeitschr. xiii. p. 361.

RITCHIE, A. S. On the Coleoptera of the Island of Montreal. Canad. Nat. and Geol. n. s. iv. 1869, pp. 27-36 (also published separately).

Contains brief general introductory remarks, and a list of 217 species (with synonymy from Leconte), many of those common in the upper Province being conspicuous by their absence.

RYE, E. C. Coleoptera: new British species, corrections of nomenclature, &c., noticed since the Entomologist's Annual, 1869. The Entomologist's Annual for 1870, pp. 31-120.

Rye records 3 genera and nearly 90 species added to the British lists since 1868.

——. Additions &c. to the list of British Coleoptera, with description of a new species of *Ochthebius*. The Entomologist's Monthly Magazine, vol. vi. pp. 2-6.

SAUNDERS, E. Descriptions of new species of Buprestidæ. Trans. Ent. Soc. Lond. 1869 (April), pp. 1-8, pl. i.

SAUNDERS, E. Descriptions of ten new species of the genus *Paracupta*, H. Deyrolle, and of ten new species of the genus *Conognatha*, Escholtze. *Journal of the Linnean Society, Zoology*, vol. x. (no. 46, 10th Aug. 1869), pp. 331-341, pl. 10. figs. 1-20.

SCRIBA, W. Die Käfer im Grossherzogthum Hessen und seiner nächsten Umgebung. Oberhessische Gesellsch. f. Nat. und Heilk. xiii. 1869, pp. 89-99.

Contains additions &c. to the author's list of 3549 species of *Coleoptera* found in Hesse, with a few brief observations on food-plants, &c.

SHARP, D. A revision of the British species of Homalota. *Transactions Entom. Soc. London*, 1869, parts ii. and iii. pp. 91-272.

— Notes on British Hydradeephaga; with descriptions of new species of *Haliplus* and *Hydroporus*. *Entom. Monthly Mag.* vol. vi. pp. 81-85.

STEIN, J. P. E. F. Zur neuesten Ausgabe des *Catalogus Coleopterorum Europæ*. Berol. 1868. *Berlin. ent. Zeitschr.* xiii. pp. 293-296.

The author defends and explains his alterations, and gives a list of additions and corrections as a supplement to his Catalogue.

STEINHEIL, EDOARDO. *Symbolæ ad historiam Coleopterorum Argentinæ meridionalis*. *Atti della Società Italiana di scienze naturali*, vol. xii. 1869, pp. 238-260.

Contains an enumeration of the species of *Coleoptera* collected by Pellegrino Strobel in Buenos Aires, Mendoza, Chili, Bahia, &c., with descriptions of several new species.

STIERLIN, G. Beobachtungen über Oreinen. *Mittheil. schweiz. entom. Gesellsch.* vol. iii. pp. 15 & 16.

STIERLIN, G., and GAUTARD, V. von. *Fauna Coleopterorum helvetica*. Die Käfer-fauna der Schweiz. I. Theil. Neue Denkschr. d. allgem. schweizer. Gesells. f. d. gesamm. Naturwiss. Bd. xxiii. 1869 (4), pp. 1-216.

Reaches to the end of the *Cicoidæ*. The main object of the work appears to be to supplement Heer's well-known *Fauna Col. Helv.* It contains very brief references to habits and localities, with some synonymic notes.

SUFFRIAN, E. Synonymische Miscellaneen, xxxiii. *Stettiner entom. Zeitung*, 1869, pp. 47-50. xxxiv. *Ibid.* pp. 264-266.

TASCHENBERG, E. Die im zoologischen Museum der Univer-

sität Halle aufgestellten Rüsselkäfer. Zeitschr. f. d. gesamm. Naturwiss. Sachs. Thüring. 1869, Bd. xxxiii. pp. 129-248.

Consists of a list of names of *Rhynchophora*, with brief references to localities, a few synonymic notes, and indications of undetermined species.

TAPPES, GABRIEL. Extrait d'un travail sur les Cryptocéphalides d'Europe et des pays limitrophes (1^{re} partie). Annales Soc. Entom. France, 4^e sér. tome ix. pp. 5-20, planche 1^{re}, figs. 1-21.

VUILLEFROY-CASSINI, FÉLIX DE. Description d'une nouvelle espèce française de Coléoptères. Annales Soc. Entom. France, 4^e sér. tome ix. p. 49.

WAGNER, MORITZ. Ueber einen neuen Coleopteren-Katalog, und dessen Bedeutung für die Systematik und die Zoogeographie. Sitzungsber. d. königl. bayer. Akad. der Wiss. zu München, 1869, i. Heft iv. pp. 415-420.

WANKOWIEZ, JEAN. Notes Entomologiques. I. Description des espèces du genre *Ptenidium* qui ont été trouvées en Lithuanie. II. Description d'une nouvelle espèce de *Ptilium*. III. Note sur les modifications que présente l'avant-dernier segment ventral des mâles des *Trichopteryx*. IV. Sur une nouvelle espèce de *Pocadius*. V. Sur une nouvelle espèce d'*Agathidium*. VI. Descriptions de nouvelles espèces de Coléoptères. Annales Soc. Entom. France, 4^e sér. tome ix. pp. 411-422.

WATERHOUSE, C. O. On a new genus and some new species of Coleoptera belonging to the family Lucanidæ. Trans. Ent. Soc. Lond. 1869 (April), pp. 13-20, pl. iii.

WESTWOOD, J. O. Remarks on the genus *Ectrephes*, and Descriptions of new exotic Coleoptera. Trans. Ent. Soc. Lond. 1869 (August), pp. 315-320.

Contains descriptions of two genera from Australia, connecting *Ectrephes* with the *Ptinidæ*, another Australian genus oscillating between the *Byrrhidæ* and *Histeridæ* (also stated to be connected with *Ectrephes*), and new species of *Articerus*, *Paussus*, and *Aprostoma*.

FOLLASTON, T. V. On the Coleoptera of St. Helena. Annals Bri and Mag. of Nat. Hist. (4th ser.), vol. iv. pp. 297-321 (Nov. 1869), 401-417 (Dec. 1869).

The author enumerates 74 species, distributed under 28 families and 50 genera: 25 are described as new, and 26 regarded as unquestionably imported, 10 of the remainder being considered (with the new species) undoubtedly indigenous; and the inference is deduced that the St. Helena list, as hitherto

known, has nothing in common with the 3 sub-African archipelagos further north. The *Rhynchophora* comprise by far the largest proportion of species, and are very eccentric, the *Hydradephaga* and *Brachelytra* being entirely wanting.

ZIMMERMANN, C. Synonymical notes on Coleoptera of the United States, with descriptions of new species. Trans. Amer. Ent. Soc. vol. ii. pp. 243-259; Jan.-Feb. 1869.
This is a posthumous paper, edited by Leconte.

† *Anatomical and Physiological.*

BAUDELLOT. Du mécanisme suivant lequel s'effectue chez les Coléoptères le retrait des ailes inférieures sous les élytres au moment du passage à l'état de repos. Bull. de la Soc. des Sciences Nat. de Strasbourg, no. 9, Dec. 1868, pp. 137 & 138.

CHAPMAN, T. A. Observations on the œconomy of the British species of Scolytus. Entom. Monthly Mag. vol. vi. pp. 126-131.

LUCAS, H. Note sur les métamorphoses de l'Otiorhynchus sulcatus, Fabr. Annales Soc. Entom. France, 4^e sér. tome ix. p. 50.

MURRAY, ANDREW. On some points in the History and Relations of the Wasp (*Vespa vulgaris*) and *Rhipiphorus paradoxus*. Annals and Mag. of Nat. Hist. (4th ser.) vol. iv. pp. 346-355.

PLATEAU, FÉLIX. Réflexions et Expériences sur le vol des Coléoptères. Soc. Phys. et d'Hist. Nat. de Genève, 2nd Sept. 1869 (Tirage, pp. 21).

The author's conclusions are:—1st. That the difference in flexibility of the two margins of the wing is not sufficient to completely explain flight; 2nd. The wing makes a large angle with the plane in which it moves; 3rd. That it is lowered more rapidly than it is elevated; and 4th. That the extent of the surface of the wing is larger in the movement of lowering than in that of elevation.

SCHLENZIG, M. Sind die Maikäfer und ihre Larven mehr schädliche oder mehr nützliche Thiere im Haushalt der Natur? Mittheil. aus dem Osterlande, Altenburg, xviii. pp. 208-216.

Treats of *Melolontha vulgaris*.

SMITH, F. Observations on the parasitism of *Rhipiphorus paradoxus*. Ann. & Mag. of Nat. Hist. (4th ser.), vol. iv. pp. 393-397.

L'ARGIONI-TOZZETTI, ADOLFO. Sulla composizione delle zampe del *Gyrinus natator*. *Bullet. della Società Ent. Italiana*, i. fasc. 2, pp. 125-133, tav. 3. figs. 1-4.

MÜLLER (*Proc. Ent. Soc. Lond.* 1869, p. xxviii) refers to a Swiss specimen of *Pterostichus prevostii* with eight legs, the normal left hind leg being placed between two extra and somewhat stunted limbs. These supernumerary legs were simply carried by the insect when alive, and did not assist in locomotion. Müller (*l. c.* p. xxx) also notes aberrations of structure in *Abar paralieus* and *Clerus formicarius*.

BATES (*Proc. Ent. Soc. Lond.* 1869, p. iii) remarks upon the position &c. of Nicaragua, and observes that American *Coleoptera* are dull in colour near the equator, but brighter near the tropics. Wallace (*ibid.*) think this holds good in the East also.

MURRAY (*Proc. Zool. Soc.* 1869, p. 530) refers to larvæ of a Longicorn beetle found in decayed palm trees, and sold as food in the markets of Old Calabar.

WESTWOOD (*Proc. Ent. Soc. Lond.* 1869, p. xxx) notes that a species of *Aphodius* (*lividus*?) is frequently vomited by South-African Hottentots, who are notoriously unclean feeders; and also records the occurrence at Bath, in tea, of an eastern species of *Heteroderes* (*Elateridæ*).

RITCHIE (*Canad. Nat. & Geol. n. s.* iv. p. 174) gives some notes on the use of the toad as a collector of beetles, enumerating thirteen perfect specimens of 8 different species (including two of some rarity) found by himself in the stomach of *Bufo americanus*.

CROTCH (*Entom.* 63, p. 229) gives directions for the use of saw-dust damped with alcohol and carbolic acid as a means of preserving *Coleoptera* before mounting them.

SALLÉ (*Ann. Soc. Ent. Fr.* 4^e sér. ix. Bull. p. xlviii) corrects Desmarest's error of attributing to Alexandre Lefebvre the "Observations sur les métamorphoses des Coléoptères du genre *Cebrio*" (*Rev. Zool.* 1853, p. 214) instead of to Lefebvre de Cerisy, now deceased. Desmarest explains that the error was copied from Hagen's 'Bibliotheca,' wherein De Cerisy's name is stated to be omitted, and Lefebvre to be called Lefébure.

In Deyrolle's "Petites nouvelles Entomologiques," no. 3, is a note (correcting an erroneous one in no. 2) specifying the different directions in which the Dejeanian collection of *Lamellicornes* (including those of Reiche and La Ferte) has been dispersed. J. Thomson (in no. 4) corrects a further error as to part of this collection.

DESB. DES LOGES (*Pet. nouv. Ent.* no. 10) gives a list of omissions, misplacements, and errors of synonyms noticed by him in Stein's Catalogue. These chiefly relate to the *Rhynchophora*.

RYE (*Ent. Mo. Mag.* v. p. 247) criticises Gemminger and Von Harold's Catalogue, tom. ii., as regards British species.

DOHRN (*Stettin. ent. Zeit.* 1869, pp. 123 & 375), under the heading of "Doctor und Apotheker," criticises the respective Catalogues of Gemminger and von Harold and Stein.

DOHRN (*l. c.* p. 133) comments upon the system of quoting before Schönherr's name the names of the individual authors of the species in Schönherr's works.

DOHRN (*l. c.* p. 308), under the heading "Zwei Krondiamanten," makes some observations upon the position of the genus *Eumecops*.

RYE (*Ent. Mo. Mag.* v. p. 197) remarks upon certain *Coleoptera* attributed to Britain by Motschulsky (see also *Ent. Ann.* 1870).

J. K. TAYLOR (*Ent. Mo. Mag.* v. p. 200, and vi. p. 136) gives lists of rare British *Coleoptera* taken near Manchester and elsewhere.

CHAMPION (*Ent. Mo. Mag.* v. p. 219, and vi. p. 136) gives lists of rare *Coleoptera* taken near London.

WOLLASTON (*Ent. Mo. Mag.* vi. p. 162) records rare *Coleoptera* taken in Devonshire.

ABELLE DE PERRIN (*Ann. Soc. Ent. Fr.* 4^e sér. ix. p. 410) publishes some notes on the most important of his captures in Le Var, the Alps, and Dauphiné, including species recorded in the 'Annales' of 1869.

PIOCHARD DE LA BRÛLERIE (*Ann. Soc. Ent. Fr.* 4^e sér. ix. Bull. p. xxi) writes an account of the *Coleoptera* met with by him *en route* from Alexandria to Palestine—Egypt (except an oasis in the desert) not being very productive, but the districts about Jaffa, Jerusalem, Jericho and the Dead Sea affording great numbers of good species, especially among the Myrmecophilous beetles.

GERHARDT (*Berl. ent. Zeit.* xiii. p. 262) gives a list of Lower-Silesian *Coleoptera* taken in 1868.

DIECK (*Berl. ent. Zeit.* xiii. p. 354, note) gives a list of rare and undescribed species found by him at Valombrosa, Apennines. He also (p. 357 *et seq.*) makes some general remarks upon subterranean *Coleoptera*.

OCT. FAUVEL (*Bull. Soc. Linn. Normandie*, 1868, p. 174) gives a list of rare *Coleoptera* taken at Calvados.

BAUDUER (*Pet. nouv. Ent.* no. 4) gives a list of rare *Coleoptera* taken near Sos (Lot et Garonne).

C. & R. OBERTHUR (*Pet. nouv. Ent.* no. 4) give a list of rare *Coleoptera* taken in the Eastern Pyrenees.

GUICHARD (*P. n. E.* no. 5) records rare *Coleoptera* from Chamounix.

GAUTIER DES COTTES (*P. n. E.* no. 7) gives a list of the *Geodephaga* taken in Trebizond by T. Deyrolle. He names some species as new, and intimates his intention of publishing their descriptions in the *Bull. of Italian Ent. Soc.* Deyrolle refers to these in *Bull. of vol. ix. Ann. Soc. Fr.*

PEYRON (*Pet. nouv. Ent.* no. 9) gives a list of rare *Coleoptera* found by him near Beyrout. He remarks upon the numerous Myrmecophilous beetles found in company with *Myrmica barbara*.

BEDEL (*Pet. nouv. Ent.* no. 9) gives a list of rare *Coleoptera* taken near Paris, and (*Ann. Soc. Ent. Fr.* 4^e sér. ix. Bull. p. v) records rare *Coleoptera* from Arcachon.

D'AGNEL (*Pet. nouv. Ent.* no. 10) notices the abundance of good *Coleoptera* in the district of the Var, especially at the time of the *Cistus* blooming.

BETHÉ (*Stettin. ent. Zeit.* 1869, p. 425) records captures of rare *Coleoptera*, chiefly from the coast of the Baltic.

AUDÉ (*Ann. Soc. Ent. Fr.* 4^e sér. ix. Bull. p. ix) gives a list of eyeless *Co-*

leoptera found by Raymond in Corsica and Sardinia, and which contains representatives of three new genera and twenty-two new species.

RYE (Ent. Mo. Mag. vi. pp. 53 & 59) publishes notes on rare *Coleoptera* occurring near Folkstone.

VAN VOLXEM and WEYERS (Ann. Soc. Ent. Belg. xii. C. r. p. iii) give a list of beetles taken on the sea-shore at Knocke, principally of the most widely distributed and universally common species.

REED (Canad. Ent. i. p. 69) gives a list of *Coleoptera* taken near London, Ontario.

PETTIT (Can. Ent. i. pp. 106 and 107, ii. pp. 7, 17, and 18) commences a systematic list of *Coleoptera* taken in Ontario, many being new to the Canadian fauna.

SMITH (Ent. Mo. Mag. vi. p. 134) adds some species to Wollaston's list of the *Coleoptera* of Lundy Island.

v. HEYDEN (Berl. ent. Zeit. xiii. p. 54) reproduces a list of rare *Coleoptera* taken by Frivaldszky in the Carpathians and Banat.

CICINDELIDÆ.

BROWN (Trans. Ent. Soc. Lond. 1869, p. 351) revises the Australian species of *Tetracha*, pointing out their structural peculiarities as compared with the American species. He considers that the Old-World species will have to be arranged in a genus by themselves, throwing *T. boccardi* into *Megacephala*.

Tetracha waterhousei (Casteln.) = *australis* (Chaud.): Brown, l. c.

BATES (Entom. Monthly Mag. v. pp. 287-291) refers to the habits and structure of *Odontocheila*, *Tetracha*, and *Ctenostoma*, and gives a list, with localities, of the species of the first of those genera.

Odontocheila castelnaui (Lucas) = *batesii* (Chaud.), local var.: Bates, l. c. p. 290.

BATES (l. c. p. 288) revises the synonymy of *Odontocheila cayennensis* (Fab.), and (p. 289) points out the incorrectness of the figure of *O. oseryi* (Lucas) in the Voyage de Castelnau, Ent. pl. 1.

COUPER (Canad. Ent. i. p. 68) records vars. of *Cicindela longilabris* (Kirby) at Natashquan.

KRAATZ (Berlin. entom. Zeitschr. xiii. p. 447) records the capture of *Cicindela lacteola* (Pall.) at Astracan by Becker, and describes the different varieties of that species. He revises its synonymy (which is incorrectly given in Chaudoir's and Gemminger's Catalogues) as follows:—*lacteola*, Pall., var. *schrenkii* (Gehl., 1841), *undata* (Motsch., 1845). Kraatz also records Spanish and Corsican examples of *B. luctuosa* (Dej.).

CROUCH (Coleopt. Hefte, v. p. 105) makes the following corrections:—*Megacephala megacephala* and *Cicindela cineta* should be referred to Oliv. and not to Fab.; *C. chinensis* to Deg. and not to Fab.; and Thunberg's name must stand if Degeer's insect is different; *C. japana* (Motsch.) must stand for *japonica* (Guér.), which name is preoccupied by Thunberg; Brulle's *C. semicincta* must be used instead of *interrupta* (Fab.); *C. interstincta* is Fabricius's species, not Schönherr's; *C. triguttata* (Hbst. 1806) = *viduata* (Fab., 1801); *C. bipunctata* (Fab., 1792) = *cayennensis* (Fab., 1787); *Collyris aptera* (Lund, nec Oliv.) is renamed *lundii*.

- Pseudozycheila tarsalis*, sp. n., Bates, *l. c.* p. 290, Costa Rica.
Tetracha pulchra, sp. n., Brown, *l. c.* p. 352, Champion Bay, W. Austr.
Oxygonia vuillefroyi, sp. n., Chaud. Rev. et Mag. Zool. 1869, p. 25, Quito.
Caledonica acentra, sp. n., Chaud. *l. c.* p. 23 (no locality).
Odontocheila. Bates, *l. c.*, describes the following new species:—*O. rubefacta*, p. 287, Upper Amazons; *O. trochanterica*, Parâ, and *O. rugatula*, Lower Amazons, p. 289.
Odontocheila lucidicollis, sp. n., Chaud. *l. c.* p. 23, Philippines.
Ctenostoma gautardi, sp. n., Chaud. *l. c.* p. 22, Porto Seguro.

CARABIDÆ.

Carabides.

BUGNON (Mittheil. schweiz. ent. Gesellsch. iii. p. 6) records *Nebria gylenhali* from Lausanne.

Procrustes sphodrinus, described by Gautier des Cottés as a variety of *rugosus* (Dej.), is now considered by him a good species. Mittheil. schweiz. entom. Gessellsch. iii. p. 131.

CLAUDON (Ann. Soc. Ent. Fr. 4^e sér. ix. p. v) records the habits of *Carabus nodulosus* (Creutz.), which lives at the bottom of the wettest granitic valleys of Alsace, and appears to prey principally on larvæ of *Agabus guttatus*.

T. DEYROLLE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. pp. xxxvi, xxxix, and xl) records the capture in Pontic Alps, north-east of Asia Minor, of several rare *Carabidæ*, including four new species (not described) of *Carabus*, which he names *robustus*, *ponticus*, *théophilei*, and *gilnickii*.

Friwaldszky's var. *blandus* (Abhandl. Ungar. Acad. 1865, p. 173, t. ix. fig. 2) of *Carabus montivagus* is, according to v. Heyden (Berl. ent. Zeit. xiii. p. 54), not distinct from Hampe's var. *vellepiticus*. He reproduces Friwaldszky's description.

CROTCH (Coleopt. Hefte, v. p. 106) suggests the following changes:—*Carabus arvensis* to be referred to Hbst. *nec* Fab.; *C. pomeranus* to Gmel. *nec* Oliv.; *C. nodulosus* (Creutz.) = *variolosus* (Fab. Mant. 1787); *C. splendens* to be referred to Oliv. *nec* Fab.; *Calosoma retusum*, Fab., Syst. Ent. 1775, is to stand; *C. indagator* (Fab., 1787) = *maderæ* (Fab., 1775); *C. sericeum* (Fab.) = *auropunctatum* (Payk., Mon. Carab., 1790).

WOLLASTON (Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 303) indicates a doubt whether his *Calosoma haligena* may not be synonymous with the prior *C. helenæ* of Hope, who, in that case, would seem to have described from a dark stunted form.

CHAUDON (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 372) thinks *Calosoma nigrum* (Parry) an aberrant dark form of a species which he proceeds to describe as *C. scabripenne*, repudiating Parry's name.

RILEY (First Ann. Rep. Nox. Ins. Missouri, 1869, p. 89) figures the larva and imago and refers to the habits of *Calosoma calidum*, known in N. America as the "Cut-worm Lion," from its devouring the larvæ of certain species of *Agrotis*, &c.

New species:—

Leistus parvicollis, Chaud. Rev. et Mag. Zool. 1869, p. 64, Epirus.

Carabus. E. Deyrolle publishes the names and short descriptions of the following species in the 'Petites nouvelles Entomologiques,' no. 2, July 15, 1869:—*C. robustus*, *C. ponticus*, *C. théophilei*, and *C. gilnickii*. [These are the insects taken in the Pontic Alps, and mentioned in the preceding page. It is stated by Deyrolle (*l. c.*) that more complete descriptions will appear in the annals of some Entomological Society; but, if the names and characters now published be sufficient to substantiate the species, there would seem no necessity for further descriptions. If, on the other hand, they are *not* sufficient, why are they published?]

Carabus pustulifer, Lucas, Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. x, China; *C. striatus*, Chaud. Rev. et Mag. Zool. 1869, p. 25, N. China; *C. insulicola*, Chaud. *l. c.* p. 26, Japan (?=*japonicus*, Motsch.); *C. carinulatus*, Chaud. *l. c.* p. 27, Mantchouria.

Calosoma. Chaudoir, Ann. Soc. Ent. Fr. 4^e sér. ix., describes the following new species:—*C. timorense*, p. 367, Timor; *C. orientale*, p. 368, Bengal (= *orientale*, Hope ?); *C. squamigerum*, *ibid.*, Bengal, Madras; *C. planicolle*, p. 369, Zambesi; *C. trapezipenne*, *ibid.*, Mendoza, in Argentine Republic; *C. fulgens*, p. 370, Paraguay; *C. abbreviatum*, p. 371, Peru or Bolivia; *C. scabripenne*, *ibid.*, Hindostan; *C. lugens*, p. 372, North China; *C. atrovirens* (Sturm in Cat. 1843), *ibid.*, Mexico; *C. politum*, p. 373, Mexico; *C. striatipenne*, *ibid.*, Puebla; *C. laevigatum*, p. 374, Mexico; *C. cicatricosum*, *ibid.*, Mexico; *C. costipenne*, p. 375, Mexico; *C. depressicolle*, *ibid.*, Toluca; *C. dolens*, p. 376, Oaxaca; *C. angulicolle*, p. 377, New Granada and Venezuela (? Chili); *C. bridgesi*, *ibid.*, Tucuman.

Calosoma (*Callisthenes*) *subæneum*, Chaud. Rev. et Mag. Zool. 1869, p. 28, California.

Cychrides.

LECONTE (Ann. & Mag. Nat. Hist. 4th ser. iv. p. 372) adds some characters to Harris's description of *Cychrus angulatus*, of which the type has disappeared, but which has again been taken by Matthews.

Cychrus dufouri, sp. n., Chaudoir, *l. c.* p. 47, Eaux-Bonnes (Lower Pyrenees).

Pamborides.

CHAUDOIR (Rev. et Mag. Zool. 1869, p. 65) considers *P. alternans* and *elongatus* specifically identical, and also that *P. morbillosus* is a var. of the same insect. *P. cunninghami* (Casteln.)=*morbillosus* (Gory), and *viridis* (Gory) is distinct from *alternans*, according to the same author.

Pamborus pradierii, sp. n., Chaud. *l. c.* p. 66, ? N. Australia.

Od(ont)acanthides.

V. HAROLD (Col. Hefte, v. p. 112) defends the alteration of *Odacantha* to *Odontacantha*, and is manifestly correct in his reasons.

Macrocentra, g. n., Chaudoir, Rev. et Mag. Zool. 1869, p. 205. Differs from *Odontacantha* in its tarsi, which are rugulose above, furrowed on the middle and sides, and strongly pubescent beneath; also in having the three basal joints of anterior tarsi of ♂ squamulate, and the fourth joint of anterior and intermediate tarsi distinctly bilobed, and of posterior tarsi deeply emargi-

nate. Comes next to *Dicraspeda* (Chaud.). Sp. *M. quadrispinosa*, sp. n., l. c. p. 206, Dorey, New Guinea.

Galeritides.

Drypta dentata is recorded as new to Belgium by P. de Borre, Ann. Soc. Ent. Belg. xii. C. r. p. xxii, taken by v. Mossevelde.

CROTCH (Coleopt. Hefte, v. p. 107) makes the following observations:—*Drypta emarginata* was first described by Oliv., 1790, and should stand instead of *dentata* (Rossi); *Zuphium olens* is to be referred to Rossi, and not to Fab.

Galerita boucardii, sp. n., Chaud. Rev. et Mag. Zool. 1869, p. 204, Mexico; *G. melanarthra*, sp. n., l. c. p. 205, Brazil.

Helluonides.

CASTELNAU (Trans. Roy. Soc. Vict. viii. p. 104) states that Lacordaire is wrong in considering the tarsi of *Heluo* to be similar in both sexes; as, in a species of that genus (probably *H. costatus*, Bon.) from Melbourne, the anterior tarsi of ♂ are dilated.

The author points out that none of the *Helluonidae*, probably, have the mentum more distinctly toothed than *Gigadema*, although Thomson, the founder of that genus, refers to the absence of a tooth in the mentum as its principal character, and this in spite of the tooth being faithfully represented in his figure.

Castelnau proposes to retain Thomson's name while modifying the generic characters of *Gigadema*.

Helluodes westwoodii, sp. n., Chaud. Rev. et Mag. Zool. 1869, p. 203, Deccan.

Pogonoglossus schaumii, sp. n., Chaud. ibid. p. 204, Mysol.

Gigadema bostockii, sp. n., Casteln. l. c. p. 106, W. Austral.; *G. paroensis*, sp. n., Casteln. ibid., New Holl.; *G. minuta*, sp. n., Casteln. l. c. p. 107, Queensland (? *Enigma unicolor*, Hope); *G. thomsoni*, sp. n., Casteln. ibid., Pt. Denison.

Brachinides.

Aptinus mutilatus (Fab., 1801)=*bombarda* (Illig., 1800); Crotch, Coleopt. Hefte, v. p. 107.

FAIRMAIRE, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 179, retracts his former opinion that *Pheropsophus humeralis* (Chaud.)=*madagascariensis*, var., and gives characters for the former.

REICHE (Coleopt. Hefte, v. p. 121) considers Kraatz wrong in thinking his *Brachinus berytinus* identical with *bombarda* (Dej.). He gives diagnostic characters for his species, and refers to another insect, allied to *bombarda*, which was sent to Schaum in error by Peyron as *berytensis*, and which (having several examples of it) he thinks may be a good species.

Pheropsophus grandicornis, sp. n., Fairmaire, l. c. p. 179, Zanzibar.

Lebiades.

CROTCH (Coleopt. Hefte, v. p. 107) makes the following observations:—*Cymindis humeralis* is to be referred to Payk., not to Fab.: *Hystrichopus*

capensis (Ol.) must be used for *dorsalis* (Thunb.), which does not stand; *Deme-
trias unipunctatus* (Germ.)=*monostigma*, Leach, 1819 (cf. Crotch, Cat. Brit.
Col. 1863); *Lebia crux-minor* must be referred to Fab. and not to Oliv.
Tetragonoderus binotatus (Dej.) must be used for *biguttatus* (Thunberg),
which does not stand.

LECONTE (Trans. Amer. Ent. Soc. ii. pp. 248-9, note) gives the following
synonymical corrections of North-American species, on Chaudoir's autho-
rity:—*Lebia cupripennis* to be referred to Chaud., not Boh. (and is found in
Peru and Chili, not California); *L. cyanella* (Mots.)=*smaragdina* (Dej.);
L. marginicollis (Dej.)=*affinis* (Dej.); *L. axillaris* (Dej.)=*ornata* (Say,
type and var. *a*); *L. ornata* (Say), var. *b*=*analís* (Dej.); *L. marginella*
(Dej.)=*axillaris* (immac. var.); *L. nigripennis* (Dej.) is not a var. of *collaris*
(Dej.); *L. cyanea* (Dej.)=*smaragdina* (Dej.), var.; *Calleida cyanipennis*
(Chaud.)=*smaragdina* (Dej.).

Cymindis reflexa (Lec.)=*marginata* (Kirby)=*cribricollis* (Dej.): Leconte,
l. c. p. 244.

ZIMMERMANN, Trans. Amer. Ent. Soc. ii. p. 243, unites *Metabletus*, *Apris-
tus*, *Blechnus*, and other allied genera, to form a natural group, which he
thus tabulates:—

A. Head elongated, narrowed behind:

a. Elytra scarcely shorter than the abdomen, but slightly truncate.
Variopalpus (Sol.).

b. Elytra shorter than the abdomen. *Oxiodes* (Sol.).

B. Head shorter, not obviously narrowed behind:

c. Peduncle of prothorax strongly projecting; elytra rectilinearly trun-
cate behind; emargination of mentum without prominent tooth.
Blechnus (Schaum), *Bomius* (Lec.), *Microlestes* (Schm. Goeb.).

d. Peduncle of prothorax strongly projecting; elytra feebly sinuate at
post. truncation; emarg. of mentum with prominent tooth. *Meta-
bletus* (Sch.), *Dromoceryx* (Sch. G.), *Syntomus* (Hope).

e. Peduncle of prothorax very feebly prominent; tip of elytra scarcely
sinuate; emargination of mentum with prominent tooth. *Apristus*
(Chaud.).

Cymindis chaudoirii, sp. n., Fairmaire, Stettin. ent. Zeit. 1869, p. 234,
Sicily; *C. brevipennis*, sp. n., Zimmermann, Trans. Amer. Ent. Soc. ii. p. 243,
Kansas.

Dromius ramburii, sp. n., De la Brûlerie, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 20,
Sierra Nevada; *D. nigrofasciatus*, sp. n., Steinheil, Atti della Soc. Ital. Sci.
Nat. xii. p. 241, Mendoza.

Metabletus nitidulus, sp. n., De la Brûlerie, *l. c.* p. 22, Sierra de Guadarrama;
M. borealis, sp. n., Zimm. *l. c.*, Lake Superior.

Lebia decora, sp. n., Steinheil, *l. c.* p. 241, Buenos Aires.

Pericalides.

H. W. BATES (Ent. Mo. Mag. vi. pp. 69-80, Aug. and Sept.
1869) notices the structure and habits of *Coptodera* and allies,
and points out the error of Dejean and Lacordaire in attrib-
uting a large central tooth to the mentum of that genus. He
notices a good diagnostic character in the dilatation and scaling

beneath of the anterior tarsi in the ♂, as in the *Anchomenides* and *Feroniades*, with the former of which he has no doubt that the *Pericalides* and greater part of the *Lebiades* are closely allied, an exactly intermediate new genus (*Phlæotherates*), which he characterizes, completing the evidence. He gives a table of the genera, with sectional characters, founded on the mentum being toothed or simple, and the claws denticulated or simple. *Nycteis* and *Belonognatha* are considered to be doubtfully distinct from *Coptodera*; and *Mormolyce*, included by Lacordaire in the group, is treated as constituting a distinct subfamily. The author seems to think it doubtful whether *Stenoglossa* (Chaud.) can be maintained, as the characters attributed to it in the ligula do not differ essentially from those of certain true *Coptodera*. Bates points out other characters in the mentum and thorax.

According to Bates, his own *Coptodera antipodum* is to be referred to *Philophlæus*; *C. guttata* (Chaud., *Agonocheila*), Gemm. and von Har. Cat., is not a *Coptodera*, but probably a *Philophlæus*; *C. viridis* (Solier) belongs to *Lobius* (Mots., a genus synonymous with *Crassonychus*, Chaud., which was omitted from Lacord. Gen. Col. i.): *ibid.* p. 80.

Stenoglossa corticalis (Chaud., Gemm. & von Har.) is stated to be not described anywhere: *ibid.* (this is subsequently described by Chaudoir).

Thyreopterus lutosus (Newm.) is referred to *Philophlæus*: *ibid.*

Phlæotherates, g. n., Bates, *l. c.* p. 79. Close to *Stenognathus*, but with the claws denticulated for half their length, and 3 joints of anterior tarsi slightly dilated, fringed beneath with long hairs, and furnished with a double row of squamæ. Sp. *P. nigropiceus*, sp. n., Bates, *l. c.* p. 80, Ega and the Tapajos.

BATES, *l. c.*, describes the following species, the synonymy of certain of which is given by the Recorder on the author's authority:—

Coptodera polygona, p. 72, Ega, Upper Amazons; *C. latipennis*, *ibid.*, St. Paulo; *C. cupreotincta*, p. 73, Ega; *C. relucens*, *ibid.*, Ega; *C. lebioides*, p. 74 Ega; *C. lineolata*, *ibid.*, New Guinea; *C. cyanella*, *ibid.*, New Guinea and Batchian; *C. spinipennis*, p. 75, Upper and Lower Amazons (= *acutipennis*, Boquet, Chaud.); *C. chalcites*, *ibid.*, Ega; *C. rutila*, *ibid.*, Ega; *C. æneorufa*, p. 76, Ega and Pará; *C. debilis*, *ibid.*, St. Paulo (= *nitidula*, Buquet, Chaud.); *C. versicolor*, *ibid.*, Ega and Pará; *C. megalops*, p. 77, Ega and Lower Amazons.

Stenoglossa pallida, p. 78, Ega (= *nigrostriata*, Reiche, Chaud.); *S. fulminans*, *ibid.*, Bahia; *S. atriceps*, *ibid.*, Ega and Rio Janeiro (= *transversa*, Reiche, Chaud.); *S. dromioides*, p. 79, Amazons and Bahia.

CHAUDOIR separates the *Pericalides* into *Thyreopterides* and *Coptodérides*, and (Ann. Soc. Ent. Belg. xii. pp. 113–162) gives characters for the genera, and enumerates the species which he associates under the former of those subdivisions, in commencement of proposed similar treatises on the other *Truncatipennes*. His papers treating on both of these groups are slightly posterior in date to Bates's publication above recorded, and the

references to Bates's species are made from information received from that author. The insects attributed by Chaudoir to his two groups above mentioned are kept separate in this Record from each other and from the *Periculides* of Bates, for facility of reference.

Chaudoir considers that the *Thyreopterides* form a transition to the *Anchomenides*, the members of his genera *Oxyglossus* and *Stenognathus* having been placed by Dejean in *Anchomenus*, &c., from which they are stated to differ in having the ligula horny, quadrisetose at the apex, and never free, in the shortness of their tibial spurs, and in the form of the apex of their elytra. He purges the type genus, *Thyreopterus* (p. 141), of all but four species.

CHAUDOIR, *l. c.* p. 122, is inclined to refer *Eurydera anchomenoides* (Gory et Cast.) as a close ally to his *Glyphodactylus madagascariensis*; at all events, he concludes that it is no true *Eurydera*. His type appears to be very imperfect. The genus *Thysanotus*, which he proposed for its reception, seems not to be admitted.

Mormolyce, according to Chaudoir, *l. c.* p. 133, must be referred to the *Thyreopterides*, as an aberrant form, near *Eurydera* and *Serrimargo*. He considers the form of the metasternal episterna of secondary importance.

CHAUDOIR, *l. c.*, characterizes the following new genera and species:—

Ferus (= *Phlæotherates*, Bates), p. 119 (*Coptodera*, Dej., pars). Differs from *Stenognathus* (Chaud.) in its more abbreviated form and the toothed base of its claws. Sp.: *F. gagatinus* (Dej.); *F. quadricollis*, sp. n., p. 121, Mexico.

Brachichila, p. 123. Distinguished from its allies by its short transverse labrum; it has rather the facies of *Ferus*, except in colouration and marking, wherein it suggests *Mochtherus*. Sp. *B. hypocrita*, sp. n., *ibid.*, Hong Kong.

Coptoglossus, p. 124. Of the build of small *Ferus*, but rather narrower, especially in the thorax, and with penult. joint of max. palpi shorter. Sp. *C. sulcatulus*, sp. n., p. 125, Melbourne, Australia.

Tantillus, *l. c.* p. 126. Also allied to *Ferus*. Sp. *T. brunneus*, sp. n., *ibid.*, Ceylon.

Pristolomus, *l. c.* p. 128. Close to *Stenognathus*, but differing in having the apex of the ligula more produced than in *Oxyglossus*, and the lateral margin of the elytra denticulated, and ending in a sharp projecting tooth at the outer posterior angle. Sp. *P. dentifer*, sp. n., *ibid.*, Columbia.

Sinurus, *l. c.* p. 129 (no differential characters given). Sp. *S. opacus*, sp. n., p. 130, Sarawak.

Pristacrus, *l. c.* p. 131 (*Eurydera*, Casteln., pars). Differs from *Eurydera* in its wide ligula and narrower and more parallel elytra, which have no widely depressed lateral border and no spine at the apex. Sp. *P. laticollis* (Casteln.).

Serrimargo, *l. c.* p. 134 (*Thyreopterus*, Schaum, pars). The nearest approach to *Mormolyce*. Sp. *S. guttiger* (Schaum), *S. verrucifer* (Chaud.).

Peripristus, *l. c.* p. 135 (*Thyreopterus*, pars). The more prominent eyes, the contraction of the thorax behind, the toothing of the whole outer margin of the elytra, and the unrounded angle at their apex, distinguish this genus from *Thyreopterus*. The lobes of the mentum not being truncate and the

labrum being unemarginate, separate it (with other characters) from *Eurydera*. Sp. *P. ater* (Casteln.), *P. femoratus* (Klug).

Phloeoxena, l. c. p. 145 (*Coptodera* and *Thyreopterus*, Dej., pars). Claws toothed from base to middle. Sp.: *P. picta*, sp. n., ibid., Mexico; *P. graphiptera*, sp. n., p. 147, Mexico; *P. undata*, sp. n., ibid. (no locality); *P. unicolor*, sp. n., p. 148, Mexico; *P. subappendiculata*, Dej.; *P. signata*, Dej.; *P. maculicollis*, sp. n., p. 151, New Granada; *P. geniculata*, sp. n., ibid., Mexico.

Holcoderus, l. c. p. 153. Distinguished by the wide and deep longitudinal furrow crossing the middle of the thorax, and with its sides slightly elevated and plicate near the middle; also by the extremities of the elytra forming together an almost semicircular emargination. Sp. *H. premorsus*, sp. n., ibid., Ceylon.

Platia, l. c. p. 155. Facies of *Catascopus compressus* (Murray). Sp.: *P. lineella*, sp. n., p. 156, Batchian and Kei; *P. brachydera*, sp. n., p. 157, Batchian; *P. laticeps*, sp. n., ibid., Celebes.

Chaudoir, l. c. describes the following new species:—

Stenognathus crassus, p. 116, Brazil; *S. crenulatus*, ibid., Columbia and Pará; *S. quadricollis*, p. 117, Mexico; *S. platypterus*, p. 118, Columbia.

Pericalus longicollis, p. 159, Malacca; *P. picturatus*, p. 160, Celebes.

Thyreopterus luteicornis, p. 144, Cape of Good Hope; *T. verrucifer*, Chaud. Rev. et Mag. Zool. 1869, p. 171, Malacca.

CHAUDOIR (Ann. Soc. Ent. Belg. xii. pp. 163–256) gives characters for the genera and descriptions of the species which he associates as *Coptoderides*, making several divisions and subdivisions of the numerous species of *Coptodera* proper, to which he reunites *Belonognatha*, and from which he removes certain species referred to other genera by him.

According to him (p. 164), *Coptodera anescens* (Mots.) = *Crassonychus viridis* (Dej., *Dromius*), of which *C. chloroptera* (Mots.) is probably only a colour variety.

Nycteis championi (Murray) and *Thyreopterus laticollis* (Laf.) = *Coptodera figurata* (Chaud.).

Rhaphidognatha trimaculata (Murr.) is probably a *Belonognatha*.

Rhinochila levrati (Montrouz.) is a *Coptodera* of the *Belonognatha* group.

Coptodera gagatina (Dej.) belongs to the *Thyreopterides* (Ferus, Chaud.); *C. gilvipes* (Dej.) is a *Mocktherus*; *C. guttata* (Chaud.) is type of a new genus *Agonochila*; *C. incerta* and *C. viridis* (Solier) = *Crassonychus viridis* (Dej., *Dromius*); *C. nigripennis* (Gory) does not belong to the group; *C. obtusangula* (Chaud.) is a *Lebis*; *C. quadripustulata* (Dej.) is allied to *Plochiomus*. *Beleopteris cyanipennis* (Klug) and *Catascopus depressus* (Chaud.) = *Coptodera madagascariensis*.

Lebia acutipennis, *enea*, *nitidula*, *rufa* and *triangularis* (Buquet), according to types, must all be referred to *Coptodera*.

C. undulata (Perty) = *C. depressa* (Dej.), Chaud. l. c. p. 166; *C. luteopicta* (Chaud.) = *rufescens* (Buquet), p. 172; *Lebia enea* (Buquet) = *C. emarginata* (Dej.), p. 175; *C. velox* (Gory) and *Lebia rufula* (Buquet) = *C. picea* (Dej.), p. 178; *C. obscura* (Casteln.) = *unicolor* (Chevr.), p. 178; *C. viridipennis*

(Gory)=*ærata* (Dej.), p. 179; small forms of *ærata* are conditionally named *ruficornis*, ibid.; *C. luteulenta* (Er.)=*triangularis* (Buquet, *Lebia*), p. 185; *C. postica* (Dej.)=*fasciata* (Boh.), p. 193; *C. spilota* (Mots.)=*equestris* (Boh.), p. 194; *C. flavosignata* (Gory) is not a *Lobodontus*, but comes near *Arsinoe*, in another division, p. 211.

Stenoglossa variegata (Chaud.) and *Dromius multiguttatus* (Putz.)=*S. nigrostriata* (Reiche, *Tetragonoderus*): Chaud. l. c. p. 203.

Beleopteris signatus (Klug)=*Nycteis brevicollis* (Casteln.), p. 210.

Chaudoir (l. c. p. 211) withdraws the name *trimaculatus* which he proposed for his *Lobodontus trisignatus*, since the *Coptodera trisignata* of Buquet is not, as he supposed, to be referred to the same genus as his insect.

Thyreopteris subangulatus (Germ.)=*Agonochila lutosa* (Newm., *Lebia*), l. c. p. 229.

Mochtherus (Schm. Göb.) is stated to have an extreme affinity to *Dolichoctis* (Schm.), from which its author widely separated it: Chaud. l. c. p. 241. *M. rotundatus* (Schm. G.) is apparently allied to *D. quadriplagiata*: ibid.

Thyreopteris tetrasemus (Dej.), *Mochtherus angulatus* (Schm. G.), and *Cyrtopterus quadrinotatus* (Mots.)=*Mochtherus tetraspilotus* (McL.): ibid.

CHAUDOIR, Ann. Soc. Ent. Belg. xii, characterizes the following new genera:—

Lioptera, p. 208. Resembles *Coptodera crucifera* in form; but its almost smooth and furrowless elytra, short transverse labrum, and short triangular mandibles are stated to distinguish it from all known *Coptoderae*. Sp. *L. quadriguttata*, sp. n., ibid., Philippine Islands.

Idius, p. 212. Distinguished from *Philophlæus* by the strong dilatation of the anterior tarsi of the male, the joints being shorter, and some even transverse. Sp. *I. mæstus*, sp. n., ibid., Melbourne.

Lelis, p. 231. Distinguished from *Coptodera* by its ligula, which is elongate, obtusely rounded at the apex, and longer than the paraglossæ, which are not connivent, and by the shape of its mentum. Sp.: *L. bicolor*, sp. n., ibid., Orizaba; *L. viridipennis*, sp. n., p. 233, Ega (= *Coptodera rutila*, Bates); *L. bifasciata*, sp. n., p. 235, Ega (= *Coptodera polygona*, Bates); *L. obtusangula* (Chaud.); *L. quadrisignata* (Buquet, *Lebia*).

Oxyodontus, p. 239. Distinguished by a sharp, prominent tooth in the emargination of the mentum. The ligula is contracted considerably at the apex, unlike *Dolichoctis*, to which it is allied. Sp. *O. tripunctatus*, sp. n., ibid., Celebes.

Brachyctis, p. 252. Differs from *Dolichoctis* in the rugosity of its surface, which is covered with longish hairs, forming pubescence, in its shorter and stouter palpi, in the form of its ligula, and in the shortness of the claws of its tarsi, which are only feebly denticulated. Sp. *B. rugulosa*, sp. n., ibid., Borneo.

Chaudoir, l. c. describes the following species:—

Coptodera affinis, p. 168, Ega, Upper Amazons (= *C. versicolor*, Bates); *C. batesi*, p. 172, Lower Amazons (= *C. megalops*, Bates); *C. tetrastigma*, p. 174, Borneo; *C. oxyptera*, p. 175, Celebes; *C. æneocuprea*, p. 177, Ega (= *C. chalcites*, Bates); *C. tripartita*, p. 180 (no locality); *C. sahlbergi*, p. 181, Brazil; *C. discicollis*, ibid., Bolivia; *C. rotundipennis*, p. 182, Ega (= *C. re-lucens*, Bates); *C. australis*, p. 184, Australia; *C. chalcoptera*, ibid., Ega

(= *C. æneorufa*, Bates); *C. nubiculosa*, p. 186, Paramaibo and Bahia; *C. flavodisca*, p. 187, Ega; *C. ocellata*, p. 188, Hindostan; *C. tetrasema*, p. 189, ? S.W. Africa; *C. picta*, p. 191, Amboyna; *C. signatipennis*, p. 193, Madagascar; *C. discoguttata*, p. 195, Celebes and Borneo (= *C. cyanella*, Bates); *C. impicta*, p. 196, Moluccas; *C. misella*, p. 197, Celebes (= *C. lineolata*, Bates); *C. tessellata*, p. 199, ? Mexico and Brazil; *C. amazonica*, p. 200, Ega (= *C. cupreotincta*, Bates).

Stenoglossa squiresi, p. 201, Brazil; *S. picturata*, p. 205, Mexico; *S. undulata*, p. 206, Rio Janeiro and Novofriburgo; *S. nigrisignata*, *ibid.*, Ega (= *S. fulminans*, Bates); *S. corticalis* (which appears to have been catalogued under a MS. name of Sahlberg's), p. 207, Brazil, Amazons, Cayenne (= *S. dromioides*, Bates).

Philophlæus distinguendus, p. 215, Australia merid.; *P. grandiceps*, p. 216, Adelaide; *P. intermedius*, *ibid.*, Victoria; *P. australasie*, p. 217, Australia merid.; *P. immaculatus*, *ibid.*, Melbourne; *P. puberulus*, p. 218, Melbourne; *P. quadripennis*, *ibid.* (no locality); *P. obtusus*, p. 219, Australia; *P. angulatus*, *ibid.*, Melbourne; *P. unicolor*, p. 220, Australia; *P. rectangulus*, p. 222, Australia.

Agonochila anomala, p. 223, Melbourne; *A. sublaevis*, p. 224, Blue Mountains, S.E. Australia; *A. biguttata*, p. 225, Australia; *A. corticalis*, p. 224, Melbourne; *A. guttata*, p. 227, Melbourne; *A. littera v.*, *ibid.*, Australia; *A. sulfasciata*, p. 228, Adelaide; *A. sinuosa*, *ibid.*, Moreton Bay; *A. vittula*, p. 229, Melbourne; *A. cribripennis*, p. 230, Melbourne.

Eurycoleus tredecimpunctatus, Chaud. l. c. p. 238, Ega.

Dolichoctis tetracolon, p. 248, Borneo; *D. tetrastigma*, *ibid.*, Celebes; *D. parvicollis*, p. 249, Borneo; *D. angulicollis*, p. 250, Rangoon; *D. aculeata*, p. 251, Celebes; *D. spinipennis*, *ibid.*, Batchian.

Pseudomorphides.

CASTELNAU (Trans. Roy. Soc. Vict. viii. p. 116) gives notes on the geographical distribution of the described species of *Silphomorpha* known to him, and states that *Adelotopus cylindricus* is from Adelaide, and not Melbourne, the locality given by Chaudoir.

Pseudomorpha argentina, sp. n., Steinheil, Atti della Soc. Ital. Sci. Nat. xii. p. 242, San Luis.

Ditomides.

Ditonus bucida (Reiche) = *asiaticus* (Chaud.), and *Carterus lucasi*, *strigosus*, and *mandibularis* (Reiche) are not specifically distinct, according to Chaudoir (L'Abeille, vi. p. 150).

Graphipterides.

Graphipterus cicindeloides must be referred to Swederus (Vet. Ac. Hæd. p. 1787), and not to Oliv., according to Crotch (Col. Hefte, v. p. 108).

Anthiides.

CROTCH, l. c., makes the following observations:—*Anthia elongata* must be referred to Degeer and not to Oliv.; *A. quadriguttata* (Fab., 1801) = *actæon* (Fab., 1794); *A. sulcata* to be referred to Oliv., and *A. thoracica* to Thunb. instead of to Fab.

Anthia mannerheimii (Chaud.) = *thunbergi* (Fischer, 1806) : v. Harold, Col. Hefte, v. p. 113.

Microlestia obtusa, sp. n., Chaud. Rev. et Mag. Zool. 1869, p. 172, S.W. Africa.

Morionides.

CASTELNAU (Trans. Roy. Soc. Vict. viii. p. 121) defends the generic name *Hyperion*, proposed by him for *Scarites schraeberi*, in lieu of *Heteroscelis* (Boisd.), already used in the *Hemiptera*, and for which Lacordaire has adopted the posterior name of *Campylocnemis*, proposed by Westwood.

Platynodes mniszecchii, sp. n., Chaud. Rev. et Mag. Zool. 1869, p. 121, West Africa.

Moria australasice, sp. n., Chaud. l. c. p. 170, Madagascar.

Scaritides.

Scarites buparius (Forst., 1771) should stand; *S. polyphemus* must be referred to Hbst. not to Bonelli. Crotch, Col. Hefte, v. p. 108.

W. MACLEAY (Trans. Ent. Soc. New South Wales, ii. pt. i. 1869, p. 58 et seq.), in a fourth paper on the *Scaritides* of New Holland, adds 20 new species to his former list. He shows that Castelnau is wrong in merging *Euryscaphus* (McL.) in *Scaraphites*, and thinks that *howittii*, *affinis*, *carbonarius* and *hopei* (Casteln.) belong to the former genus, and *heros*, *humeralis*, *gigas* and *martinii* (Casteln.) to the latter. He demurs also to *Scaraphites rotundipennis* (Dej.), *macleayi* (Westw.), and *intermedius* (McL.) being regarded as specifically identical, having no doubt that the latter at least is certainly distinct.

Carenum atronitens (Casteln. nec McL.) is named *gawlerense*; *C. singulare* (Casteln.) = *elongatum* (McL.) : MacLeay, l. c. pp. 59, 60.

MACLEAY also indicates the following synonymy with doubt :—*Carenum m'leayi* (Chaud.) = *carinatum* (McL.) ; *C. castelnaui* (Chaud.) = *interruptum* (McL.), p. 61 ; and republishes, with modifications rendered necessary by the discovery of a new species, the characters of *Curenidium* (Chaud.), p. 69.

PUTZEYS (L'Abeille, vi. p. 145) revises the known species of *Reicheia*, and is now evidently inclined to doubt the specific value of his own *subterranea*.

RILEY (First Ann. Rep. Nox. Ins. Missouri, 1869, p. 58) figures *Aspidiglossa subangulata* (Chaud.), a supposed parasite upon the "Plum Curculio."

New species :—

Reicheia raymondi, Putzeys, L'Abeille, t. vi. p. 146, Sassari.

Scarites (Dyscherus) tricotis, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 180, Madagascar; *S. mordax*, Fairm. l. c. p. 181, Madagascar.

Carenum. MacLeay, l. c., describes the following species :—*C. sexpunctatum*, Lower Murrumbidgee, *cyanipenne*, S. Austr. p. 62; *chaudoiri*, Austr., opacum, Clarence River, *triste*, Wide Bay, p. 63; *kingii* and *propinquum* (an eadem species?), p. 64, Liverpool Plains; *nitescens*, ibid., Salt Lake, S. Austr.; *ineditum*, S. Austr., *rufipes*, Stirling Range, W. Austr., p. 65; *subcyaneum*, *dispar*, and *ordinatum*, p. 66, S. Australia.

Eutoma mastersi, Dabee, and *digglesi*, Moreton Bay?, W. McL. l. c. p. 67.

Neocarenum (?) *mastersi*, Mt. Barker, W. Austr., and *rugulosum*, Salt Lake, S. Austr., W. McL., l. c. p. 68.

Carenidium damelii, W. McL. l. c. p. 68, Cape York; *C. kreusleræ*, W. McL. l. c. p. 70, S. Australia.

Scaraphites mastersi, W. McL. ibid., Mt. Barker, W. Australia.

Schizogenius costiceps, Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 242, S. Luis.

Panagæides.

CROTCH (Col. Hefte, v. p. 109), notes that *Panagæus bipustulatus* must be referred to Fab. and not to Oliv.

CHAUDOIR (Rev. et Mag. Zool. 1869, p. 116) thinks *Panagæus versutus* (Lap.) probably erroneously attributed to Senegal, and in that case identical with *P. cereus* (McL.), from Java. The author indicates a new genus, under the name *Epigraphus*, founded on *Isotarsus amplicollis* (Sch.)—which he now thinks distinct from *pretiosus*, sibi—and *Crasped. arcuaticollis* (Murray). The characters mentioned are the moderate dilatation of four first joints of ant. tarsi in ♂, which are also clothed with a dense pile beneath, and have the fourth joint only slightly notched. *C. symei* (Murr.)=*lætus*, var.; *C. australis* (Casteln. nec Dej.)=*comptus* (Laf.), Dejean's *australis* being represented by *rockhamptonensis* or *elongatus* (Casteln.). *Panagæus strachani* (Hope) and *westermanni* (Laf.) are considered identical by the author, who considers Hope's description insufficient.

CASTELNAU (Trans. Roy. Soc. Vict. viii. p. 145) considers his Brazilian genus *Doreylus* improperly removed from the *Panagæides* to the *Chlæniides* by Lacordaire; he also (with reason) demurs to Lacordaire's neglect of his prior *Eudema* for Hope's *Craspedophorus*. He enumerates and briefly characterizes the known species of *Eudema*.

PUTZEYS (Ann. Soc. Ent. Belg. xii. C. r. p. lix) notes a var. of *Panagæus quadripustulatus* (Sturm) equivalent to the var. *trimaculatus* (Dej.) of *crux-major*, and taken by Colbeau near Louvain.

Epicosmus. Chaudoir, Rev. et Mag. Zool. 1869, describes the following new species:—*E. sublævis*, l. c. p. 67, Cambodia; *humératus*, p. 69, Cochin China; *mouhotii*, ibid., Laos; *laticollis*, p. 114 (no locality); *saundersii*, ibid., Laos; *basifasciatus*, p. 115, Laos; *pradierii*, ibid., Gaboon.

Euschizomerus æneipennis, Malasia, and *E. æneus*, Deccan, Chaudoir, l. c. p. 118.

Chlæniides.

FAIRMAIRE, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 182, changes the name of his genus *Oodidius* into *Oodimorphus*, on account of the prior Carabideous genus *Ooidius* of Chaudoir.

CROTCH (Coleopt. Hefte, v. p. 109) makes the following observations: Olivier did not describe any (*Chlænius fallax*; *C. festivus* to be referred to Panz., nec Fab.; *C. holosericeus* (Fab., 1787)=*tristis* (Schall., 1783); *C. schrankii* (Duft.)=*nitidulus* (Schr., 1781); *Licinus silphoides* (Fab. Ent. Syst. nec Rossi) requires renaming; *Badister bipustulatus* (Fab. Ent. Syst.) cannot stand, *microcephalus* (Steph.) is suggested for it; *B. crux-minor* to be referred to Fab. nec Oliv.

Chlænius palæstinus (Reiche)=*dimidiatus* (Chaud.): Chaudoir, L'Abeille vi. p. 150.

CASTELNAU, Trans. Roy. Soc. Vict. viii. p. 147, notes the occurrence of the Indian *Hololeius nitidulus* (Dej.) and *Chlœnius marginatus* (Dej.) in Australia. He removes *Dicrochile* from the *Anchomenides* to the neighbourhood of *Licinus*, and states that Lacordaire is in error when referring *Rembus* to Australia.

Dicœus. The species of this genus are tabulated by Zimmermann, Trans. Amer. Ent. Soc. ii. p. 247.

Dercylus punctato-striatus, sp. n., Chaud. Rev. et Mag. Zool. 1869, p. 119, Bahia; *D. gautardi*, sp. n., Chaud. l. c. p. 120, Porto Seguro.

Oodes mouhoti and *lucidus*, spp. nn., Chaud. l. c. p. 119, Laos.

Oodimorphus huplosternus and *O. brevicornis*, spp. nn., Fairmaire, l. c. p. 182, Madagascar.

Eurygnathus parallelus, sp. n., Chaud. Rev. et Mag. Zool. 1869, p. 121, Madeira.

Broscides.

Odontoscelis darwini (Waterhouse, 1840) = *desmarestii* (Guérin, 1838), according to H. Burmeister, Stettin. entom. Zeit. xxxi. 1870 (but published in Nov. 1869), p. 125, who describes a new species, *O. waterhousii*, from Buenos Ayres.

Zacotus, g. n., Leconte, Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 373. Resembles *Promecoderus*, allied to *Miscodera* and *Proscosoma* (aa, gg, Putz.). Imperfectly characterized, owing to defective condition of the unique exponent. Sp. *Z. matthewsii*, sp. n., Lec. ibid., Vancouver's Island.

Broscus insularis, sp. n., de la Brûlerie, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 23, Majorca (cf. Ann. Soc. Ent. Fr. 1867, Bull. lxxix); redescribed by Schaufuss, Beitr. z. Kennt. d. Col.-Fau. d. Balearen, p. 6, who refers to his MS. name *crenicollis*, 1866.

Cratocerides.

Cratocera (Lec.) = *Melanotus* (Dej.) = *Polpochile* (Sol.), which should be adopted. Leconte, Trans. Amer. Ent. Soc. iii. p. 249, note.

Harpalides.

CROTCH (Coleopt. Hefte, v. p. 110) makes the following observations:—*Bradycellus fulvus* (Marsh.) = *verbasci* (Duft.); *Harpalus proteus* (Payk.) must be used for *œneus* (Fab.), which cannot stand; *H. elegans* (Preller) = *proteus* (Payk.); *H. ferrugineus* (Fab. nec Linn.) requires renaming; *H. ruficornis* (Fab., 1775) = *rufipes* (Deg., 1774); *Stenolophus vespertinus* (Panz.) = *mixtus* (Hbst., 1784).

Harpalus gaudionis (Reiche) = *Pseudophonus hospes* (Sturm), var. *sturmi* (Dej.), ♀; *H. bosphoranus* (Reiche) = *distinguendus* (Dufts.), var. *saxicola* (Dej.); *H. grandicollis* (Reiche) = *caspicus* (Stev.); *H. ovalis* (Dej.) = *melancholicus*, var. *piciventris* (Dej.), according to Chaudoir, L'Abeille, vi. p. 150.

Selenophorus fatuus (Lec.) = *parumpunctatus* (Dej.): Zimmerm. Trans. Am. Ent. Soc. ii. p. 247.

RYE (Ent. Mo. Mag. v. p. 197) remarks upon *Stenolophus anglicus* (Voet).

RILEY (First Ann. Rep. Nox. Ins. Missouri, p. 59) describes and figures (with details) a larva supposed to be that of *Harpalus pennsylvanicus* (Deg.)

which he also figures, and which is known to devour the larvæ of the "Plum Curculio."

Anisodactylus atroviridis, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 162, Nossi-Bé; *A. atrofuscus*, sp. n., Fairm. l. c. p. 183, Madagascar.

Acinopus pilipes, sp. n., de la Brûlerie, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 24, Majorca.

Selenophorus. Steinheil, Atti Soc. Ital. Sci. Nat. xii., describes the following new species:—*S. antarctioides*, Buenos Ayres, p. 244; *pampicola*, R. Cuarto and S. Luis, and *marginepilosus*, S. Luis, p. 245.

Stenolophus (Acupalpus) cantabricus, sp. n., de la Brûlerie, l. c. p. 25, Spanish Pyrenees.

Feroniædes.

CASTELNAU, Trans. Roy. Soc. Vict. viii. p. 201, recharacterizes *Eccoptogenius* (Chaud.), stating that the labrum is not (as described by Lacord.) angularly emarginate in 5 or 6 Indian species in his collection. He considers that the *Trigonostoma violacea* of his Etudes Entom. belongs to the group (*H.*) *Omalosoma* of *Feronia*, and that the insect probably comes from the N. or N.W. coast of N. Holland.

GAUTIER DES COTTES (Mittheil. schweiz. ent. Gesellsch. iii. p. 134), in a more or less intelligible way, indorses the claim of Latreille's *Feronia* to preference over *Pterostichus* (Er.). He accuses German entomologists of obstinacy in retaining the latter name, being apparently ignorant that Stein in his Catalogue (1868) had already reinstated *Feronia*. He describes species of the subgenus *Omascus* from his own collection, and proposes another division (which he states should rigorously be a separate genus) of *Feronia*, under the name of *Gluptodactylus* (sic) to include *vernalis* (Panz.), which species he considers to have no connexion with *Lagarus*. He complains of De Marseul for suppressing *Omascus incommodus*, amongst others.

BOLD (Ent. Mo. Mag. vi. p. 161) records the fact of *Pterostichus madidus* eating a vegetable substance.

STIERLIN (Neue Denkschr. schweizer. Gesells. Naturwiss. xxiii. 1869, p. 31) describes a form of *Pterostichus multipunctatus* (Dej.), from Macugnaga, under the name *nobilis*, which he appears to think is probably of specific value.

For synonymy of *Feronia carbonaria* (Dej.), see Trans. Amer. Ent. Soc. ii. p. 247.

Omascus fusco-æneus (Chaud.)=*riparius* (var.); *Feronia carbonaria* (Dej.)=*muta* (Say); *Myas foveatus* (Lec.)=*cyanescens* (Dej.). Leconte, Trans. Amer. Ent. Soc. ii. p. 248, note, on Chaudoir's authority.

Pterostichus fossulatus (Quens., 1806)=*pilosus* (Host, 1789): v. Harold, Col. Hefte, v. p. 113.

v. HEYDEN (Berl. ent. Zeit. xiii. p. 55) reproduces Frivaldszky's description of *Pterostichus sucheri* (Abh. ungar. Acad. 1865, p. 176, t. ix. f. 7), which he considers an obsoletely sculptured form of *P. jurinei*, var. *heydeni* (Dahl).

Pterostichus (Lyperopterus) vermiculosus (Mén.) is erroneously attributed to Siberia in Gemm. and V. Harold's Cat., but occurs at Indega Bay, on the coast of the Arctic Ocean, Russia in Europe, according to Kraatz (Berl. ent. Zeitschr. xiii. p. 448), who notes the omission of *Lyperopterus* by Lacordaire,

and indicates his belief that it is a true *Pterostichus*, and not allied to *Pæcilus*, as its describer opines.

Abax audouini (Duf.) = *pyrenæus* (Dej.): G. des Cottes, Pet. nouv. Ent. No. 7. (These two insects are identified in De Mars. Cat.)

PEREZ ARCAS (Bol.-rev. Univers. Madrid, ii. p. 203) describes an insect under the name of *Percus majoricensis*, which he believes to be a Majorcan form of the Minorcan *plicatus*. He distinguishes *P. navaricus* (Dej.) from *patruelis* (Duf.) and attributes *patruelis* (Fairm. & Motsch.) to the former.

Zabrus striatocollis (Gautier des Cottes) = *græcus* (Dej.). Gautier des Cottes, Mittheil. schweiz. entom. Gesellsch. iii. p. 132.

PUTZEYS (Ann. Soc. Ent. Belg. xii. C. r. p. lix) notes a var. of *Amara trivialis*, with very fine superficial striæ and flat interstices to the elytra. He also records a small form of *Pæcilus cupreus*, with contracted interstices and three punctures on the fifth interstice.

Amara fusca (Dej.) is recorded as British by Sharp, Ent. Mo. Mag. v. p. 196.

CROTCH (Coleopt. Hefte, v. p. 110) suggests the following corrections:—*Pæcilus kugelanni* (Panz.) should stand, *dimidiatus* being preoccupied; *P. lepidus* should be referred to Leske, and *P. punctulatus* to Schaller, instead of to Fabr.; *Argutor longicollis* (Duft.) should be used for *inaequalis* (Marsh. nec Panz.); *Omasseus aterrimus* to be referred to Hbst., not to Paykull; *Platysma macrum* to be referred to Marsham, not to Steph., and to be used for *picinannum* (Duft.); *Molops terricola* (Fab. nec Hbst.) requires renaming; *Cyrtotus alpinus* to be referred to Payk., not to Fabr.; *Amara eurynota* (Panz.) is older than *acuminata* (Payk.), and should be used.

New species:—

Eccoptygenius feronoides, Casteln. Trans. Roy. Soc. Vict. viii. p. 201, Deep Creek.

Feronia. Gautier des Cottes (Mitt. schw. ent. Ges.) describes the following species:—*F. (Pterostichus) appendiculata*, p. 131, Spain; *F. (Omasseus) brevicornis*, p. 136, Caucasus (? = *subcordata* (Chaud.)); *F. (Omasseus) dubia*, p. 139, Caucasus (possibly belonging to the subgenus *Pterostichus*); *F. (Omasseus) hyperoides*, p. 142, Vichy.

Feronia (Orthomus) balearica, de la Brûlerie, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 26, Majorca.

Percus clathratus, Schauf., Beitr. Kennt. Col. Balear. p. 8, Minorca (= *plicatus*, var., Dej., teste Perez Arcas, Rev. crit. Esp. Espan. Percus, p. 12); *P. guiraoi*, Peres Arcas, Bol.-rev. Univers. Madrid, ii. p. 209, and *l. c.* p. 19, Murcia and Carthage.

Zabrus politus, Gautier des Cottes, *l. c.* p. 132, Anatolia.

Antarctiides.

Antarctia canotæ, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 247, Mendoza.

Anchomenides.

CROTCH (Coleopt. Hefte, v. p. 111) makes the following observations:—*Pristonychus inæqualis* (Panz.) is a var. of (if not a distinct species from) *terri-*

cola (Hbst.), which must stand, being described in 1783 (v. Harold, who had adopted *inequalis*, explains in a note to this that he had passed over Herbst's name in consequence of Schaum's statements that that author had erroneously identified his species with *terricola*, Fab.,—an insect which in reality was not described until 1792); *Taphria vivalis* (Illig.) to stand, as *nivalis* is preoccupied in *Carabus*; *Dolichus flavicornis* (Fab., 1787) = *halensis* (Schall., 1783); *Platynus dorsalis* to be referred to Pontopp., not to Müll., and *P. viridanus* to Fab., not to Oliv.; *P. oblongus* (Fab., 1792) = *obscurus* (Hbst., 1783), and *P. parumpunctatus* (Fab.) = *mülleri* (Hbst.).

Platynus. Leconte (Trans. Amer. Ent. Soc. ii. p. 244) publishes Zimmermann's arrangement of *Platynus* (for which, on account of the confusion in names previously used, that author proposed the name *Psilopodius*), based on the following table:—

- A. Prothorax cordate or quadrate, with well-defined hind angles; pubescence of antennæ beginning on fourth joint.
 - a. All the joints of tarsi without longitudinal grooves. *oblongus* of Europe.
 - b. Only the front tarsi, ♂ ♀, without grooves . . . *Platynus* (Bon.).
 - c. All the tarsi with grooves *Anchomenus* (Bon.).
 - B. Prothorax rounded or obtuse-angled; pubescence of antennæ as in A. *Agonum* (Bon.).
 - C. Prothorax rounded or elongate-oval; pubescence of antennæ beginning on the tip of the third joint *Europhilus* (Chaud.).
- Further divisions, extending to species, are given at pp. 245-6.

CHAUDOIR (L'Abeille, vi. pp. 148 & 149) records his opinion that *Sphodrus schrenki* and *S. grandis* (Mots.) = *gigas* (Fisch.); that *Pseudotuphozenus subcostatus* (Mén.) is not a good species; that *S. thoracicus* (Gebl.) is a *Tapo. venus*; and that *Pristonychus ausonius* (Schauf.) = *mawritanicus* (Dej.), *P. cyanescens* (Fairm.) and *P. reichenbachii* (Schauf.) are probably not distinct from *P. terricola* (Hbst.), *P. cyanipennis* (Dej., Esch.) = *tauricus* (Dej.), *P. cyanipennis* (Schauf.) = *mannerheimii* (Kolen.), *P. parviceps* (Fairm.) = *carinatus* (Chaud.), *P. nitidus* (Schauf.) = *punctatus* (Dej.), *P. gratus* (Schauf.) = *tauricus* (Dej.), *P. caucasicus* (Chaud.), *P. sericeus* and *P. mannerheimi* (Schauf.), and *P. angustatus* (Fald.) = *gratus* (Fald.). These remarks are accompanied by severe observations upon Schaufuss's synonymy.

KRAATZ (Berl. ent. Zeit. xiii. p. 365) reiterates and endorses Schaum's opinion that *Sphodrus fairmairei* and *S. peleus* (Schauf.) are separated by worthless characters, and complains of the way in which Schaufuss has treated Schaum with reference to that opinion. He also corrects an error in his own Catalogue with reference to *Pristonychus cæruleus* (Dej.), to which he attributes *ianthinus* (Duft.) as a syn., and *amethystinus* (Dej.) as a var.; he now considers that there are two good species out of these, viz. *ianthinus* (Duft.) and *amethystinus* (Dej.). To the former of these he thinks *ianthinus* (Sturm, Dej.) must be attributed, so that Schaufuss's name of *sturmii* for that insect need not be adopted.

JOSEPH (Berl. ent. Zeit. xiii. p. 243) enters at very great length upon the special localities for, and the numerous varieties of, *Sphodrus schreibersii* (Küst.), found in the mountain caves of Carniola. He names 14 distinct

vars., whereof *S. schmidtii* (Schauf.) is one; and suggests that *S. dissimilis* (Schauf.) may also be only a var. of *schreibersii* (cf. 46 Jahr.-Ber. Schles. Gesellsch. p. 159 et seq.).

GAUTIER DES COTTES (Mittheil. schweiz. entom. Gesellsch. iii. p. 131, Aug. 1869) changes the specific name of his *Calathus ruficollis* to *C. Erythroderus* (sic), on account of *ruficollis*, Dej. He admits his error in referring *C. rotundatus* (Du V.) to *piceus* (Msh.); and proposes (p. 150) the generic name *Omodactylus* (sic) for the latter, in case its simple tarsi in both sexes should warrant the creation of a new genus for its reception.

Calathus minutus (G. des Cottés), *angularis* (Chevr.), and *sublaevis* and *uniseriatus* (Vuillef.) = *luctuosus* (Dej.), G. des Cottés, Pet. nouv. Entom. no. 10; *C. liotrachelus* (Vuillef., June 1866) = *bipunctatus* (G. d. Cottés, Feb. 1866), G. des Cottés, ibid. no. 12.

Platynus frater (Lec.) = *Agonum brevicolle* (Dej.), according to Chaudoir in litt. Leconte (Ann. & Mag. Nat. Hist. 4th ser. iv. p. 373, note) demurs to this, and refers *brevicollis* as a var. to *P. fossiger*; *P. retractus* (Lec.) = *lenis* (*lenum* Dej.), Zimm. Trans. Amer. Ent. Soc. ii. p. 244.

Agonum. Leconte (Trans. Amer. Ent. Soc. ii. p. 248, note) gives the following synonymy of North-American species, on Chaudoir's authority:—*A. utridulum* (Dej.) = *cupripenne*, var.; *Platynus frater* (Lec.) = *A. brevicolle* (Dej., cf. *suprà*); *A. chalcum* (Lec.) = *cupreum* (Dej.); *O. crenulatus* (Lec.) = *A. striatopunctatum* (Dej.), from which *A. striatopunctatum* (Lec.) is distinct; *A. stigmatum* (Lec.) = *octocolus* (Mann.); *P. retractus* (Lec.) = *A. mordens* (Kirby, cf. *suprà*); *A. picipenne* (Kirby), var. = *lenum* (Dej.).

V. HEYDEN (Berl. ent. Zeit. xiii. p. 54) reproduces Frivaldsky's description of his *Anchomenus banaticus* (Abhandl. ungar. Acad. 1865, p. 176, t. ix. f. 6), which seems a good species, near *A. (Platynus) scrobiculatus* (Fab.).

Sphodrus paradoxus, sp. n., Joseph, l. c. p. 255, Caves in Lower Carniola.

Calathus uhagoni, sp. n., G. des Cottés, Pet. nouv. Entom. no. 12, 15th Dec. 1869, Estremadura.

Platynus fraterculus, sp. n., Leconte, l. c.; Vancouver's Island; *P. rubripes*, sp. n., Zimm. l. c. p. 244, north of the Potomac.

Pogonides.

REICHE (Coleopt. Hefte, v. p. 120) replies with some warmth to the criticisms of Kiesenwetter and Kraatz regarding his *Patrobis napoleonis*, which he affirms to be quite distinct from *excavatus*, especially relying on the ovate shape of its elytra.

Patrobis fulcratus, sp. n., Leconte, Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 374, Vancouver's Island; *P. trochantericus*, sp. n., Lec. l. c. p. 375, North California.

Trechides.

PUTZEYS (Stett. ent. Zeitung, 31 Jahrg. 1870, but published in Nov. 1869, pp. 7-48, Taf. 1) commences a general monograph of the *Trechides* by describing the eyed species, and proposes to exhaust the group in future memoirs. Reviewing the different arrangements of Latreille, Dejean, Erichson, Lacordaire, and

Thomson, he adopts Schaum's limitation, and considers the following genera only to belong to the group:—*Trechus* (to which he adds as subgenera *Anophthalmus*, *Epaphius*, *Thalassophilus*, and *Cnides*), *Æmalodera* (Sol.), *Æpus* (sic, instead of *Æpys*, from *αἶψος*), with which he states that *Thalassobius*, Sol., is identical, and *Perileptus*. *Tachynotus* (Mots.) is added with doubt. In his general remarks, the author alludes to the following diagnostic characters:—the relative length of the second and fourth joints of the antennæ; the comparison of the length of the elevated space opposite the anterior angles of the thorax, and comprised between the eye and the curved furrow that starts from the base of the epistoma on each side; the point reached by the orbital line, if it were prolonged in front, &c.,—in addition to the characters pointed out by Pandellé. He refers to the extreme variation in the dimension, form, and projection of the eyes in the *Trechides*, and notes that those organs are especially small in such species as are testaceous in colour.

PUTZEYS (*l. c.* pp. 35–37) particularly draws attention to the species *Trechus* described by Heer (1837), viz. *T. glacialis*, *assimilis*, *profundest^{Ant}*, *macrocephalus*, *pertyi*, and *lævipennis*, the types of which, deposited by Heer in the Museum of Zurich, have been communicated to Tournier, who has figured them with great exactness. These figures, examined and vouched for by Heer himself, form plate 1 to the Monograph of Putzeys, who considers that the several species to which they refer must stand, and that Schaum was wrong in his appreciation of those species.

Trechus fulvus (Fairm. et Lab., *nec* Dej.) is renamed *cephalotes* by Putzeys, *l. c.* p. 19, who adopts the name *gravidus*, proposed by Schaum, for *T. latipennis* (Chaud. *nec* Sturm), and *montanellus* and *splendens* respectively proposed in Gemm. and v. Harold's 'Cat. for *montanus* (Putz., 1847, *nec* Motsch., 1844) and *micans* (Schaum, *nec* Le Conte, 1846).

REITTER (Berl. ent. Zeit. xiii. pp. 363 & 364) redescribes *Trechus microphthalmus* and *T. subterraneus* (Mill.).

Trechus minutus (Fab., 1792) = *quadristritus* (Schränk, 1781): Crotch, Coleopt. Hefte, v. p. 112.

ABEILLE DE PERRIN (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 408) suggests reasons for his opinion that the species of *Anophthalmus* (*sic*, except on title) do not live in caves, but in the fissures of rocks. He accounts for modifications of structure in the same species (such as the possession or want of eyes) by imagining the separation through some geological phenomenon of stragglers from an original colony, which perpetuate their individual peculiarities, on account of the impossibility of crossing with the primordial type. Acting on this idea, he refrains from giving specific rank to an insect found by himself in the cave of Ste. Madeleine at Ste. Baume du Var, and names it *A. auberti*, var. *magdalense* (*magdalense* at p. 409,—suggestive of an Abyssinian locality). He also mentions another variety, or monstrosity, of *A. auberti*, taken by himself.

JAVET (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxix) reports the capture by Dieck of a great number of *Aphenops* and *Anophthalmus* in the caves of

Ariège and the Pyrenees, and considers six species of them to be undescribed.

DIECK publishes the diagnoses of these and other new species of subterranean *Coleoptera* in a small pamphlet, and subsequently describes them fully in Berl. ent. Zeitschr. xiii. p. 337 *et seq.* He makes some general remarks upon *Anophthalmus*, p. 357 *et seq.*

Anophthalmus minos (Linder) is an *Aphenops*, according to Grenier (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. vi.), and should be placed next to *A. chaudiéri* (Bris.).

GAUTIER DES COTTES (Petites nouvelles Ent. no. 3, 1 Aug. 1869) proposes to describe as *Anophthalmus* (sic) *hispanicus* a species discovered at Alsasua and given to him by Crotch, and already referred to by Deyrolle. Crotch (*l. c.* no. 4) demurs to this, states that the insect is to be described by Perez-Arcas, and publishes a name and characters for it. Des Cottes (*l. c.* no. 5), endeavours to excuse himself.

New species :—

Trechus. Putzeys, Stett. ent. Zeit. xxxi., describes the following :—*T. integer*, p. 16, Tangiers; *chloroticus*, p. 19, and *quadriceps*, p. 20, Chili; *pacificus*, p. 24, Island of Croiset; *baldensis*, p. 26, Lake Garda; *saricola*, p. 27, Asturias; *caufussi*, p. 29, Portugal; *eximius*, p. 30, Styria; *ruficollis*, p. 31, and *obscuricornis*, p. 32, Chili; *mexicanus*, p. 33, Mexico; *cyclopterus*, p. 40, and *dupressicollis*, p. 47, Chili.

Trechus spelaeus, Reitter, Berl. ent. Zeit. xiii. p. 361, St. Miklos.

Nestra atriceps, Fairm. Ann. Soc. Ent. Fr. 4^e sér. ix. p. 114, Madagascar.

Anophthalmus (sic) *delphinensis*, Abeille de Perrin, *l. c.* p. 406, Caves in Dauphiné (La Drôme).

Anophthalmus navaricus, de Vuillefroy-Cassini, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 48, Lower Pyrenees.

Trechus (*Anophthalmus*) *perezii* and *uhagonii*, Crotch, in Deyrolle's 'Petites nouvelles Entomologiques,' no. 4, 15 Aug. 1869, Alsasua, N. Spain.

A. pluto, Dieck, Berl. ent. Zeitschr. xiii. p. 339, Ariège; *A. cerberus* and var. *charon*, Dieck, *l. c.* p. 340, Ariège and Haute-Garonne; *A. bucephalus* and *A. orpheus*, Dieck, *l. c.* p. 341, Ariège; *A. liguricus*, Dieck, *l. c.* p. 342, Spezzia.

Bembidiides.

Ochthedromus laticollis (Lec.)=*pardalis* (Zimm.), which must be used; *O. frontalis* (Lec.)=*Bembidium assimile* (Gyll.). Zimmerman, Trans. Amer. Ent. Soc. ii. pp. 247 & 248.

Bembidium semipunctatum (Graëlls)=*callosum* (Küst.), according to de la Brûlerie (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 28), who gives his reasons for thinking Schaum wrong in referring Graëlls's insect to *B. quadriguttatum*.

DE LA BRÛLERIE (*l. c.* p. 29) corrects Gautier des Cottés's description of *B. guadarriamense*, with respect to posterior angles of prothorax, which are stated to be obtuse instead of rectangular. He considers this species closely allied to *B. pyrenæum* (Dej.), and therefore in the *Leja* section, instead of belonging to the *Notaphus* group, in which it is placed by Gautier des Cottés.

DE LA BRÛLERIE (*l. c.*) notices a variety of *B. pyrenæum*, found near the

snow-line in the Guadarrama, more elongate than the Pyrenean type-form. His supposed new *Bembidium*, from Alar del Rey (*l. c.* 1866, p. 540), he now refers, as a variety, to *B. quadrimaculatum*.

GAUTIER DES COTTES (*Mittheil. schweiz. entom. Gesellsch.* iii. p. 13) gives his reasons for refusing to drop the specific name of his *Bembidium luridipes*, in spite of Reiche's prior species of the same name.

Tachys tetraspilota=*quadrisignata* (Dufts.), var., Gautier des Cottés, *l. c.* p. 133.

SHARP (*Ent. Mo. Mag.* vi. p. 133) refers to the *Peryphus maritimus* of Stephens and *Bembidium puellum* (Duval).

MORLEY (*Ent. Mo. Mag.* vi. p. 162) records *B. obliquum* from Manchester.

DIECK (*Berl. ent. Zeitschr.* xiii. p. 347) describes a larva which there is reason to believe is that of *Scotodipnus pandellei*, with which it was taken by him at Bagnères de Luchon.

CROTCH (*Coleopt. Hefte*, v. p. 112) makes the following observations:—*Bembidium stephensii* (Crotch, *Cat. Brit. Col.* ed. 2) should be used for *affine* (Steph. *nec* Say); *B. subglobosum* (Payk., 1790) should stand; *B. normannum* (Dej.) is a good species; *B. cursor* (Fab. *Ent. Syst.*) should stand for *modestum* (Fab. *Syst. El.*); *B. varicolor* (Fab., 1803) should be used for *tricolor* (Fab.), which is preoccupied.

New species :—

Tachys madagascariensis, Fairmaire, *Ann. Soc. Ent. Fr.* 4^e sér. ix. p. 183, Madagascar; *T. drimostomoides*, Fairm. *l. c.* p. 184, Mayotte, Comores.

Tachys bonariensis, Steinheil, *Atti Soc. Ital. Sci. Nat.* xii. p. 247, Buenos Ayres.

Bembidium ibericum, de la Brûlerie, *Ann. Soc. Ent. Fr.* 4^e sér. ix. p. 27, Guadarrama and Reinosa; *B. (Peryphus) saphyreum*, Gautier des Cottés, *Mittheil. schweiz. entom. Gesellsch.* iii. p. 133, Sicily.

Bembidium mellissii, Wollaston, *Ann. & Mag. Nat. Hist.* 4th ser. iv. p. 305, St. Helena.

Bembidium anglicanum, Sharp, *Ent. Monthly Mag.* vi. p. 133, Britain.

Bemb(ie)idium strobili, duvali, and cordillerae, Steinheil, *Atti Soc. Ital. Sci. Nat.* xii. p. 248, Mendoza.

Ochthedromus plagiatus, Zimmerm. *Trans. Amer. Ent. Soc.* ii. p. 247, Maryland; *O. lacunarius*, Zimm. *l. c.* p. 248, Middle States.

Anillus masinissa, Dieck, *Berl. ent. Zeitschr.* xiii. p. 343, Tangiers; *A. cordubensis*, Dieck, *l. c.* p. 344, Cordova; *A. florentinus*, Dieck, *ibid.*, Florence.

Scotodipnus sauleyi, Dieck, *l. c.* p. 345, Vallombrosa; *S. hirtus*, Dieck, *l. c.* p. 346, Col di Tenda.

DYTISCIDÆ.

Halipilides.

SHARP (*Ent. Mo. Mag.* vi. p. 81) considers *Haliphus ruficollis* and *H. fluvialis* races of one species; and thinks that, if this be conceded, his own *H. striatus* is in the same category.

Haliphus striatus, sp. n., Sharp, *Ent. M. Mag.* vi. p. 81, Scotland; *H. bonariensis*, sp. n., Steinheil, *Atti Soc. Ital. Sci. Nat.* xii. p. 248, Buenos Ayres.

Hydroporides.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 185) records *Hyphydrus distinctus* (Aubé) from Madagascar, and briefly redescribes several other of the *Dytiscidae* already attributed to that island.

BISCHOF-LEHNER (Mittheil. der schweiz. entom. Gesellsch. iii. p. 6) notes the occurrence of *Hydroporus obsoletus* (Aubé) at Bâle. (SHARP records this species from Britain: Ent. Mo. Mag. vi. p. 81.)

BUGNON (ibid.) records *Hydroporus sanmarki* (Sahl.) from Lausanne.

WOLLASTON (Ent. Mo. Mag. vi. p. 57) records *Hydroporus minutissimus* (Germ.) as British.

SHARP (*l. c.*) notes the eccentric distribution of certain *Hydropori* (p. 82), and elucidates the synonymy of *Hydroporus discretus* (Fairm.) and *H. nigrita* (Fab.). The former he records as British, and refers to it the *H. nigrita* of Thomson's Skand. Col. ii. and the *H. pubescens* of the same author's supplement (ix.). *H. glabellus* (Thoms.)=*nigrita* (Fab.), according to type from Thomson (p. 83). Sharp also points out the characters of *H. melanarius* and its ally *H. celatus* (Clark), and records *H. unistriatus* as British.

BOLD (Ent. Mo. Mag. vi. p. 161) thinks that Sharp's *H. nigrita* and *H. discretus* are sexes of the same species, chiefly because he has always found them in company. He gives other British localities for Sharp's species.

MONCREAFF (Entom. 71, p. 356) records *Hydroporus cuspidatus* from Southsea, Hants.

Heterhydrus, *g. n.*, Fairmaire, *l. c.* p. 186. Represents abbreviated *Agabus*, but allied to *Hyphydrus*, from which it differs in the mesosternum being completely covered by the prosternum, and by the posterior tarsi ending in a single, robust, flattened claw. Sp. *H. agaboides*, sp. n., Fairm. ibid., Madagascar.

New species :—

Hyphydrus uniformis, Fairmaire, *l. c.* p. 185, Madagascar; *H. acuminatus* (Buenos Ayres) and *mendozanus* (Mendoza), Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 249.

Hydroporus coquerelii, Fairmaire, *l. c.* p. 186, Madagascar; *H. costipennis*, Fairm. *l. c.* p. 187, Ste. Marie de Madagascar; *H. monticola*, Sharp, Ent. M. Mag. vi. p. 84, Scotland and Wales; *H. parallelus*, Sharp, ibid., Scotland; *H. incognitus*, Sharp, ibid., Britain; *H. brannanii*, Schauf. Beitr. Kenntn. Col. Balear. pp. 9-10, Balearic Isles (?=*vestitus*, Fairm.); *H. bonariensis*, Steinheil, *l. c.* p. 249, Buenos Ayres; *H. flavofasciatus*, Steinh. ibid., Achiras; *H. strobili*, Steinh. *l. c.* p. 250, S. Luis.

Colymbetides.

Agabus tarsatus (Zett.) is recorded as British by Sharp, Ent. Mo. Mag. vi. p. 84.

New species :—

Hydrocanthus funebris, Fairmaire, *l. c.* p. 187, Madagascar; *H. asperatus*, Fairm. *l. c.* p. 188, Madagascar; *H. fasciatus*, Steinheil, *l. c.* p. 250, Buenos Ayres.

Anisomera recta, Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 375, Vancouver's Island.

Colymbetes latus, Fairmaire, l. c. p. 191, Madagascar.

Rhantus marginatus, Steinheil, l. c. p. 250, Buenos Ayres.

Copelatus 20-striatus, Fairmaire, l. c. p. 188, Mayotte, Comores.

Dytiscides.

PREUDHOMME DE BORRE (Ann. Soc. Ent. Belg. xii. pp. 107-111) makes some interesting observations on *Dytiscus marginalis*, ♀, with smooth elytra (*conformis*, Kunze), and reports the result of his observations of a great number of that species, viz. that the posterior coxæ vary somewhat in degree of acumination, so that the slight differences supposed to be attached to *conformis* in that respect are valueless. The ♀ with smooth elytra is stated to be the rare exception (in Western Europe) in *marginalis*, but the normal type in *circumcinctus* and *circumflexus*. But at Kasan, in Russia, out of many hundreds of *marginalis*, ♀, taken by Ballion, only one was found with sulcated elytra, and that but very feebly sulcated. The influence of this imperfect development on the Darwinian hypothesis is discussed by the author.

Dytiscus anaxtomozans is referred to Von Well (in Von Jacquin's Miscellanea austriaca): Harold, Col. Hefte, v. p. 113.

Dytiscus latissimus is recorded as Belgian by Weyers (Ann. Soc. Ent. Belg. xii. C. r. p. liii). Deyrolle (l. c. p. liv) remarks on this species.

GYRINIDÆ.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 192) notes the range of *Gyrinus striatus* (Fab.), from Southern Europe to Madagascar and New Holland.

SHARP (Ent. M. Mag. v. p. 217) shows that the *Gyrinus æneus* of Stephens is practically non-existent, and (l. c. vi. p. 134) records *G. suffriani* (Scriba) from Britain.

TARGIONI-TOZZETTI (Bull. Soc. Ent. Ital. i. fasc. ii. pp. 125-133) enters minutely into the structure of the legs in *Gyrinus natator*. He gives highly magnified figures (tav. 3. figs. 1-4) of the anterior, intermediate, and posterior legs, and of the marginal lamellæ.

Gyrinus argentinus, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 251, Achiras.

Dineutes bidens, sp. n., Snellen v. Vollenhoven, Rech. sur la Faune de Madag. p. 7, pl. 1. figs. 1 & 2, Mayotte.

PALPICORNIA.

Hydrophilus lateralis (Hbst.)=*striolatus* (Lec.), which name is to be used; *H. nebulosus* (Say)=*pygmaeus* (F.); *Sphæridium apicalis* (Say)=*Cercyon melanocephalum* (L.). Zimmerman, Trans. Amer. Ent. Soc. ii. pp. 249-250.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 195), as an additional proof of the artificial distinction between *Hydrous* and *Sternolophus*, notes that his *S. comoriensis* accords well with the latter in the form of its mentum, but has the last joint of its maxillary palpi almost shorter than the third joint.

C. O. WATERHOUSE (Ent. M. Mag. v. p. 194), having examined the type

specimens of White's supposed Heteromorous genus *Rygmodes* (Voyage of Erebus and Terror, Ins., p. 118), finds that they must be referred to the *Hydrobiidæ*. He redescribes *R. modestus* and *R. pedinoides*.

RYE (Ent. M. Mag. v. p. 241, note) remarks upon the dual affinities of the British species of *Philhydrus*.

Helophorus. Zimmermann, l. c. p. 249, groups the species of this genus.

Hydræna concolor (Waterhouse) = *riparia* (Kugel.), immature. Rye, l. c. p. 248.

STIERLIN (Mitth. schweiz. ent. Gesellsch. iii. p. 7) records *Hydræna polita* from Schaffhausen as new to the Swiss lists.

Dactylosternum abdominale (Fab.) is recorded by Grenier as taken by Abeille and Rizaucourt in a hollow aspen tree at Marseilles (Ann. Soc. Ent. Fr. 4^e sér. ix., Bull. p. xv). Ancey (l. c. Bull. p. xlii) states that he was the original captor, and that the insect was under bark of *Populus fastigiata*. He has also found it near Beyrouth.

New species :—

Hydrous fulvo-femoratus, Fairmaire, l. c. p. 193, and *H. uniformis*, Fairm. l. c. p. 194, Madagascar.

Sternolophus comoriensis, Fairmaire, l. c. p. 195, Mayotte, Comores.

Hydrocharis grandis, Zimmermann, Trans. Amer. Ent. Soc. ii. p. 250, South Carolina.

Hydrobius glabricollis, Schauf. Beitr. Kenntn. Col. Balear. p. 11, Mahon, Balearic Isles.

Philhydrus punctatus, Sharp, Ent. M. Mag. v. p. 240, Britain; *P. vulgaris* and *affinis*, Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 253, and *P. variegatus*, Steinh. l. c. p. 254, Buenos Ayres; *P. reflexipennis*, New Jersey, *nitens*, North Carolina, and *semistriatus*, Maryland, Zimmermann, l. c. p. 250.

Helochaeres ludovici, Schauf. l. c. p. 11, Ibiza, Balearic Isles.

Hydrochus impressus, Zimmerm. l. c. p. 249, Carolina.

Berosus acutispina, Fairmaire, l. c. p. 196, Madagascar; *B. prolongatus*, Fairm. ibid., Madagascar; *B. corsicus*, Desbrochers des Loges, Pet. nouv. Entom. no. 12, 15 Dec. 1869, Ajaccio; *B. immaculatus*, Zimm. l. c. p. 249, Carolina and Illinois.

Ochthebius poweri, Rye, Ent. M. Mag. vi. p. 4, England (south coast).

Cyclonotum semiglobosum, Zimm. l. c. p. 250, Carolina.

Cereyon naviculare, Zimm. ibid., Middle States.

PAUSSIDÆ.

Paussus burchellianus, sp. n., Westwood, Trans. Ent. Soc. Lond. 1869 (Aug.), p. 319, Graham's Town, South-west Africa.

STAPHYLINIDÆ.

P. DE BORRE (Ann. Soc. Ent. Belg. xii. p. xlvii *et seq.*) gives a list of additions to the Belgian Catalogue of *Brachelytra*, of which *Tachinus rufipennis* appears the only species worth mentioning (*Philonthus nigrifolius* being among them). He adds a list of other species considered interesting, among them being *Anthobium ophthalmicum*, *Ocypus cupreus*, *Lesteva bicolor*, *Tachyporus brunneus*, *Oxyptoda opaca*, &c.; and also publishes, as the results in this 1869. [VOL. VI.]

group of two excursions to Vielsalm, a list of 8 species, wherein *Aleochara lanuginosa*, *Xantholinus punctulatus*, *Philonthus splendens*, *Quedius impressus* and *Homalium rivulare* are conspicuous.

Aleocharides.

RYE (Ent. Mo. Mag. vi. pp. 2 & 3) makes some corrections in the nomenclature of British *Aleocharides*.

BOLD (Ent. Mo. Mag. vi. p. 108) records *Autalia puncticollis* (Sharp) from England.

Falagria formosa (Rosenh.) = *elegans* (Baudi). Baudi, Berl. ent. Zeitschr. xiii. p. 369.

BAUDI (*l. c.*) describes (with a query as to specific value) a variety of *Bolitochara varia* (Fr.) from Cyprus; he also notes (p. 374, note) a large form of *Callicerus obscurus*, from Piedmont, to which Fauvel has given the MS. name of var. *pedemontanus*, and which Kraatz (*ibid.*) determines as *C. atricollis* (Aubé), a good species, erroneously printed *atricornis* in Stein's catalogue. Baudi (*ibid.*) reproduces the description of *Calodera* (*Ilyobates*) *rufa* (Ktz.), which he had proposed to describe as a new species, under the name *punticeps*, thinking Kraatz's insect = *propinqua* (Aubé). Kraatz (*l. c.* p. 375, note) affirms the validity of his species. Baudi (*ibid.*) states that the specific name of *Calodera mech* (Truq.) is a convivial shibboleth of students at Turin.

FAUVEL (L'Abeille, vi. p. 150) makes the following synonymical corrections:—*Phytosus dimidiatus* (Wollast.) = *spinifer*, ♀ (Curtis); *Atemeles* (var.?) *nigricollis* (Ktz.) = *emarginata* (Fab.); *Homalota imbecilla* (Waterh.) = *meridionalis* (Muls. & Rey); *Oligota xanthopyga* (Ktz.) = *Somatium anale* (Woll.); *Millena* (sic) *elongata* (Ktz.) = *glauca* (Aubé).

SHARP (Ent. Mo. Mag. vi. p. 134) gives structural characters for distinguishing specifically between *Aleochara fuscipes* (Grav.) and *A. lata* (Grav.). He also connects *A. fumata* (Grav.) to *A. brevipennis* (Grav.), as a var., having all intermediate forms.

Calodera (*Ilyobates*) *bonnairei* (Fauvel) = *Oxyptoda glabriventris* (Rye). Rye, *l. c.* p. 3.

RYE (*l. c.* p. 248) proposes the specific name *waterhousei* for *Oxyptoda nigro-fusca* (Waterhouse), the latter name having already been employed for an *Oxyptoda* by Kirby and Stephens. He quotes (Ent. M. Mag. vi. p. 3) Fauvel's opinion that this insect is *amæna* (Fairm.).

SHARP (Trans. Ent. Soc. Lond. 1869, pts. ii. & iii. pp. 91–272) revises the British species of *Homalota*, 157 in number, of which 30 are considered as previously undescribed, and about 17 are first recorded as British. He finds it impossible to adopt Thomson's genera or divisions, and modifies Kraatz's sections considerably, reducing them to eight, which he further subdivides into groups of species.

The following observations are extracted from Sharp's paper:—*H. languida* (Scriba, nec Er.) = *insecta* (Thoms.); *H. velox* (Ktz.) = *cambrica* (Woll.); *H. opacula* (Thoms.) = *hygrotopora* (Ktz.), *forte*; *H. halophila* (Thoms.) = *volans* (Scriba); Scotch vars. of *H. nitidula* (Kr.) are named *nitidiuscula*; *H. flavipes* (Thoms.) is named *Halobrectha*, adopting Thomson's generic name for the

species, to which Sharp considers Erichson's description of *atricilla* cannot apply, and for which he repudiates Waterhouse's name of *maritima*, as already employed in *Homalota*; *H. fuscofemorata* (Waterh.) and *H. thomsoni* (Jans.) are suppressed for *picipes* (Thoms.) and *nigricornis* (Thoms.), the prior Stephensian species of the two latter names being considered as non-existent; *angusticollis* (Thoms.) is specifically distinct from *ravilla* (Er.); *saundersi* (Rye) = *testaceipes* (Heer); *dadopora* (Thoms.) = *celata* (Er.); a var. of *fungi* (Grav.), with shorter antennæ and thorax, is described and named *dubia*.

RYE (Entom. Annual, 1870, p. 56) identifies *H. insecta* (Thoms.) with *sulcifrons* (Steph.), and *ænicollis* (Sharp) with *xanthoptera* (Steph.).

Homalota rufotestacea (Ktz.) is recorded as British by Rye, Ent. M. Mag. v. p. 218.

BETHE (Stettin. ent. Zeit. 1869, p. 426) records *Homalota nigerrima* (Aubé) as new to the German lists.

Myllæna paradoxa (Scriba) is to be referred to *Oxypoda*, according to Baudi, l. c. p. 377, note.

PEYRON (Pet. nouv. Ent. no. 9) records the capture at Acre of a Staphylinid (for which he thinks that a new genus near *Dinopsis* must be formed) in company with a large unknown ant, the habits of which he describes.

RYE (Ent. Mo. Mag. vi. p. 159) records *Myllæna glauca* (Aubé) from England, and notes the specific difference between the *M. elongata* of Matthews and of Kraatz.

New species :—

Ocalea parvula, Baudi, Berlin. ent. Zeitschr. xiii. p. 369, Cyprus, Piedmont, France.

Leptusa. Baudi, l. c., describes the following species :—*L. pulchella*, p. 370, note, Duomod'ossola; *L. bidens*, p. 371, note, Apennines; *L. simplex*, p. 372, note, Turin.

Calodera pulchella, Baudi, l. c. p. 375, Cyprus.

Tachyusa agilis, Baudi, l. c. p. 376, Cyprus.

Oxypoda bimaculata, Baudi, l. c. p. 377, Cyprus.

Homalota. Sharp, l. c., describes the following species :—*H. eximia*, p. 103 (= *fragilicornis*, Ktz. ??), Scotland; *H. delicatula*, p. 107, Scotland; *H. littorea*, p. 109 (= *fluviatilis*, Ktz. ??), England; *H. londinensis*, p. 118, Britain and Germany; *H. clavipes*, p. 124, Scotland; *H. oblongiuscula*, p. 130, Britain; *H. princeps*, p. 142, Isle of Wight; *H. subglabra*, p. 149, Scotland; *H. fallaciosa*, p. 157, Scotland; *H. cribriceps*, p. 166, England (possibly not a true *Homalota*; *H. curtispennis*, p. 173, Scotland (*breviceps*, Thoms. ?); *H. cavifrons*, p. 177, Scotland; *H. simillima*, ibid., Scotland; *H. decipiens*, p. 179, England; *H. exarata*, p. 186, England; *H. subænea*, p. 187, Britain; *H. ænicollis*, p. 189, Britain; *H. incognita*, p. 191, Scotland; *H. hybrida*, p. 196, Scotland; *H. ignobilis*, p. 200, Britain and Germany; *H. diversa*, p. 201, Scotland; *H. puberula*, p. 213, England; *H. perexigua*, p. 215, England; *H. indubia*, p. 227, Scotland; *H. indiscreta*, p. 228, Scotland; *H. atricolor*, p. 230, Britain; *H. germana*, p. 235, Scotland; *H. hodierna*, p. 236, England and France; *H. canescens*, p. 239, England; *H. setigera*, p. 251, Britain.

Homalota tereticornis, Wankowicz, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 420 Minsk; *H. timens*, Baudi, l. c. p. 378, note, Piedmont; *H. sericophila*, Baudi, l. c. p. 379, note, originally found in unmanufactured silk, afterwards received from Apennines and Duomod'ossola.

Phlæopora angustiformis, Baudi, l. c. p. 379, note, Apennines.

Gyrophæna carpini, Baudi, l. c. p. 380, Piedmont.

Tachyporides.

PANDELLÉ (Ann. Soc. Ent. Fr. 4^e sér. ix. pp. 261-366) has monographed the European species of this family; which, as restricted by him, contains *Hypocyptus*, *Conurus*, *Tachyporus*, *Habrocerus*, *Cilea*, *Tachinus* and *Bolitobius*. *Tanygnathus*, as usual, following Kraatz, and *Trichophya* are rejected (no better position, however, being suggested for the latter); *Lamprinus* is sunk as a subgenus of *Tachyporus*; *Leucoparyphus* (Kraatz) is deposited in favour of *Cilea* (Du Val), in which *Coproporus* (Kraatz) is also included; *Drymoporus* (Thomson) is reincorporated with *Tachinus*; and *Bryoporus* and *Lordithon* (Thoms.) are merged in *Bolitobius*, which is divided into three subgenera, *Megacron*^{ut} *Bolitobius* and *Mycetoporus*. *Conurus* (Stephens) is rightly reinstated, in place of *Conosoma* (Kraatz); but Pandellé, who can thus be just in the case of a genus, is the reverse as regards species; for he intimates that, although certain of the Stephensian *Tachyporidæ* can be satisfactorily determined by their descriptions, he finds it inconvenient to disturb the names now in use for them. Considering Erichson incorrect, Pandellé publishes fresh characters for the family; and in his subsequent descriptions makes great use of the setiferous punctures and the space between the middle and posterior coxæ; relying avowedly on characters externally accessible. The monograph, which is very ingeniously constructed, is, however, so essentially a table in itself, consisting wholly of references, that it is very difficult to work from it.

Hypocyptes rufipes (Kraatz), according to Pandellé (l. c. p. 282), who has examined all Kraatz's types but that of *H. tenuicornis*, is possibly only a crippled *H. longicornis*. *H. rufipes* (Stephens, *Cypha*) he thinks should belong to another genus; but the *rufipes* of Kraatz was, so long ago as 1858, referred to *longicornis* in Waterhouse's Catalogue, which also identifies Stephens's insect with that species. Pandellé does not seem to have observed the copious and correct Stephensian synonymy in this catalogue; as he mentions another source of information for Stephens's species, as to which he is sometimes incorrect.

Hypocyptus pygmaeus (Kraatz), according to Pandellé, l. c. p. 284, = the prior *nigripes* of Stephens, which he reinstates. According to Waterhouse's catalogue (correctly, as the Recorder has verified by examination), Stephens's *nigripes* is nothing but *longicornis*.

Hypocyrtus pulicarius, according to type received from Kraatz by Pandellé (*l. c.* p. 285), = *seminulum*, large var.

Conurus insertus (Hampe) = *C. littoreus* (Linn.), immature. Pandellé, *l. c.* p. 289.

Conosoma monticola (Woll.) = *lividus* (Er.). Fauvel, L'Abeille, vi. p. 151.

Tachyporus elegantulus (Reiche et Saulcy), *T. abdominalis* (Grav.), *T. scutellaris* (Boisd. et Lac.), and *T. anticus* (Er.) = *brunneus* (Fab.). Pandellé, *l. c.* p. 300.

Tachyporus abner (Saulcy) and *T. piceus* (Maklin, from description only) = *T. pusillus* (Grav.). Pandellé, *ibid.*

Tachyporus scitulus (Waterhouse, Cat. nec Er.) = *pusillus*, var. Rye, Ent. Mo. Mag. vi. p. 3.

Tachyporus meridionalis (Fairmaire) = *T. hypnorum* (Fab.). Pandellé, *l. c.* p. 302.

Tachyporus abdominalis (Kraatz) = *ruficollis* (Grav.), var. Pandellé, *l. c.* p. 304.

Tachyporus abdominalis (Erichson) = *obtusus* (Linn.), var., and *erichsonis*, sp. n., according to types in Aubé's collection received from Erichson. Pandellé, *l. c.* p. 305.

Tachyporus abdominalis (Mann.) = pale *obtusus*. Pandellé, *l. c.* p. 307.

Tachyporus discus (Reiche et Saulcy) is considered by Pandellé, *l. c.* p. 306, a meridional variety of *solutus* (Er.). Nevertheless he makes it rank as a species.

PANDELLÉ (*l. c.* p. 312) notes the simple antennæ of the second known species of *Habrocerus*, *H. marginicollis* (Solier, in Gay Hist. Chili, Zool., iv. p. 343, *Tachyporus id.*), from Chili.

P. DE BORRE (Ann. Soc. Ent. Belg. xii. C. r. p. lii) notes the addition to the Belgian fauna of *Trichophya pilicornis*, taken by Tennstedt.

Coproporus gallicus (Perris) is noticed as occurring under walnut-bark by Bauduer (Pet. nouv. Ent. No. 4).

Tachinus nitidus (Fauvel, Bull. Soc. Linn. de Normandie, 1867), according to Pandellé, *l. c.* p. 315, entirely realizes the description of *T. basalis* (Er.), with the exception of two characters not mentioned by Erichson, and a difference in the localities of the two insects. Fauvel has informed the Recorder that this insect is the *T. berezynicus* of Wankowicz, hereafter mentioned.

PANDELLÉ (*l. c.* p. 319) notes the capture of *Tachinus rufipennis* (Gyll.) twice in June, in the Pyrenees, among recently barked pine, at 1800 m. elevation, also in rotten beech.

Tachinus frigidus (Kraatz) = *pallipes*, according to Pandellé (*l. c.* p. 323), who has not seen Erichson's insect of the former name, from Unalaschka.

Ellipotoma tridens (Motschulsky) = *Tachinus marginellus* ♀, and *E. posticalis* (Mots.) = *T. marginellus* ♂, according to Pandellé, *l. c.* p. 326, on the supposition, at least, that Motschulsky had *laticollis* (Grav.) under the name of *marginellus*.

Bolitobius formosus of Fairm. et Lab. Faune Franç. = *inclinans*. Pandellé, *l. c.* p. 334.

Mycetoporus biplagiatus (Fairm.) = *longicornis*, var. Pandellé, *l. c.* p. 340.

PANDELLÉ (*l. c.* p. 342) drops the citation of Gravenhorst for *M. nanus*, as that author confused other species with it in his collection, and his description is not exact.

PANDELLÉ (*l. c.* p. 345) proposes the name *reyi* for the *Mycetoporus angularis* of Mulsant and Rey, on account of a good prior species of the same name from America (*angularis*, Sachse); and the *angularis* of Paykull and of Stephens are respectively attributed as synonyms to *striatus* (Oliv.) and *trinotatus* (Er.). He also proposes the name *fairmairei* (*l. c.* p. 346) for *M. niger* (Fairm.), on account of the prior *Bolitobius niger* of Gravenhorst, from North America.

PANDELLÉ (*l. c.* p. 350), though giving *Mycetoporus longulus* (Mann.), *lepidus* (Grav.), and *bimaculatus* (Boisd. et Lac., = *ruficornis*, Ktz., *punctiventris*, Thoms., and the long prior *brunneus* of Marsham) as good and distinct species, records his belief that there is but one specific type among them.

Bolitobius (Bryoporus) castaneus (Hardy and Bold) is retained instead of *hardyi* (Crotch in litt.) by Pandellé (*l. c.* p. 352), as the prior *castaneus* of Stephens does not stand specifically.

Bolitobius distigma (Fairm.) = *pygmaeus* (Fab.), var. Pandellé, *l. c.* p. 357.

New species :—

Hypocyptus rubripennis, Pandellé, *l. c.* p. 283, Tarbes; *H. lancifer*, Pandellé, *l. c.* p. 284, Berlin, Pyrenees; *H. pirazzolii*, Baudi, Berl. ent. Zeitschr. xiii. p. 381, note, Duomod'ossola.

Conurus lethierryi, Pandellé, *l. c.* p. 288, Algeria; *C. wankowiezi*, Pandellé, *l. c.* p. 294, Minsk.

Tachyporus quadriscopulatus, Pandellé, *l. c.* p. 304, Pyrenees, Calvados; *T. erichsonis*, Pandellé, *l. c.* p. 305, Berlin, Austria.

Tachinus fauveli, Pandellé, *l. c.* p. 321, Caucasus; *T. flavo-limbatus*, Pandellé, *l. c.* p. 326, Sicily, Spain, Algeria; *T. bonvouloiri*, Pandellé, *l. c.* p. 329, Pyrenees; *T. berezyncicus*, Wankowicz, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 418, Boryssow.

Bolitobius. Pandellé, *l. c.*, describes the following species:—*B. barnevillei*, p. 335, Gap; *B. aubei*, *ibid.*, Pyrenees; *B. pachyraphis*, pp. 344 & 351, Pyrenees; *B. reichii*, p. 344, Bonn, Pyrenees, Algeria; *B. chevrolati*, p. 345, Caramania; *B. brucki*, p. 347, Prague, Pyrenees, Tuscany; *B. poricollis*, p. 350, Tuscany, Styria; *B. rugipennis*, p. 352, Scotland, Pyrenees, St. Gothard; *B. kraatzii*, p. 356, Hungary, Sicily, Corsica.

Bolitobius hæmaticus, Baudi, Berl. ent. Zeitschr. xiii. p. 382, note, Piedmontese Alps.

Quediides.

ROUGET (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxii) has bred *Quedius dilatatus*, at the end of May, from larvæ found in a hornet's nest in the preceding October.

BAUDI (Berl. ent. Zeitschr. xiii. p. 383, note) records 3 specimens of *Quedius impressus*, from Sardinia and Calabria, of which the forehead is impressed with four deep equidistant punctures between the eyes.

According to FAUVEL (L'Abeille, vi. p. 151) *Heterothops minutus* (Woll.)

=*prævius* (Er.); *Quedius bonvouloiri* (Bris.) = *attenuatus* (Gyll. nec Er., Ktz.); *Q. pallipes* (Luc.) = *molochinus* (Grav.), immature; *Q. flavipennis* (Baudi) = *virgulatus* (Er.), immature.

Staphylinides.

Ocypus syriacus (Baudi) belongs to the first section, near *alpestris* (Er.), according to Baudi (Berlin. ent. Zeitschr. xiii. p. 384), who notices a small var. of *O. cupreus* (? *sericeus*, Motsch.) occurring in Cyprus, Sardinia, and Southern France.

O. olympicus (Baudi) = *rubripennis* (Reiche), sec. Fauvel: Baudi, l. c. p. 385, notes the difference between these two insects.

BAUDI (l. c. p. 386) notes varieties of *Philonthus corvinus* (Er.), *debilis* (Er.), and *rufimanus* (Er.); he finds *P. juvenilis* (Peyr.) at Cyprus, exactly agreeing with description, and remarks on its omission from catalogues, and considers *P. truquii* (Peyr.) ought to be referred as a syn. to *virgo* (Gr.) rather than to *micans* (Gr.).

According to FAUVEL (L'Abeille, vi. p. 151), *Ocypus punctatissimus* (Woll.) = *cupreus* (Rossi); *O. atratus* (Woll.) = *ater* (Grav.; cf. Ent. Mo. Mag. iv. p. 235); *Philonthus proximus* (Woll.) = *ventralis* (Grav.); *P. marcidus* (Woll.) = *ebenninus* (sic) var. *concinus* (Grav.).

Ocypus tomentosus, sp. n., Baudi, l. c. p. 384, Cyprus.

Philonthus dissimilis, sp. n., Baudi, l. c. p. 387, Cyprus (from Kraatz's note, ibid., seems scarcely different from *orbis*, Kies.); *P. depressus*, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xiii. p. 253, Mendoza.

Xantholinides.

BAUDI (Berlin. ent. Zeitschr. xiii. p. 387) notes the difference of the anal segments of the abdomen in the sexes of *Xantholinus rufipennis* (Er.), of which he records a colour-variety from Sicily. He also refers to the sexual characters of *X. collaris* (Er.).

According to FAUVEL (L'Abeille, vi. p. 151), *X. ruficollis* (Luc.) = *collaris* (Er.); *X. amissus* (Coq.) and *radiosus* (Peyr.) = *Leptacinus parumpunctatus* (Gyll.); *Othius philonthoides* (Woll.) = *brachypterus* (Woll.), minor.

Xantholinus tenuipes, sp. n., Baudi, l. c. p. 388, Apennines.

Leptacinus othioides, sp. n., Baudi, l. c. p. 390, note, banks of Po.

Pæderides.

According to FAUVEL (L'Abeille, vi. p. 152), *Lathrobium jansonii* (Crotch) = *pallidum* (Nordm.); *Stilicus ruficornis* (Luc.) = *orbiculatus* (Payk.); *Scopeus trossulus* (Woll.) = *sericans* (Rey & Muls.); *Lithocharis minuta* (Luc.) = *nigritula* (Er.).

BAUDI (Berlin. ent. Zeitschr. xiii. p. 390, note) refers to a var. of *Glyptomerus cavicola* (Müll.), from Piedmont and Tuscan Apennines, which he names *apenninus*, and to which he thinks the *etruscus* of Piccioli is to be referred.

Lathrobium angustatum (Boisd.) is recorded as British by Sharp, Ent. Mo. Mag. v. p. 197.

Lathrobium letzneri, sp. n., Gerhard, Berl. ent. Zeit. xiii. p. 257, Germany (cf. Letzner, 46 Jahr. Ber. schlesisch. Gesell.).

BAUDI (*l. c.* p. 390) notes a small var. of *Doliceon biguttulus* (Lac.) from Cyprus, to which he is inclined to refer the *D. venustus* of Peyron and *D. truquii* (Saulcy). His own *D. venustus*, however, he considers a good species.

Scopæus. Baudi (*l. c.* p. 391) notes vars. of *erichsonii* (Kolen.), *lavigatus* (Gyll.), *infirmus* and *minimus* (Er.): he thinks that *infirmus* and *scitulus* (sibi) should be placed in Mulsant's first division of the genus, instead of at the end.

Scopæus pilicornis, sp. n., Baudi, *l. c.* p. 392, Cyprus.

Lithocharis. Baudi (p. 392) refers to vars. of *fuscata* (Man.), one of which he names *infuscata*; he gives characters for *pythonissa* (Saulcy).

Sunius. Baudi (p. 393) describes a var. of *filiformis* (Latr.), for which he quotes Fauvel's name *abbreviatus*, also a queried variety of *anguinus* (sibi), with which he suggests *filum* (Aubé) may be identical. He gives distinguishing characters for *filiformis* and *anguinus*, and states that the var. *e* of his own *biguttatus* is *melanurus* (Küst.).

Sunius diversicollis, sp. n., Baudi, *l. c.* p. 393, Cyprus; *S. cribellus*, sp. n., Baudi, *l. c.* p. 394, note, Sardinia, Piedmont.

BAUDI (*l. c.* p. 394) notes a var. of *Pæderus littoralis* (Grav.), for which he adopts Fauvel's MS. name of *strictus*.

Pæderus coriaceus, sp. n., Fauvel, Tijdschr. v. Ent. xii. 1869, p. 134, pl. 2nd f. 1, Celebes.

Pinophilides.

Pinophilus scribæ, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 254, Buenos Ayres.

Stenides.

DE LA BRÛLERIE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 30) publishes his determination not to describe the supposed new genus, allied to *Eræsthetus*, to which he refers in Ann. Soc. Fr. 1866, p. 514, on account of his solitary exponent being broken.

Stenus incanus (Er.) is recorded as British by Sharp, Ent. Mo. Mag. v. p. 197.

BEDEL (Pet. nouv. Entom. no. 9) records the capture of *Stenus kiesencetteri* (Ros.) near Paris.

BAUDI (Berlin. ent. Zeitschr. xiii. p. 396) notes varieties from Cyprus of *Stenus circularis* (Grav.), *pumilio* (Er.), *nigritulus* (Gyll.), and *cyaneus*, (sibi).

According to FAUVEL (L'Abeille, vi. p. 152), *Stenus annulatus* (Crotch) = *aceris* (Lac.); *S. modestus* (Luc.) = *oculatus* (Grav.); *S. æneus* (Luc.) = *cordatus* (Grav.).

Stenus. Baudi (Berl. ent. Zeitschr. xiii.) describes the following new species:—*S. morulus*, p. 395, Cyprus; *umbricus*, ibid. note, Thrasimene Lakes; *gracilicornis*, p. 396, note, Piedmont (= *glacialis*, Ktz. nec Heer, teste Kraatz ibid.); *italicus*, p. 397, note, Piedmont, Ravenna.

Oxytelides.

SHARP (Ent. Mo. Mag. vi. p. 158) records *Bledius spectabilis* (Ktz.) from

Britain, and shows from its geographical range that it cannot be (as Fauvel thinks) a southern form of *B. tricornis*.

Bledius fuscipes (Rye) = *pallipes* (Grav.); Fauvel, L'Abeille, vi. p. 152. Rye (Ent. Mo. Mag. vi. p. 88) notes Kraatz's recognition of *fuscipes* as a good and distinct species, and his record of its capture at Stettin.

Bledius diffinis, sp. n., Baudi, Berl. ent. Zeitschr. xiii. p. 398, Cyprus.

Platystethus pilosellus, sp. n., Wankowicz, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 419, Minsk.

Platystethus longicornis (Luc.) = *nodifrons* (Sahlb.); *Trogophlæus exilis* (Woll.) = *pusillus* (Grav.). Fauvel, l. c.

Syntomium ceneum is recorded as new to the Belgian fauna by Wesmael and Tennstedt (Ann. Soc. Ent. Belg. xii. C. r. p. lvi).

Trogophlæus despectus, sp. n., Baudi, l. c. p. 400, note, Piedmont; *T. discolor*, sp. n., Baudi, l. c. p. 400, Cyprus.

Apocellus mendozanus, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 254, Mendoza.

Homaliides.

Homalium impar (Rey & Muls.) = *riparium* (Thoms.), and *allardi* (Fairm.) ^{scd.} *cellatum* (Woll.); Fauvel, L'Abeille, vi. p. 152 (cf., as to this last species, Ent. Mo. Mag. iv. p. 236).

^{sr} *Homalium crassicorne* (Matthews) = *salicis* (Gyll.), var.; Rye, Ent. Monthly Mag. vi. p. 4.

H. gracilicorne (Fairm.) is recorded as British by Rye, *ibid.*

KIESENWETTER (Berl. ent. Zeit. xiii. p. 313, note) remarks upon an alpine local variety of *Arpedium quadrum* and a new species of *Anthobium* near *longipenne*, of which the ♀ has the elytra truncate at apex.

BAUDI (Berl. ent. Zeitschr. xii. p. 404, note) mentions varieties and sexual differences of *Anthobium ophthalmicum* (Payk.).

New species :—

Anthophagus apenninus, Baudi, Berl. ent. Zeitschr. xiii. p. 401, note, Apennines.

Lesteva lepontia, Baudi, l. c. p. 401, note, Duomod'ossola.

Lathrimæum baudii, Kraatz, Berlin. ent. Zeitschr. xiii. p. 402, Cyprus.

Homalium strigicolle, Wankowicz, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 419, Boryssow; *H. distincticorne*, Baudi, l. c. p. 402, note, Piedmont (belongs to Thomson's genus *Pycnoglypta*; Ktz., *ibid.*).

Anthobium cribricolle, Baudi, l. c. p. 403, note, Alps, Monte Rosa; *A. levipenne*, Baudi, l. c. p. 404, note, Maritime Alps (♀ = *pallens*, Heer); *A. reticulatum*, Baudi, *ibid.*, Alps and Apennines.

PSELAPHIDÆ.

Pselaphides.

Chennium bituberculatum is recorded as new to the Belgian fauna by Wesmael (Ann. Soc. Ent. Belg. xii. C. r. p. lvi).

Ctenistes barbipalpis (Fairm.) = *aubei* (Rosenh.): Baudi, [on Sauley's authority, Berl. ent. Zeitschr. xiii. p. 407, note.

Pselaphus nigricans (Leach), referred to Britain in Gemminger and Von Harold's catalogue under the genus *Bryaxis*, is pointed out by Rye (*l. c.* p. 117) as having been described from Florence.

BAUDI (*l. c.*) describes under the name *temuicornis* an insect which he attributes with doubt as a variety to *Tychus castaneus* (Aubé); he gives no locality. He notes var. of *Bryaxis sanguinea* (p. 408, note), and redescribes *B. chevrierii* (Aubé), p. 412, and *clavata* (Peyron), p. 413, with their respective males.

RYE (*Ent. Mo. Mag.* v. p. 249) proposes the specific name *waterhousei* for *Bryaxis simplex* (Waterhouse), the latter name being occupied in the same genus by a Motschulskyan species from the East Indies.

RYE (*Entomologist's Annual*, 1870, pp. 115 & 118) notes the assignment by Schaum of *Bryaxis hemoptera* (Aubé), *Tychus ibericus* (Motsch.), and *Trimum brevipenne* (Chaud.) to Britain, but thinks further evidence required before accepting these species as British.

BECKER (*Hortæ Soc. Ent. Ross.* vi. p. 108) records *Bryaxis furcata* (Mots.) from Sarepta as common among *Statice tomentella*.

Bythinus nigrinus (Muls.) and *B. lericollis* (Fairm.) = *clavicornis* (Panz.). Baudi, on Sauley's authority, *l. c.* p. 414, note.

Ctenistes calcaratus, sp. n., Baudi, Berlin. ent. Zeitschr. xiii. p. 405, Asia Minor; *C. ponticus*, sp. n., Baudi, *l. c.* p. 406, Cyprus and Asia Minor. ^{2nd}

Batrissus insularis, sp. n., Baudi, *l. c.* p. 407, Cyprus.

Bryaxis. Baudi, *l. c.*, describes the following new species:—*B. gigas*, p. 406, *B. cypria*, p. 409, *B. gibbera*, p. 411, *B. tuberculata*, p. 412, *B. dentipes*, p. 413, Cyprus; *B. syriaca*, p. 410, Beyrouth.

Bythinus simplex and *B. italicus*, spp. nn., Baudi, *l. c.* p. 414, note, Piedmont.

Clavigerides.

Claviger longicornis is recorded as new to the Belgian fauna by Wesmael (*Ann. Soc. Ent. Belg.* xii. C. r. p. lvi).

KING (*Trans. Ent. Soc. N. S. Wales*, ii. pt. i. 1869, p. 56) notes the existence of forms in the Australian fauna closely allied to those of S. America, and gives a list of the known species of *Articerus*.

Claviger apenninus, sp. n., Baudi, Berl. ent. Zeitschr. xiii. p. 415, note, Apennines.

Articerus tumidus, sp. n., Westwood, *Trans. Ent. Soc. Lond.* 1869 (Aug.), p. 318, Swan River (= *setipes* ♂, Westw. ?); *A. amazonicus*, sp. n., Westw. *l. c.* p. 319, Upper Amazons.

Articerus (? *Fustiger*, Brendel) *regius*, sp. n., King, *l. c.* p. 55, Liverpool, N. S. W.; *A. breviceps*, sp. n., King, *l. c.* p. 56, Rope's Creek.

SCYDMENIDÆ.

LECONTE (*Trans. Amer. Ent. Soc.* ii. pp. 251–2) publishes an abstract of Zimmermann's views as to the classification of the RHYPHAGA, from which "series" that author proposed to eliminate and transfer the following families:—the *Pselaphidæ*,

Claviger (sic), and *Staphylinidæ*, to form another series, BRACH-ELYTRA; the *Phalacridæ* and *Telmatophilidæ* to the series CORDYLOCERA; the *Rhyssodidæ*, *Passandridæ*, and *Cucujidæ* to the series ISOMERA (XENOMORPHA); and the *Georyssidæ*, *Par-nidæ*, and *Heteroceridæ* to the series PHILYDRIA (sic). As thus restricted, the families of the RHYPOPHAGA are distinguished as follows:—

- A. Wings membranous, with distinct veins, and mostly suitable for flight; ventral segments 5, or less in number.
 - a. Ventral segments 5; tarsal joints variable in form and length PAUSSIDÆ.
 - b. Ventral segments 5; tarsal joints narrow.
 - 1. Hind coxæ not excavated for the reception of the thighs; pygidium always exposed HISTERIDÆ.
 - 2. Hind coxæ not excavated; pygidium not exposed. MYCETOPHAGIDÆ.
 - 3. Hind coxæ excavated for the reception of the thighs. DERMESTIDÆ.
- scd. Ventral segments 5; first three joints of tarsi dilated. NITIDULIDÆ.
- sp. B. Wings membranous, with distinct veins, and mostly suitable for flight, but in some genera wanting or undeveloped; ventral segments 6 or more in number.
 - a. Elytra with distinct veins SILPHIDÆ.
 - b. Elytra without veins.
 - 1. Prothorax shield-shaped, with sharply defined side margins ANISOTOMIDÆ.
 - 2. Prothorax rounded or cylindrical, without margined sides SCYDMENIDÆ.

With the *Mycetophagidæ* are to be included the *Colydiadæ*, *Cryptophagidæ*, *Trogositidæ*, *Pellidæ*, *Thorictidæ*, *Mycetæidæ*, *Murmidiidæ*, *Lathridiidæ*, *Monotomidæ*, *Derodontidæ*, and *Othniidæ*; and with the *Dermestidæ*, the *Byrrhidæ* and *Throscidæ*. From Leconte's note at p. 252, it would seem that this Table, though recent, is of a provisional nature only.

BOLD (Ent. Mo. Mag. v. p. 246) notes the occurrence in Northumberland of *Euconnus fimetarius* (Thoms.). Rye (ibid.) adds other localities for the species.

BAUDI (Berlin. ent. Zeit. xiii. p. 416) mentions Sardinian vars. of *Scydmænus kunzei* (Gené); and also the habits and varieties of *Leptomastax hypogeus* (Pirazz.).

Scydmænus truquii and *S. dichrous*, spp. nn., Baudi, l. c. p. 416, Cyprus; *S. (Eumicrus) cerastes*, sp. n., Baudi, l. c. p. 417, note, Sardinia; *S. mississipicus*, sp. n., Zimmermann, Trans. Amer. Ent. Soc. ii. p. 251.

SILPHIDÆ.

Leptoderides.

JOSEPH (45th Jahres-Ber. schlesisch. Gesellsch. 1868) describes an insect under the name of *Leptoderus robicii*, taken in a grotto between the Nanosberge and Luëg, which he appears unable to consider a good species or to refer with certainty to *L. angustatus* (Schm.), as a ♀ var.

Silphides.

An abnormal individual of *Silpha atrata* is mentioned in Tijdsch. v. Entom. xiii. p. 194.

Leptinus testaceus is recorded by Wesmael as new to the Belgian fauna (Ann. Ent. Soc. Belg. xii. C. r. p. lvi). GORHAM (Ent. Mo. Mag. vi. p. 89) records the capture of numerous specimens of it in a nest of *Bombus pratorum*, in Staffordshire.

Adelops. Fairmaire (Stettin. ent. Zeit. 1869) describes the following new species:—*A. ovoideus* and *A. epuræoides*, p. 234, Southern France; *A. subalpinus*, ibid., French Alps. Dieck (Berl. ent. Zeit. xiii.) describes the following species:—*A. stygius* and *infernus*, p. 348, Ariège; *A. muscorum*, p. 349, North Italy; *A. kiesenwetteri*, p. 350, Montserrat, Catalonia.

Anisotomides.

Triarthron märkeli (Schm.) is recorded as British by Janson (on behalf of Power), Proc. Ent. Soc. Lond. 1869, p. xix.

Agaricophagus conformis (Er.), ♀, has occurred to Bethe, at Ostseestrand, Erichson having only known the ♂. Stettin. ent. Zeit. 1869, p. 426.

WANKOWIEZ (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 417) publishes a Table of the Lithuanian species of *Agathidium*, thirteen in number, including one new species.

Agathidium polonicum (Wankowiez) = *piceum*, Er.: Wankowiez, ibid., note.

Anisotoma scutellaris, sp. n., Mulsant & Mayet, Ann. Soc. Linn. Lyon, n. s., xvi. p. 295, Cette. (It is manifestly impossible for two authors to describe a single species. In papers containing more than one species, two or more authors may combine their descriptions, signing or otherwise indicating their individual work; here, however, is an isolated notice of a single insect.)

Cyrtusa blandissima and *impubis*, spp. nn., Zimmermann, Trans. Amer. Ent. Soc. ii. p. 251, N. Carolina.

Agathidium pulchellum, sp. n., Wankowiez, l. c. p. 416, Boryssow.

CORYLOPHIDÆ.

Corylophus sublævipennis (Duv.) is recorded as British by Sharp, Ent. Mo. Mag. v. p. 197.

KRAATZ (Berl. ent. Zeit. xiii. p. 283) revises the synonymy of the species of *Sacium* and *Arthrolips* as follows:—*SACIUM* (LeConte): *pusillum* (Du V.) is doubly queried as identical with the *pusillum* of Gyll. and Thoms.; *corticinum* (Thoms.), *pusillum* (Redt.), *atrum* (Dej., Ziegl.), and ? *aiscedens* (Du V.) = *obscurum* (Sahlb. nec Dej.); *nanum* (Muls.) and *brunneum* (Bris.) are

retained as good species, and *pusillum* (Wollast.) is renamed *maderæ*.
ARTHROLIPS (Woll.): *obscurus* (Du V. and Dej. nec Sahlb.) = *piceus* (Comolli), to which *convexusculus* (Mots.) is added as a var.; *rufithorax* (Du V.) = *humilis* (Rosenh.).

TRICHOPTERYGIDÆ.

MOTSCHOULSKY (Bull. Soc. Imp. Nat. Moscou, 1868, no. 3, p. 170), who appears to be scarcely *au courant* with entomological literature, quoting Schaum's Cat., 2nd ed. (1861), as his sole authority for certain of Matthews's genera (of which he states that *Micrus* does not at all correspond with his own genus of the same name established in 1850), gives the following synoptical table of genera, stating that the large number of exotic species in his collection cannot be arranged in the genera already known:—

- A. Elytra abbreviated, widely truncate, leaving a part of abdomen free. Body punctuated, thickly pubescent and silky on the upper surface.
 - a. Post. angles of thorax acuminate.
 - † Elytra more or less parallel ACRATRICHIS (sic), Mots.
 - †† Elytra much attenuated; no eyes MYRMICOTRICHIS, Mots., 1855 (*Astaloptyx*, Perris).
 - b. Post. angles of thorax rectangular. PTERYX, Matth.
 - c. Post. angles of thorax rounded ELACHYX (sic), Matth.
 - d. Thorax contracted behind.
 - † Abd. entirely free PTINELLA, Motsch.
 - †† Abd. slightly visible above MICRUS, Matth. (*Epitomella*, Mots.).
- B. Elytra elongate, almost entirely covering the abdomen. Body punctuated above, and almost always covered with a more or less fine pubescence.
 - a. Elytra ovate, slightly widened behind.
 - † Thorax without median longitudinal line. PTILIOLA, Haldeman, 1849.
 - †† Thorax with a median longitudinal line. MICRELLA, Mots. (*Micrus*, Mots., *olim.*).
 - b. Elytra almost parallel, narrow, very elongate.
 - † Thorax attenuated towards the head. NANOSELLA, g. n.
 - †† Thorax rounded at the sides ACTEELLA, Mots. (? g. n.).
 - ††† Thorax contracted behind and slightly cordate. OLIGELLA, Mots. (? g. n.).
 - c. Elytra contracted behind.
 - † Extremity of elytra truncate MICRIDIMUM, Mots. (? g. n.).
 - †† Extremity of elytra attenuated and rounded. CAMPLIDIUM, Mots. (? g. n.).
- C. Elytra strongly contracted behind. Body very shining on the upper surface, polished, or only with scattered punctures, and a few hairs.
 - a. Thorax transverse, with a deep median longitudinal furrow and a foveola on each side MILLIDIUM, Mots.
 - b. Thorax almost quadrate, and slightly cordate towards the elytra, glabrous above CISSIDIUM, Mots.

c. Thorax enlarged towards the elytra, contracted and arched in front.

PTENIDIUM, Er.

D. Body of a regular oval shape, covered on the upper surface with elevated hairs ANISARTHRIA, Steph. ^{ns. 2}

The author proceeds to characterize briefly the following species of the above mentioned genera, most of which, bearing his own name, would seem, from the heading of his paper (Énumération des nouvelles espèces) to be undescribed; it is, however, expressly stated that certain of them are new. The typographical errors in this paper are exceedingly numerous and troublesome.

ACRATRICHIS (p. 173).

* *Elytra almost quadrate.*

A. quadrangula (Mots.), United States; *brunnipennis* (Mots.), Panama; *brevicornis* (Mots.), Madeira and Dalmatia; *abrupta* (Hald.), U. States; *lividipennis* (Mots.), Panama; *nigricornis* (Mots.), Madeira; *velutina* (Mots.), Panama; *nanula* (Mots.), New York; *subglabra* (Mots.), Panama; *ovatulula* (Mots.), Madeira.

** *Elytra elongate-quadrate.*

A. insularis (Makl.), North Amer.; *parallela* (Hald.), Pennsylvania; *ri-valis* (Lec.), New Orleans; *aspera* (Hald.), U. States; *vulgata* (Lec.), Pennsylvania; *sylvestris* (Mots.), Panama.

*** *Elytra rather short, but slightly attenuated behind.*

A. ceylonica (Mots.), Ceylon; *grossa* (Mots.), Washington; *orientalis*, (Mots.), Ceylon; *trapeziformis* (Mots.), Ceylon; *haldemanni* (Lec.; *rotundata*, Hald.), U. States; *cursitans* (Nietn.), Ceylon; *umbricola* (Woll.), Madeira; *punctatissima* (Mots.), England; *convera* (Mots.), Panama; *fuscipennis* (Hald.), U. States; *subænea* (Mots.), England; *rufipennis* (Mots.), Egypt; *planulata* (Mots.), Panama; *infuscata* (Mots.), Panama; *discolor* (Hald.), U. States; *subnitida* (Mots.), North Amer.; *fulva* (Mots.), Panama; *fenestrata* (Moritz), Panama; *elongatulula* (Mots.), Panama; *pusillima* (Mots.), Panama.

**** *Elytra narrower than thorax, and very attenuated towards the apex (all sea-coast species).*

A. dilaticollis (Mots.), Egypt; *littoralis* (Mots.), Alexandria; *maritima* (Mots.), Marseilles, Crimea.

MYRMICOTRICHIS (p. 181).

M. laticollis (Perris; *subcorticalis*, Hochh.), Russia and France, in nests of *Formica pubescens*; *æquatorialis* (Mots.), Panama, in nests of *Edecnema hystrix*; *subvittata* (Mots.), Panama.

PTERYX (p. 182).

P. brunnea (Lec.), N. Amer.; *perforata* (Mots.), Georgia; *dimidiata* (Mots.), New York.

ELACHYS (p. 183).

E. gibbula (Mots.), U. States; *castanoptera* (Mots.), Mobile; *flaviventris* (Mots.), N. York.

MICRUS (ibid.).

M. solidus (Mots.), Mobile; *cinerascens* (Mots.), N. York.

PTINELLA (p. 184).

* *With eyes.*

P. nigrovittis (Mots.), New Orleans.

** *Eyeless.*

P. balteata (Mots.), Mobile; *pini* (Mots.), N. Orleans; *quercus* (Lec.), N. Orleans; *pallidula* (Mots.), Georgia; *arcuaticollis* (Mots.), Caucasus; *rotundicollis* (Mots.), Finland.

PTILIOLE (p. 185). Of this genus, *nana*, Steph. (*kunzei*, Chev., Gillm.), is stated to be the type.

P. canadensis (Lec.), N. Amer.; *livida* (Mots.) Carniola; *rubida* (Mots.), Caucasian Alps; *postica* (Mots.), Mobile.

MICRELLA, g. n. (p. 186). Founded upon a part of Gillmeister's 3rd division. Shape ovate, slightly enlarged behind, convex, punctuation very fine, pubescence velvety, three impressed lines on middle of thorax. Sp. *M. cordata*, *fulvescens*, and *lineatocollis* (Mots.), Russ. merid.

NANOSELLA (also spelt *Nonosella*), p. 187. This genus and the four succeeding genera are not stated to be new, but are thus characterized:—Form elongate, narrow, almost parallel; elytra more than thrice as long as thorax, and rather dilated behind; thorax with no impressions, almost quadrate, slightly attenuate towards the head, which is rather small, with post. angles slightly obtuse; ant. short, not exceeding the base of the thorax; eyes distinct; punctuation very fine, pubescence invisible. Sp. *N. fungi* (Mots.), Amer. Georgia, in fungus, tab. viii. fig. 3. The smallest known beetle, scarcely $\frac{1}{16}$ lin. long.

Acteella (also spelt *Actella*), p. 188. Form slightly suggestive of certain species of *Corticaria*; elytra very elongate-oval, entirely covering abd.; thorax short, transverse, slightly arched at the sides, often with a foveola at middle of the base; ant. short, scarcely exceeding the base of thorax, stout; wings and eyes complete. Sp. *A. aterrima* (Mots., 1845) and *A. mediterranea*, sp. n., p. 188, shores of Mediterranean, at Marseilles, Alexandria, &c.

OLIGELLA (ibid.). Form narrow, rather parallel, surface shining, with a few very fine long hairs; thorax almost cordate, with a tribrancheate excavation at the middle of its base; antennæ rather long and slender; eyes and wings complete. Sp. *O. minima* (Hbst., *Latridius*; *excavata*, Gillm.).

MICRIDIMUM (ibid.). Form elongate-ovate, attenuate behind and slightly truncate at apex; thorax more or less contracted behind; superficial punctuation and pubescence very fine and close. Sp. *M. boudierii* (Allib.; *transversalis*, Gillm.), *vittata* (Mots., 1845), and *lineatum*, sp. n. (p. 189), North America.

CAMPTODIUM (p. 189). Of the ovate and slightly abbreviated form of *Planidium* (sic.), but with the surface finely punctured and pubescent; thorax perceptibly narrower than the elytra, transverse, arched and contracted towards the head; elytra slightly convex, rounded at the apex, and entirely covering the abdomen. Sp. *C. adustipenne* (Mots.), East Indies, tab. viii. f. 4.

MILLIDIUM (Mots., 1855), ibid. Recharacterized. Sp. *M. minutissimum* (Gillm., *Trichop.*), *sculpturatum* and *triramosum* (Mots.).

CISSIDIUM (Mots., 1855), ibid. Sp. *C. basale*, t. viii. f. 5, and *rufescens* (Mots.), Panama.

PTENIDIUM (p. 190).

P. fuscipennis (Mots.), Panama; *foveicolle* (Mots.), N. Orleans; *glabratum*, (Mots.), Niagara; *terminale* (Hald.), U. States; *atamaroides* (sic.), Mots., Madeira, Catarro, and Russ. Georgia.

ANISARTHRIA (p. 191).

A. americana (Mots.), Amer. Georgia; *amæna* (Mots.), U. States.

WANKOWIEZ (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 411) describes seven species of *Ptenidium* found in Lithuania, and sinks *formicetorum* (presumably of Kraatz) as a var. of *apicule* (Er.). He also (l. c. p. 414) calls attention to the modifications exhibited by the seventh ventral segment in the males of six species of *Trichopteryx*.

WOLLASTON (Ent. Mo. Mag. vi. p. 162) records *Actidium coarctatum* (Halid.) from South Devon.

Limulodes, g. n., Matthews, Ann. Lyceum Nat. Hist. New York, vol. viii. 1867, pp. 406-13, pl. 15. Resembles the "Horse-shoe Crab," *Limulus*, in general facies: ant. 9-jointed, wide and flattened; head retractile, eyeless; max. palpi rising from an elevated process in the middle of the upper surface of stipes; prosternum much elevated, excavated in front, produced posteriorly into a wide and long plate, deeply bifid at apex, passing over mesost. and part of metast.; keel of mesost. anteriorly much elevated, expanded posteriorly over the intermediate coxæ, and produced into a broad spoon-shaped plate, very wide, truncate, and slightly emarginate at apex, which is clothed with long hair; legs exceedingly short and laminate; apex of abd. strongly resembling that of the *Tachyporidae*, with which family the author hints that the *Trichopterygidae* have considerable affinity in his opinion. Sp. *L. radoxus*, sp. n., Florida, N. York and Washington, in ants' nests, p. 412.

Ptenidium intermedium, sp. n., Wankowicz, l. c. p. 412, Boryssow.

Ptilium modestum, sp. n., Wankowicz, l. c. p. 413, Lithuania.

SCAPHIDIIDÆ.

Toxidium compressum, sp. n., Zimmermann, Trans. Amer. Ent. Soc. ii. p. 251, Louisiana, Texas, Florida, Illinois.

HISTERIDÆ.

DE MARSEUL (Berl. ent. Zeit. xiii. p. 288) divides a paper of his on South African *Histeridæ* into two distinct parts:—1, a list of species taken by Fritsch; and 2, descriptions of such of these as are new. Nevertheless in the first part an insect is indicated both as a variety and as a possible new species, being named and shortly described in a footnote.

Teretrius quercus (Mars.) = *Paromabus rothi* (Rosenb.); *Platysoma georgianum* (Leach) = *oblongum* (Fab.): De Marseul, L'Abeille, vi. p. 155 (cf. for the last mentioned species, v. Harold, Col. Hefte, v. p. 100, and Waterhouse, Ent. Mo. Mag. v. p. 168).

ZIMMERMANN (Trans. Amer. Ent. Soc. ii. p. 253) recharacterizes and tabulates *Pachylopus* (Er.), and groups the species of *Plegaderus* (p. 254). He records *Hister servus* (Er.), *H. corvinus* (Germ.), and *Carcinops troglodytes* (Mars.) from America, and observes that *Platysoma æquum* (Lec.) = *Hister frontalis* (Say), which he redescribes.

RYE (Entom. Monthly Mag. v. p. 250), noticing variations in size and sculpture of British specimens of *Gnathocicus rotundatus* (Ill.), considers Thomson, in all probability, wrong in specifically separating his *G. punctulatus* from that insect.

WESTWOOD (Trans. Ent. Soc. Lond. 1869, Aug., p. 317) states that an Australian genus, which he characterizes under the name *Chlamydopsis*, is

intermediate between the *Byrrhidæ* and *Histeridæ*, especially likening it, in his enumeration of the generic characters, to *Murmidius*, Leach (*Ceuthocerus*, Schüpp.), which he considers a member of the *Byrrhidæ*, and, in his remarks upon one of the new species described by him, stating that it seems to connect *Ectrephes* (formerly associated with the *Paussidæ*, and now referred by Westwood to the *Ptinidæ*) with certain *Histeridæ*, such as *Heterius*, and especially with *Terapus* (Mars.). *Chlamydopsis* is, therefore, recorded in this family; but its true position is evidently not as yet discovered.

Echinodes, g. n., Zimmerm. l. c. p. 253. Intermediate between *Eretmotus* and *Heterius*, and easily distinguished from the latter by the large, long, broad and concave lobe of the mentum. Sp. *E. setiger* (Lec., *Heterius*).

Chlamydopsis, g. n., Westwood, l. c. p. 317. Simulates in appearance *Chlamys*, and also *Ectrephes* (Pasc.), but is stated to be intermediate between the *Byrrhidæ* and *Histeridæ*. Head almost entirely retracted into thorax (parts of the mouth not examined); ant. 9-jointed, small, globose, apical joint equal to six preceding; legs contractile, tarsi 5-jointed; basal segment of abdomen largest. Sp. *C. duboulayii*, sp. n., Westw. l. c. p. 318, Champion Bay; *C. striatella*, sp. n., Westw. ibid., Swan River.

New species:—

Hister furciger, De Mars. Berl. ent. Zeit. xiii. p. 290, South Africa; *H. furcatus*, De Mars. l. c. p. 238, note, S. Africa (? = *obesus*, Fahr., var.); *H. permixtus*, Zimm. l. c. p. 252, Carolina.

Phelister amphibius, De Mars. l. c. p. 289, Kuruman.

Epierus novellus, Zimm. l. c. p. 253, Carolina.

Tribalus ascapheus, De Mars. l. c. p. 290, Cape of Good Hope; *T. quadristriatus*, Wollaston, Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 310, St. Helena.

Carcinops lautus, Zimm. l. c. p. 253, North Carolina.

Saprinus lautus, Wollast. Ann. & Mag. Nat. Hist. 4th ser. iv. p. 311, St. Helena; *S. harmonicus*, De Mars. l. c. p. 291, Cape of Good Hope; *S. strobili*, Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 255, San Luis.

Acrilus instabilis, De Mars. l. c. p. 292, Cape of Good Hope.

NITIDULIDÆ.

RYE (Ent. Mo. Mag. vi. p. 106) records *Epuræa silacea* (Hbst.) from Scotland, and *E. longula* (Er.) from England. He notices the other British species of the genus, and refers *E. pygmæa* of Hardy & Bold's Cat. to *E. obsoleta* (Fab.).

Epuræa rubiginosa (Heer) is a *Symbiotes*, according to Tournier (Pet. nouv. Ent. no. 3), who has seen Heer's type; and must have precedence over *pygmæus* (Hampe), which is synonymous with it.

Nitidula elegans (Stierl.) = *fusula* (Gehl.) = *regalis* (Zoubkoff) = *ciliata*? (Klug). Mots. Horæ Soc. Ent. Ross. vi. p. 94.

Cyllodes laticollis (Heer) is recorded as French by Tournier, l. c.

Cercus metallescens, sp. n., Schauf. Beitr. Kennt. Col. Balear. p. 13, Mahon, Bal. Ins.

Carpophilus apicipennis, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 200, Madagascar.

Cyllæus scapularis, sp. n., Fairmaire, l. c. p. 201, Ste. Marie de Madagascar. 1869. [VOL. VI.]

Pocadius wajdelota, sp. n., Wankowicz, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 415, Minsk.

TROGOSITIDÆ.

MULLER (Entom. Monthly Mag. v. p. 276) mentions an apparently undescribed *Trogosita*, from China, as injurious to raw silk.

Peltis yanii (Allibert) = *P. pusilla* (Klug), according to Fairmaire (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 202), who states that the insect is diffused over all intertropical regions, probably with rice.

COLYDIIDÆ.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 205) points out the relationship between *Prionolatus* and *Microprius*, and gives characters for the latter.

Colydium lineola and *longiscutum* (Say) are probably identical. Zimmermann, Proc. Amer. Ent. Soc. ii. p. 254.

DE MARSEUL (Nouvelles et faits divers, Sept. 1869, p. ii) records the capture by Ancey, in the forest of Ste. Baume (Var), in the dead branches of beech, of an insect resembling small *Esarcus* (sic) *lepreuxi*, but for which, apparently, a new genus is required, as its antennæ gradually increase to the extremity and the tarsi are four-jointed, except those of the anterior legs, which have only three joints.

ANCEY (Nouvelles et faits divers, Oct. 1869, p. viii) gives a diagnosis of this species, and again, in Deyrolle's 'Petites nouvelles Entomologiques' (no. 12, 15 Dec. 1869), gives a rough description of it, stating that it belongs to the *Lathridiidae*, and should be placed near *Mycetæa*. He records six or eight specimens, from yew and beech. ABEILLE DE PERRIN, in Dec. 1869 (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 410), also calls attention to it as allied to *Eusarcus*, a genus between *Tarphius* and *Ditoma*.

WESTWOOD (Trans. Ent. Soc. Lond. 1869, p. 320) considers *Aprostoma* (Guér.) to have only an analogy with *Calodromus* (*Brenthidæ*), and to be really allied to *Colydium*.

DIECK (Berl. ent. Zeitschr. xiii. p. 353) refers to the characters of two unnamed and undescribed species of *Anommatus*, from Corsica and Nice.

MOTSCHOULSKY (Bull. Soc. Imp. Nat. Mosc. 1868, no. 3, p. 196) points out that Lacordaire is wrong in placing *Monotoma* among the *Lathridiidae*, and in assigning only 3 joints to the tarsi and 10 to the antennæ in that genus. He figures these numbers (tab. viii. fig. 10), showing that they are respectively 4- and 11-jointed, and observes that those characters and the mode of life assign *Monotoma* to the *Colydiidae*, next the *Pycnomerides*. After redescribing the characters of the genus at length (considering Lacordaire's notice of it defective), the author enumerates 31 species known to him, of which the following, from their wanting the references given in all other instances, may be supposed to be new:—*M. hindustana*, East Indies, and *obtusicollis*, South Russia, p. 198; *fulvipennis* and *subnigra*, N. America, and *ægyptiaca*, Egypt, p. 199; *parallelcollis* and *corpulenta*, New Orleans, and *rubustula*, Amsterdam, p. 200. The following synonymic observations are made:—*M. rufa* (Redt.) = *4-impressa* (Mots., 1845); *4-foveolata* (Aubé) should be referred to Motsch.; *convexicollis* (Mots.) = *angustata* (Msh., Steph.) [which is erroneously given as distinct from *longicollis* (Gyll.)]; *punctaticollis* (Aubé) = *bicolor* (Villa) [which is usually considered a var. of *quadricollis* (Aubé)].

ZIMMERMANN, *l. c.* p. 255, recharacterizes *Mychocerus* (Er.), referring to it the *Murmidus depressus* of Leconte, who discusses the question of the affinities of the two genera, which he thinks are closely allied, and should be referred to the *Histeridæ*, rather than to the vicinity of *Cerylon*.

New genera and species:—

Nepharis, g. n., De Castelnau, Rev. et Mag. Zool. 1869, p. 356, pl. 18. figs. 4-5. Belongs to the *Synchitides*, near *Cossyphodes*. Sp. *N. alata*, sp. n., *l. c.* p. 357, King George's Sound, New Holland.

Prolyctus, g. n., Zimmermann, Trans. Amer. Ent. Soc. ii. p. 254. Differs from *Bothrideres* in its short, thick head, transversely elongate eyes, and the longitudinal costæ of the prothorax and elytra. Sp. *P. exaratus* (Mels.; *Bothrideres*).

Coelinius, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 202. Belongs to the *Pycnomerides*, but resembles *Bolitophagus* or *Synchita* in facies. Sp.: *C. stricticollis*, sp. n., Fairm. *l. c.* p. 203, Madagascar; *C. impressipennis*, sp. n., Fairm, *l. c.* p. 204, Kalalou, Ste. Marie de Madagascar.

Syntarsus, g. n., Fairmaire, *l. c.* p. 205. Possibly = *Diplotoma* (Erichson); but the author only finds 10 joints to the antennæ, and sees no spurs to the tibiæ. Sp.: *S. asperulus*, sp. n., Fairm. *l. c.* p. 206, St. Marie de Madagascar; *S. soricinus*, sp. n., Fairm. *ibid.*, Madagascar.

Hiketes, g. n., King, Trans. Ent. Soc. N. S. Wales, ii. pt. 1, 1869, p. 76. Belongs to the *Bothriderides*. Allied to *Derataphrus* (Newm.). Myrmecophilous; antennæ 9-jointed, stout, placed near the mouth, far in advance of the eyes, which are sunk in a deep groove; parts of the mouth almost rudimentary, placed at extremity of the head; posterior portion of mentum longitudinal, quite free; abdomen 5-jointed; tarsi pentamerous. Sp. *H. costatus*, sp. n., King, *l. c.* p. 77, Liverpool; *H. thoracicus*, sp. n., King, *l. c.* p. 78, King George's Sound.

Aulonium ferrugineum, Zimmermann, *l. c.* p. 254, Carolina.

(*Lusconotus*) *referendarius*, Zimm. *ibid.* (no locality given).

Priolomus spinicollis, Fairmaire, *l. c.* p. 204, Madagascar.

Sosylus goudotii, Fairmaire, *l. c.* p. 206, Madagascar.

Entoxylon (gen. ined.) *abeillei*, Ancey, Nouvelles et faits divers, October 1869, no. 2, p. viii, Ste. Baume (Var).

Aprostoma planifrons, Westwood, Trans. Ent. Soc. Lond. 1869 (Aug.), p. 320, River Niger.

Anommatus planicollis, Fairmaire, Stettin. ent. Zeits. 1869, p. 232, Southern France; *A. valombrosæ*, Dieck, Berl. ent. Zeits. xiii. p. 353, Valombrosa.

Cerylon brevicolle, Fairmaire, *l. c.* p. 207, Nossi-Bé, Madagascar.

CUCUJIDÆ.

v. Gernet, Horæ Soc. Ent. Ross. vi. 1863, describes and figures the larva of *Dendrophagus crenatus* (with some doubt as to the identity of the species).

Tournier (Pet. nouv. Ent. no. 3) records *Læmophlæus nigricollis* (Lucas) as new to the French fauna.

Pediacus costipennis (Fairm.), according to Tournier (*l. c.*), must be separated from *Pediacus*, and constitute a fresh genus, for which he proposes the name *Pediaphlæus* (without publishing any characters).

EMERY (Pet. nouv. Ent. no. 7), having taken many specimens of *Silvanus bicornis* (Er.), by sifting dead leaves, has assured himself, by dissection, that only the ♂ has the head horned. Both sexes, however, may be distinguished from *frumentarius* by the longer space between the eyes and the post. angles of the head in *bicornis*.

Silvanus similis (Er.) is recorded as British by Janson, on behalf of Power. Proc. Ent. Soc. Lond. 1869, p. xx.

Silvanus bicornis, *Læmophlaus testaceus* (Fab., with which *L. zimmermanni*, Lec., is identical), *L. pusillus*, and *L. alternans* are noted as common to Europe and N. America by Zimmermann, Trans. Amer. Ent. Soc. ii. p. 257, who gives the name *vernalis* to a species of *Lathropus*, allied to the European *L. sepicola*, but without describing the insect.

New genera and species:—

Typhlocharis, g. n., Dieck, Berlin. entom. Zeitschr. xiii. p. 351. Allied to *Læmophlaus*, of which it has the form and habit, but distinguished by its entire want of eyes, the structure of its anterior tibiæ (which are strongly emarginate on the inner side, and produced at the upper third into a triangular process, which is armed at the apex with a very long incurved spine, reaching the middle third of the tibia), the inflated third joint and very minute subulated apical joint of its max. palpi, and the simple apex of its mandibles. All the tarsi are 5-jointed; but the author suggests the possibility of all his specimens (11) being ♀. Sp. *T. silvanoides*, sp. n., Dieck, l. c. p. 352, Tangiers, associated with a new species of *Anillus*.

Nilina, g. n., Motsch. Bull. Soc. Imp. Nat. Mosc. 1868, no. 3, p. 201, tab. viii. fig. 11. Thorax laterally reflexed, elytra attenuated, club of antennæ somewhat abrupt, formed by joints 9–11, of which the apical joint is almost buried in the penultimate; tarsi pentamerous, fourth joint very small. Sp. *N. reflexicollis*, sp. n., Motsch. l. c. Egypt.

Psaradino, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 208. Closely allied to *Ino* (Lap.), but with penult. joint of tarsi not bilobed, head contracted behind, elytra obliquely cut at the apex, and spurs to the tibiæ. Forms a transition from the *Hemipeplides* to *Læmophlaus*. Sp. *P. coquerelli*, sp. n., Fairm. l. c., Ste. Marie de Madagascar.

Psammæchidius (sic), g. n., Fairmaire, l. c. p. 209. Very close to *Psammæchus*, but with penult. joints of tarsi bilobed, first joint of antennæ longer than second and third together, and thorax strongly contracted behind and laterally toothed. In the latter character it approaches *Phlæostichus* (sic), from which it differs in not having its antennæ slender at the base and widened towards the apex. The author cannot be sure whether its tarsi are pentamerous or heteromerous. Sp. *P. spinicollis*, sp. n., Fairm. ibid., Ste. Marie de Madagascar.

Nausibius major, sp. n., Zimm. l. c. p. 257, Carolina.

Silvanus costatus, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 256, Buenos Ayres.

CRYPTOPHAGIDÆ.

v. GERNET (Horæ Soc. Ent. Ross. vi. 1868) describes and figures the larva of *Antherophagus pallens*.

v. HEYDEN (Berl. ent. Zeit. xiii. p. 55) reproduces Frivaldsky's characters

for his genus *Haplophus* (Abhandl. ungar. Acad. 1865, p. 190), and the description of his species, *H. neglectus* (l. c. t. x. fig. 9), stated to be allied to *Paramecosoma* and *Telmatophilus*. Kraatz (B. e. Z. l. c., note) states that he has this species under the name *Telmatophilus frivaldszkyi* (Er. in litt.), from Frivaldszky, and that it is identical with *Paramecosoma robustum* (Morawitz, 1863).

Atomaria contaminata (Er.)=*ornata* (Heer, 1841), according to Tournier (Pet. nouv. Ent. no. 3), who has seen Heer's type. Heer's insect is usually erroneously given as a synonym of *versicolor* (Er.), which, published in 1848, could not have the priority, even if identical with it.

Cryptophagus croceus, *crinitus*, and *fungicola*, Carolina, and *C. nodulargulus*, Middle and Southern States: spp. nn., Zimmerman, Trans. Amer. Ent. Soc. ii. p. 257.

Atomaria testacea, S. Carolina, *ochracea*, Maryland, and *ephippiata*, Middle States: spp. nn., Zimm. l. c. p. 258.

Paramecosoma balearica, sp. n., Schauf. Beitr. Kennt. Col. Balear. p. 14, Mahon, Balearic Isles.

LATHRIDIIDÆ.

the *Corticaria denticulata* (Gyll.), *serrata* (Payk., with which *C. denticulata*, for i^c by, and *L. octodentatus*, Say, are stated to be without doubt identical), and *longata* (Gyll.) are recorded as common to Europe and N. America by Zimmermann, Trans. Amer. Ent. Soc. ii. p. 256.

Corticaria rugulosa (Lec.)=*pusilla* (Mann.): Leconte, ibid.

Lathridius reflexus (Lec.)=*rugicollis* (Mann.): Leconte, ibid. Zimmermann observes that the species is common to Europe and N. America.

v. HEYDEN (Berl. ent. Zeit. xiii. p. 56) reproduces Frivaldszky's characters for his genus *Mycetomychus* (Abh. d. ungar. Acad. 1865, p. 192), founded on the *Corticaria macularis* of Fuss (= *Lathr. variegatus*, Dej. Cat.). v. Heyden thinks the genus probably identical with *Phlæophilus* (Waterh.)

KRAATZ (Berl. ent. Zeit. xiii. p. 129) makes some observations upon the two species of *Lathridius* (*constrictus* and *carinatus*) upon which Thomson founds his genus *Coninomus*, the principal character whereof is the distinctly biarticulate clava of the antennæ. Both these insects occur in Germany, according to Kraatz, who thinks Thomson's genus scarcely entitled to stand as such, and who notes emphatically a fresh character for *carinatus* in the distinct white membrane on the sides of the thorax, which is wanting in *constrictus*. [This membrane is always found in fresh specimens of certain *Lathridii*, notably in *L. nodifer*.]

Lathridius limbatus (Förster)=*carinatus* (Gyll., Ktz.), according to Kraatz, ibid., who remarks that the *incisus* of German collections, mostly from Märkel and purporting to be Mannerheim's species of that name, are to be referred to *constrictus* (Gyll.).

L. cordaticollis (Aubé)=*testaceus* (Waterh., Steph.): Kraatz, ibid. [This identification has long been made by Crotch. Vide Entom. Annual, 1866, p. 120.]

KRAATZ (ibid.) notes the confusion between small *Corticaria pubescens* and *C. piligera* (Mann.).

Corticaria villosa and *C. subimpressa*, spp. nn., Zimm. l. c. p. 256, N. America.

MYCETOPHAGIDÆ.

Mycetophagus fulvicollis (Fab.) is recorded as British by Rye (Ent. Mo. Mag. vi. p. 107), who figures it in Entom. Annual for 1870, frontispiece, fig. 4.

DERMESTIDÆ.

Attagenus fulvipes (Muls. et Rey) = *sordidus* (Heer), according to Tournier, Pet. nouv. Ent. no. 3.

Dearthus longulus (Lec.) is to be referred to *Hadrotoma* (Er.). Zimmermann, l. c. p. 258.

WALSH & RILEY (American Entom. i. p. 166) figure the principal stages of *Anthrenus varius*, and make observations on its habits.

Anthrenus museorum is stated to be common to Europe and N. America by Zimmermann, l. c. p. 258.

Anthrenus castaneæ (Mels.) = *adpersus* (Hbst.). Zimm. ibid.

Hadrotoma biteniata, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 258, Mendoza and S. Luis.

BYRRHIIDÆ.

MULSANT & REY (Ann. Soc. Linn. de Lyon, nouv. sér., xvii. 1869, pp. 201–378, pls. 1 & 2) have published their monograph on the species forming their tribe *Piluliformes*, which they divide into three families (as in De Marseul's catalogue), thus characterized:—

A. Antennæ concealed in repose on the sides of the breast. The part of the prosternum that constitutes the anterior margin of the breast shorter than the prosternum.

a. Head porrect. The part of the prosternum that constitutes the anterior margin of the breast leaving the mentum and even the prebasilar piece uncovered; the mentum concealing the lower parts of the mouth.

NOSODENDRIENS.

b. Head subconvexly perpendicular; anterior margin of prosternum advanced like a cravat or chin-piece, veiling the parts of the mouth more or less in repose.

BYRRHIENS.

B. Antennæ thrown back on the sides of the head in repose. Head subconvexly perpendicular in repose. The part of the prosternum that forms the anterior margin of the breast having the outer border of its sides contiguous to the inner margin of the prothoracic fold; antepectoral portion longer than the prosternum. LIMNICHIEENS.

The *Nosodendriens*, formed of the single genus *Nosodendron*, admit of no subdivision; the *Byrrhiens* are separated into two branches, *Syncalyptaires* and *Byrrhaires*, chiefly characterized by the greater degree of concealment of the eyes by the prothorax in the former. The *Syncalyptaires* include the genera *Syncalyptra* (Steph.), tabulated at p. 234, and *Curimus* (Er.). The *Byrrhaires* are divided into two branches, *Byrrhates*, with at

least the anterior tarsi received into a depression in the inner surface of the tibiæ, and *Simplocariates* (*Simplocaria* only), in which all the tarsi are not so received. The *Byrrhates* (tabulated at p. 248) contain the genera *Byrrhus* (Linn.), *Cytilus* (Er.), and *Morychus* (Fab.). It will readily be believed that the numerous varieties and degrees of depilation in *Byrrhus* are treated *in extenso* by the authors. The *Limnichiens* are also divided into two branches, *Limnichates* (including *Pelochares*, a new genus, and *Limnichus*, Latr.) and *Botriophorates*, chiefly distinguished by the prothoracic pit for reception of the club of the antennæ in the latter (*Botriophorus*, Muls. et Rey, only).

The authors figure *Nosodendron fasciculare*, *Syncalypta setigera*, *Cytilus varius*, *Byrrhus pyrennæus*, *Morychus nitens*, *Simplocaria semistriata*, and *Limnichus (pygmeus)*.

Zimmermann's views as to classification of the *Byrrhidæ* are briefly indicated by Leconte, Trans. Amer. Soc. ii. p. 258.

KING (Trans. Ent. Soc. N. S. Wales, ii. pt. 1. 1869, p. 73) describes a ^{the} *heteromorous* species of *Microchaetes* (Hope), from Sydney, which appears to for ⁱⁿ a passage from that genus to *Syncalyta* (Steph.). He observes that a ^{new} genus might have been formed for this new species, if he had not thought it probable that *Microchaetes* (of which he redescibes the recorded species) may not be retained eventually. King also describes a heteromorous species of *Morychus* (Er.), and a genus of *Byrrhidæ* with 9-jointed antennæ.

Limnichus lepieurii (Perris) = *aureosericeus* (du V.), var. Muls. et Rey. l. c. p. 367.

New genera and species :—

Pelochares, g. n., Muls. et Rey, l. c. p. 361. Allied to *Limnichus*, but with the prothoracic fold subparallel with the inner border, or merging into it in a feeble curve; the prosternum rounded at its apex and received into a semi-circular emargination of the mesosternum. Sp. *P. emarginatus*, sp. n., ibid., Lyon, Alps; (?) *versicolor* (Waltl.)

Byzenia, g. n., King, l. c. p. 74. Antennæ 9-jointed, the first and apical joints very large, the first joint, labrum, and mandibles being always conspicuous; thorax very transverse; elytra strongly ridged, not covering the whole of the abdomen; legs robust, very widely separated, not received into cavities. Sp. *B. formicicola*, sp. n., King, ibid., Liverpool.

Pedilophorus rufipes, Muls. et Rey, l. c. xvii. p. 350, Spain.

Syncalypta reichei, Muls. et Rey, l. c. xvi. p. 282, Carinthia.

Byrrhus aurovittatus, Muls. et Rey, l. c. xvi. p. 284, Piedmont; *B. nigrosparsus*, ibid. p. 285, Spain.

Microchaetes minor, King, l. c. p. 73, Sydney.

Morychus heteromerus, King, l. c. p. 74, Gawler, S. Australia.

PARNIDÆ.

GERHARDT (Berl. ent. Zeit. xiii. p. 261) records the capture of *Elmis hirschii* (Müller in litt.) at Blenzbach, in company with *E. æneus*. He describes the differences between these two insects, leaving it doubtful whether his notice

ought not to be treated as a publication of Müller's inedited species, in spite of his remark to the contrary.

Elmis pygmæus is recorded from Schaffhauseu by Stierlin (Mitth. schweiz. ent. Gesellsch. iii. p. 7)

Stenelmis vittipennis and *S. linearis*, spp. n., Zimmermann, Trans. Amer. Ent. Soc. ii. p. 259, S. Carolina.

Psephenus trentonensis, sp. n., Zimm. ibid., Trenton Falls, N. York.

HETEROCERIDÆ.

Heterocerus kiesewetteri, sp. n., Steinheil, Atti Soc. Ital. Sci. nat. xii. p. 258, Mendoza; *H. ciliaticollis*, sp. n., Steinheil l. c. p. 259, Buenos Ayres.

LUCANIDÆ.

Lucanides.

Aulacostethus, g. n., C. O. Waterhouse, Trans. Ent. Soc. Lond. 1869, p. 13. Mentum broader than long, bowed in front, post. angles rounded; eyes entirely divided by canthus; produced portion of prosternum between coxæ very narrow and grooved; post. tibiæ much enlarged at apex. Sp. A. *archeri*, sp. n., C. O. Waterh. l. c. p. 14, pl. 3. fig. 1, N. India (= "*Cladognathus batesi*, Parry, Trans. Ent. Soc. 1869," of Gemm. & v. Harold's Cat. 1868).

Chiasognathus peruvianus, sp. n., C. O. Waterh. l. c. p. 18, pl. 3. figs. 2 & 3 ^{slightly} Peru.

Cladognathus motschulskii, sp. n., C. O. Waterh. l. c. p. 16, Japan? or Indian archipel.; *C. impressus*, sp. n., C. O. Waterh. l. c. p. 17, India.

Ceruchus punctatus, sp. n., Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 377, El Dorado.

Passalides.

KAUP (Coleopt. Hefte, v. pp. 1-40, 1869) completes his monographic revision of the *Passalides* by treating of the remainder of his fourth subfamily, the *Passalinæ*, and his fifth subfamily, the *Neleinæ*. The following is an abstract of this work, as regards the *Passalinæ* (including one or two references to the author's first and second subfamilies) :—

Passalus distinctus (Weber) = *cornutus* (Fab.), p. 3; *P. monticulosus* (Smith) belongs to *Eriocnemis*, p. 38; *P. crassus* (Smith) = *Proculejus concretus* (Perch., Kaup), p. 39; *P. thoracicus* (Smith) = *angulatus* (Perch.), ibid.; *P. oroleius* (Smith) is nearest to *Leptaulax*, probably belonging to a new genus; *Aulacocyclus comatus* (Kaup) = *Passalus basalis* (Smith); *P. humeralis* (Smith) = *planiceps* (Esch.), which is an *Erionomus*, p. 40; *P. rinator* (Truq.) = *sagittarius* (Smith), p. 3; *P. occipitalis* (Perch., Burin.) = *binominatus* (Perch.), p. 15; *P. cognatus* (Truq.) = *maillei* (Perch.), p. 16; *P. contractus* (Perch.) = *punctatostriatus* (Perch.), p. 18; *P. pelliculatus* (Perty) = *convexus* (Dalm.), p. 21; *P. pelliculatus* (Perch.) is named *pertyi*, p. 22; *P. inops* (Truq.) = *morio* (Perch.), ibid.; *P. puncticollis* (Serv.) = *crenatus* (M'L.), p. 28.

Kaup describes the following new genera of his *Passalinæ* :—

Oileus, p. 3. Joints of antennæ longer than in *Passalus*, 4 and 5 with short points; humeral angles with fine hairs; margin of clypeus mostly straight.

Sp.: *O. sagittarius* (Smith); *O. expositus*, sp. n., Kaup, l. c. p. 4, ? Mexico; *O. klingelhöfferi*, sp. n., Kaup, l. c. p. 5, Mexico; *O. guatemalensis*, sp. n., Kaup, l. c. p. 6, Guatemala.

Undulifer, p. 6. Margin of clypeus produced into three flat arches, of which the middle is slightly prominent; base of horn deeply furrowed; surface of head wrinkled and uneven. Sp. *U. incisus* (Truqui).

Stephanocephalus, p. 7. Clypeal margin reflexed, with three even emarginations and four vertical spines; tibiae unusually short, ant. tibiae very narrow. Sp. *S. hostilis* (Perch.); *S. stellaris*, sp. n., Kaup, l. c. p. 8, Mexico.

Pseudacanthus, p. 9. Like the preceding, but with no terminal projection to the frontal ridges, which coalesce with the middle teeth of the clypeus, these, with the marginal spines, being directed forwards. The frons falls away much more abruptly and is much shorter than in *Stephanocephalus*. Sp. *P. mexicanus* and *astescus* (Truq.), *P. agnoscendus* (Perch.).

Phoroneus (*Passalus*, Burm. sect. 13 & 14), p. 10. Clypeal margin more or less projecting, and with a simple spine in the middle, or more or less distinctly emarginate, with two teeth; middle tibiae exhibiting more spines than in any allied genus; punctuation very distinct, especially on the sides of the elytra. Sp.: *P. denticollis* (p. 11), *lunaris* (p. 12), *obtusidens* (p. 14), *angulifrons* (p. 15), *perplexus* (p. 16), *paxilloides* (p. 19), spp. n., Kaup, l. c. p. 17; *azil*; *spirifer*, *rusticus*, *binominatus*, *maillei*, *abortivus*, *punctatostriatus*, *cajor* for *ic*; Perch.); *quadricollis*, *glaberrimus* (Esch.); *erosus* (Truq.).

Pertinax (=Burm. sect. 15), p. 21. The three joints below club of ant. with short toothlets; clypeal margin straight, unusually broad, with a tubercle at each end above the margins of the labrum; frontal ridges ending in a knob, far removed from the clypeal spine; anterior tibiae with one or two longitudinal costæ on the underside. Sp.: *P. convexus* (Dalm.); *pertyi* (Kaup); *morio*, *latifrons*, *longulus*, *marginatus* (Perch.); *gibbosus*, *mancus* (Burm.); *tau*, sp. n., Kaup, l. c. p. 26, Columbia.

Ptichopus, p. 27. Allied to *Pertinax*, but with more curved mandibles, which are simple instead of tridentate at the apex, and with broader anterior tibiae, which are transversely plicated on the underside. Sp. *P. angulatus* (Perch.).

Spasalus, ibid. *Pertinax* with a 5-jointed club to the antennæ; clypeal margin slightly emarginate in the middle, with two small projections at the ends. Contains small, convex species, with distinct punctuation in deep furrows. Sp. *S. robustus* (Perch.), *crenatus* (M'L.).

Subfamily 5. NELEINÆ. Prothorax of normal size; mandibles distinctly tridentate at apex; shoulders of elytra and their outer lateral ridges more or less set with hairs. In this group Kaup includes part of M'Leay's *Parillus* (*pentaphyllus*, Beauv., and *leachi*, M'L.), and four new genera, viz.:—

Neleus (=Burm. sect. 8), p. 30. Clypeal margin slightly arched, with 4 teeth, of which the middle are approximated; frons broad, short, abruptly sloped, thickly punctured. Sp.: *N. interruptus* (Linn.); *unicornis*, *punctiger* (Serv.); *conifer*, *striolatus*, *punctatissimus*, *interstitialis* (Esch.); *laborator*, sp. n., Kaup, l. c. p. 32, Brazil.

Neleides (=Burm. sect. 10), p. 33. Less flat than *Neleus*, which it resembles. Clypeal margin not toothed in the middle, but with a shallow emargination at most; frontal ridges commencing from point of horn. Sp.: *N. affinis*, *geometricus*, *incertus*, *angulifer* (Perch.); *multispinosus*, sp. n., Kaup, l. c. p. 34, Columbia; *punctulatus*, sp. n., Kaup, l. c. p. 35, Panama.

Vatinus (=Burm. sect. 9, *part.*), p. 35. Clypeal margin projecting, toothed or smooth in the middle; horn more perpendicular, not reaching the clypeal margin, when viewed from above. Sp.: *V. plicatus*, *nasutus*, *aculeatus* (Perch.); *torifer* (Esch.).

Petrejus, p. 36. Horn long, projecting almost to the clypeal margin, which is not projecting, but is more or less deeply emarginated in the middle. Sp.: *P. sicatus*, *pugionatus*, *mucronatus* (Burm.); *curtus* and *gracilis*, spp. n., Kaup, l. c. p. 38, Columbia.

KAUP makes the following synonymic remarks in the *Neleine*:—*Pavillus brasiliensis* (Guér.) and *depressus* (Drap.)=*leachi* (McL.), p. 30; *P. spectabilis* (Perty)=*interruptus* (Linn.); *P. occipitalis* (Esch.) and *suturalis* (Burm.)=*unicornis* (Serv.); *P. coarctatus* (Perch.)=*conifer* (Esch.); *P. tlascalae* (Perch.) and *striolatus* (Esch.)=*punctiger* (Serv.), p. 31; *P. acuminatus* (Esch.) and *barbatus* (Serv.)=*interstitialis* (Esch.), p. 32; *P. coronatus* (Mann.) and *carbonarius* (Sturm)=*affinis* (Perch.), p. 33; *P. villosus* (Perch.)=*torifer* (Esch.), p. 36.

SCARABÆIDÆ.

Coprides.

HAROLD (Coleopt. Hefte, v. p. 55) notes that *Scarabæus* (*Ateuchus*) *lamarki* (McLeay), *cuvieri* (McLeay), and a third undescribed species are generally confused in collections; he gives diagnostic characters for them, attributing *A. fernalis* (Klug) to the first, *A. lamarki* (Klug) to the second, and *A. cupreus* (Sturm) and *lamarki* (Casteln.) to the third. He gives the following synonymy (l. c. p. 56 *et seq.*):—*Gymnopleurus impressus* (Casteln.)=*indicus* (Casteln.); *Canthon apicalis* (Luc.)=*lituratus*, var.; *C. costulatus* (Luc.)=*unicolor* (Blanch.); *C. confluent* (Har.)=*rubescens* (Blanch.); *C. cupricollis* (Har.)=*lividus* (Blanch.); *C. cupricollis* (Luc.) is a *Deltochilum*, and =*cupreicollis* (Blanch.); *C. fractipes* (Har.)=*plicatipennis* (Blanch.); *C. gagatinus* (Har.)=*humectus* (Say, Ins. Louisian. 1832, not MS.); *Canthidium aureolum* (Har.)=*orbiculatum* (Luc.); *C. smaragdinum* (Har.)=*viride* (Luc.); *Chæridium velutinum* (Har.)=*viduum* (Blanch.); *Ontherus* (*Copris*) *polynice* (Blanch.)=*quadratus* (Er.), ♀; *O. (C.) rotundatus* (Blanch.)=*quadratus* (Er.), ♂; *Copris ovalipennis* (Blanch.)=*Ontherus sulcator* (Fab.); *Pinotus bituberculatus* (Har.)=*colonicus* (Say); *P. colonicus* (Har.) is renamed *eremita*; *P. andicola* (Har.)=*aricius* (Blanch.); *P. crenatipennis* (Blanch.)=*seniæneus* (Germ.); *P. opacus* (Blanch.)=*carbonarius* (Mann.); *P. hypocrita* (Luc.)=*inhiatus* (Germ.); *Copris bellator* (Chevr.)=*corniger* (Sahlb. Thon's Archiv, nec MS.); *C. denticornis* (Klug) and *exadius* (Chevr.)=*prociuius* (Say), ♂, and not *incertus* (Say); *C. evanidus* (Klug)=*orphanus* (Guér.); *Gromphas lacordairei* (Blanch.)=*æruginosus* (Perty); *Phanæus chabrilacii* (Thoms.)=*saphirinus* (Sturm), var.; *P. sylvanus* (Cast.)=*bellicosus* (Oliv.); *P. palæno* (Blanch. nec Cast.)=*kirbyi* (Vigors); *P. levicollis* (Cast.)=*planicollis* (Perty); *Onthophagus analis* (Luc.)=*sellatus* (Klug.), sec. typ.; *O. brasiliensis* (Har.)=*æneus* (Blanch. nec Fab.)=*hirculus* (Mann.); *O. murrayi* (Har.)=*noctis* (Thoms.); *O. scotias* (Thoms.) and *O. schüppeli* (Dej.)=*tridens* (Fab.)=Harold (l. c.) also notes alterations to be made in his Catalogue among the *Coprophaga*, and, amongst other observations on certain of the species, describes the ♂ of his own *Onthophagus mexicanus* and of *Copris integer* (Reiche); and states that *Copris alexis* (Blanch.) is an *Ontherus*. He gives characters for *Gromphas dichroa* (Blanch.) and certain allied species, and also for *Phanæus jasius* (Oliv.) and *acrisius* (McL.),

of which he revises the synonymy, attributing *acrisius* (Deyr.) to the former and *satyrus* (Cast.) to the latter; and records H. Deyrolle's remark that in *Onthophagus pentacanthus* and allies the ♀ is armed as in the ♂. [Is it possible that the true ♀ has escaped detection, and that the minor developed form of the ♂ is here treated as that sex ?]

HAROLD (*l. c.* p. 78 *et seq.*) tabulates and describes 31 species of *Onthophagus* from Australia, entirely from his own collection, and omitting those of which he has only ♀ exponents. Ten of the species are new. He now refers the insects formerly considered by him to be ♀ of his *O. pentacanthus* and *O. ferox* to his *O. atrox*.

HAROLD (*l. c.* p. 114) notes the omission from his catalogue of *Gymnopleurus aciculatus* (Gebl.). *Onthophagus pusillus* and *histerinus* (Fab.) must be referred to *Caccobius*; and Harold's former *C. aterrimus* must be placed as a synonym of the former. He can throw no further light on *aterrimus* (Fab.).

HAROLD (L'Abeille, t. vi. pp. 123-144) revises the species constituting the genus *Pinotus* of Erichson (1847), remarking that Hope established in 1838 two genera (*Dichotomius* and *Holocephalus*) for the reception of these insects, but which cannot be adopted, as the characters given by that author merge imperceptibly, and do not apply to all the species. Harold separates the well-known Brazilian *Copris hesperus* of Olivier from *Pinotus*, and adopts for it solely the genus *Chalcocopris* of Burm. He makes the following observations on synonymy:—*Copris hesperus* (Lac. nec Ol.) = *P. smaragdinus* (Perty); *C. ephialtes* (Mann., ♂, 1829), *nasuta* (Casteln.), and *protensa* (Perty, ♀) = *P. mormon* (Ljungh, 1799); *C. bos* (Blanch., Lac.) = *P. anaglypticus* (Mann.), for which species Harold's name *mannerheimii* need not be used, as Say's prior *C. anaglypticus* does not now clash with *Pinotus*; *C. semicuprea* (Germ.) = *P. semiceneus* (Germ.), var.; *C. punctatissima* (Curtis) and *C. valdivianus* (Philippi) = *P. torulosus* (Esch.).

HAROLD (Coleopt. Hefte, v.) characterizes the following new genera:—

Byrrhidium, p. 96. Allied to *Copræcus*, but with the intermediate tibiæ bicalcarate at apex. Sp. *B. ovale*, sp. n., Harold, *ibid.*, Port Natal.

Bdelyrus, p. 97. Allied to *Aphengium* and *Pedaridium*. Sp. *B. lagopus*, sp. n., Harold, *ibid.*, Bahia.

Xinidium, p. 98. Allied to *Chæridium*, but with eight striæ to the elytra, and the spur of anterior tibiæ placed forward in the middle of the apical truncation and above the insertion of the tarsus. Sp. *X. dentilabris*, sp. n., Harold, *ibid.*, Port Natal.

HAROLD (Col. Hefte, v.) describes the following new species:—

Scarabæus (Ateuchus) subæneus, p. 56, Senegal; *S. (A.) westwoodii*, p. 95, interior of S.W. Africa.

Megathopa virens, p. 95, Brazil, New Friburg.

Canthon candezi, Tapajos, and *C. pygmaeus*, Cuba, p. 96.

Aulonocnemis anobioides and *A. irregularis*, p. 97, Madagascar.

Scatinus bicarinatus, p. 97, Brazil.

Canthidium monaceros, p. 98, Brazil.

Ontherus cephalotes, *ibid.*, New Friburg.

Pinotus. Harold (L'Abeille, vi.) describes the following species:—*P. tuberculatus*, p. 127, Mexico; *P. pelamon*, p. 128, Brazil (= *boreus*, ♀?); *P. glaucus*, p. 135 (no locality); *P. luctuosus*, *ib.*, Brazil; *P. mundus*, p. 136,

Brazil; *P. lucasi*, p. 137 (no locality); *P. reichei* and *P. ascanius*, p. 138, and *P. deyrollei*, p. 139, Brazil; *P. agenor*, p. 141, Columbia; *P. fimbriatus*, p. 143, Brazil.

Pinotus batesi, (Col. Hefte, v.) p. 98, Ega.

Gromphas inermis, *ibid.* p. 62, St. Catherine, Buenos Ayres, Corrientes.

Phanaeus cerberus, p. 65, Brazil.

Copris saundersi, p. 99, Celebes.

Dendropemon angustipennis, Ega, and *D. convexus*, St. John del Rey, *ibid.*

Onthophagus blanchardi, p. 67, Abyssinia; *O. mniszewski*, p. 80, Australia; *O. jubatus* and *O. hostilis*, p. 81, Adelaide; *O. promptus*, p. 82, North Australia; *O. schmeltzi*, p. 84, *O. dunningi*, and *O. declivis*, p. 85, N. S. Wales; *O. evanidus*, p. 86, Tasmania; *O. pexatus*, *ibid.*, Adelaide; *O. kingi*, p. 87, Rockhampton; *O. parryi*, p. 99, Dorey.

Oniticeilus giganteus, Madagascar, and *O. clouei* (Mus. Paris), p. 68.

Aphodiides.

CHAPMAN (Entom. Monthly Mag. v. p. 273) records a series of observations proving that *Aphodius porcus* is parasitic upon *Geotrupes stercorarius*, eating the egg laid in the burrow of the latter, and laying its own ova in cavities in the pabulum surrounding the cavity made by the *Geotrupes*.

REICHE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxii) thinks fresh observations necessary before admitting this peculiarity.

PEYRON (Pet. nouv. Entom. no. 9, 1 Nov. 1869) notes that *Atenius horticola* (Har.) is not exotic; he has taken it in the mountains near Beyrout, on the sea-shore at Saïda, at Tarsus, and Alexandria. Harold (Col. Hefte, v. p. 70) notes the occurrence of this species from Syria.

HAROLD (Coleopt. Hefte, v.) makes the following observations:—*Aphodius rapax* (Fald.) = *prodromus* (Brahm), sec. type, p. 69 (de Mars. Cat. 1863); *A. suturalis* (Fald.) = *granarius* (Linn.), sec. type, *ibid.* (de Mars. Cat. 1866); *A. haagi* (Beck., Har.) is not *granarius* but = *kraatzi* (Harold), *ibid.*; *A. lucasi* (Har., *affinis*, Luc. nec Panz.) is apparently non-existent, the exponents being *granarius* (Linn.) and *ater* (Deg.), var., with the latter of which *A. ascendens* (Reiche) is almost identical, *ibid.*; *Aphodius satellitius* (Hbst.) is older than *pecari* (Fab.) and must stand; *Plagiogonus rhododactylus* (Marsh.) must stand for *arenarius* (Ol.), erroneously attributed to *arenarius* (Fab.), which is an *Ægialia*, p. 114; *Psammobius cruciatusulcatus* (Preys.) is to be abandoned for *sulcicollis* (Ill.), p. 115; *Oxyomus excavaticollis* (Blanch.) is a *Euparia*, and the other *Oxyomi* described by Blanchard belong to *Atenius*, p. 70.

Dialytes, g. n., Harold, *l. c.* p. 101. Recedes from the true *Aphodii* in its spinulose shoulders, the obsolete transverse ridges of its posterior tibiae, and its 4-dentate anterior tibiae, of which the two upper teeth are obsolete, the third large, situated on the margin at the apex, and the fourth minute, directed forwards and placed near insertion of tarsus. Sp. *D. striatulus* (Say); *D. truncatus* (Melsh.).

HAROLD, *l. c.* describes the following new species:—

Aphodius fuweli, interior of S.W. Africa, and *A. steinheili*, Illinois?, p. 100. *Annæcius terminatus*, *ibid.*, S.W. Africa.

Oxyomus morosus, *ibid.*, Chili; *O. tricostatus*, p. 101, Columbia.

Harmogaster nasuta, S.W. Africa, Xobar, and *H. opacula*, Cape of Good Hope, p. 101.

Saprosites eugastricus, *ibid.*, Brazil, and *S. sulcatus*, p. 102, Ega.

Atenius arator, *complicatus*, and *laborator*, p. 102, Brazil; *A. morator*, p. 103, Bahia; *A. sordidus*, Texas, Mexico, Honduras, Cuba, Ega, and *A. vexator*, Brazil, St. Thomas, *ibid.*

Psanmodius subciliatus, p. 103, interior of S.W. Africa.

Ægialia punctata, *ibid.*, Egypt.

Orphnides.

HAROLD (*l. c.* p. 115) remarks that *chrysomeloides* (Schr.) must be removed from the synonymy of *Ochodæus chrysomelinus* (Fab.), as it apparently refers to *Serica holosericea* (Scop.). As Fabricius had identified his species with Schrank's, the name of the former must be altered.

Geotrupides.

E. DEXROLLE (Pet. nouv. Ent. no. 3, 1 Aug. 1869) states that Fairmaire has described a species under the name of *Geotrupes andalusiacus*, of which he gives the salient characters.

HAROLD (Col. Hefte, v. p. 115) observes that there is no necessity to alter *Geotrupes* to *Geotrypes* (as in Stein's Cat.), inasmuch as many Latin words (e. g., *aga*, *fucus*, *mus*) are derived directly from the Greek without the *u* undergoing any modification*.

Enoplotrupes, g. n., Lucas, Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xiii. Allied to *Ceratotrupes* (Jekel). Sp. *E. sinensis*, sp. n., Lucas, *ibid.*, China.

Geotrupes (Phelotrupes) jekeli, sp. n., Harold, *l. c.*, p. 104, Himalaya, Sikkim.

Glaphyrides.

HAROLD (Berlin. entom. Zeitschr. xiii. p. 425 *et seq.*) describes the known species of *Glaphyrus*, of which (including three which he brings forward as new) he enumerates thirteen. He enters at full length into the structural characters of the *Glaphyri*.

Glaphyrus rufipennis (Gory) = *varians* (Mén.), var. : Harold, *l. c.* p. 436.

Glaphyrus. Harold, *l. c.*, describes the following species:—*G. comosus*, p. 433, *G. syriacus*, p. 437, *G. rothi*, p. 411, Palestine.

Melolonthides.

v. HAROLD (Coleopt. Hefte, v. pp. 122 & 123) makes the following changes in nomenclature:—

Lasiopus (Lec.) to *Podolasia* (*Lasiopus*, Schönh., 1826); *Barybas* (Burm.) to *Byrasba* (*Barybas*, Blanch., 1850); *Hoploscelis* (Burm.) to *Hoplocnemis* (*Hoploscelis*, Serv., 1832); *Prionophora* (Sol.) to *Pristerophora* (*Prionophora*, Westw., 1848); *Phyllotocus ruficollis* (McL.) to *collaris* (*ruficollis*, McL., 1864); *Serica fuliginosa* (Burm.) to *javana* (*fuliginosa*, Blanch., 1850); *S. ferrugata* (Blanch.) to *rubiginosa* (*ferrugata*, Blanch., 1850); *S. micans* (Klug) to *splendens* (*micans*, Fab., 1801); *S. robusta* (Lec.) to *valida* (*robusta*, Blanch., 1850); *Ablabera luridipennis* (Burm.) to *lutaria* (*luridipennis*, Blanch., 1850); *Scitula pruinosus* (Blanch.) to *rugosula* (*pruinosa*, Dalm., 1823); *Lio-genys pallidicornis* (Blanch.) to *xanthocerus* (*pallidicornis*, Blanch., 1850); *Phytalus lævigatus* (Burm.) to *politus* (*lævigatus*, Blanch., 1850).

LEFEBVRE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxv) notes monstrosity in leg of *Melolontha vulgaris*, ♂.

* These were old words in the Latin, and were more probably derived from the common mother of both Latin and Greek.

CHEVROLAT (ibid.) notes possession by himself of a similar monstrosity in the same species.

The larva of *Melolontha vulgaris* is recorded as attacking the roots of rose-trees: Gardeners' Chronicle, 1869, p. 1088.

RILEY (First Ann. Rep. Nox. Ins. Missouri, 1869, p. 156 *et seq.*) figures the principal stages and describes the habits, &c., of the "White Grub," *Lachnosterna quercina* (Knoch).

VAN VOLKEM (Ann. Soc. Ent. Belg. xii. C. r. p. liv) records *Rhizotrogus ater* from Luxembourg.

E. DEYROLLE (Pet. nouv. Ent. no. 3, 1 Aug. 1869) states that Fairmaire has described a species under the name of *Geotrogus gougeleti*, from Cordova.

Hoplia pilifera, sp. n., Desbrochers des Loges, Pet. nouv. Entom. no. 12, 15 Dec. 1869 (no locality).

Rhizotrogus lepidus, sp. n., Schauf., Beitr. Kennt. Col. Balear. p. 16, Minorca; *R. vevator*, sp. n., Schauf. l. c. p. 17, Mahon, Balearic Isles.

Pleophylla unicolor, sp. n., Snellen v. Voll., Rech. Faunæ Madag. 1869, p. 8, pl. 1. fig. 3, Nossi-Bé.

Rutelides.

v. HAROLD (Col. Hefte, v. p. 123) makes the following changes in nomenclature:—

Aulacopalpus (Guér.) to *Sulcupalpus* (vox hybrida); *Anomala plebeia* (Burm. nec Ol.) to *posterior*; *A. polita* (Blanch. nec Bl. 1850) to *relucens*; *A. collaris* (Motsch. nec Burm.) to *turcomanica*; *Antichira virens* (Blanch. nec Drury) to *viridana*; *Pelidnota sumptuosa* (Casteln. nec Vigors) to *sybarita*; *Adoretus cribratus* (Blanch. nec White) to *cribrosus*; *A. vestitus* (Boh. nec Reiche) to *versutus*; *Leucothyreus laticollis* (Blanch. nec Burm.) to *mutatus*.

LOCKWOOD (Amer. Nat. iii. p. 49) records the destruction caused in New Jersey by the larva of the "Goldsmith Beetle," *Cotalpa lanigera* (L.).

MULSANT & MAYET (Ann. Soc. Linn. de Lyon, n. s. xvi. p. 297) describe the metamorphosis of *Anomala vitis* (F.).

Anomala. Candèze, Coleopt. Hefte, v. 1869, describes the following new species:—*A. (Heteroplia) breviuscula*, p. 41, Sumatra; *A. nigrosulcata*, ibid., Calabar; *A. (Euchlora) obesa*, ibid., Philippines; *A. (E.) limata*, Borneo and *encausta*, Manilla, p. 42; *A. planata*, Manilla, and *fulvescens*, Celebes. ibid.; *A. (Spilota) pictura*, Manilla, ibid.; *A. (S.) popiliopsis*, Nepaul, and *wallandii* (= *Popilia tessellata*, Murray, cf. Col. Hefte. v. p. 116), Sumatra, p. 43; *A. (Callistethus) iris*, Nepaul, ibid.

Anomala (Rhinoptia) bivittata, sp. n., Snellen v. Voll., Rech. Faune de Madag. 1869, p. 8. pl. 1. fig. 4, Nossi-Bé.

Heterosternus rodriguezii, sp. n., Candèze, l. c. p. 43, Guatemala.

Antichira haroldi, sp. n., Candèze, l. c. p. 43, Nicaragua.

Parastasia basalis, sp. n., Candèze, l. c. p. 44, Taprobana.

Chlorota pallida, sp. n., Candèze, l. c. p. 44, Guatemala.

Popilia. Candèze, l. c., describes the following new species:—*P. vestita* and *strigata*, p. 44, Celebes; *lacertosa*, ibid., *lucidipennis* and *octogona*, p. 45, Calabar.

Dynastides.

Oryctes nasicornis. The structure and functions of the antennæ in the insect are discussed by v. Grimm, Bull. Ac. Imp. Sci. St. Petersb. xiv. 66, Taf. xiv.

v. HAROLD (Col. Hefte, v. p. 123) makes the following changes in nomenclature:—

Chalepus (McL.) to *Dyscinetus* (*Chalepus*, Thunb., 1805); *Cyclocephala frontalis* (Burm. nec Chevr.) to *mutata*; *C. clypeata* (Er. nec Burm.) to *laticeps*; *C. castanea* (Er. nec Ol.) to *peruana*.

Heteronychus sanctæ-helenæ (Blanch.)=*arator* (Fab.): Wollast. Ann. & Mag. Nat. Hist. 4th ser. iv. p. 312.

Melissius, g. n., Wollaston, l. c. p. 313. Allied to *Cheiroplatys* and *Isodon*, but with slight organs of stridulation, prothorax entire in both sexes, and ant. tibiae in male not enlarged; antennæ 9-jointed. Sp.: *M. eudoxus*, sp. n., Woll. l. c. p. 314, and *M. adumbratus*, sp. n., p. 315, St. Helena.

Cetoniides.

v. HAROLD, l. c. p. 53, mentions the existence in Mniszech's collection, among less than 50 specimens of *Goliathus*, of 5 ♂ examples intermediate between *regius* and *cacicus*, having the decidedly yellowish-brown thoracic markings of the latter, and the humeral spots of the elytra connected with the apical elevations as in the former. He asks whether these are to be referred to an intermediate form, corroborating Melly's opinion that the two insects named are not specifically distinct, or considered a good species; and inclines for the present to the latter opinion. Referring to the possibility of hybridism in connexion with this point, Harold remarks that, although *Melolontha hippocastani* and *vulgaris*, closely allied but distinct species, abound at the same time, and on the same plants, his closest attention for some years has failed to detect a single example affording the suspicion of transition from one to the other; and he infers that if hybridism under such favourable conditions does not occur, or is so rare as to escape notice, in these great numbers of the *Melolontha*, it is extremely improbable that out of less than 50 of the *Goliathus* no less than 5 should be hybrids. [This instance, however, would not seem in any way to corroborate his expressed opinion as to *G. regius* and *cacicus* being specifically distinct; for, if it were possible to prove beyond doubt that the 5 examples above mentioned did not result from a crossing of those two insects, considered as distinct, the more reasonable view would still remain (if any thing, strengthened by that proof) that they were simply the intermediate form of a species of which *regius* and *cacicus* are the two extremes.]

v. HAROLD (l. c. p. 116) remarks that the *Blæsia lansbergii* of Gemm. & v. Har. Cat. p. 1287, has only a remote resemblance to the genus in which it is placed, and that a new genus must be formed for its reception.

Cetonia niveo-picta (Fairm.)=*costata* (Luc.), the latter possibly also being identical with *deserticola* (Luc.): De Marseul, L'Ab. vi. p. 154.

DUNNING (Proc. Ent. Soc. Lond. 1869, p. xi) records hybernation in the earth of *Cetonia aurata*.

CLAUION (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. vi) notes the varied habitat of *Cetonia morio* at Colmar: and (l. c. p. xxiii.) writes that at the same

place *Cetonia hirta* destroys the stamens of the flowers of apple- and pear-trees, thus hindering the production of the fruit, and imitating *C. stictica*, which, according to Boisdual, commits similar damage in the Parisian district.

BRISCHKE (Schrift. Naturforsch. Gesellsch. Danzig, 1868) records larvæ of the Dipterous genus *Phora*, found in living *Osmoderma eremita* (L.) and which, if new, he proposes to call *P. coleopterorum*.

LLEWELYN (Ent. Mo. Mag. vi. p. 60) records *Trichius fasciatus* in plenty from South Wales, including a variety resembling *T. abdominalis*.

SCUDDER (Corresp. of T. W. Harris, pl. iv. figs. 4-7) figures *Cremastochilus castanea*, *hentzii*, and *sayi* (Hentz), with details.

Euryomia melancholica (G. and P.) is noted by Walsh and Riley (Amer. Entom. i. p. iii. fig. 92) as eating the blossom end of pears, and being found in cotton-bolls already pierced by the boll-worm.

Cetonia subpilosa, sp. n., Desbrochers des Loges, Pet. nouv. Entom. no. 12, 15 Dec. 1869, Syria; *C. raffrayi*, sp. n., Desb. des Loges, ibid., Andalusia.

Allorhina anomala, sp. n., Bates, Trans. Ent. Soc. Lond. 1869 (Dec.), p. 388, Nicaragua.

Gymnetis ramulosa, sp. n., Bates, l. c. p. 389, Nicaragua.

Parachilia pollenii, sp. n., Snell. v. Vollenh., Rech. Faune de Madag. 1869, p. 9, pl. 1. f. 5, Nossi-Bé.

BUPRESTIDÆ.

JAVET (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxvi) exhibits a number of living *Julodis onopordi* (Fab.), received from the Maritime Alps.

DOHRN (Stettin. ent. Zeit. 1869, p. 308) records *Julodis variabilis* (Pallas) in numbers from Sarepta.

LICHTENSTEIN (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxix) notes that *Ptosina novem-maculata* (Fab.) and *Capnodis tenebrionis* (Linn.), two of the *Buprestidæ* that live on the peach-tree, might easily be able to resist the action of laurel-leaves, a specimen of the former of them having survived a day's stay in a laurel-bottle.

RILEY (First Ann. Rep. Nox. Ins. Missouri, 1869, p. 46) figures the larva and imago, and refers to the habits of *Chrysobothrys femorata* (Fab.), a destroyer of apple-trees in Central America.

KAWALL (Stettin. ent. Zeit. xxxi. p. 109) notes his finding *Chrysobothrys chrysostigma* (L.) in *Pinus abies*.

GOUBERT (Pet. nouv. Ent. no. 2) records the capture of several *Anthaxia candens* (Panz.), out of a plum-stock, brought from Wasselonne.

LUCAS (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. iv) re-describes *Chrysochroa mnizechii*, which H. Deyrolle appears to have described and figured from a blue variety from Siam. The type appears to be greenish coppery, and to be found in Cochin China. Lucas notices another variety from Poulo-Condor.

E. SAUNDERS (Journ. Linn. Soc. Zool. x. pp. 331-341, pl. 10) remarks on the distribution of the species of *Paracupta* (H. Deyr.) and *Conognatha* (Esch.), and describes and figures 20 new species of those genera. The same author (Trans. Ent. Soc. Lond., April 1869, pp. 1-8, pl. 1) describes and figures nine other new species of this family, and characterizes a new genus.

DE MARSEUL (Coleopt. Hefte, v. p. 122) changes the specific names of the following species described by him in L'Ab. ii. :—*Sphenoptera impressicollis* to *mendax*, *Acmaødera guttifera* to *spilophora*, *Anthaxia verecunda* to *venerabilis*, and *Agrilus impressicollis* to *foveicollis*, on account of their having been previously used by Fahræus, Leconte, Erichson, and Gory respectively.

Agrilus sericeus (Fairm.) = *croceivestis* (Mars.). De Mars. L'Ab. vi. p. 154.

HAROLD (Coleopt. Hefte, v. pp. 116 & 117) states that *Chalcotænia*, *Iridotænia*, *Paracupta*, and *Pleiona* (Deyr.) must provisionally be considered as synonyms of *Chalcophora*, and that *Stigmodera chrysochlora* should be referred to *Conognatha*; *Pacilonota fastuosa* was first described by Well (Jacquin's Miscell.); *Ptosina undecimmaculata* (Hbst.) is older than *novemmaculata* (Fab.), and should stand; *Acmaødera flavofasciata* (Pill. et Mitterp., 1783) should stand for *tæniata* (Fab.); *Buprestis regalis* (Fab.) is an *Actenodes*, and *Cisseis pulchella* (Kirby) = *Agrilus armatus* (Weber), teste Saunders; *C. eremita* (White) is probably an *Anilara*.

HAROLD (l. c. pp. 123 & 124) makes the following changes in nomenclature :—

Trigonophorus (Sol.) to *Trigonogenium* (*Trigonophorus*, Serv., 1834); *Acanthopygus* (Deyr.) to *Geralius* (*Acanthopygus*, Montr., 1860); *Stigmodera obscuripennis* (Saund. nec Mann.) to *gravis*; *Acmaødera ornata* (Woll. nec Fab.) to *elegans*; *A. cuprina* (Boh. nec Spin.) to *gamensis*; *A. fasciata* (Boh. nec Roth) to *fascigera*; *Chrysobothris soror* (Lec. nec Cast. et G.) to *adelpha*; *Agrilus mucronatus* (Boh. nec Klug) to *acanthopterus*; *A. leucostictus* (Saund. nec Klug) to *irrorellus*; *A. pygmæus* (Fahr. nec Cast. et G.) to *minutus*; *A. cyanipennis* (Cast. et G. nec Chev.) to *orientalis*; *A. desertus* (Lec. nec Klug) to *solitarius*; *A. tenuis* (Gory nec Ratz.) to *umbratus*; *A. tenellus* (Boh. nec Fahr.) to *vagans*.

Pseudhyperantha, g. n., E. Saunders, Trans. Ent. Soc. Lond. 1869, p. 5. To be placed between *Capmodis* and *Cardiaspis* in Lacordaire's *Chalcophorides*, having the antennary pores on each side of the joints; but resembles *Hyperantha* in general form, and has the scutellum of *Belionota*. Sp. *P. jucunda*, sp. n., E. Saund. l. c. p. 6, pl. 1. fig. 9, Penang.

New species :—

Sternocera multipunctata, E. Saunders, l. c. p. 1, pl. 1. fig. 2, Cochín China.

Julodis æneipes, E. Saund. l. c. p. 2, pl. 1. fig. 4, East (Persia?).

Catoxantha mouhotii, E. Saund. l. c. p. 3, pl. 1. fig. 4, Laas (sic).

Chrysaspis (H. Deyr. M.S) *viridipennis*, E. Saund. l. c. p. 4, pl. 1. fig. 5, Gaboon.

Paracupta. E. Saunders, Journ. Linn. Soc. Zool. x., describes the following species :—*P. lorquini*, p. 331, pl. 10. fig. 1, Celebes?; *P. sulcata*, p. 332, fig. 2, Fiji Islands; *P. foveicollis*, ibid., fig. 3, Aneiteum; *P. taciturna*, ibid., fig. 4, Fiji Islands; *P. marginipennis*, p. 333, fig. 5, Fiji Islands; *P. aurofoveata*, p. 334, fig. 6, N.W. Australia; *P. suturalis*, ibid., fig. 7, New Caledonia; *P. flavofoveata*, p. 335, fig. 8, Aneiteum; *P. mæsta* (sic), ibid., fig. 9, New Caledonia; *P. æneicollis*, p. 336, fig. 10, Aneiteum.

Psiloptera. Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix., describes the following species :—*P. alboparsa*, p. 210, Madagascar; *P. coquerellii*, p. 211, Mayotte; *P. patruelis*, ibid., Mayotte; *P. sycophanta*, p. 212, Madagascar; *P. brenei*, ibid., Madagascar; *P. sternalis*, p. 213, Mayotte; *P. peraffinis*, p. 214, Mada-

gascar; *P. xanthosticta*, p. 215, Madagascar; *P. sersulcata*, *ibid.*, Madagascar; *P. ampliata*, p. 216, Madagascar; *P. (Polybothris) expansicollis*, p. 217, Nossi-Bé; *P. tetrops*, p. 218, Madagascar; *P. inornata*, p. 219, Madagascar; *P. parmulata*, p. 220, Madagascar; *P. (Polybothris) nossibiana*, p. 221, Loucoubé, Nossi-Bé; *P. bothripyga*, p. 222, Madagascar; *P. oculicollis*, p. 223, Madagascar.

Psiloptera batesii, E. Saunders, Trans. Ent. Soc. Lond. 1869, p. 4, pl. 1. fig. 3, Buenos Ayres; *P. mayottensis*, Snell. v. Vollenh., Rech. Faune d. Madag. 1869, p. 9, pl. 1. f. 6, Mayotte.

Anthaxia (Cratomerus) bonvouloiri, Abeille de Perrin, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 401, Lambessa, Bone.

Hyperantha bella, E. Saund. l. c. p. 6, pl. 1. fig. 8, Brazil.

Conognatha. E. Saunders (Journ. Linn. Soc. Zool. x.) describes the following species:—*C. olivacea*, p. 336, fig. 11, New Granada; *C. eximia*, p. 337, fig. 12, Brazil; *C. brevicollis*, *ibid.*, fig. 13, Rio Janeiro; *C. batesii*, *ibid.*, fig. 14, Brazil; *C. fryi*, p. 338, fig. 15, Pará; *C. minor*, *ibid.*, fig. 16, Espirito Santo (Brazil); *C. posticalis*, p. 339, fig. 17, Brazil; *C. subdilatata*, *ibid.*, fig. 18, Brazil; *C. parallela*, p. 340, fig. 19, Brazil; *C. rufipes*, *ibid.*, fig. 20, South America.

Acherusia parryi, E. Saund. Trans. Ent. Soc. Lond. 1869, p. 7, pl. 1. fig. 6, Brazil; *A. piliventris*, E. Saund. l. c. p. 8, pl. 1. fig. 7, Brazil.

Agrius sulcaticeps, Abeille de Perrin, Pet. nouv. Entom. no. 11, 1 Dec. 1869, Lower Alps.

THROSCIDÆ.

BETHE (Stettin. ent. Zeitung, xxxi. p. 111) redescribes *Throscus exul* (Bonvoul.), which he has found in some numbers in July, at Stettin, in company with *T. carinifrons*.

EUCNEMIDÆ.

Tharops melasoides (Lap.) occurs at Fontainebleau. Javet, Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxii.

BAUDUER (Pet. nouv. Ent. no. 4) has obtained *Eucnemis capucinus* in all its stages in a young elm affected with dry rot.

Phyllocerus longipennis, sp. n., Ferrari, Verh. zool.-bot. Gesellsch. in Wien, Bd. xix. p. 193, Elisabethopol.

ELATERIDÆ.

HAROLD (Coleopt. Hefte, v. p. 88 *et seq.*), in a series of remarks upon the *Elateridæ* of Stein's Catalogue (wherein, amongst other errors, he notes the entire omission of 17 species of that family), makes the following observations:—*Adelocera varia* (Ol.) = *quercea* (Hbst., 1784); *Elater pomorum* was apparently first described by Germar (1844), not Geoffroy; but Lacordaire's *ferrugatus* (1835) must stand for the species [but see *infra*]. The first description of *E. crocatus* is Castelnau's (1840), but the *erubescens* of Eschscholtz (1829) must stand for it; *E. ochropterus* is to be attributed to Eschscholtz, and not Küster, and *elongatus* to Fab., and not Oliv.; *Cryptohypnus meridionalis* (Casteln., 1840) must stand for *lupidicola* (Germ.); *Cardiophorus bi-guttatus* is Olivier's species (1790), and not Fabricius's (1792); *Melanotus niger* (Fab.) and *aterrimus* (Ol.) clashing with the Linnæan *Elaters* of those names respectively, the *punctolineatus* of Pelerin must stand for the species to which they refer (*cf.* Crotch's Cat. Brit. Col. ed. 2); *Limonium bructeri* should be assigned to Panzer, and not to Fab. (*cf.* De Mars. Cat. ed. 3), but *æconiger*

(Deg.) is the oldest name for the species; *L. cylindricus* (Payk.) must be proposed in favour of *æruginosus* (Ol.), since Paykull's insect is erroneously referred to *cylindricus* (Rossi); *Athous tibiellus* (Chevr.) = *Corymbites nivicola* (Kies.); *Corymbites æneicollis* (Ol., 1792) = *virens* (Schr., 1781); *C. kiesenwetteri* (Bris.) = *pyrenæus* (Charp.); *C. pyrenæus* (Dej. nec Charp.) = *amplicollis* (Germ.); *C. profugus* (Fald.) is eight years prior to *globicollis* (Germ.), but *alpestris* (Mén.) is still older, and must stand for the species; the insect known as *C. holosericeus* (Ol., Fab., &c.) is the true *tessellatus* (Linn.), according to Schiödte, and the *tessellatus* of Fab. &c. (with the older *nubilus*, Schr., and the var. *assimilis*, Gyll.) must be referred to *sjælandicus*, Müll., 1764 (see *infra*); *Agriotes incanus* (Gyll.) = *C. quercus* (Gyll.), sec. typ.; *Adrastus pusillus* (Fab.) = *limbatus* (Fab.), sec. typ.; *Ectinus* (Esch.) = *Agriotes* (Esch.), and *Pittonotus* (Kies.) must be used for the genus; Olivier's 4-maculatus being a *Euphemus*, there is no need to alter the Fabrician species of the same name into *bisbimaculatus*, as it is a *Betarmon*; *Campylus* (Fischer, 1823) = *Lepturoides* (Hbst., 1784); *Drapetes equestris* (Fab., 1789) = *mordelloides* (Host, 1789).

Harold (l. c. p. 117 *et seq.*), correcting his own catalogue as regards the *Elatridæ*, remarks as follows:—*Semiotus suturalis* (Ol., Fab.) = *angularis* (Drury); *Elater planicapillus* (Drap.) is probably a *Dicrepidius*; *Eolus similis* (Hbst., 1806) = *unifasciatus* (Fab., 1801); *Elater coccineus* (Schiöd.) = *sanguineus* (Germ.); *E. sanguineus* (Schiöd.) = *lythropterus* (Germ.); *E. pomorum* must stand, having been described by Hellwig in 1795, long before *ferrugatus* (Lac.), which, with the prior *flavatus* (Schr.), must remain in the synonymy of that species; *Corymbites tessellatus* (Linn.), according to Crotch, who refers to the type in Linn. Coll., is not *holosericeus*, but the species usually known by the former name; Harold, however, thinks the description the better authority.

Harold (l. c. p. 125) has changed *Melanotus persicus* (Fald.) to *M. mutatus*, the former specific name being preoccupied by Ménétries; and, on account of Candèze's *Athous montanus*, alters Leconte's species of that name to *orophilus*.

CANDÈZE (Coleopt. Hefte, v. p. 122) changes *Anepsius* (sibi) to *Achrestus*, on account of Leconte's prior *Anepsius*; he also alters *Blax* (sibi) to *Metablax*, Thomson having already employed the former name in the *Longicornia*; changes the specific name of his *Cryptohypnus exilis* into *angularis*, Motschoulsky having anticipated him in the former name; and, on account of *Cardiophorus signatus* (Ol.), adopts *stigmaticus* for his own *C. signatus*.

LETZNER (45 Jahr. Schles. Ges. nat. Cult. pp. 142–6) gives lengthy differential characters for *Cryptohypnus tetragraphus* (Germ.) and *C. dermestoides* (Hbst.).

Elater sanguinolentus is noticed as abundant under oak-bark, near Héron-thals, by Weyers and van Volxem (Ann. Soc. Ent. Belg. xii. C. r. p. lvii).

SCUDDER (Correspond. of T. W. Harris, pl. 4. figs. 1, 2, 3) figures the larva of *Elater oculatus* (Harris), with details.

GRENIER (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xv) records *Ectinus theseus* (Germ.), taken by Abeille de Perrin in the Lower Alps; also other captures of rare *Coleoptera* at Embrun.

REICHE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 379 *et seq.*) gives a list, with dates and localities, of the species of *Athous* described since the publication

of Candèze's monograph, 21 in number, but from which *tibiellus* (Chevrolat) is to be omitted, as it is a *Corymbites*. Reiche (who proceeds to describe eight new species from his European collection) thinks that more inedited species are extant in this genus, which has been more increased already than any other of the *Elateridae* since Candèze's work above referred to. He publishes some notes on the position in the genus of certain species already described &c., and describes the male of his own *A. corsicus*, and the female of *A. emaciatus* (Candèze).

Athous virgatus (Reiche in Gren. Cat. &c.) = *subtruncatus* (Muls. et Rey), var. Reiche, l. c. p. 382.

FALLOU (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxix) has bred *Steatoderus ferrugineus* from larvæ resembling those of one of the *Melasmata*, found near Lagny, in diseased apple-trees.

DOHRN (Stettin. entom. Zeit. 1869, p. 122) records the occurrence in the Amoor district of *Corymbites æripennis* (Kirby), hitherto known from Canada only.

SLATER (Entom. Monthly Mag. v. p. 276) notices the altitudes at which *Corymbites pectinicornis* and *C. cupreus* occur.

LICHTENSTEIN (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxiii) mentions a specimen of *Agriotes segetis* (*lineatus*, Linn.) found dead and fixed to a leaf by threads from its abdomen, which threads, he imagines, were produced by the larva of an internal parasite. GIRAUD (ibid.) thinks the parasite is produced after death, and that the adherence to the leaf was caused by a cryptogamic production.

SMITH (Proc. Ent. Soc. Lond. 1869, p. xv) remarks upon the varied luminosity of a larva from Uruguay, supposed to be that of a *Pyrophorus*, and stated to be of peculiar longevity. Candèze and Schiödte (ibid. p. xvi) both consider this to be the larva of one of the *Elateridae*, and are equally of opinion that Murray's *Astraptor illuminator* was not an *Elater*.

OSTEN SACKEN (Amer. Naturalist, ii. p. 665) considers that a luminous larva, figured l. c. p. 432, and not referred to any genus or species, is that of a *Melanactes*. Cf. Proc. Ent. Soc. Philad. 1862, and Trans. April 10, 1865.

New species :—

Heteroderes puncticollis, Wollaston, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 317, St. Helena.

Elater anthracinus, Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 378, Vancouver's Island.

Cryptohypnus propinquus, Desbrochers des Loges, Pet. nouv. Ent. no. 8, 15 Oct. 1869, Ajaccio.

Cardiophorus. Desb. des Loges describes the following species, Petites nouv. Ent. no. 9, 1 Nov. 1869 :—*C. mauritanicus*, Algeria; *C. convexithorax*, Caucasus; *C. maculicrus*, Corsica; *C. senaci*, Kustendjé; (l. c. no. 12, 15 Dec. 1869) *C. pusillus*, Corsica.

Limonijs nitidicollis, Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 378, Vancouver's Island.

Athous. Reiche (Ann. Soc. Ent. Fr. 4^e sér. ix.) describes the following species :—*A. murinus*, p. 380, France; *A. debilis*, p. 382, Galicia; *A. crenatostriatus*, p. 383, France; *A. laverniei*, p. 384, Tuscany; *A. delphinus*, p. 385,

France (Alpine); *A. thessalonicus*, p. 386 (Greece); *A. bonvoulori*, *ibid.*, Pyrenees; *A. agnatus*, p. 387, Lower Alps.

Desbrochers des Loges describes the following species (Petites nouv. Ent. no. 9, 1 Nov. 1869):—*A. sinuatocollis*, M. Doré; *A. fallax* and *nigerrimus*, French Alps; *A. insularis*, Ajaccio (? = ♂ *corsicus*, Reiche, var.). *L. c.* no. 12, 15 Dec. 1869) *A. depressifrons*, Corsica.

Corymbites fraternus, Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 379, Vancouver's Island.

Agriotes. Desbrochers des Loges describes the following species (Petites nouv. Ent. no. 8, 15 Oct. 1869):—*A. attenuatus*, Savoy; *A. meridionalis*, Southern France (= ♀ *attenuatus*, Des Loges, who proposes, *l. c.* no. 12, to retain the name *meridionalis*, as the other name is not appropriate for both sexes). *A. sareptanus*, *l. c.* no. 12, 15 Dec. 1869, no locality given; *A. brevisculus*, *ibid.*, Sardinia.

CEBRIONIDÆ.

Cebrio pubicornis, sp. n., Fairmaire, Stettin. ent. Zeit. 1869, p. 233, Portugal.

DASCILLIDÆ.

GEMMINGER (Coleopt. Hefte, v. p. 125) makes the following changes:—*militirhipis bicolor* (Blanch. nec Casteln.) to *separata*; *Helodes ruficollis sangu.* ch. nec Say to *rufithorax*; *H. collaris* (Sol. nec Guér.) to *torquatus*; *morboscurus* (Sol. nec Guér.) to *tristis*.

BEDEL (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. v.) states that *Eucinetus meridionalis* (Cast.) is exclusively attached to *Pinus maritima*, although omitted by Perris from his list of the insects peculiar to that tree.

Eucinetus subaxillaris, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e ser. ix. p. 224, Madagascar; *E. substriatus*, sp. n., Fairm. *ibid.*, Madagascar.

MALACODERMATA.

Lycides.

J. R. HARDY (Ent. Mo. Mag. vi. p. 60) records his having bred *Eros affinis* (Payk.) from larvæ resembling those of *E. aurora* and found at Killarney, and also at Sherwood.

FAIRMAIRE, Ann. Soc. Ent. Fr. 4^e ser. ix. p. 225, adduces three species of *Cænia*, described by himself, as proving the correctness of Lacordaire's opinion that Newman's characters for his genera *Cænia* and *Celetes* are merely sectional.

Cænia. Fairemaire, *l. c.*, describes the following species:—*C. klugii*, p. 226, Mamoukou, Bay of Passandava, Madagascar; *C. dohrnii*, p. 227, Kalalou, Ste. Marie de Madagascar; *C. coquerellii*, *ibid.*, north-west coast of Madagascar.

Lampyrides.

NAUDIN (Ann. Soc. Ent. Fr. 4^e ser. ix. Bull. p. xxxv) makes some observations on the economy of *Lamprorhiza mulsanti* (Kies.) ♀.

WESTWOOD (Proc. Ent. Soc. Lond. 1869, p. vi) states that he has observed a full-grown larva of *L. noctiluca* decidedly luminous.

Lampyris italica is noticed in Ent. Mo. Mag. vi. p. 60, as having been stated (in all probability erroneously) to have occurred in England in 1869. WEBB

(Proc. Ent. Soc. Lond. 1869, p. xxvi) states that the species referred to was *L. noctiluca*, ♂.

Telephorides.

RILEY (First Ann. Rep. Nox. Ins. Missouri, 1869, p. 57) figures the imago and larva (with details) of *Chauliognathus pennsylvanicus* (De G.), a destroyer of the larvæ of the "Plum Curculio." He describes the larva at some length.

ABEILLE DE PERRIN (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 41) remarks upon the position of *Malchinus* (Kies.), which he thinks should be at least between *Malthinus* and *Malthodes*, if not before *Malthinus*, as forming a transition to certain of the true *Telephoridæ*.

DARWIN (Ann. & Mag. Nat. Hist. iv. p. 145) notes the fertilization of *Hermimum monorchis* by *Malthodes brevicollis*.

Telephorus cornix, sp. n., Abeille de Perrin, Pet. nouv. Entom. no. 11, 1 Dec. 1869, Lower Alps.

Malchinus telephoroides, sp. n., Abeille de Perrin, l. c. p. 39, Colmar.

Drilides.

RYE (Ent. Mo. Mag. vi. p. 59) records ♀ of *Drilus flavescens* from Folke-
stone. Dec.

Melyrides.

ABEILLE DE PERRIN (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 403) considers that *Anthocomus vesiculiger* (Marseul) is properly to be referred to *Hypebæus* (Kies.), and should come next after *H. flavipes* (Fab.). He also affirms that *A. tripartitus* (Mars.) is a true *Anthocomus*, and has only a colour-relationship with certain species of *Cerapheles*; and that *Cyrtosus bicolor* of Perris (of which *Oogynes signicollis*, Rey et Muls., is possibly a synonym) is a true *Oogynes*. The abnormal appendages of the sixth abdominal segment in the male of the species, which he proceeds to describe, appear to him to demand a new generic division, at the expense of *Oogynes*, for which he proposes the (Latin) name of *Furciger*. Such being his opinion, it seems curious that he did not adopt the latter appellation for his insect. At p. 409, l. c., he corrects some errors in his former communication.

Oogynes signicollis (Muls.) and *Charopus dispar* (Fairm.) = *C. saginatus* (Kies.). De Marseul, L'Abeille, vi. p. 155.

MULSANT & REY have completed (Ann. Soc. Linn. de Lyon, n. s. xvi. pp. 83-231, pl. i.-xix.) their monograph of the species of this group forming their tribe *Floricoles*.

In continuation of their branch *Dasytates* of the group *Dasytaires*, they describe the sole French species of *Lobonyx* (Duv.), l. c. p. 83, *L. æneus* (Fab.), in upwards of four pages, and *Psilothrix* (Redt.), p. 90. The *Haplocnemates* (tabulated at p. 97), the second branch of their *Dasytaires*, is composed of the genera *Julistus* (Kies.), p. 98, and *Haplocnemus* (Steph.), tabulated at pp. 110, 126, 151, 167. The second family, the *Melyriens*, p. 172, includes *Melyris* and *Zygia* (Fab.); the third, the *Danacæns*, p. 182, *Dolichosoma* (Steph.) and *Danacæa* (Lap.), tabulated at p. 194; and the fourth, the *Phlæophilens*, p. 225, *Phlæophilus* (Steph.). The authors figure with much detail

Henricopus vittatus ♂, pl. 1; *Divales bipustulatus* ♀, pl. 2; *Dasytes niger* ♀, pl. 3; antennæ of *Dasytes*, pl. 4; *Hypodasytes obscurus* ♂, pl. 5; *Mesodasytes flavipes* ♂, pl. 6; *Metadasytes nigrocyaneus* ♂, pl. 7; *Pseudodasytes subcaneus* ♂, pl. 8; *Lobonyx æneus*, pl. 9; *Psilothrix nobilis*, pl. 10; *Julistus floralis*, pl. 11; *Haplocnemus jejunos* ♂, pl. 12; antennæ of *Haplocnemus*, pls. 13 & 14; *Zygia oblonga*, pl. 15; *Dolichosoma lineare* ♂, pl. 16; *Danacæa montivaga*, pl. 17; antennæ of *Danacæa*, pl. 18; *Phlæophilus edwardsi*, pl. 19. They characterize 14 new species; some of which are indicated with a want of precision and an apparent lack of belief, on the authors' part, painfully in accordance with the diluted style of their descriptions.

Dolichosoma subdensatum, Muls. et Rey, l. c. p. 189, and *submicaceum*, p. 190, France, are admitted by the authors to be of doubtful specific value; they, however, indicate a third quasi-species, under the name of *subnodosum*, p. 191, which, with the other two, seems only a form of *D. lineare* (Rossi).

Malachius heteromorphus, sp. n., Abeille de Perrin, l. c. p. 42, Mont Cenis, Eastern Pyrenees and Digne.

Oogynes (Anthodytes) anceyi, sp. n., Abeille de Perrin, l. c. p. 404, Damascus, Syria.

Ebæus viridifrons, sp. n., Schauf., Beitr. Kennt. Col. Balear. p. 18, Arta, Balearic Isles; *E. abietinus*, sp. n., Abeille de Perrin, l. c. p. 44, Higher and lower Alps.

Stenoploenemus. Mulsant & Rey, l. c., describe the following new species:—*moratæmerus*, p. 111, Lyons, Paris; *nigripes*, p. 139, Kabylia; *erosus*, p. 149, and *cribricollis*, p. 150, Corsica; *calidus*, p. 155, Marseilles; *quercicola*, p. 159, Beaujolais, Lyons.

Danacæa. Muls. & Rey, l. c., describe the following new species:—*D. montivaga*, p. 200, France (?=*denticollis*, Baudi); *particeps*, p. 208, Spain (?=*pallipes*, Kies. nec Panz.); *ambigua*, p. 208, France; *longiceps*, p. 221, S. of France. Another species, *D. paradoxa*, is indicated at p. 225.

Danacæa ziczac, sp. n., Schauf., Beitr. Kennt. Col. Balear. p. 19, Mahon; *D. pygmæa*, sp. n., Schauf. l. c. p. 20, Mahon, Palma and Arta, Ins. Balear.

CLERIDÆ.

ANCEY (Pet. nouv. Ent. no. 5) gives an account of the habits of *Denops albofasciatus*, which is parasitic upon certain species of *Sinorylon* and *Xylorpertha*; the latter appear to make their galleries in the branches of oaks attacked during the past season by *Coræbus bifasciatus* (*Buprestidæ*).

LYMEXYLIDÆ.

Hylæcetus lugubris (Say) has been rediscovered, from Michigan. Walsh & Riley, Amer. Entom. i. p. 167.

PTINIDÆ.

WESTWOOD, in Trans. Ent. Soc. 1869 (Aug.), p. 315, considers that, by the analysis of certain new species described by him (l. c.), the genus *Ectrephes* (Pascoe) is nearly related to *Mezium* and *Gibbium*, and has no affinity with the *Paussidæ* or *Gnostus*, to which it has been considered to be allied. He gives the dates of publication &c. of Pascoe's *Ectrephes* and King's *Anapestus*, which are synonymous—the right of priority apparently being due to the former.

Anapestus kreusleri (King) = *E. formicarum* (Pascoe): Westw. *ibid.*

Ptinus loboderus (Schm.) and *P. dilophus* (Boield.) = *lusitanus* (Ill.); *P. alpinus* (Boield.) = *irroratus* (Kies.) ♀; *P. lepidus* (Villa) = *ornatus* (Müll.), var.; *P. ruber* (Rosenh.) and *P. cisti* (Chev.) = *spitzzi* (Villa); *P. raptor* (Sturm.) and *P. sycophanta* (Ill.) = *bidens* (Ol.). De Marseul, L'Abeille, vi. p. 155.

Ptinus auberti, sp. n., Abeille de Perrin, *Pet. nouv. Entom.* no. 11, 1 Dec. 1869, Toulon.

Nitpus gonospermi (Duv.) is stated on behalf of Power in *Proc. Ent. Soc. Lond.* 1869, p. xx, to have occurred in the Orkneys. Rye (*Ent. Annual*, 1870) considers this insect must have been accidentally introduced.

P. DE BORRE (*Ann. Soc. Ent. Belg.* xii. *Comptes rendus*, p. iii) records *Gibbium scotias*, taken by Candèze at Brussels, as new to the Belgic fauna.

Ectrephes pascoei, Westwood, *l. c.* p. 315, and *E. kingii*, spp. nn., Westw. *l. c.* p. 316, Swan River.

Anobium confertum, sp. n., Wollaston, *Ann. & Mag. Nat. Hist.* 4th ser. iv. p. 319, St. Helena (possibly imported).

Polyplacotes, g. n., Westwood, *l. c.* p. 316. Antennæ 9-jointed. Connects *Ectrephes* with the *Ptinidæ*. Sp. *P. longicollis*, sp. n., Westw. *ibid.*, and *P. nitidus*, sp. n., Westw. *l. c.* p. 317, Swan River, New Holland.

Diplocotes, g. n., Westw. *l. c.* p. 317. The stout 11-jointed antennæ of *l. c.* genus are stated to connect *Polyplacotes* with *Ptinus*. The 10th joint is crassated, and equal to the three preceding. Sp. *D. howittanus*, sp. n., Westw. *ibid.*, Gawler, Adelaide.

BOSTRYCHIDÆ.

Sinoxylon muricatum (Fab.) is quoted in *Bull. Soc. Ent. Ital.* i. p. 80, from Rendic, dell' Ist. Lombardo, as destructive in the larval state to oaks, near Florence.

Bostrychus (Xylopertha) iracundus, sp. n., Snell. v. Vollenh., *Rech. Faune de Madagasc.* 1869, p. 10, pl. 1. f. 7, Nossi-Bé.

CIOIDÆ.

WANKOWIEZ (*Ann. Soc. Ent. Fr.* 4^e sér. ix. p. 421, note) remarks on the insufficiency of the spinosity of the anterior legs as a generic character for *Ennearthron*, and notes the evident transition to irregularity of structure afforded by *E. cornutum* in this respect, — *E. laricinum* (Cis, Mellie), moreover, having simple legs and nine-jointed antennæ.

CHAPMAN (*Entom. Monthly Mag.* v. p. 297) records his observations on the oviposition of *Octotemnus glabriculus*.

Cis vestitus (Mellie) is recorded as British by Rye (*Ent. Mo. Mag.* vi. p. 5).

Cis sublaminiatus, sp. n., Wankowicz, *l. c.* p. 422, Lithuania.

Ennearthron wagæ, sp. n., Wankowicz, *l. c.* p. 421, Lithuania.

MELASOMATA.

PASCOE (*Annals and Mag. of Nat. Hist.* 4th ser. vol. iii. nos. 13, 14, 16 and 17, plates x.-xii.) describes new genera and species of *Melasomata*, from Australia and Tasmania, and thinks the number likely to be greatly increased.

He explains the difference between "epipleura" and "epipleural fold," as understood by him, and also the position of the trochantin (p. 36, note, pl. x. fig. 9, a).

Tentyrides.

Tentyria banatica (Frivaldsky, Abh. d. ungar. Acad. 1865) = *T. frivaldskyi* (Ktz., 1864): v. Heyden, Berl. ent. Zeit. xiii. p. 57.

Tentyria basalis, sp. n., Schauf., Beitr. Kennt. Col. Balear. p. 21, Majorca and Minorca.

Akides.

Akis cratii (Morawitz) = *auritus* (Pall., *Tenebrio*): Motsch. Horæ Soc. Ent. Ross. vi. p. 94.

Blaptides.

KRAATZ (Berl. ent. Zeit. xiii. p. 276), in the course of some observations upon a species of *Blaps* named *viatica* (in litt.) by Miller, and for which he gives diagnostic characters, mentions the evidence upon which he draws the inference that Miller's insect, *B. longicollis*, *confluens*, *dorsata*, *halophila*, *fati-a*, *songorica* and *confusa* (Fischer), *convexicollis*, *coriacea*, and *scabrosa* (St.), *reflexicollis*, var. A, *longicollis* (Solier), *pannonica* (Friv.) and *glabrata* (Besser) must all be referred to one and the same species! Of these names, Fischer's *longicollis* (1844) would seem the oldest; but there remains the *confusa* of Ménétrés, published early in 1832, of which the description is very meagre, but which is represented in all the best collections by Fischer's last-mentioned insect, and must therefore apparently be retained.

KRAATZ (l. c. p. 279) also notices the confusion between the *B. reflexicollis* of Solier and the *B. reflexicollis* of Fischer, to the latter of which he refers as synonyms *B. dahlii* (Solier) and *B. putrida* and *robusta* (Mots.). In an appendix (p. 281) to his notes above mentioned, Kraatz gives the following synonymy:—*B. krynickii* (Kryn.) = *parvicollis* (Zoubk; *brevicollis* in error); *B. fischeri* (Fisch.) = *pruinosa* (Fald.), var.; *B. sulcata* (Küst.) = *lineata* (Dej.); *B. ægyptiaca* (Sol.) = *taniolata* (Mén.); *B. convexa* (Fisch.) = *abbreviata* (Mén.); *B. rectangularis* (Sol.) = *gibba* (Cast.); *B. angulata* (Reiche) = *cribrosa* (Sol.); *B. striolata* (Küst.) and *B. sublineata* (Brullé) = *mucronata* (Latr.). *B. hispanica* (Sol.) is stated to be distinct from *lusitanica* (Hbst.) by Kraatz (ibid.), who notices some errors in the Catalogues of Schaum and Stein with respect to the genus *Blaps*.

Asidides.

ALLARD (L'Abeille, vi. pp. 159–304) reproduces the description of all known species of *Asida*, with additions of new species, fresh characters, and synonymy. He gives an analytical table of the members of the genus, and modestly avows that his work is only intended as a supplement to Solier's monograph. He enumerates 115 species, of which 3 are unknown to him, and 15 are new.

According to Allard, *A. grisea* (Sol.) = *rugosa* (Fourcroy), of which *vicina*

(Sol.) is the ♀ and *glabricosta* (Sol.) is a var.; *A. complanata* (Luc.)=*ruficornis* (Sol.); *A. morbillosa* (Fab.)=*fascicularis* (Germ.); *A. abrupta* (Fairm.)=*inæqualis* (Sol.); *A. acuticollis* (All.)=*lineatocollis* (Küst); *A. mahonis* (Boield.) and *A. pazi* (Per. Arc.)=*jurinei* (Sol.), of which *bigorrensis* (Sol.) is the ♀; *A. cardonæ* (Per. Arc.) and *A. horrens* (Schauf.)=*reichei* (All.); *A. combæ* (Gené)=*genei* (Sol.); *A. angusta* (All.)=*gibbicollis* (Per. Arc.), ♂; *A. hebes* (Rosenh.)=*minuta* (Ramb.); *A. solieri* (Ramb. nec. Gené)=*clementei* (Per. Arc.); *A. henoni* (Fairm.)=*dissimilis* (All.); *A. servillei*, var. B, *depressa* (Sol.)=*fabricii* (All., *rugosa*, Fab. nec. Fourc.); *A. sulcipennis* (Fairm.)=*opatroides* (All.); *A. miliaris* (Er.)=*servillei* (Sol.), ♀; *A. moræ* (Per. Arc.)=*crassicollis* (Fairm.), ♂; *A. affinis* (Luc.)=*subcostata* (Sol.), ♂; *A. dermatodes* (Fairm.)=*clypeata* (All.); *A. gaditana* (Ramb.), *perezi* (Chevr.) and *ventricosa* (Sol.)=*goudoti* (Sol.); *A. amori* (Per. Arc.)=*elongata* (Sol.); *A. montana* (Ramb.) and *vuillefroyi* (Per. Arc.)=*parallela* (Sol.); *A. lævigata* (Ramb.)=*depressa* (Sol.); *A. grossa* (Sol.)=*sicula* (Sol.), ♀.

ALLARD (l. c.) describes the following new species:—

A. gambeyi, p. 184, Algeria; *pirazzolii*, p. 200, Piceno; *setipennis*, p. 218, Escorial; *curta*, p. 220, *lævicollis*, p. 243, and *crassipes*, p. 256, Algeria; *grandipalpis*, p. 288, Spain; *squalida*, p. 289, Malaga; *græca*, p. 290, Attica; *sardiniensis*, p. 291, Sardinia; *consanguinea*, South of France, and *brucki*, Carthage, p. 292; *kraatzii*, p. 293, Tetuan; *bifoveata*, p. 294, Tangiers; *gracilec.* p. 295, Spain.

Asida planipennis, sp. n., Schauf. Beitr. Kennt. Col. Balear. p. 23, Arta, Ins. Balear.; *A. horrens*, sp. n., Schauf. l. c. p. 24, Minorca.

v. HEYDEN (Berl. ent. Zeit. xiii. p. 57) reproduces Frivaldszky's description of *Asida banatica* (Abh. d. ungar. Acad. 1865, p. 200, t. xi. fig. 13).

Pedinides.

v. HEYDEN, l. c., reproduces Frivaldszky's description of *Platyscelis hungaricus* (l. c., f. 2).

Pandarus castilianus, sp. n., de la Brûlerie, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 31, Central and Western Spain, and Portugal.

Pandarinus nevadensis, sp. n., de la Brûlerie, l. c. p. 33, Sierra Nevada.

Helioopathes (*Homocrates*) *mul santi*, sp. n., de la Brûlerie, l. c. p. 36, and *H. (Ho.) reyi*, sp. n., de la Brûlerie, l. c. p. 37, Estremadura; *H. (Ho.) mediterraneus*, sp. n., de la Brûlerie, ibid., Balearic Isles.

(*H*) *Opatrides.*

PASCOE (l. c. p. 277) refers Hope's (*H*) *Opatrum piceitarse* (with which the *Isopteron* (*h*) *opatroides* of the same author is stated to agree almost exactly) and (with some doubt) also his *Platynotus insularis* to *Cestrinus* (Er.). He remarks upon the disorder of Hope's collection.

Achora, g. n., Pascoe, l. c. p. 279. Allied to *Cestrinus*, but with broader and horizontal epipleuræ, mesost. entire in front, last joint of lab. palpi oblong-ovate, and mentum trapeziform. Sp. *A. serricollis* (Hope, *Asida*); ?(*H*) *Opatrum denticolle* (Blanch.).

Cestrinus aversus, *C. punctatissimus* and *C. posticus*, spp. nn., Pascoe, l. c. p. 278, Tasmania.

Ulodides.

PASCOE (*l. c.* p. 32) tabulates the genera of this subfamily. He refers *Endophlæus variicornis* (Hope) to his genus *Ulodica*, *Bolitophagus sapphira* (Newm.) to his *Ganyme* (p. 33), and *Endophlæus australis* (Hope) to his *Dipsaconia*.

Ulodica, g. n., Pascoe, *l. c.* p. 31. Antennæ not clavate, 3rd joint twice as long as 4th; prothorax transverse, rounded on each side, with margins scaled. Sp. *U. hispida*, sp. n., Pascoe, *l. c.* p. 32, Clarence River.

Ganyme, g. n., Pascoe, *l. c.* p. 32. Ant. clavate, eyes transverse and narrowed, prothorax strongly angulated on each side. Sp. *G. howittii*, sp. n., Pascoe, *l. c.* p. 33, pl. x. fig. 7, Victoria, Tasmania.

Bolitophagides.

GOBERT (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxx) has reared *Bolitophagus armatus* (Panz.) from the larva, found in *boleti* on beech trees.

PASCOE (*l. c.* p. 30) gives characters at length for his genus and species *Orcopagia monstrosa*, which he figures pl. x. fig. 8.

Bolitothorus (Candèze) = *Phellidius* (Lec.): Pascoe, *l. c.* p. 31.

Diceroderes elongatus (Redt.) is stated to be one of the *Bolitophagides* (*Dysantes*, Pascoe, MS.), *ibid.*

Diaperides.

V. GERNET (Horæ Soc. Ent. Ross. vi. 1868) describes and figures the larva of *Hoplocephala hæmorrhoidalis* (F.).

PASCOE (*l. c.* p. 279) adopts *Arrhenoplita* (Kirby) for *Hoplocephala*, used previously by Cuvier for a genus of Ophidiæ.

Typhobia, g. n., Pascoe, *l. c.* p. 279. Separated from *Diaperis* by the obconic joints of its antennæ, and its more flattened form. Sp. *T. fuliginea*, sp. n., Pascoe, *ibid.*, Victoria.

Platydema aries, sp. n., Pascoe, *l. c.* p. 280, Brisbane; *P. oritica*, sp. n., Pasc. *ibid.*, Victoria?; *P. limacella*, sp. n., Pasc. *ibid.*, Victoria?; *P. thaloides*, sp. n., Pasc. *l. c.* p. 281, Sydney.

Ceropria (?) *valga*, sp. n., Pasc. *l. c.* p. 281, Queensland.

Heterophylus goudotii, sp. n., Fairmaire, *l. c.* p. 229, Madagascar; *H. curtus*, sp. n., Fairm. *ibid.*, Madagascar; *H. punctatissimus*, sp. n., Fairm. *ibid.*, Madagascar.

Ulomides.

V. GERNET (Horæ Soc. Ent. Ross. vi. 1878) describes and figures the larva of *Gnathocerus cornutus* (F.).

Alphitobius granivorus, sp. n., Muls. & God., Ann. Soc. Linn. Lyon, n. s. xvi. p. 288; *A. viator*, sp. n., p. 290, Marseilles; *A. distinguendus*, sp. n., Fairmaire, *l. c.* p. 230, Mayotte, Comores.

Cataphronetis luctuosa, sp. n., Fairmaire, *l. c.* p. 230, Madagascar, Séchelles, Comores (? = *Phaleria crenata*, Klug); *C. striatula*, sp. n., Fairm. *l. c.* p. 231, Ste. Marie de Madagascar.

Toxicum capreolus, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 228, Mayotte, Comores.

Helæides.

Pterohelæus. Pascoe, *l. c.*, describes the following new species:—

P. nitidissimus, p. 282, South Australia (= *P. striato-punctatus*, de Brême, nec Boisd.); *P. vicarius*, p. 283, Queensland, N. S. Wales, Victoria; *P. litigiosus*, *ibid.*, Sydney; *P. alternatus*, p. 284, "Interior;" *P. minimus*, *ibid.*, Cooper's Creek; *P. laticollis*, p. 285, Melbourne; *P. hepaticus*, *ibid.*, Melbourne; *P. dispar*, p. 286, Swan River.

Helæus squamosus, sp. n., Pasc. *l. c.* p. 286, pl. 12, fig. 4, Cooper's Creek, Darling River.

Saragus limbatus, sp. n., Pasc. *l. c.* p. 287, Melbourne, Gawler.

Cælozetopides.

Brises, g. n., Pascoe, *l. c.* p. 145. Head sunk up to the eyes; inner lobe of maxillæ unarmed; sides of thorax foliaceous. Sp. *B. trachynotoides*, sp. n., Pasc. *l. c.* p. 146, pl. xi. fig. 5, Champion Bay.

Asphalus, g. n., Pasc. *ibid.* Resembles *Pedinus*. Inner lobe of max. hooked; last joint of all the tarsi longer than all the preceding joints together. Sp. *A. ebeninus*, sp. n., Pasc. *l. c.* p. 147, pl. xi. fig. 3, Clarence River.

Hydissus, g. n., Pascoe, *l. c.* p. 148 (note). Differs from *Hypaulax* and *Chileone* (F. Bates) in sub-bilobed penult. joint of tarsi, the absence of grooves behind mentum, and termination at shoulder of epipleural line. Sp. *Uferonioides* (Pasc.).

Tenebrionides.

PASCOE (*l. c.* p. 149, note) confirms his statement as to absence of hook on int. max. lobe of *Dechius aphodioides*, contradicted by F. Bates. He makes some observations (p. 150) on Boisdual's descriptions in the 'Voyage de l'Astrolabe,' and remarks that the genus *Baryscelis* of that author was never published.

PASCOE (*l. c.* p. 153) thinks *Boros* (Hbst.) and its allies should be retained in the *Tenebrionides*, but kept apart from the *Calcarides*. He refers to the structure of their anterior coxæ.

SCHAUFUSS (Beitr. Kennt. Col. Balear.) considers *Tenebrio opacus* (Dft.) to be only a var. of *T. obscurus*.

Promethis, g. n., Pascoe, *l. c.* p. 148. Ant. angles of prothorax produced, rounded; margins entire. Sp.: (type) *P. angulatus* (Er., *Upis*, *Iphthimus*); *P. lethalis*, sp. n., Pasc. *ibid.*, Queensland; *P. quadricollis*, sp. n., Pasc. *l. c.* p. 149, Swan River.

Æctosis, g. n., Pascoe, *ibid.* Allied to *Menepphilus*, but less depressed, with a fold between base of mandible and eye; epipleura absent towards the apex. Sp. *Æ. cylindrica* (Germ., *Upis*).

Meneristes, g. n., Pascoe, *l. c.* p. 150. Tibiæ with spurs, femora incrassate. Sp.: *M. laticollis*, sp. n., Pascoe, *ibid.*, pl. xi. fig. 2, Victoria (? *laticollis*, Boisd.); *M. intermedius*, sp. n., Pasc. *ibid.*, Gawler; *M. servulus*, sp. n., Pasc. *l. c.* p. 151, Tasmania to Queensland.

Ephidonius, g. n., Pascoe, *ibid.* Tibiæ strongly spurred, tarsi nearly naked beneath. Sp. *E. acuticornis*, sp. n., Pascoe, *l. c.* p. 152, pl. xi. fig. 6, Gawler, S. Australia.

Tanytypa, g. n., Pascoe, *l. c.* p. 152. Allied to *Boros*. Eyes transverse, inn. lobe of max. unarmed, tibia arched, ant. coxæ transverse. Sp. *T. morio*, sp. n., Pascoe, *l. c.* p. 153, pl. xi. fig. 4, Tasmania.

Heterotarsides.

MOTSCHOULSKY (Bull. Soc. Imp. Nat. Mosc. 1868, no. 3, p. 192) briefly recharacterizes *Paratenetus*, described by Spinola as one of the *Cleridæ*; subsequently recognized by Erichson as Heteromerous and to be placed next *Anædus* (Dej.), and entirely passed over by Lacordaire. The author states that its form is very near that of *Carticuria* (? *Corticaria*), but that its elytra are not striated, but strongly and irregularly punctured.

He thus tabulates the species known to him:—

- A. Thorax with 5 strong lateral teeth.
 - a. Punctuation of elytra larger and less close than of thorax.
 - † Antennæ wholly testaceous.
 - punctatus* (Spin.), N. Amer., tab. viii. f. 8.
 - †† Club of ant. black *luridus* (Mots.), Brazil.
 - b. Punctuation of elytra and thorax equally large.
 - † Thorax quadrate, angles rotundate.
 - cicatricosus* (Mots.), Brazil.
 - †† Thorax cordate, post. angles prominent.
 - cribratus* (Mots.), Amer. Georgia.
 - B. Thorax with very short lateral teeth, or only crenulated.
 - a. Elytra gibbous, rather short, and slightly elevated behind; antennæ concolorous, clear *gibbipennis* (Mots.), Atlanta.
 - b. Elytra elongate-ovate, slightly convex, form of *Corticaria*.
 - † Ant. club black and very dilated, base clear.
 - grandicornis* (Mots.), Panama.
 - †† Ant. club small, testaceous, like the body, which is covered with punctures and long scattered hairs.
 - tropicalis* (Mots.), Panama.

The author (p. 193) proceeds to characterize a closely allied new genus, *Terametus* (tab. viii. f. 9), also resembling *Corticaria*, but with a quadrate thorax, and irregularly punctured elytra, the punctuations of which are not so large as in *Paratenetus*, and apparently 9-jointed antennæ. He hints the possibility of those members being broken in his exponent, which, under the name of *T. capicola*, he describes as new at p. 195, from the Cape of Good Hope.

MOTSCHOULSKY also (p. 195) describes a new species, apparently of *Anædus* (though, the antennæ being certainly broken in his specimen, he cannot be sure whether it should not be referred to some other genus), under the name of *orietalis* (sic). He states that "this singular form, observed hitherto solely in America, occurs also in Mongolia;" from which it is to be inferred that the species described by him was found in the latter country.

Cyphaleides.

PASCOE (*l. c.* p. 288) gives a revised tabulation of the genera of this sub-family.

Opigenia, g. n., Pascoe, *ibid.* Inner max. lobe not produced into a hook, though its apex is pointed; ninth and tenth joints of ant. transversely obconic; mesost. short, deeply incised. Sp. *O. iridescens*, sp. n., Pasc. *l. c.* p. 239, Victoria.

Hectus, g. n., Pasc. *ibid.* Allied to *Lygestira*, but only ant. tarsi dilated; prosternum produced in front, keeled; intercoxal process short, rounded in front. Sp. *H. anthracinus*, sp. n., Pasc. *l. c.* p. 290, pl. xii. fig. 6, Rockhampton.

Altes, g. n., Pasc., *l. c.* p. 290. Separated from *Charopteryx* (Westw.) by its long hairs, short antennæ (of which two penult. joints are transverse), linear tibiæ, of which the ant. and interm. are not spurred, and the short basal joint of its post. tarsi. Sp. *A. binodulosus*, pl. xii. fig. 2.

Decialma, g. n., Pasc. *l. c.* p. 291. Separated from *Olisthæna* (Er.) chiefly on account of the penult. joints of ant. being broader than long. Sp. *D. temitarsis*, sp. n., Pasc. *ibid.*, Victoria.

Barytipha, g. n., Pasc. *l. c.* p. 292. Tarsi clothed with short stiff hairs, which are confined to the apices of the joints; epipleuræ scarcely narrowed behind. Sp. *B. socialis*, sp. n., Pasc. *ibid.* pl. xii. fig. 5, Victoria.

Mithippia, g. n., Pasc. *l. c.* p. 293. A degraded form, differing from its allies in its simple mesosternum, not notched for reception of prosternal process. Sp. *M. aurita*, sp. n., Pasc. *ibid.* pl. xii. fig. 3, Adelaide.

Lepispilus stygianus, sp. n., Pasc. *l. c.* p. 290, Alps of Victoria.

Achthosus laticornis, sp. n., Pasc. *l. c.* p. 294, Clarence River.

Cnodalonides.

Camariodes, g. n., Fairmaire, *Ann. Soc. Ent. Fr.* 4^e sér. ix. p. 232. Extremely close to *Tetraphyllus*, but having slender antennæ, of which the apical joints are not shortened, and a very oblique mesosternum, which is concave in front, but does not receive the apex of the prosternum. Sp. *C. coquerelii*, sp. n., Fairm. *ibid.*, Madagascar.

Holobrachys, g. n., Fairmaire, *l. c.* p. 233. Very close to *Tetraphyllus*, differing in the singular form of its short, wide, flattened antennæ, and the enormous development of the wide triangular apical joint of its maxillary palpi. Sp. *H. heterocerus*, sp. n., Fairm. *ibid.*, Ste. Marie de Madagascar.

Tinophyllus, g. n., Fairmaire, *l. c.* p. 234. Extremely close to *Tetraphyllus*, but with slender antennæ, of which the apical joints never become transverse, and with a more oblique and less excavated mesosternum. The mentum, also, is bicarinate. Sp. *T. gracilicornis*, sp. n., Fairm. *ibid.*, Ste. Marie de Madagascar.

Helopides.

PASCOE (*l. c.* p. 35) discusses the position of the *Apocryphides*, and especially as to the location therein of his genera *Hymæa* and *Melytra*. He proposes for *Thoracophorus* (Hope) the name *Atryphodes*, on account of *Thoraxophorus*, Mots. (cf. Lacordaire, *Gen. Col.* v. p. 436, note), being apparently unaware that Motschoulsky's *Cardiothorax* (1859) was applicable.

Atryphodes licinoides (Redt.) = *aratus* (Pasc.): Pasc. *l. c.* p. 40, note.

PASCOE (*l. c.* p. 144) gives his reasons for taking *Amphidora* (after Leconte) as type of a subfamily distinct from the *Adeliades*. He considers it probable that the species of his *Ectyche* are ant's-nest insects.

PASCOE (*l. c.* p. 133) tabulates the genus *Adelium* (Kirby) and certain of its allies, which he characterizes as new. He also gives a further account of the affinities and species of his genus (*H*) *Omolipus* (*l. c.* p. 143), and redescribes his genus and species *Blepegenes aruspex* (p. 41, pl. x. fig. 2), noticing a mistake in the original description of the clypeus (note), and pointing out that *Ceradelium armatum*, Preudhomme de Borre (*Ann. Soc. Ent. Belgique*, xi. 1868, p. 125, and fig.; omitted from *Zool. Rec.* for 1868), is synonymous with that species. De Borre notes this also (*Ann. Soc. Ent. Belg.* xii. *Comp. ren.* p. xxiii), and refers to his description of *Ceradelium* in the *Comptes rendus* of the sitting of 4th April, 1868, Pascoe's *Blepegenes* having been published in *Proc. Ent. Soc.* for the same month. De Marseul (*L'Abeille*, vii. p. 41) speaks of Pascoe's species as if published for the first time in *Ann. & Mag.* Jan. 1869, and permits himself some remarks distinguishing between entomologists who describe and "real workers," apparently intending a compliment to De Borre's isolated description and figure.

New genera :—

Melytra, g. n., Pascoe, *l. c.* p. 34. Ant. slightly thickened at apex, third joint much longer than the rest; mentum subquadrate, last joint of labial palpi conic, labium membranous; outer lobe of maxillæ short and transverse; last joint of max. palpi slightly hatchet-shaped. Sp. *M. ovata*, sp. n., Pascoe, *ibid.* pl. x. fig. 1, Tasmania.

Hymæa, g. n., Pascoe, *l. c.* p. 35. Ant. clavate, third joint not longer than the rest; mentum transverse, gradually narrowed in front, labium horny; outer lobe of maxillæ elongate, narrowed, last joint of max. palpi ovate. Sp. *H. succinifera*, sp. n., Pascoe, *l. c.* p. 36, pl. x. fig. 3, Tasmania.

Ectyche, g. n., Pascoe, *l. c.* p. 143. Clypeus a little round anteriorly, separated from the front; ant. tibiæ dilated and obliquely truncated at the apex; intercoxal process narrowed, rounded at apex. Sp. : *E. erebea*, sp. n., Pascoe, *l. c.* p. 144, pl. xi. fig. 1, Freemantle; *E. (?) nana*, sp. n., Pasc. *l. c.* p. 145, Gawler.

Byallius, g. n., Pascoe, *l. c.* p. 42. Third joint of ant. elongate, cylindric; front slightly convex, with no grooves; inner lobe of max. narrow, curved and pointed; elytra obovate, reticulate, epipl. fold obsolete. Sp. *B. reticulatus*, sp. n., Pasc. *l. c.* p. 43, pl. x. fig. 6, Gippsland.

Apsis, g. n., Pascoe, *l. c.* p. 139. Anterior angles of mentum rounded; prothorax truncate at apex; three intermed. joints of ant. tarsi in ♀ obconic, all tomentose beneath. Sp. *A. howittii*, sp. n., Pascoe, *l. c.* p. 140, pl. xi. fig. 7 (♂), Victoria.

Licinoma, g. n., Pascoe, *l. c.* p. 140. Tarsi slightly pilose beneath, prothorax with the apex not emarginate. Resembles *Adelium*, but with broader eye. Sp. *L. nitida*, sp. n., Pasc. *ibid.*, Mount Macedon, Victoria.

Brycopia, g. n., Pascoe, *l. c.* p. 141. Eye prominent, nearly circular; clypeal suture simple. Sp. *B. pilosella*, sp. n., Pasc. *ibid.*, Mount Macedon, Victoria.

Dinoria, g. n., Pascoe, *l. c.* p. 141. Distinguished by its pilose tarsi from *Brycopia*. Sp. *D. picta*, sp. n., Pasc. *ibid.*, Tasmania.

Dystalica, g. n., Pascoe, *l. c.* p. 142. Eyes narrow, tarsi pilose, prothorax emarginate at apex, crenate at sides. Sp. *D. homogenea*, sp. n., Pasc. *ibid.*, Swan River.

Sphaerocaulus, g. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 235. Closely allied to *Osdara*, but much more compact, with more globose elytra, last joint of palpi wider and short, a furrow separating the epistoma, three apical joints of antennæ wide, and joints of posterior tarsi equal. Sp. *S. graniger*, sp. n., Fairm. *l. c.* p. 236, Madagascar.

Asdidius, g. n., Fairmaire, *l. c.* p. 236. Founded on a single broken specimen. Allied to *Sphaerocaulus*, but with a concave head, which is sunk quite up to the eyes, and has the anterior margin of the epistoma produced into a short tubercle in the middle; and with other characters apparently insufficient for generic distinction. Sp. *A. coquerelii*, sp. n., Fairm. *l. c.* p. 237, Madagascar.

New species:—

Atryphodes. Pascoe, *l. c.*, describes the following species:—*A. howittii*, p. 37, Kiama; *A. castelnaudi*, p. 38, Kiama; *A. cordicollis*, *ibid.*, Brisbane; *A. aricollis*, *ibid.*, Queensland; *A. encephalus*, p. 39, Rockhampton; *A. pithecius*, *ibid.*, Queensland; *A. caperatus*, p. 40, Hunter's River, Darling Downs.

Seirottrana proxima, Pascoe, *l. c.* p. 43, Victoria; *S. crenicollis*, Pasc. *ibid.*, pl. x. fig. 4, mountains of Victoria.

Coripera ocellata, Pasc. *l. c.* p. 44, pl. x. fig. 5, Mount Macedon, Victoria.

Adelium. Pascoe, *l. c.*, describes the following species:—*A. plicigerum*, p. 133, Queensland; *A. ararium*, *ibid.*, Darling Downs; *A. pilosum*, p. 134, Lachlan River; *A. scutellare*, *ibid.*, Darling Downs, Brisbane; *A. reductum*, p. 135, Brisbane; *A. geniale*, *ibid.*, Clarence River; *A. neophyta*, p. 136, Adelaide, Victoria; *A. ancilla*, *ibid.*, Darling Downs; *A. repandum*, p. 137, Brisbane; *A. scytalicum*, *ibid.*, Swan River; *A. orphana*, p. 138, Victoria; *A. steropoides*, *ibid.*, Victoria; *A. ruptum*, p. 139, "Yankee Jim's Creek;" *A. commodum*, *ibid.*, Tasmania.

Omolipus levis, Pasc. *l. c.* p. 142, Cape York; *O. gnesioides*, Pasc. *l. c.* p. 143, Port Denison.

Helops viridicollis, Schauf. Beitr. Kennt. Col. Balear. p. 25, Minorca and Palma; *H. tauricus*, Muls. & Godart, Ann. Soc. Linn. de Lyon, n. s. xvi. p. 277, Crimea; *H. minutus*, Muls. & G. *l. c.* p. 279, Algiers.

Hedyphanes hirtus, Muls. & G. *l. c.* p. 280, Biskra, Algiers.

Amarygmides.

Amarygmus. Pascoe, *l. c.*, describes the following species:—*A. caelestis*, p. 345, Brisbane; *A. vinosus*, *ibid.*, Sydney; *A. exilis*, p. 346, Lachlan River; *A. indigaceus*, *ibid.*, Sydney; *A. cupido*, *ibid.*, Queensland; *A. pusillus*, p. 347, Kiama; *A. minutus*, *ibid.*, Sydney; *A. obtusus*, p. 348, Queensland; *A. polychromus*, *ibid.*, South Australia; *A. howittii*, *ibid.*, Victoria; *A. semiticus*, p. 349, Port Denison; *A. semissis*, *ibid.*, Kiama; *A. ellipsoides*,

p. 350, Queensland; *A. saturalis*, *ibid.*, Swan River; *A. torridus*, p. 351, Cape York.

Strongyliides.

PASCOE (*l. c.* p. 295) refers to the unsatisfactory state of this subfamily, and especially to the inordinate number of species contained in the typical genus *Strongylium*.

Tyndarismus, *g. n.*, Pascoe, *ibid.* Distinguished by the great length of the ant. tarsi, which rather exceed the rest, and by its transverse prothorax, of which the lateral margins are produced. *Sp. T. longitarsis*, *sp. n.*, Pasc. *ibid.*, pl. xii. fig. 1, Australia.

Hyperchalea, *g. n.*, Fairmaire, *l. c.* p. 238. Extremely close to *Nesogena*, and forming a still better transition of the *Cisteliidæ* than that genus, according to the author. The characters given seem quite insufficient to separate it from *Nesogena*, supposing *N. acutipennis* (Fairm.) to be rightly included in that genus. *Sp. H. ænescens*, *sp. n.*, Fairm. *l. c.* p. 238, Ste. Marie de Madagascar.

Nesogena acutipennis, *sp. n.*, Fairmaire, *l. c.* p. 237, Madagascar.

St;

CISTELIDÆ.

FAIRMAIRE (*Ann. Soc. Ent. Fr. 4^e sér. ix. p. 239*) notes an example of *Cistela melanura* (Klug), from Kalalou, Madag., which differs from the type in smaller size as well as in colour and punctuation. He thinks that *Plesia* (Klug) cannot be separated generically from *Cistela*.

The type of *Cistela amplicollis* is now in Bonvouloir's collection. Grenier, *Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. vi.*

Cistela crenato-striata, *sp. n.*, Fairmaire, *l. c.* p. 240, Ste. Marie de Madagascar.

KIRSTH (*Berl. ent. Zeitschr. xiii. pp. 97-128*) describes many new (and a few little-known) species of *Omophlus*, and tabulates the members of that genus. He places at its beginning, as nearest to *Cteniopus*, the species of *Heliotaurus* (Muls.), which he rejects as a genus, and gives the following synonymy:—*O. galbanatus* (Kies.)=*curvipes* (Brullé), *var.*, p. 105; *lividipes* (Muls.)=*amerinae* (Curtis), *var. minor*, p. 107; *atripes* (Küst.)=*flavipennis* (Küst.), p. 118; *elongatus* (Küst.) and *alpinus* (Mill.)=*lepturoides* (Fab.), p. 120; *dilatatus* (Fald.), *rugicollis* (Küst.), and *brevicollis* (Muls.)=*rugosicollis* (Brullé), p. 122. He describes a variety of *O. dispar* (Costa), which he names *dalmatinus* (p. 116), and another of *O. lepturoides* (Fab.) which he names *pilosellus* (p. 120).

Omophlus. Kirsch, *l. c.*, describes the following new species:—*O. mulsanti*, p. 103, Algeria; *O. chalybeus*, *ibid.*, Egypt; *O. küsteri*, p. 105, Turkey; *O. gracilipes*, p. 108, Syria; *O. brulléi*, p. 109, Greece (*P. quadricollis*, Brullé); *O. falsarius*, *ibid.*, Syria; *O. marginatus*, p. 110, Caucasus; *O. propagatus*, p. 111, Cyprus; *O. hirtellus*, *ibid.*, Corfu; *O. varicolor*, p. 112, Syria; *O. volgensis*, p. 115, Sarepta; *O. tarsalis*, *ibid.*, Caucasus; *O. turcicus*, p. 117, Turkey, Greece; *O. infirmus*, p. 119, Greece, Crete; *O. proteus*, p. 123, Greece, Turkey, and merid. Russia; *O. caucasicus*, *ibid.*, Caucasus; *O. deserticola*, p. 125, Desert at Kirgis; *O. lucidus*, *ibid.*, Palestine; *O. tenellus*, p. 126, Egypt; *O. ocellaris*, p. 128, Palestine.

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PYTHIDÆ.

Salpingus exsanguis, sp. n., Abeille de Perrin, Pet. nouv. Entom. no. 11, 1 Dec. 1869, Provence.

MELANDRYADÆ.

ABEILLE DE PERRIN (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 410) notes the occurrence in France of *Orchesia undulata* (Ktz.).

MARSH (Ent. Mo. Mag. vi. p. 162) records *Anisoxya fuscata* (Ill.) from the neighbourhood of London.

Anisoxya mustela, sp. n., Abeille de Perrin, Pet. nouv. Entom. no. 11, 1 Dec. 1869, Paris.

LAGRIIDÆ.

Lagria pallida (Cast.) possibly = *L. adusta* (Klug), according to Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 243.

Lagria. Fairmaire (l. c.) describes the following new species:—*L. coquerellii*, p. 242, Mayotte, Antongil; *L. insignicornis*, p. 243, Ste. Marie de Madagascar (? = *L. adusta* ♂); *L. nigriceps*, p. 244, Ste. Marie de Madagascar; *L. fuliginosa*, ibid., Ste. Marie de Madagascar; *L. dermatodes*, p. 245, Zanzibar; *L. corticina*, ibid., Marotte (sic), Antongil; *L. cribrata*, p. 246, Madagascar.

ANTHICIDÆ.

KING (Trans. Ent. Soc. N. S. Wales, ii. pt. 1) notices the occurrence of *Anthicus floralis* (Payk.) in South Australia, a more extended range even than that given by La Ferté for the species. In describing his *A. concolor* and *abnormis*, King mentions characters apparently sufficient for generic separation.

Notoxis bicoronatus, sp. n., Bedel, Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxiv. (pub. 22 Sept. 1869), Fontainebleau, Marseilles, Algeria.

Mecynotarsus. King describes the following new species, l. c.:—*M. kreusleri*, *ziczac*, and *concolor*, p. 4, Gawler.

Macrarthrus australis, sp. n., King, l. c. p. 2, Gawler, S. Australia.

Formicomus. King describes the following new species, l. c.:—*F. clarkii*, p. 5, Gawler; *agilis*, Paramatta; *denisonii*, Pt. Denison, p. 6; *speciosus* and *quadrimaculatus*, p. 7, Gawler; *australis*, p. 8, N. S. Wales, Gawler, K. George's Sd.; *obliquifasciatus*, ibid., Paramatta; *mastersii*, p. 9, S. Australia.

Anthicus. King describes the following new species, l. c.:—*A. nitidissimus*, p. 11, *pulcher*, p. 12, Gawler; *comptus*, ibid., Adelaide and Gawler; *unifasciatus*, Gawler, *bellus*, Paramatta, p. 13; *myrteus*, Paramatta and Gawler, *glaber*, Gawler, *intricatus*, K. George's Sd., p. 14; *denisonii*, Pt. Denison, *dubius*, Paramatta, p. 15; *scydmaenoides*, Austr., *luridus* and *apicalis*, Pt. Denison, p. 16; *immaculatus*, p. 17, S. Austr.; *hesperi*, Paramatta and Gawler, *montilis* and *kreusleri*, Gawler, p. 18; *charon*, p. 12, K. George's Sd.; *brevicollis*, Randwick, *glabricollis*, Gawler, p. 20; *crassus* and *nigricollis*, p. 21, Gawler; *wollastonii* and *gawleri*, Gawler, *rarus*, Paramatta, p. 22; *krefftii*, Paramatta, *macleayi*, Illawarra, p. 23; *concolor* and *abnormis*, p. 24, Paramatta.

PYRRHOCHRODÆ.

FERRARI (Verh. Zool.-Bot. Gesellsch. in Wien, Band xix. p. 198) gives a table of the species of the genera *Dendroides* (Lat.) and *Pogonocerus* (Fisch.).
Dendroides (*Hemidendroides*) *ledererii*, sp. n., Ferrari, l. c. p. 195, Smyrna.

MORDELLIDÆ.

Mordellistena brevicauda (Boh.) is recorded as British by Rye (Ent. Mo. Mag. vi. p. 86), who refers to its specific characters.

CROTCH (Entom. 69, ii.) notes the habits of *Mordellistena pumila*, the larva of which lives in the stems of *Silene* in corn-fields.

v. HEYDEN (Berl. ent. Zeit. xiii. p. 58) reproduces Frivaldsky's description of *Mordella scutigeri* (Abh. d. ungar. Acad. 1865, p. 202, t. xi. fig. 6).

RHIPIPHORIDÆ.

MURRAY (Ann. & Mag. of Nat. Hist. 4th ser. iv. pp. 346-355) records his examination of wasp-combs containing *Rhipiphorus paradoxus*, the result being that he thinks Stone (Ent. Monthly Mag. i. p. 118) mistaken in his very decided statement of having actually seen the *Rhipiphorus*-larva in the act of devouring the wasp-larva. He thinks the skin and mandibles, which Stone states not to be devoured, were the cast skin of a larva, and considers this circumstance of his finding in three instances two pupæ (of *Rhipiphorus* and wasp) in the same cell conclusive against the idea of one feeding on the other. Murray adheres to the old supposition that the *Rhipiphori* are bred by the wasps under the mistaken belief that they are their own progeny.

SMITH (l. c. pp. 393-397) shows that Stone's observations were not founded on one instance, as inferred by Murray's remarks, and accounts for the two pupæ being in one cell by showing that parasites frequently fail to destroy the vitality of their prey. He is decidedly of opinion that the *Rhipiphorus* lives entirely on wasp-larvæ. In Proc. Ent. Soc. Lond. 1869, p. xxiv, Smith makes some further observations to the same effect.

MELOIDÆ.

FURMOUZE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxx) has made an analysis with a view to determining the vesicant properties of certain insects belonging to the genera *Mylabris* and *Meloë*, with the result that *Mylabris sidæa*, known as the "Chinese Cantharis," contains as much cantharidine as the *Cantharis* of commerce, and can therefore be substituted for the latter in the Pharmacopœia. The species of *Meloë* appear, however, to be by far the richest in vesicant matter of all insects upon which he has experimented, often containing, as stated, crystals of cantharidine visible to the naked eye, and, at all events, more than doubling *C. vesicatoria* in quantity of active principle.

SMITH (Proc. Ent. Soc. Lond. 1869, p. xiv) records the capture of *Melecta armata* (a bee parasitic upon *Anthophora*) covered by about 300 or 400 larvæ of *Meloë*, on 6th of June, 1869. He also (l. c. p. xx) notes the capture of *Meloë rugosa* (Marsh.), and the excessive pugnacity of that insect, even after the deposition of ova by the females.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 97 et seq.) figures and describes the habits of *Lytta vittata*, *cinerea*, and *marginata* (Fab.), and

murina (Lec.), which, with *L. atrata* (Fab.), infest potatoe-plants in N. America.

Sitaris nitidicollis, sp. n., Abeille de Perrin, Pet. nouv. Entom. no. 11, 1 Dec. 1869, Provence.

CEDEMERIDÆ.

Asclera nigra, sp. n., Leconte, Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 379, Vancouver's Island.

CURCULIONIDÆ.

LECONTE (Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 382) is inclined to attribute more importance than is attached by Lacordaire to a peculiar character exhibited by the greater part of the latter author's *Adelognathes* and some of the short-beaked *Phanerognathes*, viz. the possession by the freshly developed imago of deciduous acute pyramidal appendages to the mandibles; and intends to include all such forms under the name *Brachyderidæ*.

PASCOE (Proc. Ent. Soc. Lond. 1869, p. x) refers to species of the European genera *Apion*, *Attelabus*, and *Elleschus* from Australia.

Brachyderides.

ALLARD (Berl. ent. Zeit. xiii. pp. 321 & 322) corrects some errors in his monograph of *Sitones* published in Ann. Soc. Ent. Fr. According to his present opinion, *S. callosus* (Sch.) and *S. tenuis* (Resenh.) are good and distinct species, as are *S. tibialis*, *ambiguus*, and *brevicollis* (Sch.), and *S. lineatus* and *geniculatus* (Sch.). He gives diagnostic characters for this species, which he had formerly confounded, and remarks that De Marseul is wrong in treating *S. bituberculatus* (Mots.) as a synonym of *gemellatus* (Sch.).

DESBROCHERS DES LOGES (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 398) gives a table of certain species of *Polydrosus* allied to *cervinus* (Linn.).

CHEVOLAT (Coleopt. Hefte, v. p. 73) remarks that *Phyllobius ligurinus* (Gyll., Schön.) belongs to *Eustolus* (Thoms.), a genus which in his opinion should be maintained. He considers that *Polydrosus armipes* (Gyll.) is most likely *dentipes* (Brullé), and gives characters for distinguishing his own *chrysocephalus* from *armipes*, with which it is erroneously united in De Mars. Cat.

Piezocnemus, g. n., Chevrolat, l. c. p. 72. Belongs to the group *Naupactides*, and is chiefly conspicuous for its robust short legs, of which the tibiæ are wide and flat, and very narrowed at the base. Sp. *P. paradoxus* (Schön., *Polydrosus*); *P. pedemontanus*, sp. n., Chev. ibid., North Italy.

New species :—

Cyclomaurus piceus, Allard, Berl. ent. Zeit. xiii. p. 324, and *C. punctatus*, Allard, l. c. p. 325, Constantine.

Strophosomus flavipes, Chevrolat, l. c. p. 71, Asturias.

Brachyderes ophthalmicus, Fairmaire, Stettin. ent. Zeit. 1869, p. 232, Andalusia.

Sitones ophthalmicus (sic), Desbrochers des Loges, Pet. nouv. Ent. no. 8, 15 Oct. 1869, Corsica; *S. parallelipennis*, Desb. des Loges, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 398, Southern Russia; *S. fairmairei*, Allard, Berl. ent. Zeitschr. xiii. p. 322, Oran; *S. villosus*, Allard, l. c. p. 323, Tarsus.

Metallites pruinosisus, Chevr. l. c. p. 71, Algiers.

Polydrosus. Chevrolat, *l. c.*, describes the following species :—*P. (Eustolus) florentinus*, p. 73, Fiesole ; *P. nodulosus*, *ibid.*, South of France ; *P. melanostictus*, p. 74, East of France.

In an unsigned article in Deyrolle's *Petites nouvelles Entomologiques*, no. 8, 15 Oct. 1869, the following species are described, presumably on the part of Desbrochers des Loges, who subsequently (*l. c.* no. 12) adopts the notice in which they appeared :—*P. abeillei* and *P. griseomaculatus*, Lower Alps, and *P. alveolus*, Sierra Nevada and Morena. Des Loges again describes the first two of these in *Ann. Soc. Ent. Fr.* 4^e sér. ix. p. 390 & 394, with the following species :—*P. peragallonis*, p. 392, no locality given (= *nodulosus*, Chevrolat), and *P. arvernicus*, p. 393, Auvergne, Allier (= *melanostictus*, Chevr.). The synonyms are given by Des Loges himself.

Tanymecus alboscuteUatus, Chevr. *l. c.* p. 74, Oran.

Otiorhynchides.

LUCAS (*Ann. Soc. Ent. Fr.* 4^e sér. ix. p. 50) refers to the larva and pupa of *Otiorhynchus sulcatus* (Fab.), which he intends to figure, as he considers it not recognizable from Bouché's plate.

SHARP (*Ent. Mo. Mag.* vi. p. 107) refers to British specimens of *Otiorhynchus fuscipes* (Walton), and thinks it probable they are the same as Olivier's and Stierlin's. Rye comments upon this (p. 108). Smith (*l. c.* p. 135) considers Walton's *fuscipes* distinct from Olivier's, and names it *waltoni*, identifying it, however, with *fagi* (Chevr.), a recognized form of *fuscipes* (Oliv.).

v. HEYDEN (*Berl. ent. Zeit.* xiii. p. 58) reproduces Frivaldszky's description of *Omius hanakii* (Abh. d. ungar. Acad. 1865, p. 205, t. xi. fig. 7),—a true *Omius*, according to Seidlitz.

GAUTIER DES COTTES (*Mittheil. schweiz. entom. Gesellsch.* iii. p. 151) complains that Seidlitz, though in possession of a type of his *Omius trichopterus*, has ignored that name and redescribed the species as *Barypeithes violatus*, under the pretext that the insect is not recognizable from des Cottés's prior description.

PASCOE (*Ent. Monthly Mag.* vi. pp. 99-105) describes new genera and species from Australia, allied to *Peritelus* and *Mylocerus*. He tabulates these genera and gives figures of their chief diagnostic characters (p. 100), and also tabulates (p. 103) nine new species of *Mylocerus*. According to him *Peritelus schönherri* (Stierl.) should be separated from *Peritelus*, on account of its free claws.

DE MARSEUL (L'Abeille, vi. p. 154, note) notes the existence of two species named *Phyllobius irroratus*—one (Boh.) published in 1843, the other (Seidl.) in 1867.

New genera :—

Dyslobus, g. n., Leconte (*Ann. & Mag. of Nat. Hist.* 4th ser. iv. p. 380). Allied to *Otiorhynchus*, but with eyes narrowed and angulated beneath, less elongate scape to the antennæ, and ciliated postocular thoracic lobes. Sp. *D. segnis* (Lec., *Otiorhynchus olim*) ; *D. granicollis*, sp. n., Lec. *ibid.*, Vancouver's Island and Puget Sound ; *D. decoratus*, sp. n., Lec. *l. c.* p. 381, Vancouver's Island.

Phymatinus, g. n., Lec. l. c. p. 381. Related to *Dyslobus*, but with a more slender rostrum, which is much more dilated at apex, and has longer and deeper antennal grooves. Leconte hesitates in characterizing this genus, which he thinks probably belongs to Lacordaire's *Phytoscapli*. Sp. *P. gemmatus* (Lec., *Tyloderes*?).

Trachyphlaeosoma, g. n., Wollaston, Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 414. Allied to *Trachyphlaeus*, but with a conical abbreviated rostrum, which is truncate at the tip, with scrobes more bent downwards, smaller eyes, ant. inserted nearer apex of rostr., &c. Sp. *T. setosum*, sp. n., Woll. ibid., St. Helena.

Phlyda, g. n., Pascoe, Ent. Mo. Mag. vi. p. 100. Distinguished by its six-jointed funicle. Sp. *P. periteloides*, sp. n., Pasc. ibid., figs. 1 & 1^a, Adelaide.

Titinia, g. n., Pascoe, l. c. p. 101. Scape of ant. very long, funicle seven-jointed, rostrum short, scrobes dorso-apical. Sp. *T. ignara*, sp. n., Pasc. ibid., figs. 4 & 4^a, Melbourne.

Idaspora, g. n., Pascoe, ibid. Rostrum longer than head, scrobes lateral. Sp. *I. terreæ*, sp. n., Pasc. ibid., figs. 3 & 3^a, Gawler.

Epherina, g. n., Pascoe, l. c. p. 102. Rostrum long and broad, increasing at the emarginate apex, with three raised lines above; scrobes commencing at apex and disappearing near eyes; antennæ very long, scape clavate. Sp. *E. longicornis*, sp. n., Pasc. ibid., figs. 2 & 2^a, Champion Bay.

New species :—

Otiorhynchus asturiensis, Chev. Coleopt. Hefte, v. p. 74, Asturias; *O. (Eurychirus) coyi*, Chev. l. c. p. 75, Syria.

Sciobius subnodosus, Wollaston, Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 416, St. Helena.

Trachyphlaeus coloratus, Allard, Berl. ent. Zeit. xiii. p. 325, Constantine.

Mylocerus. Pascoe (Ent. Monthly Mag. vi.) describes the following species:—*M. herbaceus*, p. 103, Champion Bay; *M. aurifex*, ibid., West Austr.; *M. glaucinus*, p. 104, Champion Bay; *M. pudicus*, ibid., Nicol Bay; *M. cinerascens*, ibid., West Austr.; *M. decretus*, ibid., Champion Bay; *M. aphthosus*, p. 105, Cape York; *M. rusticus*, ibid., Champion Bay; *M. nasutus*, ibid., West Austr.

Leptopsides.

TYLDEN (Ent. Mo. Mag. vi. p. 33) records the habits of *Tropiphorus carinatus* (Müll.).

Brachycerides.

BONNAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xli) records *Brachycerus pradierii* (Fairm.) from the island of Ré (France).

Byrsopsides.

Rhytirhinus alpicola, sp. n., Fairmaire, Stettin. ent. Zeit. 1869, p. 232, French Alps.

Rhiparasomides.

BONNAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xli) records *Orthochates insignis* (Aub.) from the island of Ré (France).

Orthochaetes discoidalis, sp. n., Fairmaire, Stettin. ent. Zeit. 1869, p. 232, French Alps.

Dichotrachelus maculosus, sp. n., Fairmaire, l. c., p. 233, French Alps.

Molytides.

Molytes germanus and *carinærostris*, associated by Stein and De Marseul, are perfectly distinct, the latter being closely allied to *glabratus* (Fab.), according to Desb. des Loges (Pet. nouv. Ent. no. 10).

Tanyrhynchides.

Nesiotes asperatus, Wollaston, Ann. & Mag. of Nat. Hist. 4th ser. iv. p. 413, St. Helena.

Hyperides.

Phytonomus punctatus (Fab.) is mentioned in Bull. Soc. Ent. Ital. i. pp. 80 & 81, as injurious to trefoil; and various means for destroying this insect are there enumerated. The ravages of this species are also referred to in the report of Balsamo-Cruvelli and others (R. Inst. Lomb. ser. ii. vol. i. fasc. 12).

RYE (Ent. Mo. Mag. vi. p. 160) reviews Capiomont's characters for specifically distinguishing between *Phytonomus pollux* and *P. julinii* (Sahlb.), and inclines to the belief that the latter is only a variety of the former.

Ithycerides.

WALSH and RILEY (Amer. Entom. i. p. 221) record the habits and figure the larva and imago of *Ithycerus noveboracensis* (Forst.), which attacks the tender growth of apple-trees.

Cleonides.

DOHRN (Stettin. ent. Zeit. 1869, p. 308) records *Eumecops kittaryi* (Hoch.) from Sarepta. He dissents from Lacordaire's opinion that *Eumecops* should be placed between *Leucochromus* and *Stephanocleonus*; and from Hochhuth, who considers it belongs to the *Byrsopsides*.

Cleonus scutellatus (Boh.)=*sulcirostris* (Linn.); *C. (Rhytideres) siculus* (Fabr.)=*plicatus* (Ol.), var.: Desb. des Loges, Pet. nouv. Ent. no. 10. *C. pelleti* (Fairm.)=*Stephanocleonus tabidus* (Ol.), a species which Gyll. & Schön. are stated not to have known: Chevrolat, Coleopt. Hefte, v. p. 77.

The economy of *Lixus myagri* (Ol.) is described by Letzner; 45 Jahrb. Schles. Ges. vat. Cult. pp. 141 and 142.

Lixus rufitarsis (Boh.)=*filiformis* (Fab.), var.; *L. ascanoides* (Villa)=*juncii* (Boh.); *L. rufulus* (Boh.)=*angustus* (Hbst.): Desb. des Loges, Pet. nouv. Ent. no. 10.

BETHUNE (Canad. Ent. i. p. 89) records *Lixus concavus* (Say) as new to Canada.

New species :—

Cleonus (Cyphocleonus) sardous, Chevr. Coleopt. Hefte, v. p. 75, Sardinia; *C. (Conorhynchus) turbinatus*, Chevr. ibid., Oran (Chev. in Pet. nouv. Ent. no. 5, afterwards states that this species must constitute a new genus, which he names *Tennorhinus*).

Stephanocleonus gaditanus, Chevr. l. c. p. 76, South of Spain (= *Plagiographus amori*, Mars. teste Chevr. l. c. p. 125, and Pet. nouv. Ent. no. 5); S. ? (*Plagiographus saintpierrei*, Chevr. ibid., Oran.

Bothynoderes luscus, Chev. l. c. p. 77, Carthage.

Hylobiides.

Lepyryus binotatus is recorded as British by Black (Ent. Mo. Mag. vi. p. 86). Rye figures it in frontisp. to Entom. Annual for 1870, fig. 7.

SMITH (Proc. Ent. Soc. Lond. 1869, p. xvi) records *Pissodes notatus* from the south of England (Bournemouth).

WALSH and RILEY (Amer. Entom. ii. p. 26) refer to the habits and figure the principal stages of *Pissodes strobi* (Peck).

Erirhinides.

BETHE (Stettin. ent. Zeit. 1869, p. 426) notes his astonishment (very naturally) at finding two specimens of *Erirhinus infirmus* (Hbst.) in the interior of *Pachyscelis granulosa* (Latr.), one of the *Pimelidæ*. He rightly justifies his astonishment by remarking that the *Erirhinidæ* live usually in the stems and roots of water-plants.

Bagous incernatus (Gyll.) is recorded as British by Rye (Ent. Mo. Mag. p. 5), who figures it in frontisp. to Entom. Annual, 1870, fig. 6.

Acrisius, g. n., Desbrochers des Loges, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 395. Eyes small, subconcave, situate very little before the base of the rostrum (instead of on the sides, as in *Plinthus*) and separated by less than their greatest diameter. Comes next to *Aubeonymus* (Duv.), its representative having much the form of *Aub. carinicolis* (Lucas). Sp. *A. koziorowiczii*, Desb. des Loges, l. c. p. 396, Corsica (Ajaccio).

Apionides.

BETHE (Stettin. ent. Zeit. 1869, p. 373) redescribes *Apion steveni* (Gyll., Schön.), which he states to be a perfectly good species, and not a var. of *flavifemoratum* (Hbst.), of which it is considered a synonym by De Marseul, Wencker and Stein. Des Loges (Pet. nouv. Ent. no. 10) expresses himself to the same effect.

RYE (Entom. Monthly Mag. v. p. 276) draws attention to *Apion scrobicollis* (Gyll.), originally described from Britain, but apparently unknown to British or Continental entomologists.

DESBROCHERS DES LOGES (Pet. nouv. Ent. no. 10) notices omissions, misplacements, and errors of synonymy in Stein's Catalogue, as regards *Apion*. According to him, *A. cyanescens* (Gyll.) = *pisi* (Fab.); *A. plumbeomicans* (Wenck.) = *angustatum* (Kirby); *A. decorum* and *A. marqueti* (Wenck.) = *juniperi* (Boh.).

BECKER (Hort. Soc. Ent. Rossicæ, vi p. 108) records *Apion artemisiæ* (Moraw.) from Sarepta on *Statice caspica*, which appears to be its true food-plant.

Apion heydeni, sp. n., Pet. nouv. Ent. no. 8, 15 Oct. 1869, anon., but presumably on the part of Desbrochers des Loges, who subsequently (l. c. no. 12) changes the specific name to *cantabricus* (sic); *A. distinctirostre*, sp. n., Desb. des Loges, l. c. no. 8 (no locality given).

Attellabides.

FREY-GESSNER (Mittheil. der schweiz. entom. Gesellsch. iii. p. 6) notes the capture of *Apoderus intermedius* (Hellw.) on *Spiræa ulmaria*. It appears not to have been before observed in the Swiss Alps.

Rhinomacerides.

ABEILLE DE PERRIN (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 410) notes the capture by himself in France of *Rhynchites abeillei* (Desb. des Loges) on oak, and of *R. tristis* (Fab.), which rolls the leaves of the sycamore.

H. BRISOUT DE BARNEVILLE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxvi) notes capture at St. Germain of *Rhynchites rectirostris* (Gyll.) on white-thorn.

RYE (Ent. Mo. Mag. vi. p. 58) records capture of *Rynchites germanicus* with each antenna biclavate.

Balaninides.

RYE (Ent. Mo. Mag. v. p. 218) refers to *Balaninus cerasorum* and *B. rubidus*.

MÜLLER (Ent. Mo. Mag. vi. p. 137) proves *B. brassicæ* (Fab.) to be an inquiline, and not a gall-maker.

Balaninus crucifer (Fuchs) = *crux* (Fab.): De Marseul, L'Abeille, vi. p. 155.

Anthonomides.

H. BRISOUT DE BARNEVILLE (An. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxvi) records capture of *Anthonomus pruni* (Desbr.) at St. Germain, on black-thorn.

RYE (Ent. Mo. Mag. vi. pp. 87 & 88) refers to the species of *Anthonomus* reputed to be British in des Loges's Monograph, and draws attention to an undescribed small species allied to *rubi*, found in Scotland on *Comarum palustre*. Crotch (Entom. 69, pp. 307-310, under the heading of "Contributions to a Synopsis of British Coleoptera") also abstracts des Loges's Monograph, and dubiously suggests the title "var. ? *comari*" for the insect above referred to.

WALSH and RILEY (Amer. Entom. i. p. 93) note the exemption of the plum known as the Miner or Hinkley plum from the attacks of *Anthonomus prunicida* (Walsh).

The larva of *Anthonomus erythropus* (Say) is briefly described by Shimer (Trans. Amer. Ent. Soc. ii. p. 394), who has found it in galls on hickory, formed by *Dactylosphæra* (Homop.).

Bradybatus fallax (Gerst.) and *Anthonomus aceris* (Chev.) = *A. elongatulus* (Boh.): De Marseul (L'Abeille, vi. p. 155),—who refers to Desbrochers's use of the long preoccupied name *Pseudomorphus* for the genus of this insect, for which he himself had, in anticipation of Desbrochers, proposed the name *Nothops*.

MONCREAFF (Entom. 62, p. 218) notes *Orchestes alni* in October, in a decaying branch of whitethorn, and seems to think they had "pupized," if not fed up, in the wood. The beetles were, of course, preparing for hibernation.

Anthonomus stierlini, sp. n., Derbrochers des Loges, Pet. nouv. Ent. no. 8, 15 Oct. 1869, Athens; *A. lethierryi*, sp. n., Desb. des Loges, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 387 (no locality given).

Tychiides.

MONCREAFF (Entomologist, no. 62, p. 218), under the MS. name of *Sibinia statice*, refers to an insect found by himself in the flower-heads of sea-thrift at the Island of Portsea, and which he likens (when rubbed) to *Amalis Scortitium* (sic).

Cionides.

Cionus olens (Fab.) is recorded as British by Rye (Ent. Mo. Mag. v. p. 5).

Cionus distinctus, sp. n., Desb. des Loges, Pet. nouv. Ent. no. 8, 15 Oct. 1869, Corsica.

ABEILLE DE PERRIN (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. xlviii) remarks upon the faculty, possessed by the larvæ of *Nanophyes tamarisci*, of making the seeds of tamarisk jump; a peculiarity already recorded, according to Laboulbène, by Lucas and Gervais (cf. Ann. Soc. Ent. Fr. 1849, Bull. p. lxiv, and 1856, Bull. p. xciv; also Brisout, L'Abeille, vi. p. 310).

Orobitis niger (Waltl), according to De Marseul, L'Abeille, vi. p. 25, note, is a *Nanophyes*, and probably = *siculus* (Boh.). H. Brisout omits reference to this point in his monograph, though referring Waltl's insect to the same page as *siculus* in his Index.

H. BRISOUT DE BARNEVILLE (L'Abeille, vi. p. 305-352) monographs the European and Algerian species of *Nanophyes*, of which he enumerates 33, including four new species. According to him, *N. aureolus* (Perris) = *transversus* (Aubé), var.; *siculus* (Boh.) and *annulatus* (Gyll.) exhibit sexual eccentricities in armature of the femora; *globiformis* (Kies.) = *rubricus* (Rosenh.); *brevicollis* (C. Bris.) = *sahlbergi* (Gyll.); *difficilis* and *helveticus* (Tournier), *nitidulus* (Gyll.), and *longulus* (Woll.) = *chevrieri* (Boh.); *angustipennis* (Bach) = *lythri* (Fab.), var.; *oliveri* (Desbr.) = *centromaculatus* (Costa); *sexpunctatus* (Kies.) and *setulosus* (Tourn.) = *quadringatus* (Costa), varr. He thinks *gracilis* (Redt.) may be the same as *geniculatus* (Aubé), and records the Algerian *duriei* from Spain.

New species are:—*Nanophyes pæcilopterus*, H. Brisout, l. c. p. 334, Algiers; *syriacus*, H. Bris. l. c. p. 337, Syria (brought forward with evident doubt); *inconspicuus*, H. Bris. l. c. p. 345, and *biskrensis*, H. Bris. l. c. p. 347, Algeria.

Gymnetrides.

Gymnetron sanguinipes (Chev.) = *variabilis* (Rosenh.); *G. variabilis* (Bris.) is renamed *algiricus*: De Marseul, L'Abeille, vi. p. 115.

In the 'Petites nouvelles Entomologiques,' no. 8, 15 Oct. 1869, is an unsigned notice, presumably on the part of Desbrochers des Loges, containing names, short descriptions and localities, &c. of the following species, stated to be new:—*Gymnetron hoferi*, S. Russia; *G. griseohirtus*, Corsica; *G. heydeni*, Granada, Alhambra; and a var. of *G. netus*, named *fulvus*, and queried as possibly a good species, Allier. Desbrochers des Loges (l. c. no. 12)

adopts this statement in a signed article, in which he changes the name of *G. hoferi* to *G. zuberi*, and corrects an error in the diagnosis of that species, which he again describes under the latter name in Ann. Soc. Ent. Fr. 4^e sér. ix. p. 399, where he states it to have been found at Sarepta.

Cholides.

Abebaeus, g. n., Kirsch, Berl. ent. Zeit. xiii. p. 190. Allied to *Homalotus* (Schön.), but with the prosternum deeply and widely channelled, the depression being not sharply defined at the edges; the 7th joint of funiculus more freed from the clava; the ant. legs decidedly longer, and the elytra proportionately broader than the thorax: in outline resembles many species of *Cratosomus*. Sp. *A. dorsalis*, sp. n., Kirsch, l. c. p. 191, Bogotá; *A. cristatus*, sp. n., Kirsch, ibid., note, Peru.

Cholus geniculatus, sp. n., Kirsch. Berl. ent. Zeit. xiii. p. 187, and *C. tener*, sp. n., Kirsch, l. c. p. 188, Bogotá.

Archarius ellipsifer, sp. n., Kirsch, Berl. ent. Zeit. xiii. p. 189, Bogotá.

Cryptorhynchides.

The larva of *Conotrachelus posticatus* (Schön.) is stated to live in hickory-galls, formed by *Dactylosphaera* (*Homop.*); *C. elegans* (Fitch) is probably identical with this species: Shimer, Trans. Amer. Ent. Soc. ii. p. 394.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 51 *et seq.*) figures the principal stages, and enters at length into the economy of *Conotrachelus nemphar* (Hbst.), known in N. America as the "Little Turk" and "Plum Curculio."

Gasterocercus depressirostris (Fab.) occurs in quantity in the Forest of Compiègne. Léveillé, Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xli.

CROTCH (Pet. nouv. Entom. no. 12) states that *Crypharis* (Fairm., 1868) is identical with *Torneuma* (Wollast., 1860); and thinks *T. orbatum* possibly only an insular modification of *T. cæcum*, Fairmaire's *C. planidorsis* being specifically quite distinct from both.

New genera and species:—

Dysmachus, g. n., Kirsch, Berl. ent. Zeit. xiii. p. 192. Superficially resembles several species of *Plinthus*. Distinguished from the *Cholides* by the apex of the tibiæ being provided with short hooks on the inner side, the corbels of the post. tibiæ being open; and by the very narrow portion of the prosternum between the coxæ. Sp. *D. plinthoides*, sp. n., Kirsch, l. c. p. 193, Bogotá.

Chleuastes, g. n., Kirsch, l. c. 194. A genus somewhat difficult to place, possibly allied to *Rhyssomatus*. Sp. *C. jubatus*, sp. n., Kirsch, l. c. p. 195, Bogotá.

Cryptacrux, g. n., Kirsch, l. c. p. 198. Distinguished from *Cryptorhynchus* by the mesosternum being arched over from behind towards the front, its ant. margin reaching the front coxæ, so that the apex of the rostrum is hidden under the arching. The metast. is long, with very narrow episterna. Sp.: *C. atropos* (Schön., *Cryptorh.*); *C. clotho*, sp. n., Kirsch, l. c. p. 189, Bogotá.

Eubulus, g. n., Kirsch, l. c. p. 200. Distinguished by its linear femora, which are not thickened towards the apex, and by the posterior femora being longer than the abdomen. Sp. *E. (Cryptorhynchus) orthomasticus* (Germ.), *aspericollis*, *cinctellus*, and *stipulator* (Schön.), *E. (Macromerus) triangularis* (Schön.); *E. munitus*, sp. n. Kirsch, l. c. p. 201, Bogotá.

Conotrachelus amplipennis, Kirsch, l. c. p. 193, Bogotá.

Bothrobatus variegatus, Kirsch, l. c. p. 196, Bogotá.

Gasterocercus hypsophilus, Kirsch, l. c. p. 197, Bogotá.

Cryptorhynchus. Kirsch, l. c., describes the following species:—*C. bicirculus*, p. 201, *orbatus*, p. 202, *cancroma*, p. 203, *terminatus*, p. 204, *imbriatus*, p. 205, Bogotá.

Cælosternus amplicolis, Kirsch, l. c. p. 205, Bogotá.

Crypharis robusta, Dieck, Berl. ent. Zeit. xiii. p. 355, and *C. tingitana* Dieck, p. 356, Tangiers.

Zygopides.

Copturus scapha, sp. n., Kirsch, l. c. p. 206, Bogotá.

Ceuthorhynchides.

RUPPERTSBERGER (Ver. zool.-bot. Gesells. in Wien, 1869, Sitzungsb. 6) notes the attacks of the larva of *Cæliodes fuliginosus* (Marsh.) on roots of *Papaver somniferum*.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 128) figures and describes the habits of the "Grape Curculio," *Cæliodes inæqualis* (Say), and also figures and describes the larva of another *Curculio* infesting the grape, and of which the imago appears to be undiscovered.

Ceuthorhynchus arcuatus (Hbst.) is recorded as British by Rye (Ent. Mo. Mag. vi. p. 5), who figures it in frontisp. to Entom. Annual, 1870, fig. 5.

TYLDEN (Ent. Mo. Mag. vi. p. 33) records *Cardamine pratensis* as the food-plant of *Ceuthorhynchus suturellus* (Gyll.), and gives British localities for *Poephagus nasturtii* (Germ.) and *Rhinoncus denticollis* (Gyll.).

HISLOP (ibid.) notes *Stachys arvensis*, one of the *Labiata*, as the food-plant of *Ceuthorhynchus viduatus* (Gyll.).

RYE (ibid., p. 58) mentions the capture by himself at Folkstone of four specimens of *Ceuth. marginatus* (Payk.) with only six joints to the funiculus. These individuals occurred with others of the type form.

V. HEYDEN (Berl. ent. Zeit. xiii. p. 59) reproduces Frivaldsky's description of *Ceuthorhynchus dimidiatus* (Abh. d. ungar. Acad. 1865, p. 217, t. xiii. fig. 8).

Peridinetides.

Peridinetus pictus, sp. n., Kirsch, Berl. ent. Zeit. xiii. p. 297, Bogotá.

Baridiides.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 93) figures the principal stages and describes the habits of *Baridius trinotatus* (Say), which infests the stalks of potatoes in the middle States of North America.

MURRAY (?; under the initials "A. M.") describes in the 'Gardeners' Chronicle,' 1869, p. 1279, under the name *Centrinus epidendri*, an apparently

new species, believed to attack soft-hearted orchids, such as *Epidendrum*, from S. America. It is considered, also, that the beetles were produced from other examples of the larvæ referred to by Westwood (?; under the initials "I. O. W."), in the same publication, p. 1230, when describing an unknown species of the *Chalcididæ* found in exotic orchids. Admitting the novelty of both insects, and the (otherwise) sufficiency of the descriptions, it seems strange that authors of so much experience should publish species anonymously.

New genera and species :—

Heterosternus, g. n., Kirsch, Berl. ent Zeit. xiii. p. 215. Comes between *Loboderes* (Sch.) and *Baridius*; distinguished from the former by its longer and thinner rostrum, and by the sharp prosternal channel; and from the latter by the prosternum having a dilated lobe behind, which is emarginate at the apex, and almost entirely covers the mesosternum. Sp. *H. carbo*, sp. n., Kirsch, l. c. p. 216, Bogotá.

Anopsilus, g. n., Kirsch, l. c. p. 218. Sp. *A. bonvouloirii*, sp. n., Kirsch, l. c. p. 219, Bogotá.

Diorymerus lævipennis, Kirsch, l. c. p. 208, Bogotá.

Eurhinus malachiticus, Kirsch, l. c. p. 208, Bogotá.

Baridius. Kirsch, l. c., describes the following species:—*B. smaragdinus* and *ater*, p. 209, *ævatus*, p. 210, *erubescens* and *fasciatus*, p. 211, *impressus*, p. 212, *rugicollis* and *evulsus*, p. 213, *nigerrimus*, p. 214, Bogotá.

Centrinus lacunifer, Kirsch, l. c. p. 216, and *distigma*, p. 217, Bogotá.

Madarus cornix, Kirsch, l. c. p. 219, *M. tarsalis*, p. 220, and *velatipes*, p. 221, Bogotá; *M. vitis*, Riley, l. c. p. 131, fig., Missouri (= *Baridius* Lec.).

Calandrides.

AUBÉ (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xvi) considers that the fact or *Sitophilus oryze* having perforated a seed of *Nelumbium* is decisive as to that plant being monocotyledonous, as the *Calandridæ* never attack dicotyledons. Reiche (l. c. p. xvii) does not share this opinion, as *S. oryze* appears to attack vegetable substances indiscriminately.

WALSH & RILEY (Amer. Entom. i. p. 179) record Dr. Hartman's statement that, in the Southern American States, *Sitoph. granarius* has been used successfully as a substitute for *Cantharis* in blisters, with the advantage that it does not cause strangury. They call attention to Curtis's quotation from Trans. Ent. Soc. Lond. vol. i. p. 242, of a somewhat similar observation made by a medical practitioner in Madeira, many years ago.

KIRSCH (Berl. ent. Zeit. p. 222, note) remarks upon the great diversity of structure in the sternum exhibited by the species of *Sphenophorus*.

Sphenophorus. Kirsch, l. c., describes the following species:—*S. laticapus*, p. 221, and *S. nawradii*, p. 223, Bogotá.

Cossonides.

WOLLASTON (Ann. & Mag. Nat. Hist. 4th ser. iv. p. 402) monographs the known species of *Microxylobius* (Chevr.), expressing some doubt as to the type, *M. westwoodii* (Chevr.), of which the description is very meagre and

possibly taken from a rubbed exponent. He also records (p. 411) a new species combining the external aspect of *Pentarthrum* with the exscutellated, subeyeless *Mesoxenus*.

New species :—

Pentarthrum subcæcum, Wollast. l. c. p. 410, St. Helena.

Amaurorhinus crassiusculus, Fairmaire, Stettin. ent. Zeit. 1869, p. 232, Italy.

Microxylobius vestitus, Wollaston, l. c. p. 404, *M. obliteratus*, Woll. p. 407; *M. debilis*, Woll. ibid., *M. monilicornis*, Woll. p. 410, St. Helena.

Raymondia apennina, Dieck, Berl. ent. Zeit. xiii. p. 354, Valombrosa.

Cossonus vittatus, Kirsch, Berl. ent. Zeit. xiii. p. 224, Bogotâ.

SCOLYTIDÆ.

CHAPUIS, in his "Synopsis des Scolytides" (intended as the preface of a monograph), divides that tribe as follows (leaving *Tomicus* and its allies to Eichhoff) :—

Subtribe 1. COPTONOTIDÆ, having the sides of the pronotum strongly emarginate, and consisting of a single new genus and species.

Subtribe 2. PHLÆOTRUPIDÆ, characterized by the 7-jointed funiculus and annulated club of the antennæ, the transversely reniform and coarsely granulated eyes, the externally spinulose tibiæ, and the ovate or oblong-ovate body and large size. Genera : *Phlæotrupes* (Er.), *Phlæoborus* (Er.), and one new genus.

Subtribe 3. HYLESINIDÆ, having the antennæ inserted laterally, with the funiculus 5- or 7-jointed, with a compound club; the eyes transversely reniform, minutely granulated; the tibiæ spinulose externally; and the body cylindrical or ovate, of small size. Genera : *Hylastes* (Er.), *Dolurgus* (Eichh.), *Bothrosternus* (Eichh.), *Pagiocerus* (Eichh.), *Hylesinus* (F.), *Hylurgus* (Latr.), *Blastophagus* (Eichh.), *Dendroctonus* (Er.), *Carphoborus* (Eichh.), and six new genera.

Subtribe 4. PHLÆOTRIBIDÆ, having the antennæ inserted in front, with 5-jointed funiculus and a large club, sometimes freely jointed, sometimes solid. Genera : *Phlæophthorus* (Woll.), *Phlæotribus* (Latr.), and two new genera.

Subtribe 5. POLYGRAPHIDÆ, with the antennæ laterally inserted, the funiculus 5-jointed, the club solid, the eyes bipartite, the tarsi cylindrical, slender, with the third joint neither bilobed nor dilated. Genus *Polygraphus* (Er.).

Subtribe 6. ONYCHIDÆ, with antennæ as in preceding, the eyes subcircular, the tibiæ entire on the outer side, the tarsi elongate, with the first joint equal in length to the two following together, the third not dilated, the fourth longer and armed with strong claws. Comprises one new genus.

Subtribe 7. CTENOPHORIDÆ, with 6-jointed funiculus, joints alternately larger, and a solid club. Contains one new genus.

Subtribe 8. CAMPTOCERIDÆ, with 7-jointed funiculus and a solid club, sometimes composite and with flexuous sutures; the eyes transversely reniform; the tibiæ very free from denticulations externally. Genera: *Diamerus* (Er.), *Camptocerus* (Latr.), *Cnemonyx* (Eichh.), and two new genera.

Subtribe 9. SCOLYTIDÆ VERÆ, with the abdomen very truncated, ascending from the base towards the apex, and the tibiæ entire externally. Genus *Scolytus* (Geoffr.).

CHAPMAN (Ent. Mo. Mag. v. p. 199) records the economy of *Hylurgus pilosus* (Ratz.), and (*l. c.* vi. pp. 6-8) of *Phloxophthorus rhododactylus* (Marsh.) and *Hylastes obscurus* (Marsh., = *trifolii*, Müll.). He (Trans. Woolhope Nat. Field Club, 1869 for 1868, pp. 26-31) describes the habits of *Hylesinus crenatus*, *fraxini* and *vittatus*, and figures their burrows, &c.; and (Ent. Mo. Mag. vi. pp. 126-131) records observations on the economy of *Scolytus destructor*, *S. multistriatus*, *S. pruni*, *S. rugulosus*, and *S. intricatus*, and (*l. c.* v. p. 198) records observations on the economy of *Cryphalus binodulus* (Ratz.).

The ravages of *Hylurgus piniperda* are described by Murray and others in Gardener's Chronicle, 1869, pp. 921, 967, 992, 1087.

Hylesinus juniperi (Nördl.) = *thuyæ* (Perr.). De Mars. l'Abeille, vi. p. 155.

H. oleiperda (Fab.; *suturalis*, Redt.) is recorded from Württemberg by Nördlinger (Württ. naturwiss. Jahresh. 1868, p. 186), who makes observations on its synonymy.

RYE (Ent. Mo. Mag. vi. p. 6) records *Tomicus autographus* (Ratz.) as British.

ERICHSON (Berl. ent. Zeit. xiii. pp. 297-301) revises the characters of the genera *Corthylus* (Er.) and its allies, with the following result:—*Morizus* (Ferrari) and probably *Cosmocorynus* (Ferr.) = *Corthylus* (Er.). Lacordaire's characters for his *Corthylus* are apparently identical with Erichson's, though his sole exponent, *fasciatus* (Say), does not belong to Erichson's genus, but to *Pterocyclon* (Eich.), whilst Erichson was in error when placing both *compressicornis* (Fab.) and *fasciatus* (Say) in his *Corthylus*; *Corthylus* and *Corthylomimus* (Ferr.), and *Monarthrum* (Kirsch) = *Pterocyclon* (Eich.). Erichson adds a list of the species of *Pterocyclon* and *Corthylus*, and gives on pl. 2 figures of the antenna, maxilla, and labium of the latter genus. Kirsch's *Monarthrum*, stated to have a single joint to the funiculus (as in *Corthylus*), in reality has two joints, and is therefore abandoned for *Pterocyclon*.

PUTTON (Pet. nouv. Ent. no. 11) notes that the true locality for *Crypturgus cedri* (Eich.) is Batna (Algeria), and not Corsica as stated in Berl. ent. Zeit.

New genera:—

CHAPUIS, *l. c.*, characterises the following:—

Coptonotus, p. 11. Funiculus 7-, club 3-jointed, with flexuous sutures; pronotum laterally emarginate; tarsi cylindrical, with the 1st joint elongate, equal to the 2nd and 3rd together. Sp. *C. cyclopus*, *ibid.*, New Granada.

Dactylipalpus, p. 12. Max. palpi 2-jointed, the 2nd joint very long. Sp.:

D. transversus, sp. n., ibid., Malacca, Celebes; *D. quadratocollis*, sp. n., ibid., Ternate.

Nemophilus, p. 27. Funiculus 7-jointed, with the joints scarcely increasing in width, and the club elongate, oval, annulate, with straight sutures; tibiæ very free from denticulation externally; the 3rd joint of the tarsi entire. Sp.: *N. strigillatus*, sp. n., ibid., North America, Texas; *N. gibbus*, sp. n., p. 28, Cumana.

Dendrosinus, p. 27. Funiculus 7-jointed, with the joints decidedly increasing in width, a large club, annulated at the base, truncated at the apex; the joints of the tarsi subequal, with the third bilobed. Sp. *D. globosus* (Eichh.).

Kissophagus, p. 34. Funiculus 6-jointed, with the joints subequal in width, the club oval, annulated; joints of the tarsi minute, subequal, the 3rd bilobed; mentum rotundate-ovate at the base. Sp. *K. hederæ* (Schm.).

Xylechinus, p. 36. Funiculus 5-jointed, with the joints scarcely increasing in width, and an oval annulated club; joints of the tarsi subequal, the 3rd joint cordate; mentum cordiform; the 1st joint of the labial palpi elongate, longer than the two others together. Sp. *X. pilosus* (Ratz.).

Phlæosinus, p. 37. Third joint of tarsi entire; mentum elongate, narrowed at the base. Sp. *P. aubei* and *thuyæ* (Perris), *detersus*, *haagi*, *graniger* and *squamulatus* (Eichh.), *liminaris* (Harr.), *coronatus*, sp. n., p. 39, Yucatán; *variegatus*, sp. n., p. 40, Chili.

Nemobius, p. 41. Club acute; 1st joint of tarsi minute, 2nd longer, 3rd short and entire; mentum subampliato-rotundate at the base; first two joints of the labial palpi subequal. Sp.: *N. pallidus*, sp. n., ibid., Guadeloupe; *N. lambottei*, sp. n., p. 42, Mexico.

Dryotomus, p. 46. Club of antennæ formed of three free joints, produced inwards; 3rd joint of tarsi cylindrical and entire. Sp. *D. puberulus*, sp. n., ibid., Cayenne.

Rhopaloplexurus, ibid. Club large, solid, inserted obliquely; tarsi as in preceding. Sp.: *R. tuberculatus*, sp. n., New Granada, p. 47; *R. rotundatus*, sp. n., ibid., Guadeloupe; *R. lecontei*, sp. n., ibid., N. America; *R. pumilus*, sp. n., ibid., Mexico.

Onychius, p. 48. Funiculus 5-jointed, club compressed, coriaceous at the base; basal joint of tarsi equal to the two following in length, the third not dilated, entire. Sp. *O. nitidus*, sp. n., p. 49, New Friburg.

Ctenophorus, p. 49. Funiculus 6-jointed, with alternate joints; club short, ovate, solid; tarsi slender, cylindrical, with 3rd joint entire. Sp. *C. levigatus*, sp. n., ibid., Colombia.

Ceratolepis, p. 52. Joints 2-7 simple in ♀, with a solid club; 1st joint of tarsi equal to the two following, the 3rd bilobed. Sp. *C. jucundus*, sp. n., ibid., New Friburg.

Loganius, ibid. Joints 2-7 of antennæ appendiculate in ♂; club with concentric sutures; joints 1 and 2 of tarsi equal, 3rd subdilated. Sp. *L. flavicornis*, sp. n., p. 53, Cumana.

New species :—

CHAPUIS, l. c., describes the following :—

Phlæoborus grossus, Colombia, *sericeus*, Cayenne, *elongatus*, Brazil, *cris-tatus*, Bogotá, p. 13; *punctatorugosus*, New Granada, *breviusculus*, Cayenne,

nitidicollis, Rio Janeiro, *mamillatus*, Brazil, p. 14; *ellipticus*, Brazil, *ovatus*, Cayenne, p. 15.

Hylastes vastans, Mexico, p. 17; *exilis*, N. America, p. 20; *planirostris*, Mexico, and *peregrinus*, New Zealand, p. 21; *bonvouloirii*, Algeria, and *alternans*, Mexico, p. 22; *contractus*, Brazil, p. 23.

Bothrosternus cancellatus, *costatus*, and *lacordairei*, Brazil, p. 25.

Hylesinus atomarius, Brazil, and *reticulatus*, Bogotá, p. 29; *porcatus*, New Holland, and *perrisi*, Corsica, p. 31.

Dendroctonus parallelocollis, p. 36, Mexico.

Carphoborus bicristatus, p. 41, America.

Phlaotribus transversus, p. 44, Columbia; *puncticollis*, Brazil, *obliquus*, Mexico, and *sulcifrons*, New Granada, p. 45; *collaris*, New Granada, and *contractus*, Brazil, p. 46.

Diamerus impar, p. 50, Guinea.

Camptocerus cinctus, South America; *squamiger* (sic), Cayenne, and *costatus*, Brazil, p. 51.

Scolytus thoracicus, Brazil, and *carinatus*, Carthage, p. 55; *javanus*, Java, and *marginatus*, Yucatan, p. 56; *proximus*, New Granada, and *dimidiatus*, Cuba, p. 57; *atratus*, Columbia, and *costellatus*, Brazil, p. 58; *nitidulus*, Southern France, p. 59; *dahuricus*, Siberia, p. 60.

Tomicus amulus, Wollaston, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 321, St. Petersburg.

rarity (*Dryæctes*) *marshami*, Rye, Ent. M. Mag. iv. p. 187 (redescribed in Entom. Annual for 1869, p. 50), England (= *D. alni*, Georg, and ? = *Ips fuscus*, Marsham, hitherto considered a synonym of *bicolor*, Hbst.).

Crypturgus mediterraneus (Eichhoff), Puton, Pet. nouv. Ent. no. 11, Dec. 1, 1869, St. Tropez (Var).

BRENTHIDÆ.

PASCOE (Proc. Ent. Soc. Lond. 1869, p. i) remarks on *Aprostoma*, *Mece-danum*, and *Gempylodes*, with reference to an insect from the Niger exhibited by Westwood, and distinct from the latter genus.

BRUCHIDÆ.

ALLARD (Pet. nouv. Ent. no. 6) makes the following corrections of errors in his "Étude sur le groupe des Bruchites:—*Urodon concolor* (All. nec Sch.) = *villosus* (Stév.); *Bruchus lividimanus* (Sch.) is wrongly united to *seminarius* (Gyll.); *consobrinus* (All.) = *fischeri* (Sch.); *obtectus* (Sch., All.) = *irreductus* (Sch.); *albescens* (All.) = *braccatus* (Sch.); *ruficornis* (All.) = *brachialis* (Sch.); *meridionalis* (All.) = *perezii* (Ktz.); *loti* (All. nec Sch.) = *oxytropis* (Sch.). The true *B. loti* (Sch.) is stated not to be in French collections.

Some of these identifications are repeated by Allard in Berlin. ent. Zeitschr. xiii. pp. 326–330, with the following additional remarks:—*Spermophagus variolosopunctatus* (Sch.) may be recognized by the bright ferruginous spines at apex of post. tibiæ; the true *Bruchus loti* does not exist in any collection that he has seen; it is to be distinguished from *oxytropis* by its punctiform scutellum being covered with very dense pubescence, which is continued on the suture, and by its general pubescence being more sparse. Allard also 1869. [VOL. VI.]

characterizes the following species:—*Bruchus lubricus*, *virgatus*, *astragali*, *carinatus* (= *pygmaeus*, Schön., var. ?), *stevensi*, *lugubris*, *fahraei*, and *nesapius* (Schön.), and *sibiricus* (Gebler) and *altaicus* (Faldern.), and indicates their position in his work above alluded to.

KRAATZ (Berl. ent. Zeit. xiii. pp. 331–334) appears to have originated some of Allard's synonymical references, and adds the following:—*Bruchus braccatus* (All. nec Schön.) = *galegæ* (Schön.); *B. subellipticus* (Woll.) = *irresectus* (Schön.), from which *B. mimosæ* (Schön.) is distinct; *B. ruficornis* (All.) = *pallidicornis* (Muls. & Rey, nec Schön.), which is the ♂ of *brachialis*; *B. stierlini* (All.) = *pusillus* (Germ.), var.; *B. poupillieri* (All.) probably = *incarnatus*, which Kraatz has taken in Spain. He also refers to *B. magnicornis* (Küst.) as omitted by Allard, and the differences between the types of *B. discipennis* (Schön.) possessed by himself and Allard, who does not agree with him in considering that insect a var. of *5-guttatus* (Ol.).

Bruchus scutellaris, hitherto reputed North American exclusively, occurs in Sicily in *Pisum viride*, according to Ragusa (Pet. nouv. Ent. no. 6).

Bruchus lentis (Boh.), *B. nigripes* (Gyll.), *B. nubilus* (Boh.), and *B. canus* (Germ.) are recorded as truly indigenous inhabitants of Britain by Janson, on behalf of Power. Proc. Ent. Soc. Lond. 1869, p. xx.

Bruchus rubiginosus, sp. n., Desbrochers des Loges, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 399, Portugal; *B. radula*, sp. n., Desb. des L. l. c. p. 400, South Russia.

LONGICORNIA.

The first part of the ninth volume of Lacordaire's 'Genera des Coléoptères' contains the continuation of his classification of the Longicornia. Having in the eighth volume treated of his first subfamily, the *Prionides*, the first Legion (Cerambycides aberrants) of his second subfamily, the *Cerambycides*, and a part of the first division of Cohorte I. (C. vrais sylvains) of his second Legion (Cerambycides vraies), he has completed that division with the following tribes:—

Callichromides (p. 1), *Compsochérides* (p. 30), *Callidiides* (p. 43), *Clytides* (p. 57), *Anaglyptides* (p. 84), *Tillomorphides* (p. 88), *Sestyrides* (p. 95), *Cléoménides* (p. 97), *Rhopalophorides* (p. 109), *Glaucyctides* (p. 118), *Hétéropsides* (p. 121), *Ancylocérides* (p. 135), *Cælarthrudes* (p. 138), *Smodicoides* (p. 143), *Pæcilocephalides* (p. 147), *Tropidosomides* (p. 149), *Sternacanthides* (p. 154), *Paristémides* (p. 159), *Sténaspides* (p. 166), *Dorcacérides* (p. 192), *Trachydérides* (p. 194), *Lissonotides* (p. 208).

2nd division. Tribes: *Megaderides* (p. 215), *Tragocérides* (p. 217), *Spinthérides* (p. 219), *Coptommides* (p. 221), *Navomorphides* (p. 223).

3rd division. Tribes: *Disténides* (p. 225), *Hystérarthrides* (p. 231).

Cohorte II. CERAMBYCIDES VRAIS SOUTERRAINS (p. 232). Tribes: *Apatophysides* (p. 234), *Vesperides* (p. 236).

The 3rd subfamily, *Lamiides* (p. 238), is divided as follows:—Tribes: *Tmesisternides* (p. 242), *Dorcadionides* (p. 251), *Lamiides vraies* (p. 287), and *Phytocéides*, the last tribe and a part of the last but one not being included in the present part of vol. ix.

The *Dorcadionides* are subdivided into the following groups:—*Hexatrachides*

(p. 254), *Dorcadidides* (p. 257), *Parménides* (p. 263), *Monéilémides* (p. 279), *Dorcadionides vrais* (p. 281), *Phantasides* (p. 285).

The *Lamiides vraies* are again separated into two divisions, the first having the scape of the antenna cicatrized at its apex, which is simple in the second. The first division is completed in the part now under consideration, and is composed of two sections: A, comprising the groups *Morimopsides* (p. 289), *Phrissomides* (p. 290), and *Lamiides vraies* (p. 293); and B, comprising the *Monohammides* (p. 299), *Agniides* (p. 340), *Batocérides* (p. 353), *Gnomides* (p. 363), *Mésosides* (p. 367), *Métonides* (p. 387), *Ancylonotides* (p. 391), *Prosopocérides* (p. 396), and *Sternotomides* (p. 401).

Prionides.

PASCOE (Trans. Ent. Soc. Lond. 3rd series, vol. iii. pp. 660-680, plates 23 and 24) completes his "Longicornia Malayana" by describing the *Prionides*, which he arranges after Lacordaire's method (except that the positions of that family and of the *Lamiades* are inverted, Pascoe having commenced with the latter, with which Lacordaire ends, before the publication of the vols. of the 'Genera' relating to the *Longicornia*). Nevertheless, the author considers Thomson's arrangement the more natural of the two, and would exclude such forms as *Hypocephalus*, *Paranara*, &c. from the *Longicornia*. He takes objection (p. 660, note) to Lacordaire's dichotomous terms.

None of Lacordaire's first "Legion," *Prionides aberrants*, or of the first "Cohort" (*Prionides vrais souterrains*) of his second "Legion," *Prionides vrais*, appear as yet to have been recorded from the Malayan Archipelago; and Pascoe has only to treat of nine subfamilies (*groupes*) out of the 27 contained in the second "Cohort," *Prionides vrais sylvains*: these he tabulates after Lacordaire, noting that the characters are taken exclusively from the male.

PASCOE (l. c. p. 671) remarks upon the insufficiency of the absence of denticulations or other asperities on the legs to distinguish the *Malloodontides* from the *Remphanides*: he observes that such a character, even as specific, must be received with caution.

PASCOE (l. c.) figures:—*Xaurus depsarius* (Pasc.), pl. xxiii. fig. 3; *Zarax eurypodoides* (Pasc.), pl. xxiv. fig. 3; *Omatagus lacordairii* (Pasc.), pl. xxiii. fig. 1; *Sarmyldus antennatus* (Pasc.), pl. xxiv. fig. 2.

H. W. BATES (Trans. Ent. Soc. Lond. 1869, April, pp. 37-58), in a memoir professedly continuing his papers in Ann. & Mag. of Nat. Hist. 1861, on the *Lamiades* of the Amazons, describes the genera and species of the *Prionides* found by him in that region. He adopts Lacordaire's classification, which (without believing it to be entirely natural) he recognizes as superior to his own or any other classification applicable only to a single fauna. Having traced the successive modification of forms allied to the *Lepturides*, he admits Lacordaire's correctness in sinking that group as subordinate to the *Cerambycides*, and the

error of the opinion expressed by himself in the papers above referred to on the same subject. He notes the habits of equatorial *Prionides*.

BATES (*l. c.* p. 39) considers *Parandra* an extreme development of the *Mallodon* type, and to be wrongly included by Lacordaire in his artificial group of "Prionides aberrants." Bates describes the ♂ of *Macrodonia crenata* (Oliv.), *l. c.* p. 41, and points out (p. 44) that Lacordaire's generic character of sexual difference in the punctuation of the thorax in *Ctenoscelis* is not applicable.

Mallodon occipitale (Thoms.) is probably synonymous with *M. bajulus* (Er.), hitherto erroneously cited as *Chiasmometes limæ* (Guér.), ♀: Bates, *l. c.* p. 47.

Lacordaire's characters for *Mallaspis* (Serv.) are no longer applicable according to Bates (p. 49), who states that only its pilose scutellum will now distinguish it from *Pyrodes* (Serv.).

Pyrodes fastuosus and *heterocerus* (Er.), *P. antennatus* and *petalocerus* (White) = *pulcherrimus* (Perty), according to Bates (*l. c.* p. 50), the first of them being the ♀, and the three next the ♂ of the last-mentioned species.

P. rubrozonatus (Lucas) = *nigricornis* (Guér.). Bates, *l. c.* p. 53.

Bates (*l. c.* p. 55) enumerates the species of *Pyrodes*, as restricted by him, and remarks upon their liability to vary in characters usually considered specific. He hints that the whole may possibly constitute one variable series. *P. columbinus* (Guér.) he refers to *Esmeralda* (Thoms.), and has no doubt that *E. suavis* (Thoms.) is its male.

Nicias (Thoms.) has a nearer affinity to *Esmeralda* than to any of the *Pacilosominae*, in which Lacordaire places it. Bates, *l. c.* p. 58.

WALSH & RILEY (Amer. Entom. i. p. 231-234) record the economy and describe and figure the earlier stages and imago of *Prionus laticollis* (Drury), which appears to be injurious to grape-roots in North America. At p. 232, note, is a full description of the larva, with a fig. of the anterior segments viewed from beneath.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 124 *et seq.*) figures and describes the larva and perfect insect of another grape-root-borer, *Orthosoma cylindricum* (Fab.), with some slight doubt as to its correct determination.

New genera and species :—

Ommatomenus, g. n., Higgins, Trans. Ent. Soc. Lond. 1869, p. 11. Connects the *Acanthophorus* group (pl. ii. fig. 2) of the Old World with the *Dero-brachus* (ib. fig. 3) group of the New World. Distinguished from *Tithoes* and *Acanthophorus* by its voluminous eyes, which nearly meet above and below, and from *Dorycera* (White) in the form of the body and prosternum. Sp. *O. sericatus*, sp. n., Higgins, *l. c.* p. 12, pl. ii. fig. 1, mouth of the Niger; *O. megalops* (White, *Acanthophorus*).

Osphryon, g. n., Pascoe, *l. c.* p. 662. Has the antennæ of *Sarmyds* (*Closterides*), from which its parallel, posteriorly truncate metathoracic episterna distinguish it. The only known genus of *Dero-brachides* not American. Sp. *O. adustus*, sp. n., Pasc. *ibid.*, pl. xxiii. fig. 2, Dorey.

Dysiaetus, g. n., Pascoe, *l. c.* p. 664. Allied to *Xixuthrus* (Thoms.), but with third joint of ant. much shorter than scape, joints 4, 5, and 6 rather

shorter than 3, and the rest equal to 3; thick straight mandibles; and anterior angles of thorax produced. Sp. *D. melas*, sp. n., Pasc., l. c. p. 665, pl. xxiv. fig. 1, Macassar.

Parandra gracillima, Bates, l. c. p. 38, Ega.

Acanthinodera bihamata, Bates, l. c. p. 43, note, Mendoza.

Rhaphipodus wallacii, Pasc. l. c. p. 669, Sarawak.

Mallodonhoplus crassidens, Bates, l. c. p. 45, Ega.

Polyzoa lineata, Bates, l. c. p. 48, Ega.

Mallaspis beltii, Bates, l. c. p. 49, note, Chontales, Nicaragua; *M. salvini*, Bates, ibid., Costa Rica; *M. paradoxa*, Bates, l. c. p. 383, Chontales, Nicaragua.

Pyrodes. Bates describes the following species, l. c.:—*P. formosus*, p. 51, St. Paulo, Upper Amazons; *P. graciosus*, ibid., Pará; *P. nodicornis*, p. 53, St. Paulo; *P. dispar*, p. 54, Pebas.

Esmeralda latifixa, Bates, l. c. p. 56, St. Paulo.

Holomotus nigroæneus, Bates, l. c. p. 57, note, Chontales.

Cerambycides.

PASCOE (Trans. Ent. Soc. London, 3rd series, vol. iii. pp. 497–500, pls. 20–22), in the completion of his “Longicornia Maritima,” arranges the *Cerambycides* almost entirely after the method of Lacordaire, so far as shown in vol. viii. of his ‘Genera.’

The author does not use Lacordaire’s minor divisions of the *Cerambycides*, and treats his groups as subfamilies. None of Legion I., *Cerambycides aberrants*, belong to the Malayan fauna, which comprises only 7 of the 24 subfamilies of the first section of Cohort I. of Leg. II. (*C. vrais*), 16 of the 54 of the second section of the same Cohort, and none of the second Cohort.

PASCOE (l. c. p. 508) thinks the extension of *Pachydissus* (Newm.) given by Thomson & Lacord. is untenable, and gives his reasons (p. 518) for not following the latter in merging *Imbrius* (Pasc.) with *Dymasius* (Thoms.). A species of *Neocerambyx* from Sarawak is (p. 510) referred with doubt to the *N. æneus* of Thomson. He corrects Thomson’s error in stating that the femora are not clavate, and that the sutural apex of elytra is hispinous in *Lachnopterus* (p. 523), and finds the tomentose patch on the prothorax of the species of *Stromatium* (p. 531) sectionized by Lacordaire as deficient in that respect (except one unknown to him). *Thranis* is stated to be erroneously referred by Lacordaire to Australia (p. 563, note). *Nitocris* (Thoms.) = *Dirphya* (Pascoe), ibid. *Necydalis* (Linn.) = *Molorchus* (Muls., Lac., vir Fab.), p. 565, note (cf. p. 562, note). *Cyllene*, *Euryscelis*, *Perissus* and *Sarosesthes*, genera included in the *Clytides* by Lacordaire, are observed (p. 593, note) to have (contrary to the characters given by that author for the group) the antennæ in ♂ nearly as long as or longer than the body, and in one species (*Cyllene nebulosa*) a distinct tooth on each side of the thorax. *Demonax*, latterly associated by Thomson with *Acrocyrta* (Pasc.), is, according to Pascoe (p. 620), essentially different from that genus. He thinks Lacordaire wrong in omitting both of these from the *Clytides*; and (p. 643, note) gives

reasons for thinking that author misled in considering *Clytellus westwoodii* generically distinct from *Clytellus*. *Euryphagus* (*Cerambyx*) *lundii* (Fab.) is noted (p. 654) as 3 years prior to *maxillosus* (Oliv.).

PASCOE (*l. c.*) figures *Zegriades magister* (Pasc.), pl. xx. fig. 2, and *Psallanta chalybeata* (Pasc., *Noemia*), pl. xxii. fig. 1.

THOMPSON (Rep. on Ins. destructive to woods, Allahabad) refers to the habits of a *Cerambyx* which he does not describe, but names *vatica* (sic), from its frequenting *Vatica robusta*. The insect is figured *l. c.* pl. ix.

D'AGNEL (Pet. nouv. Ent. no. 10) notes the habits of *Strangalia distigma*, which frequents *Cistus*-flowers, in calm sunny weather, from 10 A.M. till noon, in certain parts of the district of the Var, near the river Endre.

GIRARD (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxxi) notes that *Strangalia nigra* (Linn.) and *S. atra* (Fab.) assist in the fecundation of the *Orchidaceæ*, by detaching the glutinous pollen.

GUICHARD (Pet. nouv. Ent. no. 5) records *Clytus lama* (Muls.) in quantity from Chamounix. Its larva feeds in fir-wood.

Westwoodia (Kaup) = *Aprosictus* (Pasc.). Pasc. *l. c.* p. 549.

Cerambyx dorycus (Boisd.) is a *Chloridolum*, and appears to have been passed over by Lacordaire and Thomson. Pascoe, *l. c.* p. 590.

Brachypteroma ottomanum (Heyd.) and *Dolocerus mulsanti* (Stierl.) = *D. reichei* (Muls.). De Marseul, L'Abeille, vi. p. 155.

Clytus brucki (Ktz.) = *caucasicus* (Mots.). De Marseul, L'Abeille, vi. p. 156.

Xylotrechus crucicollis, *X. subscutellatus*, and (probably) *X. putzeysii* (Chevr.) = *australis* (Lap. & G.). Pasc. *l. c.* p. 607.

New genera :—

PASCOE, *l. c.*, characterizes the following new genera :—

Elydnus, p. 516. Probably nearest to *Dymasius*, but separated from all its allies by its mesosternum being truncate in front, and by its very long pubescent antennæ, of which the 3rd and 4th joints are very nodose (♂), and 5th-10th dilated (♀). Sp.: *E. amictus*, sp. n., Pasc. *l. c.* p. 517, pl. xx. fig. 1, Sarawak, Singapore; *E. serricatus*, sp. n., Pasc. *ibid.*, Banda.

Zegriades, p. 525. Ant. cotyloid cavities narrowly closed behind; femora not keeled; elytra not keeled near the margin behind; emarginate at apex; allied to *Xoanodera* (Pasc.). Sp. *Z. magister* (Pasc.).

Laodora, p. 529. Comes near *Phacodes* and *Gnaphalodes*, but resembles *Elaphidion*. Sp. *L. pilosa*, sp. n., Pasc. *ibid.*, Banda.

Examnes, p. 539. General habit of *Ceresium* (Newm.), but with much longer and stouter antennæ, and a very short face, the antennary tubers forming a nearly continuous pad. Sp. *E. longicornis*, sp. n., Pasc., *l. c.* p. 540, pl. xx. fig. 3, Bouru, Dorey; *E. idoneus*, sp. n., Pasc. *ibid.*, Waigiou; *E. frontalis*, sp. n., Pasc. *ibid.*, Sarawak.

Tethionea, p. 543. Almost glabrous. Head subvertical, wide. Sp.: *T. unicolor*, sp. n., Pasc. *ibid.*, pl. xx. fig. 4, Aru; *T. apiculata* (Pascoe, *Ceresium*); *T. strumosa*, sp. n., Pasc. *l. c.* p. 544, Ceram, Amboyna; *T. tridentata*, sp. n., Pasc. *l. c.* p. 545, Batchian.

Dictamia, p. 545. Femora very thick in middle, but not pedunculate at base. Thorax as in *Strongylurus*, but ant. cotyl. cav. open behind. Sp. *D. rugosa*, sp. n., Pasc. *l. c.* p. 546, Dorey.

Salpinia, *ibid.* Separated from the rest of its subfamily by its narrow cylindrical form. Sp. *S. diluta*, sp. n., Pasc. *ibid.*, pl. xx. fig. 5, Sarawak.

Semiope, p. 547. Except in colour, allied to *Tethionea* (Pasc.), but more slender, and with no antenn. tubers. Sp. *S. festiva*, sp. n., Pasc. *l. c.* p. 548, pl. xx. fig. 6, Saylee.

Iphra, p. 552. Habit of *Tillomorpha*, but ant. coxæ exerted and shortly conical; abd. very short, first segm. largest, the rest abnormal. Sp. *I. tillomorphoides*, sp. n., Pasc. *ibid.*, Ceram.

Euchlanis, p. 569. Allied to *Merionæda*, but with prost. and mesost. nearly on same plane; intercox. process rounded; eyes nearly divided; head short, broad. porrect, with no frontal impression. Sp. *E. collaris*, sp. n., Pasc. *l. c.* p. 570, pl. xxi. fig. 9, Sarawak.

Ocytasia, p. 575. Resembles *Merionæda*, but with a normal abdomen. Sp. *O. fulvipennis*, sp. n., Pasc. *ibid.* pl. xxi. fig. 6, Kaioa.

Mesophaea, p. 581. Third joint of ant. terminating in a slender, obtuse process, and less than the fourth by three times. Sp. *M. lachrymosa*, sp. n., Pasc. *l. c.* p. 582, pl. xxi. fig. 2, Sarawak.

Elezira, p. 637. Approaches *Demonax* (Thoms.), but joints of ant. not spined. Sp. *E. balyi* (Pasc., *Clytus*).

Halmæ, p. 641. Allied to *Epipedocera* (Chevr.), but with pedunculate femora. Second joint of ant. only a third shorter than third joint. Sp. *H. cleiformis*, sp. n., Pasc. *l. c.* p. 642, pl. xxi. fig. 8, Sarawak, Mysol.

Eodalis, p. 648. Allied to *Artimpaza* (Thoms.), but with fusiform antennæ, shorter tarsi, and first abd. segm. not longer than two next together. Sp. *E. lepidus*, sp. n., Pasc. *ibid.*, pl. xxi. fig. 5, Sarawak.

Seuthes, p. 651. Allied to *Glaucytes* (Thoms.), but with the head wide in front, joints of ant. quadrangular, and mesost. less elevated, being scarcely vertical. Sp. *S. sericatus*, sp. n., Pasc. *l. c.* p. 652, pl. xxii. fig. 5, Morty.

Polyphida, p. 652. Differs from *Glaucytes* and *Seuthes* in having the prothorax narrower than the head, and from the former also by its head being produced in front, its elytra nearly parallel, and mesost. rounded in front. Sp. *P. clytoides*, sp. n., Pasc. *ibid.*, pl. xxii. fig. 3, Sarawak.

Nericonia, p. 657. Allied to *Noemia* (Pasc.), but of a shorter form, with ninth and tenth joints of antennæ shorter than the preceding joints, ovate transverse eyes, and shorter palpi. Sp. *N. trifasciata*, sp. n., Pasc. *l. c.* p. 658, pl. xxii. fig. 2, Sarawak.

Psalanta, p. 658. Differs from *Noemia* (Pasc.) in its coarsely granulated, elongate, transverse eyes, which are slightly emarginated, and subapproximated above, and in its linear femora. Sp. *P. chalybeata* (Pasc., *Noemia*).

Melegena, p. 659. Differs from *Psalanta* in its clavate femora, and from *Noemia* in similar characters to those of *Psalanta*. Sp. *M. pubipennis*, sp. n., Pasc. *ibid.*, pl. xxii. fig. 4, Sarawak.

LACORDAIRE, *l. c.*, characterizes the following new genera:—

Nothopygus, p. 22. Allied to *Ozyprosopus* (J. Thoms.), but with flat, dehiscent elytra, which are scarcely half the length of the body, and are obliquely rounded on the inner side in their post. third. Sp. *N. mniszecchi*, sp. n., Lac. *ibid.*, note, Sierra Leone.

Plectocerum (Dej. Cat.), p. 135. Occupies an intermediate position between *Trichrous* (Chevr.) and *Heterops* (Blanch.). Femora pedunculated at the

base. Sp. *P. cribratum* (Sallé), and *Callidium spinicorne* (Oliv.), according to Chevrolat.

Aphylax, p. 165. Allied to *Pteroplatus* (Buquet), but with the thorax strongly and obtusely tuberculate on the sides, and no fringe to the sides or apex of the elytra, which are of a solid tegument. Sp. *A. mentiens*, sp. n., Lac. *ibid.*, note, Brazil.

Phœnicus, p. 174. Allied to *Tragidion* (Serv.), but with elevated lines to the elytra instead of ridges. Sp. *P. sanguinipennis*, sp. n., Lac. *ibid.*, note, Central America.

Trypogeus, p. 236. Facies of a short massive *Toxotus*; differs from the other known *Apatophysides* in its long palpi. Sp. *T. albicornis*, sp. n., Lac. *ibid.*, note, Malasie.

New species :—

Tetropium velutinum, Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 382, Vancouver's Island, Oregon, California.

Naserius ovatipennis, Pascoe, *l. c.* p. 500, Sarawak; *N. ignavus*, Pasc. *ibid.*, Timor.

Tetraommatus. Pascoe, *l. c.*, describes the following species :—*T. nigriceps*, p. 502, Singapore; *T. tabidus*, p. 503, Key; *T. similis*, *ibid.*, Batchian; *T. angustatus*, *ibid.*, Ceram; *T. ocularis*, p. 504, Morty.

Hyphus apicalis, Pascoe, *l. c.* p. 505, Sarawak.

Xystrocera apiculata, Pascoe, *l. c.* p. 506, Amboyna, Kaioa.

Neocerambyx textor, Pasc. *l. c.* p. 511, Ternate, Ceram, Morty; *N. externus*, Pasc. *l. c.* p. 512, Dorey; *N. alexis*, Pasc. *ibid.*, Sarawak, Singapore.

Hoplocerambyx severus, Pasc. *l. c.* p. 514, Waigiu, New Guinea.

Dialeges egenus, Pasc. *l. c.* p. 522, Bouru; *D. tenuicornis*, Pasc. *ibid.*, Sarawak.

Stromatium laticolle, Pasc. *l. c.* p. 532, Batchian, Tondano.

Ceresium rufipes, Pasc. *l. c.* p. 537, Timor; *C. furtivum*, Pasc. *l. c.* p. 538, Sarawak.

Diatomocephala diversa, Pasc. *l. c.* p. 541, Menado; *D. pachymera*, Pasc., Bouru, Ceram, and *E. larvata*, Pasc., Lombok, *l. c.* p. 542.

Obrium annulicorne, Pasc. *l. c.* p. 551, Sarawak.

Syllitus albipennis, Pasc. *l. c.* p. 555, Morty.

Leptura histrionica, Pasc. *l. c.* p. 557, Macassar; *L. femorata*, Pasc. *l. c.* p. 558; Singapore; *L. scripta* and *L. matthewsii*, Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 384, Vancouver's Island.

Cortodera monticola, Abeille de Perrin, Pet. nouv. Entom. no. 11. 1 Dec. 1869, Higher Alps.

Grammoptera bicarinata, Arnold, Horæ Soc. Ent. Ross. vi. p. 137, tab. iii. fig. 7, a, b.

Ophistomis picticornis, H. W. Bates, Trans. Ent. Soc. Lond. 1869 (Dec.), p. 384, Nicaragua.

Agæone monostigma, H. W. Bates, *ibid.*, Nicaragua.

Ephies dilaticornis, Pasc. *l. c.* p. 560, pl. xxi. fig. 1, Sarawak, Sumatra; *E. lepturoides*, Pasc. *ibid.*, Singapore.

Thranus. Pasc. *l. c.* p. 564, describes the following species :—*T. brunneus*, Dorey; *T. angustipennis*, Amboyna; *T. basalis*, Batchian.

Necydalis lævicollis, Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 383, Vancouver's Island.

Epania. Pascoe, *l. c.*, describes the following species :—*E. brevipennis* and *E. pusio*, p. 567, Singapore; *E. paulla*, p. 568, Sarawak; *E. discolor*, *ibid.*, pl. xxi. fig. 7, ♂, Ceram.

Merionæda. Pascoe, *l. c.*, describes the following species :—*M. flavitarsis*, p. 571, Dorey; *M. melanopsis*, p. 572, Aru; *M. calcarata*, p. 573, Sarawak; *M. subulata*, p. 574, pl. xxi. fig. 4, ♂, Sarawak; *M. brachyptera*, *ibid.*, Sarawak, Singapore.

Plutonæsthes amœna, Pasc. *l. c.* p. 577, Singapore.

Chloridohum. Pascoe, *l. c.*, describes the following species; *C. principale*, p. 583, Ceram (P = *Callichroma orientalis*, Guér.); *C. factiosum*, p. 584, Amboyna; *C. scytalicum*, *ibid.*, Sarawak; *C. collinum*, p. 585, Mount Ophir; *C. radiatum*, p. 586, Sarawak; *C. ceycinum*, p. 587, Singapore; *C. viridipenne*, p. 588, Sarawak; *C. concinnatum*, *ibid.*, Batchian, Amboyna; *C. collare*, p. 589, Malacca; *C. rufescens*, p. 590, Waigiou; *C. prætorium*, p. 591, Amboyna, Ceram; *C. promissum*, p. 592, Kaioa, Morty, Tandano; *C. obscuripenne*, *ibid.*, Bourou; *C. eupodum*, p. 593, Ceram; *C. melanaspis*, *ibid.*, Bouru; *C. litopoides*, p. 594, Kaioa; *C. distinctum*, *ibid.*, Saylee.

Leontium punctigerum, Pasc. *l. c.* p. 595, Singapore; *L. pedestre*, Pasc. *l. c.* p. 596, Ceram.

Callidium spinicorne, Abeille de Perrin, *Pet. nouv. Entom.* no. 11, 1 Dec. 1869, France.

Sympiezocera japonica, Lacord. *l. c.* p. 47, note, Japan.

Clytus solitarius, Pasc. *l. c.* p. 599, Singapore.

Clyanthus. Pascoe, *l. c.*, describes the following species :—*C. oriolinus*, p. 600, Salwatty, Mysol; *C. figuratus*, *ibid.*, Batchian; *C. leucothyreus*, p. 601, Aru, Waigiou, Dorey; *C. luzatus*, p. 602, Saylee; *C. torquilla*, p. 603, Macassar, Singapore, Sarawak; *C. seclusus*, *ibid.*, Sarawak; *C. prætextus*, p. 604, Mysol, Dorey; *C. mouhoti*, *ibid.*, Malacca, Laos.

Xylotrechus. Pascoe, *l. c.*, describes the following species :—*X. brevicornis* and *pedestris*, p. 608, Sarawak; *X. hypoleucus*, p. 609, Aru; *X. iteratus*, *ibid.*, Tondano; *X. lyratus*, p. 610, and *X. decoratus* and *scenicus*, p. 611, Sarawak; *X. famelicus*, p. 612 (no locality); *X. regina*, p. 613, pl. xxii. fig. 9, Batchian, Morty.

Thranodes pictiventris, Pasc. *l. c.* p. 614, Tondano.

Perissus. Pascoe, *l. c.*, describes the following species :—*P. antennatus*, p. 616, Aru, Dorey, Amboyna; *P. grallarius*, p. 617, Ceram; *P. fluctuosus*, *ibid.*, Sarawak; *P. æmulus*, p. 618, Sarawak.

Demonax. Pascoe, *l. c.*, describes the following species :—*D. præcursor*, p. 620, Ceram; *D. strangalioides*, p. 621, pl. xxii. fig. 6, Ceram; *D. martes*, p. 622, Sarawak; *D. ordinatus*, p. 623, Singapore (? = *elongatulus*, Lap. & G., var.); *D. detortus*, p. 624, Sarawak; *D. sospitalis*, p. 625, Dorey; *D. salutaris*, *ibid.*, Ceram, Singapore; *D. planatus*, p. 626, Saylee; *D. apicalis*, p. 627, Aru; *D. cumulosus*, *ibid.*, Singapore; *D. tenuispinosus*, p. 628, Tondano, Menado; *D. erythromerus*, *ibid.*, Amboyna; *D. algebricus*, p. 629, Sarawak; *D. notator*, p. 630, Aru; *D. musivus*, *ibid.*, Sumatra; *D. ephippiatus*, p. 631, Batchian; *D. alcellus*, *ibid.*, Sarawak; *D. tipularius* and *dammalis*, p. 632, Sarawak; *D. culicinus*, p. 633, Waigiou; *D. pullastra*, p. 634, Ceram, Amboyna; *D. ocularis*, *ibid.*, Macassar; *D. mulio*, p. 635, Sarawak; *D. collaris*, p. 636, Ceram; *D. interruptus*, *ibid.*, Mysol; *D. exilis*, *ibid.*, pl. xxii. fig. 7 (noted as too broad and robust), Java (this and the two pre-

ceding species are noted as forming a small group, possibly distinct from *Demonax*, from which they recede in their small, delicate form, and in their antennæ not being setaceous); *D. ? polyzonus*, p. 637, Sarawak (it is stated that this species will eventually have to be separated from *Demonax*); *D. ? palliatus*, p. 638 (pl. xxii. fig. 8), Gilolo; *D. ? melanurus*, ibid., Batchian (this and the preceding species differ from their congeners in colour and in the structure of the prothorax. Pascoe hesitates to found a new genus on them, as they are each represented by a single specimen, of doubtful sex).

Atimia dorsalis, sp. n., Leconte, Ann. & Mag. Nat. Hist. 4th ser. iv. p. 385, Vancouver's Island and South California.

Epipedocera abdominalis, Pasc. l. c. p. 640, Sumatra, Malacca.

Cleomenes vittatus, Pasc. l. c. p. 647, pl. xxi. fig. 3, Java.

Epianthe funesta, Pasc. l. c. p. 649, Singapore.

Smodicum impressicollis, Lacord. l. c. p. 146, note, Hayti and Cuba.

Purpuricenus ledereri, Ferrari, Verh. zool.-bot. Gesellch. in Wien, Band xix. p. 199, Astrabad.

Oxoplus ornaticollis, Lac. l. c. p. 180, note, Oajaca (Mexico).

Ætheceus hornii, Lac l. c. p. 184, note, Interior of North America?

Distenia fimbriata, Lac. l. c. p. 228, note, South America?

Ceclarthron quadrinotatum, H. W. Bates, Trans. Ent. Soc. London, 1869 (Dec.), p. 385, Nicaragua.

Crioprosopus rutilans, H. W. Bates, l. c. p. 384, Nicaragua.

Lamiides.

According to Kraatz, Berl. ent. Zeitschr. xiii. p. 335, *Dorcadion brandtii* (Gehl.) is a distinct species from *ornatum* (Fald.); *D. reichei* (Chevr.) = *ghilianii* (Chevr.), ♂, and not *grællsii* (Gr.), var.; *D. byzantinum* (Thoms.) = *albolineatum* (Küst.) and not *7-lineatum* (Küst.), var.; *D. senegalense* (Thoms.) = *molitor* (Oliv.), var., its specific name having apparently been formed in error from "Gal," the usual abbreviation of "Gallia," in which country it occurs; *D. encaustum* (Chevr.) = *perezi* (Gr.), var.; *D. gogivum* (Thoms.) = *rufipes* (Fab.), ♀, var.; *D. staudingeri* (Chevr.) = *lusitanicum* (Chevr.), and not *suturale* (Chevr.), ♂; *D. razumoffskii* (Fisch.) = *cruciatum* (Fab.); *D. tricolor* (Fisch.) = *rufipes* (Fab.), immature; *D. velutinum* (Thoms.) = *caucasicum* (Küst.), with the small variety of which (possibly a distinct species, and generally named *caucasicum*) *D. micans* (Thoms.) is also identical.

PASCOE (Ann. & Mag. Nat. Hist. 4th ser. iv. p. 210) recharacterizes his genus *Anthores*, which, as he states, is in Lacordaire's opinion synonymous with *Lophoptera* (Perroud). He points out the differences between these two genera.

Monochamus asperulus (White) is to be referred to *Opepharus* (Pascoe), which is allied to *Anthores*: Pascoe, l. c. p. 211.

T. CHAPMAN (Ent. Mo. Mag. vi. p. 89) notes live ♂ *Astynomus ædilis*, imbedded in a seam of coal in a pit, 147 fathoms below the surface. This he correctly supposes must have emerged from timber used in the mine. The Recorder has known the same species to occur in the middle of London, having emerged from a Scotch fir scaffold-pole used in building.

HISLOP (Ent. Mo. Mag. vi. p. 108) refers to capture of live *Monohammus*

sutor (Linn.) on timber at mouth of a coalpit near Falkirk. GREENSTREET (Entom. 72, p. 365) records the same species from Brighton.

LACORDAIRE (Gen. des Coleopt. ix. p. 298, note) proposes the specific name *whitei* for *Leprodera morimoides* (White), which is a true *Morinus*.

PASCOE (Trans. Ent. Soc. Lond. 3rd series, vol. iii. p. 681) gives the following synonymy:—*Amesisa consularis* (Pasc.) = *Amechana nobilis* (Thoms.); *Phelipara marmorata* (Pasc.) = *Anandra capriciosa* (Thoms.). *Apophrena montana* (Pasc. l. c. p. 425) is now referred by Pascoe to *Cleptometopus* (Thoms.).

BELLIER DE LA CHAVIGNERIE (Pet. nouv. Ent. no. 4) gives an account of the habits and peculiarities of an *Agapanthia* taken by himself in Corsica, and which Gautier des Cottés (l. c. no. 3) proposes to name *insularis*.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 42) figures the principal stages and records the habits of *Saperda bivittata* (Say), a pest to apple-trees in North America.

CHAPPELL (Ent. Mo. Mag. vi. p. 33) records *Saperda scalaris* (Linn.), bred from *Alnus glutinosa*. TAYLOR (ibid. p. 60) has bred it from pupæ found under oak-bark.

New genera :—

Phrynidius, g. n., Lacordaire, Gen. des Col. ix. p. 262. Allied to *Dorcadida*. Type *Moneilema inæqualis* (Say).

Stychus, g. n., Lac. l. c. p. 265. Resembles *Acantholophus* (Amycterides), and differs from *Micotragus* in having apical joint of all the palpi rather longer than broad. Sp. *Micotragus amycteroides* (Pascoe).

Stratioceros, g. n., Lac. l. c. p. 303. Allied to *Epicedia* (J. Thoms.), but differing in its head being deeply and widely concave between the antennæ, with a very flat front, triemarginate on its lower border, in the long and very robust fringed and spined scape to its antennæ, and in the shape of its elytra and length and sculpture of its thorax. Sp. *S. princeps*, sp. n., Lac. ibid., note, Laos.

Cratotragus, g. n., Lac. l. c. p. 332. Allied to *Agnoderus* (J. Thom.), but with a vertical mesosternum, which is obtusely conical in front, shorter legs, and shorter antennæ, of which the subapical joints are suddenly abbreviated, the apical joint itself being equal in length to the two preceding. Sp. *C. cinnabarinus*, sp. n., Lac. ibid., note, Siam.

Carneades, g. n., H. W. Bates, Trans. Ent. Soc. London, 1869 (Dec.), p. 386. Differs from *Colobotheca* in having either no lateral keel to the elytra or in the keel being indistinct, and in the basal joint of its antennæ being abruptly clavate at apex. Sp. *C. superba*, sp. n., Bates, l. c. p. 387, and *C. delicæa*, sp. n., ibid., Nicaragua.

New species :—

Dorcadion sutura-alba, Desb. des Loges, Pet. nouv. Entom. no. 9, 1 Nov. 1869, Gallipoli.

Achthophora fasciata, Pascoe, l. c. p. 204, Labuan.

Agelesta mystica, Pasc. ibid., Manilla.

Coptops centurio, Pasc. l. c. p. 205, India.

Crossotus stypticus, Pasc. ibid., Damaraland.

Daxata confusa, Pasc. l. c. p. 206, Penang.

- Mispila curvilinea*, Pasc. *ibid.*, India.
Macchotypa adusta, Pasc. *l. c.* p. 207, Laos.
Rhytiphora dallasi, Pasc. *ibid.*, West Australia.
Symphelotes defloratus, Pasc. *ibid.*, Champion Bay; *S. lanosus*, Pasc. *l. c.* p. 208, Champion Bay.
Thysia viduata, Pasc. *l. c.* p. 208, Sumatra.
Nyctopais thomsoni, Pasc. *l. c.* p. 209, Gaboon.
Anthores leuconotus, Pasc. *l. c.* p. 210, Natal.
Leprodera officinator, Lacordaire, Gen. des Col. viii. p. 306, note, East Indies.
Monohammus acutus, Lac. *l. c.* p. 316, note, Nova Scotia; *M. obscurior*, Abeille de Perrin, Pet. nouv. Entom. no. 11, 1 Dec. 1869, French Alps.
Hammoderus impluviatus, Lac. *l. c.* p. 324, note, Guatemala.
Anamera concolor, Lac. *l. c.* p. 383, note, Laos.
Phytæcia algerica, Desb. des Loges, Pet. nouv. Entom. no. 9, 1 Nov. 1869, Bône.
Phymasterna (?) *humeralis*, Snellen v. Vollenh. Rech. Faune de Madagasc. 1869, p. 10, pl. 2. fig. 1, Nossi-Bé.
Chalastinus rubrocinctus, H. W. Bates, Trans. Ent. Soc. London, 1869 (Dec.), p. 385, Nicaragua.
Anisocerus personatus, H. W. Bates, *ibid.*, Nicaragua.
Lagocheirus rosaceus and *L. V-album*, H. W. Bates, *l. c.* p. 386, Nicaragua.
Anphyionycha bifasciata, H. W. Bates, *ibid.*, Nicaragua.
Jamesia multivittata, H. W. Bates, *l. c.* p. 388, Nicaragua.
Deliathis nivea, H. W. Bates, *ibid.*, Nicaragua.

PHYTOPHAGA.

Donaciides.

RYE (Ent. Mo. Mag. v. p. 218) refers to the *Donacia geniculata* and *D. iavicollis* of Thomson, and comments upon that author's repudiation of *sericea* (Linn.) for the latter, and his apparent ignorance of the identity of the former with *D. comari* (Suffr.).

SUFFRIAN (Stettin. ent. Zeit. 1869, p. 47) comments upon Stein's suppression in his catalogue of *D. comari* as a var. of *D. sericea*, and gives numerous distinctive characters for the former. He also remarks upon the *Donacia aquatica* of Linnæus, the types of which, in the Linnæan Coll., are *D. comari*, with which the description of *aquatica* does not agree.

KRAATZ (Beil. ent. Zeit. xiii. 267) refers at great length to the characters of *D. sericea* and *comari*. He considers *comari* as most probably a var. of *proteus* (Kunze), and at the same time quotes *proteus* (Kunze), with a query, as a var. of *sericea* (Linn.). The only point of real bearing upon the question that he adduces is the capture, by himself, near Berlin, of specimens of *sericea* exhibiting the characters in the lower joints of the antennæ relied upon by Suffrian for his *comari*; but he appears not to be fully convinced of the correctness of his own opinion on the question.

Donacia simplicifrons (Lac.) and *brevicornis* (Gyll., Thoms.) = *antiqua* (Kunze), according to Kraatz (*l. c.* p. 262), who has examined two of Schuppell's types, from which Kunze described his species. *D. gracilis* (Suffr.) Kraatz considers is probably the ♂ of *antiqua*.

D. brevicornis (Redt.) = *impressa* (Payk.), of which *brevicornis* (Ahr.) is the ♀; *brevicoanis* (Suffr., Lac.) is a var. of *thalassina* (Germ.): Kraatz, l. c. pp. 266 & 267. Kraatz mentions a probable var. of *apricans* (Lac.), which he names *andalusiaca*, and reproduces Thomson's description of *D. platysterna* (pp. 271 & 272).

BEDEL (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. vi) records *Hæmonia mossellæ* (Bellevoye) from detritus of the Seine.

BELLEVOYE (Pet. nouv. Entom. no. 9, 1 Nov. 1869) remarks upon the habits of *Hæmonia*. He recommends a search, at any time between June and October, for their cocoons at the roots of *Potamogeton* and *Myriophyllum* (of course under water). According to his experience, the larva, pupa, and perfect insect may be found in cocoons at the same period.

Criocerides.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 99) figures the principal stages, and refers to the habits of *Lema trilineata* (Ol.), which infests the potato in N. America; and (p. 132) figures *Fidia viticida* (Walsh), destructive to grape-vines in the same country.

The sound-producing apparatus of *Crioceris merdigera* is stated in Sitzber. d. nat. Gesell. Isis (Dresden), 1869, p. 83, to be constructed exactly as in *Neocrophorus*.

WALSH and RILEY (Amer. Entom. i. p. 114) figure the transformations of *Crioceris asparagi*, and give particulars of its ravages on Long Island, where it was accidentally introduced about 1860, from Europe, and whence it has now spread to the main land.

Rhabus sagroides (Solsky) = *beckii* (Suffr.) = *mannerheimii* (Mots., 1845): Motsch. Horæ Soc. Ent. Ross. vi. p. 94.

Eumolpides.

BÉJOT-GANDEL (Journ. d'Agric. pratique, 1869, p. 888) refers to the ravages of *Bromius vitis* (F.).

Eumolpus. Fairmaire (Ann. Soc. Ent. Fr., 4^e sér. ix.) describes the following new species:—*E. argopoides*, p. 247, Madagascar; *E. atrimentarius*, p. 248, Nossi-Bé; *E. impressicollis*, ibid., Madagascar; *E. janthinipennis* p. 249, Mamoukou, Passandava, Madagascar.

Cryptocephalides.

TAPPES (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 5), as an instalment towards his monograph of the European species of this family, describes four new species, and gives a fresh notice of a fifth. He figures these (Planche 1^{re}), and reproduces from Rosenhauer (figs. 1-6, 9 & 11) details of the economy of *Cryptocephalus* in its earlier stages, giving also original figures (7, 8, 10, 12-16) of similar details &c., and of two Hymenopterous parasites of two of the commoner *Cryptocephali*. The discoveries of the past year have been five in number, viz.:—the parasitism of *Blacus falcatus* (Nees) on *C. bipunctatus* (fig. 16); the case (figs. 8^a, 8^b), larvæ and pupæ of *C. janthinus*; the envelope of the egg and the case of *C. minutus*; the cases of *C. rossii* and of *C. aureolus* (figs. 7, 7^a, 7^b), and the case of *Homalopus loreyi* (fig. 8).

TAPPES (l. c. p. 7) states his conviction, founded on the observations of himself and of Rouget, Godart, Varin, and Peragallo, that *C. bipustulatus*

(Fab.) is a good species, perfectly distinct from *C. bipunctatus* (Linn.). He relies on difference of habitat and certain specified sculptural discrepancies. He redescribes (from a large number of specimens) *C. tappesi* (Marseul), of which he notes a peculiar (badly developed?) example, and also a local var. from Beyrout and Antioch.

DE MARSEUL (L'Abeille, vi. p. 154) affirms the specific distinctness of *C. ochroleucus* (Fairm.) from *C. sulphureus* (Ol.), and admits his error in referring *C. ramburi* (Suffr.) to *Pachybrachys* in his Catalogue.

Cryptocephalus. Tappes, l. c., describes the following new species:—*C. bischoffi*, p. 8 (pl. l. fig. 17), Engadine; *C. perrisi*, p. 9 (ibid., fig. 18), Algeria; *C. mniszewski*, p. 11 (ibid., fig. 19), Altai; *C. saintpierrei*, p. 13 (ibid., fig. 20, 20^{bis}), Oran.

Chrysomelides.

The ravages of *Chrysomela staphylea* are referred to by Balsamo-Cruvelli (R. Ist. Lomb. ser. ii. vol. i. fasc. 12).

SUFFRIAN (Stettin. entom. Zeit. 1869, p. 264) remarks upon the synonymy of *Chrysomela fimbrialis* (Küst.) and *C. hungarica* (Fuss).

SPICER (Hardwicke's 'Science Gossip,' no. 59, p. 249) remarks upon the economy of *Lina populi*.

STIERLIN (Mittheil. schweiz. entom. Gesellsch. iii. p. 15) notices the capture by Frey-Gessner of two *Oreinae* in copula, of which the ♂ must be referred to *pretiosa* (Suffr.), and the ♀ to *speciosa* (Linn.); he adduces this instance as an additional proof of the correctness of Kraatz's judgment in sinking *pretiosa* (with other supposed species) as a variety of *speciosa*.

Phratora major (Stierlin) is allied to *vitellina*: Stierlin (l. c. p. 152) gives fresh characters for his species.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 101 *et seq.*) figures the different stages, and enters at some length upon the habits, &c., of *Doryphora 10-lineata* (Say), too well known in N. America as the "Colorado Potato-beetle." At p. 105, he figures *D. juncta* (Germ.) the "Bogus Colorado Potato-beetle," the larva of which he fully describes at p. 106. At p. 115 he figures *Tetracha virginica* (Hope), *Calosoma calidum* (Fab.), *Pasimachus elongatus* (Lec.), and *Harpalus caliginosus* (Say)—all feeders upon the Potato-beetle and its larva.

RILEY (Amer. Entom. ii. p. 85) gives authentic instances of severe inflammation and other poison-symptoms resulting from contact with the juices of *Doryphora 10-lineata* (Say).

Gallerucides.

Adimonia rustica. For an account of injuries caused by this insect, see Balsamo-Cruvelli's report, R. Ist. Lomb. 2, vol. i. fasc. 12.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 152) adopts *Idacantha* for *Diacantha*, on account of the too great similarity of the latter name to *Diacanthus* in the *Elateridae*. He suggests that *Galleruca comitata* (Klug) may belong to this genus.

WALSH and RILEY (Amer. Entom. ii. p. 24) record the habits and figure the transformations of *Diabrotica vittata* (Fab.).

Galleruca costulata, sp. n., Fairmaire, l. c. p. 250, Madagascar; *G. pruinosa*.

sp. n., Fairm. *l. c.* p. 251, Ste. Marie de Madagascar; *G. carinulata*, sp. n., Desb. des Loges, Pet. nouv. Entom. no. 9, 1 Nov. 1869, Southern Russia.

Halticides.

LABOULBÈNE (Ann. Soc. Ent. Fr. 4^e sér. ix. Bull. p. xxii) remarks upon the habits of *Lithonoma marginella* (Fab.).

CORNELIUS (Stettin. ent. Zeitung, 1869, p. 408) records his finding *Psylliodes chrysocephalus* plentifully in the droppings of the Swift (*Cypselus apus*); and at the same time records his conviction that *P. nigricollis* (Marsham) is nothing but a variety of that insect.

RYE (Ent. Mo. Mag. vi. p. 88) notes Rottenberg's opinion to the same effect.

DUNNING (Proc. Ent. Soc. Lond. 1869, p. xv) records the damage done by *Thyamis parvula* (Payk.) to flax crop at Belfast, especially whilst the plant was in the seed-leaf.

WALSH and RILEY (Amer. Entom. i. p. 158) figure the transformations of *Phyllotreta striolata* (Ill.), and give particulars of its economy from Shimer.

Means of preventing the ravages of *Phyllotreta undulata* are discussed in the 'Gardeners' Chronicle,' 1869, no. 20, pp. 541-2.

RILEY (First Ann. Rep. nox. Ins. Missouri, 1869, p. 101) figures and refers to the habits of *Haltica cucumeris* (Harris), which, as he states, is erroneously considered by some authors to be identical with *H. pubescens* (Ill.).

Hispides.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. ix. p. 254) notes the occurrence at Madagascar of the genus *Orycephala*, hitherto only found in Asia.

BALY (Trans. Ent. Soc. Lond. 1869, p. 381) describes a new genus of *Hispideæ*, remarkable among the whole *Phytophaga* for wanting the labial palpi. He has two species exhibiting this peculiarity, and fails to detect (with a very high power) the slightest trace of these palpi or their point of insertion, the basal segment of the ligula appearing itself to be obsolete, its place being occupied by the large apical segment.

BALY (*l. c.* p. 367) now considers *Alurnus cupido* (Thoms.) specifically distinct from *bipunctatus*, and gives Pebas (Upp. Amazons) as a new locality for *A. cassideus* (Westw.).

New genera and species:—

Aspidispa, g. n., Baly, *l. c.* p. 378, closely resembles *Hoplionota*, but in reality one of the *Hispideæ*, and allied to *Gonophora* (Baly). Sp. *A. tibialis*, sp. n., Baly, *l. c.* ibid., Gilolo.

Cheridiona, g. n., Baly, *l. c.* p. 380. Labial palpi and basal segment of the ligula obsolete. Follows *Nepius*. Sp. *C. metallica*, sp. n., Baly, ibid., India; *C. picea*, sp. n., Baly, *l. c.* p. 381, India.

Hispa apicata, Fairmaire, *l. c.* p. 258, Ste. Marie de Madagascar; *H. æneicolor*, Fairm. *l. c.* p. 259, Mayotte, Comores; *H. longespinoza*, Fairm. ibid., Ste. Marie de Madagascar.

Leptispa godwini, Baly *l. c.* p. 364, Shanghai.

Callispa. Baly describes the following species, *l. c.* :—*C. proxima*, p. 364, Siam (Laos); *C. brevicornis*, p. 365, Penang; *C. bretteinghami*, *ibid.*, India; *C. tarsata*, p. 366, India (? = *bretteinghami*, ♀); *C. mouhoti*, *ibid.*, Cambodia.

Cephaloleia. Baly describes the following species, *l. c.* :—*C. approximata*, p. 367, Upp. Amazons; *C. laticollis*, p. 368, Upp. Amazons, Peru; *C. amazona*, p. 369, Upp. Amazons; *C. dimidiaticornis* and *C. nigriceps*, p. 370, Peru; *C. truncatipennis*, p. 371, Upp. Amazons; *C. cognata*, p. 372, Bahia; *C. apicicornis*, *ibid.*, Rio Janerio, New Friburg; *C. flavipennis*, p. 373, Ecuador.

C. microdonta, Fairmaire, *l. c.* p. 257, Madagascar.

Hispodonta elegantula, Baly, *l. c.* p. 374, Amboyna.

Promecotheca reichii, Baly, *ibid.*, Vavao (= *cæruleipennis*, Blanch., var.).

Botryonopa cyanoptera, Baly, *l. c.* p. 375, Borneo; *B. imperialis*, Baly, *ibid.*, Philippine Islands.

Estigmene terminalis, Baly, *l. c.* p. 376, Tondano.

Downesia atrata, Baly, *l. c.* p. 377, India; *D. tarsata*, Baly, *ibid.*, Hongkong.

Cælenomenodera coquerelii, Fairmaire, *l. c.* p. 255, Madagascar.

Gonophora nigriceps, Baly, *l. c.* p. 379, Penang; *G. apicipennis*, Baly, *ibid.*, Ceylon.

Alurnus ornatus, Baly. Trans. Ent. Soc. Lond. 1869 (Apr.), p. 87, Nicaragua.

Euryspa odewahnii, Baly, *l. c.* p. 88, Gawlor, S. Austr.; *E. normalis*, Baly, *l. c.* p. 89, Queensland, Moreton Bay; *E. howittii*, Baly, *l. c.* p. 90, Melbourne.

Cassidides.

SMITH (Proc. Ent. Soc. Lond. 1869, p. xv) refers to the capture of *Physonota gigantea* at Liverpool, brought from Central America in a cargo of log-wood.

WALSH and RILEY (Amer. Entom. i. p. 228) note that *Cassida clavata* (Fab.) must be added to the list of insect destroyers of the potato. They also (*l. c.* pp. 234–238) record the economy, and figure the principal stages of *C. bivittata* (Say), *C. aurichalcea* (Fab.), *C. (Coptocycla) guttata* (Oliv.), and *C. nigripes* (Oliv.), all of which injure the Sweet Potato; and (*l. c.* ii. pp. 2–4) make further observations upon *Cassidideæ* and other *Phytophaga* injurious to *Solanum* and its allies, and figure *Chelymorphia cribraria* (Fab.) and its pupa.

Cassida trabeata (Lec.) = *guttata* (Oliv.): Walsh & R. *l. c.* i. p. 238, note,

New species :—

Cassida atripennis, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 253, Madagascar.

Dolichotoma distincta, Baly, Trans. Ent. Soc. Lond. 1869 (Apr.), p. 83, Nicaragua.

Calispidea bacchus, Baly, *l. c.* p. 84, Para; *C. connectens*, Baly, *l. c.* p. 85, Pebas.

Mesomphalia honorata, Baly, *ibid.*, Bolivia.

Batonota collaris, Baly, *l. c.* p. 86, Pebas; *B. rufo-ornata*, Baly, *ibid.*, Nicaragua.

Physonota quinquepunctata, Walsh & Riley, Amer. Entom. ii. p. 4, fig. 3, N. America.

EROTYLIDÆ.

Triplax breviscutata (Fairm.) = *cyanescens* (Bed.), var. : De Mars. L'Ab. vi. p. 154.

ENDOMYCHIDÆ.

Symbiotes pygmæus (Hampe) = *rubiginosus* (Heer, *Epuræa*), according to Tournier (in Deyrolle's Pet. nouv. Entom. no. 3), who has seen Heer's type.

Symbiotes bonariensis, sp. n., Steinheil, Atti Soc. Ital. Sci. Nat. xii. p. 257, Buenos Ayres.

COCCINELLIDÆ.

BATES (Proc. Ent. Soc. Lond. 1869, p. xxvi) remarks on the swarming of *Coccinellidæ*.

WALSH and RILEY (Amer. Entom. i. pp. 194 & 207) gives figures and records the habits of *Hippodamia maculata* (De G.), *H. convergens* (Guér.), and *Coccinella munda* (Say).

Euxochomus xanthoderus (Fairm.) = *Chilocorus nigripennis* (Er.) : De Mars. L'Abeille, vi. p. 154.

RILEY (First Ann. Rep. of noxious &c. Ins. of Missouri, 1869, p. 16) figures and records the economy of *Chilocorus bivulnerus* (Muls.), a parasite upon *Coccidæ* infesting apple-trees; and (p. 112) figures and refers to the habits of *Hippodamia maculata* (De G.), *13-punctata* (Linn.), and *convergens* (Guér.), and *Coccinella 9-notata* (Hbst.), all destructive to the eggs of the "Colorado Potato-bug" (*Doryphora 10-lineata*, Say).

Scymnus hæmorrhous (Lec.) feeds in the larval state on the *Aphides* of the elm-gall. Walsh and Riley (Amer. Entom. i. p. 110).

HYMENOPTERA

By the Rev. T. A. MARSHALL, M.A., F.L.S.

A. *Separate Works.*

BOLD, THOMAS JOHN. A Catalogue of the Insects of Northumberland and Durham. (Aculeate Hymenoptera.) Newcastle-on-Tyne, 1869, pp. 39.

Reprinted in a separate form from the Nat. Hist. Trans. Northumb. and Durham, vol. v. A review of this paper will be found in the Ent. Monthly Mag. vol. v. p. 301. It is carefully and scientifically compiled, containing notices of the habits of many of the species, which are 133 in number, and of the localities where all of them may be taken.

DOURS, A. Monographie Iconographique du genre *Anthophora*, Lat. Amiens, 1869, 8vo, pp. 211, 2 pls.

Extracted from the 'Mémoires de la Société linnéenne du Nord de la France,' in the succeeding volumes of which publication the 1869. [VOL. VI.]

remaining plates are to appear. The author reproduces Sichel's instructions from the 'Guide de l'Amateur d'Insectes,' and gives a general outline of the economy of *Anthophora* and its parasites. He includes in his work *Habropoda* (Smith), *Anthophora*, and *Saropoda*, and describes about 45 new species.

Much of the practical part of this work is avowedly owing to the late Dr. Sichel, with whose extremely synthetical views, however, the author does not appear, from his prefatorial remarks, entirely to agree. From the copious records of varieties ("Tribes" of vars. being employed!) and of undefined conditions termed *subvarieties*, it is not always easy (bearing in mind the reserve of opinion above mentioned) to be sure as to the true status of the insects described.

SNELLEN VAN VOLLENHOVEN, S. C. Schetsen ten gebruike bij de studie der Hymenoptera. Obl. fol. Gravenhage, 1868.

This work is in progress. Only the sheets published in 1868 have been seen by the Recorder. They consist of well-executed outline figures of *Ichneumonidæ*.

B. Papers published in Journals &c.

CHAPMAN, T. ALGERNON. On the œconomy of the *Chrysides* parasitic on *Odynerus spinipes*. Ent. Monthly Mag. vi. pp. 153-158.

This paper contains more than is implied in its title; and the account of the habits of these insects is both minute and instructive. The *Chrysides* in question are *neglecta* (Shuck.), *fulgida* (Linn.), *bidentata* (Linn.), and *ignita* (Linn.). Of these, *neglecta* and *bidentata* are the habitual parasites of the *Odynerus*, the other two only occasionally.

CRESSON, E. T. Description of North-American Bees. No. 2. Proc. Acad. Nat. Sci. Philad. 1869, pp. 269-272.

The remainder of this paper, after p. 272, has not been seen by the Recorder.

——. Descriptions of two new species of Arotes. Trans. Amer. Ent. Soc. vol. ii. p. 260: Feb. 1869.

Contains also a table of the North-American species.

——. A list of the North-American Species of the genus *Anthophora*, with descriptions of new species. Ibid. pp. 289-293: March 1869.

——. Notes on Cuban Hymenoptera, with descriptions of new species. Ibid. pp. 293-298: Feb.-March 1869.

——. List of the North-American species of the genus *Aleiodes*, Wesm. Ibid. pp. 377-382: Nov. 1869.
Contains descriptions of 19 new species.

EMERY, C. Formicidarum Italicorum species duæ novæ. *Bullet. d. Soc. Ent. Ital.* i. pp. 135-137.

ENGELHARDT, H. Ueber *Megachile centuncularis*, F. *Sitz.ber. Nat. Gesellsch. Isis*, Dresden, 1869, p. 89.

FÖRSTER, —. Synopsis der Familien und Gattungen der Ichneumoniden. *Verhandl. d. naturhist. Ver. preuss. Rheinl. u. Westphal.* xxv. 1868, pp. 135-221.

——. Ueber die Gallwespen. *Verhandl. zool.-bot. Gesellsch. in Wien*, 1869, Bd. xix. pp. 327-370.

The author, after cursorily reviewing the literature of the *Cynipidæ*, and promising a monograph of the species of that family (which he expects to print in about a twelvemonth's time), gives synoptical tables of the 7 subfamilies into which he divides it, and brief references to the type species of the known genera, with characters for 63 new genera and 27 new species.

GERSTÄCKER, A. Beiträge zur näheren Kenntniss einiger Bienen-Gattungen. *Stettiner entom. Zeitung*, 1869, pp. 139-184, 315-367.

This paper contains a copious and critical revision of many genera and species of bees, chiefly European, with rectifications of nomenclature, descriptions of new forms, and remarks on geographical distribution.

——. Zwei neue von Hrn. Prof. Zeller in Ober-Kärnthen gesammelte *Chrysis*-Arten. *Stettiner entom. Zeitung*, 1869, pp. 185 & 186.

GIRAUD, J. Note sur trois Hyménoptères parasites. *Annales Soc. Ent. France*, 4^e série, tome ix. pp. 145-150.

The parasites in question belong to the *Chalcididæ* and *Ichneumonidæ*.

——. Note biologique sur la *Melittobia audouini*. *Ibid.* pp. 151-156.

——. Observations Hyménoptérologiques. *Ibid.* pp. 469-488.

Contains a new genus of *Crabronidæ* (*Ammoplanus*), and several new forms among the *Tenthredinidæ* and pupivorous groups, including *Hormiopterus*, a new genus of *Braconidæ*.

JAENNICHKE, F. (Enumeration of the Hymenoptera of Frankfurt and Offenbach.) *Neunter Bericht des Offenbacher Vereins für Naturkunde*, 1869, pp. 113-133.

The Recorder has not been able to procure this paper, the German title of which is translated above.

KAWALL, J. H. Enneas Ichneumonidarum Curoniæ quas descripsit novas J. H. Kawall. *Bull. Soc. Nat. de Moscou*, tome xlii. pp. 503-510.

KRIECHBAUMER, J. Hymenopterologische Beiträge. Verhandl. zool.-bot. Gesellsch. in Wien, 1869, Bd. xix. pp. 587-600.

Contains descriptions of 15 new species, chiefly of *Allantus*.

LUCAS, H. Un mot sur le *Pelopæus spirifex*, et sur les Aranéides destinées à servir de nourriture aux larves de cet Hyménoptère de la famille des Sphégides. Annales Soc. Ent. France, 4^e série, tome ix. pp. 427-429.

MORAWITZ, F. Die Bienen des Gouvernements von St. Petersburg. Horæ Soc. Ent. Ross. t. vi. pp. 27-71. (Anmerkungen, p. 61. Correcturen zum "Catalogus Hymenopterorum Europæ Auctore L. Kirchner," pp. 62-65.)

Contains a list of Bees known by the writer to inhabit the Government of St. Petersburg, with copious references and many descriptions, some of new species. Part III., "Correcturen," &c., comprises corrections of the list of European *Mellifera* given in Kirchner's Catalogue, pp. 236-256. No less than twenty-four names are rejected as being merely MS. Part IV. pp. 65-71, contains descriptions of new species.

NORTON, EDWARD. Catalogue of the described Tenthredinidæ and Uroceridæ of North America. (Continuation.) Trans. Amer. Ent. Soc. vol. ii. pp. 211-242, July 1868-Jan. 1869; pp. 321-368, June 1869.

Contains descriptions of many new species, including new species of *Hymenoptera* parasitic upon *Lophyrus abietis*.

——. Description of Mexican Ants noticed in the 'American Naturalist,' April 1868. Proc. Essex Inst. iv. 1868, p. 1.

——. Remarks on Mexican Formicidæ. Trans. Amer. Ent. Soc. ii. pp. 44-46.

PICCIOLI, FERDINANDO. Descrizione di un nuovo genere d'imenotteri della famiglia degli *Sfecidei*, spettante alla fauna toscana. Bullet. d. Soc. Ent. Ital. i. pp. 282-285.

——. Descrizione di una nuova specie d'imenotteri della famiglia degli *Sfecidei*, e appartenente alla fauna della toscana. Bullet. d. Soc. Ent. Ital. i. pp. 38-40.

PULS, J. C. Descriptions of two new species of Hymenoptera from the Argentine Republic. Ann. & Mag. of Nat. Hist. 4th ser. vol. iv. p. 295.

RADOSZKOWSKY, O. Notes synonymiques sur quelques *Anthophora* et *Cerceris*, et descriptions d'espèces nouvelles. Horæ Soc. Ent. Ross. t. vi. pp. 95-107.

This paper consists chiefly of corrections of, and additions to, Kirchner's Catalogue, pp. 254-1013, with some descriptions of new species.

SAUSSURE, H. DE. Hyménoptères divers du Musée Godeffroy. Stettiner entom. Zeitung, 1869, pp. 53-64.

SICHEL, J., and RADOSZKOWSKY, O. Essai d'une Monographie des Mutilles de l'Ancien Continent. Horæ Soc. Ent. Ross. t. vi. pp. 139-172, plates 6-8.

In this essay the authors propose to themselves to bring the natural history of the genus *Mutilla* down to the present time, so far as relates to the species of the Old World. They reject the generic divisions formed by Wesmael, Costa, and Morawitz, on the ground of insufficiency, and revert to the older system of Latreille. Only a small portion of the monograph is in the hands of the Recorder, and it is probably all at present published. The work appears to be excellently conceived and carried out, so far. It commences with a general history of the subject, of an exhaustive character, followed by analytical tables for the determination of 145 species. The first eight species are also described, one being new.

SMITH, F. Descriptions of new species of the genus *Pison*; and a synonymic list of those previously described. Trans. Ent. Soc. Lond. 3rd series, vol. iii. pp. 289-300, pl. 6: June 1869.

— Descriptions of new genera and species of exotic Hymenoptera. Ibid. pp. 301-311, pl. 6.

— Notes on Hymenoptera. Ent. Annual for 1870, pp. 19-30.

This paper contains additions to the list of British Aculeate Hymenoptera made in 1869, and an account of the author's captures in North Devonshire, especially Lundy Isle, with lists of species and anecdotes of nidification.

— Wasps and their habits. Ann. & Mag. Nat. Hist. 4th ser. vol. ii. pp. 389-394.

Contains observations on the species noticed in Walsh's paper in the 'American Entomologist' for March 1869.

SNELLEN VAN VOLLINGHOVEN, S. C. Nieuwe Naamlijst van Nederlandsche Vliesvleugelige Insecten. Tijdschr. voor Entom. 2^{de} serie, deel iv. pp. 89-127, pl. 3.

This list contains the first four families of the Hymenoptera of Holland, under the somewhat cumbrous names *Tenthredinidea*, *Siricidea*, *Cynipidea*, and *Evaniadea*. The total number of species is 299, of which 220 are *Tenthredinidae*. Each name is accompanied by references to the best descriptions, and notes of locality. The paper concludes with remarks on many of the species, and some descriptions of new forms, which will be noticed in their proper places.

TASCHENBERG, E. Die Pompiliden des Museums der Universität Halle. Zeitschr. gesamm. Nat. Sachs. Thüring. xxxiv. pp. 25-75.

Contains descriptions of 70 new species.

TASCHENBERG, E. Die Sphegidæ des zoologischen Museums der Universität Halle. Zeitschr. ges. Nat. Sachs. Thür. xxxiv. pp. 407-435.

Contains descriptions of 3 new genera and 28 new species.

TSCHKE, C. Ueber eine neue Galle auf Eichen und deren Erzeuger. Verhandl. zool.-bot. Gesellsch. in Wien, 1869, Bd. xix. pp. 559, 560.

Contains description of a new species of *Spathogaster*.

WALKER, FRANCIS. Notes on *Chalcididæ*; and description of a new species of *Megastigmus*. Trans. Ent. Soc. Lond. 3rd series, vol. iii. pp. 313 & 314: August 1869 (read 7th June, 1869).

WAKEFIELD remarks upon the scarcity and inferior forms of *Hymenoptera* in New Zealand (Proc. Ent. Soc. Lond. pp. 16 & 17.)

ANTHOPHILA.

SMITH (Ent. Monthly Mag. vol. v. pp. 276 & 277) records the capture near Birkenhead of *Colletes cunicularius* (Linn.) = *hirtus* (St. Farg.), a new British species; and (Ent. Annual for 1870, p. 21) describes ♂ and ♀ of this species, subsequently taken in the Isle of Wight.

Prosopis. Morawitz, Horæ Soc. Ent. Ross. vi. p. 48, gives the following synonymy of known Russian species of this genus:—*P. annulata* (Linn.) = *dilatata* (Nyl.) = *borealis* (Nyl.) = *patellata* (Eversm.); *P. communis* (Nyl.) = *annulata* (Fab.); *P. confusa* (Nyl.) = *signata* (Nyl.); *P. rinki* (Gorski) ♂ = *distans* (Eversm.), ♀ = *annularis* (Schenck), l. c. p. 49.

Cresson (Proc. Acad. Nat. Sci. Philad. 1869, pp. 269 & 270) redescribes *P. basalis* and *P. affinis* (Smith).

Halictus. Morawitz (l. c. p. 47) gives the following synonymy of known Russian species of this genus:—*H. quadricinctus* (Fab.) = *tomentosus* (Eversm.); *H. rubicundus* (Christ.) = *Apis flavipes* (Panz.) ♀ = *nidulans* (St. Farg.); *H. maculatus* (Smith) = *interruptus* (Eversm.), *H. fulvicornis* (Kirby) = *albipes* (Schenck), *H. cylindricus* (Fab.) = *abdominalis* (Panz.) = *fulvocinctus* (Kirby) = *malachurus* (Kirby) = *terebrator* (Walcken.) = *elegans* (St. Farg.) = *rubellus* (Eversm.) = *rufiventris* (Gir.) = *obovatus* (Kirby) var. = (♀) *albipes* (Fab.), which is the oldest name. *H. tumulorum* (Linn.) = *fasciatus* (Nyl.); *H. flavipes* (Fab.) = *seladonia* (Fab.), p. 48.

SMITH (Proc. Ent. Soc. Lond. p. 27) describes the earth-cells formed by a species of *Halictus* at Cairo.

Andrena. Morawitz (l. c.) gives the following synonymy of known Russian species of this genus:—*A. hattorfiana* (Fab.) = *equestris* (Panz.) ♀ = *hemorrhoidalis* (Kirby) = *quadripunctata* (Fab.) ♂ = *elongata* (Imhof); *A. zonalis* (Kirby) ♂ = *rosæ* (Panz.) ♀ = *austriaca* (Panz.) ♂; *A. cetti* (Sehr.) = *marginata* (Fab.) = *schränkella* (Kirby); *A. ovina* (Eversm.) = *pratensis* (Nyl.); *A. nitida* (Kirby) = *consimilis* (Smith) = *thoracica* (Mor.); *A. bicolor* (Fab.) = *clarkella* (Kirby) = *dispar* (Zett.); *A. hæmorrhœa* (Fab.) = *albicans* (Kirby); *A. fucata* (Smith) = *clypearis* (Nyl.), p. 45; *A. præcox* (Scop.) ♂ = *smithella* (Kirby) ♀ = *pilipes* (Panz.) = *helvola* (Mor.); *A.*

ruficrus (Nyl.) = *rufitarsis* (Zett.); *A. fulvescens* (Smith) = *cinerascens* (Nyl.); *A. argentata* (Smith) = *barbatula* (Zett.); *A. shawella* (Kirby) ♀ = *coitana* (Kirby) ♂ = *nana* (Nyl.); *A. xanthura* (Kirby) = *chrysosceles* (Nyl.) = *convexuscula* (Kirby); *A. listerella* (Kirby) = *denticulata* (Kirby); *A. pubescens* (Fab.) = *fuscipes* (Kirby) = *cincta* (Nyl.), p. 46; *A. nigriceps* (Kirby) = *fulva* (Nyl.); *A. parvula* (Kirby) = *subopaca* (Nyl.); and *A. minutula* (Kirby) = *nanula* (Nyl.), p. 47.

Macropis. According to Morawitz (*l. c.* p. 44), *M. labiata* (Panz.) = *Megilla fulvipes* (Fab.), contrary to the views of Schenck.

Cilissa. According to Morawitz (*ibid.*), *C. hæmorrhoidalis* (Fab.) = *Melitta chrysura* (Kirby), and *C. melanura* (Nyl.) = *Andrena quadricincta* (Eversm.).

Dufourea. Morawitz (*l. c.* p. 43) redescribes *Rhophites halictula* (Nyl.) and assigns it to this genus.

Chrysantheda frontalis (Guér.). The ♂ is described by Packard, First Ann. Report of Peabody Acad. 1869, p. 58.

Panurgus. Morawitz (*l. c.* p. 43) notices the characters of *P. calcaratus* (Scop.) = *Philanthus ater* (Fab.) = *Apis ursina* (Kirby) ♀ = *Apis limæella* (Kirby) ♂ = *Andrena lobata* (Panz.).

Pasites. Gerstæcker (Stettiner entom. Zeitung, 1869, p. 139) redescribes this genus of Jurine, and corrects the error of Latreille in assigning to it as the *Tiphia brevicornis* (Panz.) = *Nomada schottii* (Fab.), a mistake copied by all subsequent writers. The real type, and only species, according to Gerstæcker, is *P. maculatus* (Jurine) = *Ammobates variegatus* (Smith) ♀ + *P. schottii* (Eversmann) ♂.

Phileremus. Gerstæcker, *l. c.* p. 142, redescribes this genus, with three species, one of which is new. Sp. 1. *P. punctatus* (Fab.) = *Epeolus kirbyianus* (Latr.) = *Nomada truncata* (Nylander); sp. 3. *P. niveatus* (Spinola), *l. c.* p. 144.

Phileremus hirsutulus (Eversm.) is probably established only on the ♂ of *P. abdominalis* (Eversm.), according to Gerstæcker, *l. c.* p. 149. (See 'Record,' 1868, p. 292.)

Biastes. Gerstæcker, *l. c.* p. 145, redescribes this genus with its only species, *B. brevicornis* (Panz.) = *Nomada schottii* (Fab.) ♀ + *Nomada atrata* (Fab.) ♂ = *Stelis aberrans* (Eversmann).

Ammobates. Gerstæcker describes of this genus *A. ruficornis* (St. Farg.) = *Anthophora abdominalis* (Illig.) = *A. muticus* (Spin.), *l. c.* p. 152; and *A. bicolor* (St. Farg.), p. 153.

Pasites dichroa (Smith) is referred by Gerstæcker to his genus *Omachthes*, *l. c.* p. 155.

Epeolus. Of this genus Gerstæcker describes *E. variegatus* (Linn.) = *E. transitorius* (Eversm.), *l. c.* p. 156; and *E. pictus* (Nylander), p. 158.

Epeoloides. Gerstæcker (*l. c.* p. 161) describes of this genus *E. cæcutiens* (Fab.) = *E. fulviventris* (Schenck) ♂ + *E. ambiguus* (Giraud) ♀.

According to Morawitz also (*l. c.* p. 50), *E. cæcutiens* (Fab.) = *ambiguus* (Gir.).

Nomada. Morawitz (*l. c.*) groups the known Russian species of this genus in two divisions:—

I. Antennæ, especially of the ♂, having the second joint of flagellum shorter than the third, when viewed from beneath. *N. succincta* (Panz.) = *goodeniana* (Kirby) = *scutellaris* (St. Farg.), *l. c.* p. 50; *N. fucata* (Panz.) ♀

=*varia* (Panz.) ♂ = *zonata* (St. Farg.), *l. c.* p. 51; *N. ruficornis* (Linn.) = *flava* (Panz.) = *leucophthalma* (Kirby) = *conjungens* (H. Sch.), var., *ibid.*; *N. ochrostoma* (Kirby) = *hillana* (Kirby) = *vidua* (Smith) = *melanostoma* (H. Sch.) var. = (?) *striata* (Fab.), *l. c.* p. 53; *N. borealis* (Zett.) = *inquilina* (Smith), *l. c.* p. 55; *N. flavoguttata* (Kirby) = *minuta* (Nyl.) = *fabriciana* (Schenck), *ibid.*; *N. ferruginata* (Kirby) = *stigma* (Fab.) ♂ = (?) *germanica* (Panz.) ♀ = *rufiventris* (Spin.), *l. c.* p. 56.

II. Antennæ with the second joint of the flagellum equal to, or longer than, the third. *N. armata* (H. Sch.) = *cincticornis* (Nyl.) = (?) *rostrata* (St. Farg.), *N. rufiventris* (Kirby) ♀ = *lathburiana* (Kirby) ♂ = *marshamella* (Nyl.) = *fucata* (Eversm.), *N. fuscicornis* (Nyl.) = (?) *germanica* (Schenck), *l. c.* p. 57; *L. solidaginis* (Panz.) = *dubia* (Eversm.), *N. roberjeotiana* (Panz.) = *neglecta* (H. Sch.), and *N. jacobææ* (Panz.) = *flavopicta* (Kirby), *l. c.* p. 60. Morawitz also redescribes many of the above species of *Nomada*, and mentions the bees which they respectively infest as parasites.

Rhathymus bicolor (St. Farg.), = *Liogastra bicolor* (Perty), is described by Gerstäcker, *l. c.* p. 163.

Cælioxyys. Gerstäcker (*l. c.*) gives a description of this genus, with diagnoses and a synonymic revision of the following species:—

- a. Pale spots and bands of the thorax and abdomen formed of adpressed hairs. Eyes with long hairs. Fore coxæ ♂ appendiculated.

C. conoidea (Illig.) = *vectis* (Curt.) = *punctata* (St. Farg.) = *temporalis* (Nyl.), *l. c.* p. 169; *C. rufescens* (St. Farg.) = *hebesens* (Nyl.) = *trinacria* and *diglypha* (Först.), *ibid.*; *C. elongata* (St. Farg.) = ? *simplex* (Nyl.) = *microdonta* (Först.) = *sponsa* (Smith) = *conica* (Curt.), *l. c.* p. 170; *C. tricuspidata* and *divergens* (Först.), *ibid.*; *C. conica* (Linn.) = *quadridentata* (Linn.) = *acuta* (Nyl.) = *fraterna* and *fissidens* (Först.), *ibid.*; *C. aurolimbata* (Först.), *l. c.* p. 171.

- b. Pale spots and bands formed of erected scales. Eyes with short hairs.

Fore coxæ ♂ not appendiculated.

C. coronata (Först.), *l. c.* p. 171, and *erythropyga* (Först.), *l. c.* p. 172.

According to Morawitz (*l. c.*), *C. quadridentata* (Linn.) ♂ = *conica* (Linn.) ♀ = *acuta* (Nyl.) = *fissidens* (Först.) ♂ = *convergens* (Schenck), *C. simplex* (Nyl.) = *tricuspidata* (Först.) ♀ = *divergens* (Först.) ♂ = *distincta* and *obscura* (Schenck), p. 49; *C. vectis* (Curt.) = *punctata* (St. Farg.) = *temporalis* (Nyl.) = *conoidea* (Eversm.), *C. rufescens* (St. Farg.) = *hebesens* (Nyl.) = *diglypha* (Först.) ♂ = *trinacria* (Först.) ♀ = *longiuscula* (Schenck) = *obtusata* (Schenck), p. 50.

Stelis. According to Morawitz, *S. octomaculata* (Smith) = *ornatula* (Nyl.), and *S. minuta* (St. Farg.) = *nana* (Schenck), *l. c.* p. 49.

Osmia. Gerstäcker (*l. c.* p. 329), criticises the monographic literature of this genus, and discusses the means of dividing it into groups. He rectifies the synonymy and gives descriptions of the following known species:—*O. corticalis* (Gyllenhal) = *nigriventris* (Giraud), *l. c.* p. 331; *O. fuciformis* (Latr.) = *chrysomelina* (Panz.) = ? *nigriventris* (Zett.) = *xanthomelana* (Gir.), *l. c.* p. 333; *O. xanthomelana* (Kirby) = *atricapilla* (Curt.), *l. c.* p. 334; and (*l. c.* p. 351) gives a list of the species found in the neighbourhood of Berlin. He also notices some synonyms, namely:—*O. bicornis* (Linn.) includes as var. *fronticornis* (Fab.); *O. fusca* (Christ.) = *bicolor* (Schr.); *O. aurulenta* (Panz.) = *tunensis* (Kirby); *O. fulviventris* (Fab.) = *leaiana* (Kirby), *ibid.*

O. cærulescens (Linn.) = ♂ *ænea* (Linn.); *O. leucomelana* (Kirby) = *interrupta* (Schenck.), l. c. p. 352.

According to Morawitz (l. c.), *O. ænea* (Linn.) ♂ = *cærulescens* (Linn.) ♀ = *notata* (Fab.) = *melanippa* (Spin.), and *O. leucomelana* (Kirby) = *interrupta* (Schenck), p. 40. Morawitz also corrects Schenck, who has mistaken *O. leucomelana* (Kirby) for *parvula* (Duf.) and *vice versâ*, p. 41.

Megachile. Gerstäcker (l. c. p. 353), in his remarks on this genus, separates from it *M. alboeristata* (Smith) = *lefebvrei* (St. Farg.), *M. serrata* (Smith), *M. manicata* (Giraud), which he regards as belonging to *Chalicodoma*, l. c. p. 354. *M. rufitarsis* (Giraud) belongs also to *Chalicodoma*, and must be re-named, as there exists already *C. rufitarsis* (St. Farg.), l. c. p. 355. *M. dohrnii* (Radoszk.) = *monoceros* (Eversm.), is a *Lithurgus*, and probably = *L. cornutus* (Latr.), ibid. *M. bucephala* (Först.) and *vestita* (Giraud) must change their names to avoid collision with two species of Smith, which have the priority, ibid.

Megachile apicalis (Spin.) = *M. mixta* (Costa), according to Gerstäcker, l. c. p. 360.

According to Morawitz (l. c. p. 37), *M. willoughbiella* (Kirby) = *fulviventris* (Zett.), and *M. analis* (Nyl.) = *apicalis* (Nyl.) = *albicilla* (Eversm.), p. 38.

Chalicodoma. Gerstäcker (l. c.) defines the real limits of this genus, or subgenus, and enumerates the European species known to him, with rectified nomenclature, namely:—*C. muraria* (Fab.), l. c. p. 364; *C. bætica* (Gerst.), ibid.; *C. lefebvrei* (St. Farg.) = *Megachile alboeristata* (Smith), l. c. p. 365; *C. pyrrhopezæ* (Gerst.) = *Anthophora meliturga* (Illig.) = *Megachile rufitarsis* (Giraud), l. c. p. 366; *C. manicata* (Giraud), l. c. p. 367; *C. sicula* (Rossi), ibid. Most of these species are here also described by Gerstäcker.

Anthidium. According to Morawitz (l. c. p. 35), *A. manicatum* (Linn.) = *Apis maculata* (Fab.) ♀; *A. septemspiniosum* (St. Farg.) = *nigripes* (Eversm.) = *nigriceps* (Smith); *A. punctatum* (Latr.) = *minus* (Nyl.) = *senile* (Eversm.), var., l. c. p. 36; and *A. strigatum* (Panz.) = *contractum* (Latr.) = *minusculum* (Nyl.), l. c. p. 37.

Trachusa. According to Morawitz (ibid.), *T. serratulæ* (Panz.) ♂ = *Anthophora byssina* (Fab.) ♀.

Chelostoma. According to Morawitz (ibid.), *C. florissomnis* (Linn.) ♂ = *maxillosa* (Linn.) ♀.

Heriades. According to Morawitz (l. c. p. 42), *H. campanularum* (Kirby) = *Apis florissomnis minima* (Chris.), and *H. nigricornis* (Nyl.) = *Chelostoma inerme* (Eversm.) = *H. rapunculi* (St. Farg.).

Ceratina. Gerstäcker (l. c. pp. 173–184) gives diagnoses of, and copious critical remarks upon, the following known species of this genus:—*C. cucurbitina* (Rossi) = *Hylæus albilabris* (Fab.) = *C. decolorans* (Brullé), l. c. p. 174; *C. egregia* (Gerst.) = *ænea* (Brullé) = *chalcites* (Germar), l. c. p. 176; *C. ænea* (Fab.) = ? *viridis*, var. (Smith), l. c. p. 177; *C. smaragdula* (Fab.) = *maculata* (Smith), ibid.; *C. dentiventris* (Gerst.) = *Megilla chalcites* (Illig.), l. c. p. 178; *C. cyanea* (Kirby) = ? *callosa* (St. Farg.), l. c. p. 180; *C. callosa* (Fab.) = *mauritanica* (St. Farg.), l. c. p. 182.

Eucera. According to Morawitz (l. c. p. 35), *E. longicornis* (Linn.) ♂ = *Apis tuberculata* (Fab.) ♀.

Habropoda (Smith). Dours (Mon. Icon. *Anthoph.* p. 29) recharacterizes this genus, which, contrary to Sichel's opinion, he thinks should remain

isolated. He reproduces Smith's figures of palpi and wing, and observes that the character afforded by the first recurrent nervure of *Habropoda* is not constant, as it occurs also in certain Mexican *Anthophoræ*. The sexes of *H. zonatula*, *ezonata*, and *festiva* (with hind legs of the two last spp.) are figured by him, pl. 2.

Anthophora. Dours, *l. c.*, tabulates the known species of this genus, by ♀ characters, pp. 36-46; by ♂, pp. 46-56. To *A. zonata* (Linn.) the author appears to agree with Sichel in referring as vars. the following described species:—*A. cincta* and *cingulata* (Fab.), *subcærulea* (Lep.) and *pulchra* (Sm.), and also the following insects, apparently described for the first time, viz.:—*A. atrocaerulea*, p. 60, and *analis*, p. 61 (Sichel), *A. flammeozonata*, p. 61 (Dours), and *A. viligans*, p. 62 (Smith, but which was published in Journ. Linn. Soc. 1861). To *A. 4-fasciata* (Vill.) in like manner are attributed the following described species:—*A. maderæ* (Sichel), *domingensis* (Lep.; with which *maculicornis* and *melaleuca*, Lep., are stated on Sichel's authority to be identical), *mucorea*, *socia*, *farinosa*, *alternans*, and *incana* (= *nivea*, Lep.), Klug, and *confusa* (Smith), and also the following apparently previously undescribed insects:—*A. albescens* (Dours), p. 66, and *A. semipulverosa* (Sich.), p. 68, with some unnamed subvarieties. To *A. albigena* (Lep.; *binotata*, Lep., ♂) are attributed *A. niveocincta* (Smith; with which *A. calens*, Lep., is stated to be identical) and *A. ruficornis*, p. 77, and *albida*, p. 78 (Sichel), apparently not before described, with *Megilla 4-cincta* and *fasciata* (Fab.) and unnamed subvars. In his preface Dours states that *albigena* was connected by Sichel with *4-fasciata*, but that he himself considers them distinct, and that he will note other instances of improper suppression of species in his Monograph. There is, however, no further indication of his differing from Sichel's synthetical views in this work, beyond the fact of his describing as *varieties* insects which it may be open to him to term *species*, if Sichel's opinions, as interpreted by himself, be explicitly repudiated by him at any future time. To *A. rufipes* (Lep.) the *A. savignyi* and *rufa* of the same author are referred as varieties. *A. æruginosa* (Smith) is numbered as a species and referred to specifically as a var. *Megilla sesquicincta* and *vidua* (Klug) = *A. bicincta* (Lep.); *Xenoglossa fulva* (Smith) is renamed *A. holopyrrha* (Sichel); *A. nigrofulva* (Lep.) and ? *caliginosa* (Klug) = *ferruginea* (Lep.), var.; a var. of *A. parietina* (F.) is described and named *fulvocinerea* (p. 100), *Megilla plagiatæ* (Ill.) and *M. villosa* (Herr. Sch.) being also considered vars. of that species; *A. dubia* (Smith nec Eversm.) is renamed *smithii* (Sichel), p. 103; *A. tristrigata* (Spin.) = *chiliensis* (Spin.), p. 136; *A. borealis* (Morawitz) = *4-maculata* (Panz.) var., p. 45; Sichel's table of vars. of *A. pilipes* (F.) is given at pp. 155-6; vars. of *A. personata* (Ill.) are described and named (*euris*, Dours, apparently not before published), pp. 165-8; *A. 4-cincta* (Evers.) and *erinipes* (Smith) = *senescens* (Lep.), p. 174; *A. liturata* ♂ (Lep.) = *atro-alba* (Lep.), p. 182.

Anthophora nidulans (Fab.) is described by Radoszkowsky (Horæ Soc. Ent. Ross. vi. p. 98), and, according to him, includes as varieties *A. quadri-fasciata* (Vill.), *orianensis* [sic] (St. Farg.), *farinosa* (Klug), *garrula* (Germ.), *socia* and *alternans* (Klug), and *nana* (Eversm.).

Saropoda. Dours (*l. c.* p. 195) recharacterizes this genus, and gives Sichel's fresh description of *S. bimaculata* (Panz.), Lepelletier's being considered defective. He considers *S. fulva* (Eversm.) probably not a *Saropoda*.

Bombus. Gerstäcker (*l. c.* pp. 315–329) publishes some interesting notes on the geographical distribution of the species of this genus, with special reference to those occurring in the Alps of Southern Germany, the Tyrol, the Stelvio Pass, and other lofty situations. These observations include twenty-six species, some of which are described as new, together with some synonymy.

According to Gerstäcker. *Bombus ligusticus* (Spin.) = *scutellatus* (Jur.), *l. c.* p. 317; *B. terrestris* (Linn.) = *lucorum* (Linn.) ♂ = *cæspitum* (Panz.) = *ericetorum* (Curt.), *ibid.*; *B. latreillellus* (Kirby) = *tunstallanus* (Kirby) ♀, *ibid.*; *B. hypnorum* (Linn.) = *ericetorum* (Fab.) ♂, *l. c.* p. 320; *B. muscorum* (Linn.) = *agrorum* (Fab.), *ibid.*; *B. pascuorum* (Scop.) = *italicus* (Fab.), *l. c.* p. 321; *B. montanus* (St. Farg.) = ? *nivalis* (Smith), *l. c.* p. 322; *B. pratorum* (Linn.) includes as var. *subinterruptus* (Kirby), *l. c.* p. 325. Of the section *Psithyrus*, Gerstäcker notices as Alpine species *B. rupestris* (Fab.), *globosus* (Eversm.), *quadricolor* (St. Farg.), *vestalis* (Fourcr.), *saltuum* and *campestris*, (Panz.), *l. c.* p. 329.

According to Morawitz (*l. c.* p. 32), *B. sylvarum* (Linn.) = *veteranus* (Fab.); *B. latreillellus* (Kirby) ♂ = *Apis tunstallana* (Kirby) ♀, *l. c.* p. 34; *B. pratorum* (Linn.) = *ephippium* (Zett.) = *lullianus* (Nyl.), *ibid.*; *B. derhamellus* (Kirby) ♂ = *raielus* (Kirby) ♀, *ibid.*; and *B. terrestris* (Linn.) = *sporadicus* (Nyl.), *l. c.* p. 35.

Psithyrus. Morawitz (*l. c.* p. 60) gives synonyms of three Russian species of this genus, viz.:—*P. rupestris* (Fab.) ♀ = *albinella* (Kirby) ♂ = *frutetorum* (Panz.) = *subinterrupta* (Kirby); *P. campestris* (Panz.) = *rossiella* (Kirby) = *francisana* (Kirby) = *leana* (Kirby); *P. vestalis* (Fourcr.) = *nemorum* (Fab.) = *æstivalis* (Panz.).

SMITH (Proc. Ent. Soc. Lond. p. 10) makes some observations on the variations of colour in the parasitic *Apathi*, corresponding to the appearance of the *Bombi* which they respectively infest.

SMITH considers *Apis fuscata* (Linn.) distinct from *A. ligustica* (Spin.), and not a variety of that insect as it is considered by Gerstäcker (Proc. Ent. Soc. Lond. p. 3).

HORNE observes that *Apis dorsata* (Fab.), notwithstanding its sting, forms the food of certain Lizards in India (*ibid.* p. 7).

New genera:—

Phiarus, g. n., Gerstäcker, Stettiner entom. Zeitung, 1869, p. 147. Resembles *Ammobates*; third joint of antennæ elongate; labrum elongate, carinated; maxillary palpi 6-jointed; scutellum bituberculated; radial cell not appendiculated; abdomen (♀) cordiform, sixth dorsal segment exerted, subquadrate, fifth ventral segment plane, transverse, emarginate at the apex; ungues (♀) appendiculated at the base; metatarsi elongate. This genus supersedes *Ammobatoides* (Radoszkowsky), which Gerstäcker condemns as unscientifically constructed upon two widely different species (see 'Record', 1868, p. 292). Sp. *Phileremus abdominalis* (Eversm.) = *Ammobates extraneus* (Forst.).

Euglages, g. n., Gerstäcker, *l. c.* p. 149. Nearest to *Melecta*, from which it is distinguished by having the upper surface entirely villose, a short cordiform abdomen with five white interrupted bands, two cubital cells, and

the antennæ of the ♂ with apical joint dilated and lenticular. Sp. *E. scripta*, sp. n., p. 150, South of Spain.

Omachthes, g. n., Gerstäcker, l. c. p. 154. Allied to *Ammobates*; third joint of antennæ oblong; labrum subquadrate; maxillary palpi 4-jointed; radial cell truncate, appendiculated. Sp. *O. carnifex*, sp. n., l. c. p. 155; and *O. histrio*, sp. n., ibid., Cape of Good Hope.

New species :—

Prosopis. The following new species of this genus are described by Cresson (Proc. Acad. Nat. Sci. Philad. 1869):—*P. varifrons* = (?) *elliptica* (Kirby), l. c. p. 270, Colorado Territory; *P. sparsa*, Pennsylvania, *P. verticalis*, United States, and *P. antennata*, New Jersey, l. c. p. 271; *P. pygmaea*, Illinois, *P. azteca*, *dubiosa*, and *mexicana*, Mexico, l. c. p. 272.

Halictus atricornis, Smith, Ent. Annual for 1870, p. 26, ♂ and ♀, Cheshire; *H. rimosiceps*, Packard, First Ann. Rep. Peabody Acad. 1869, p. 57, Quito.

Phileremus nasutus, Gerstäcker, l. c. p. 143, Berlin (? = *P. kirbyanus*, Schenck).

Ammobates vinctus, Gerstäcker, l. c. p. 152, Portugal.

Epeolus speciosus, Gerstäcker, l. c. p. 158, = ? *E. luctuosus* (Evers.), Pomerania; *E. amabilis*, Gerstäcker, l. c. p. 159, = *E. variegatus*, var. (Smith), Cape of Good Hope; *E. militaris*, Gerstäcker, l. c. p. 160, Cape of Good Hope.

Nomada eustalacta, Gerstäcker, l. c. p. 164, Berlin; *N. femoralis*, Morawitz, Horie Soc. Ent. Ross. vi. p. 66, France; *N. panurgina*, Moraw. ibid., Nice.

Calioxys tegularis, Cresson, Trans. Amer. Ent. Soc. ii. p. 297, Cuba.

Dioxys ardens, Gerstäcker, l. c. p. 166, Southern Spain; *D. cruenta*, Gerst., ibid., Sicily; *D. pumila*, Gerst. l. c. p. 167, Rhodes.

Osmia. The following new species are described by Gerstäcker, l. c. :—*O. vulpecula* = ? *parietina* (Smith) = ? *Anthophora inermis* (Zett.), p. 335, Thuringia; *O. uncinata* = ? *Anthophora angustula* (Zett.), p. 336, Berlin; *O. platycera* = ♂ *nigriventris* (Morawitz), p. 338, Alps of Southern Germany; *O. cæmentaria* = *Anthophora anthæca* (Illig.) = *spinolæ* (Schenck) = *loti* (Mor.), p. 339, Germany and South Europe; *O. bisulca*, p. 344, Sicily and Rhodes; *O. vidua*, p. 345, Sicily; *O. clavicula*, p. 347, Naxos; *O. mustelina*, p. 348, Culmbach, Franconia; *O. macroglossa*, p. 349, Greece.

Osmia quadricornis, Kriechb., Verh. zool.-bot. Ges. Wien, xix. p. 600, Tinos; *O. confusa*, Morawitz, l. c. p. 38, and *O. panzeri*, Mor. l. c. p. 65, Russia.

Megachile. Gerstäcker (l. c.) describes the following new species :—*M. ursula*, p. 355, Mountains of Bavaria; *M. hymenæa*, p. 356, Meran; *M. intermixta*, p. 358, Sicily; *M. imbecilla*, p. 359, Berlin; *M. leucomalla*, p. 360, Attica; *M. derasa*, p. 361, Naxos.

Megachile armaticeps, Cresson, Trans. Amer. Ent. Soc. ii. p. 296, Cuba.

Chalcidodoma bætica, Gerstäcker, l. c. p. 364, Andalusia.

Anthidium pictifrons, Packard, l. c. p. 59, Brazil.

Augochlora nigroænea, Packard, ibid., Brazil; *A. fuscipes*, Packard, l. c. p. 60, Quito.

Heriades trinacria, Morawitz, l. c. p. 41, Russia.

Ceratina gravidula, Gerstäcker, l. c. p. 179, Meran; *C. nigroænea*, Gerst.

l. c. p. 181, Crimea, Asia Minor, and Greece; *C. chrysomalla*, Gerst. *l. c.* p. 183, Rhodes; *C. loewi*, Gerst. *l. c.* p. 184, Asia Minor and Greece.

Xylocopa. Packard (*l. c.* p. 57) describes, without naming, two species of this genus from Quito.

Agapostemon obscurata, Cresson, Trans. Amer. Ent. Soc. ii. p. 295, Cuba. (*Megacilissa* ?) *nigrescens*, Cresson, *ibid.*, and (*M.* ?) *subaurata*, Cresson, *l. c.* p. 296, Cuba.

Melissodes mimicus, Cresson, *l. c.* p. 298, Cuba.

Habropoda festiva, Dours, Mon. Icon. *Anthoph.* p. 33, Cape of Good Hope, Caffraria.

Anthophora. Dours, *l. c.*, describes the following new species:—*A. squamulosa* (Sichel), p. 78, Mexico; *rufolanata*, p. 81, Caffraria (? *Megilla concinna*, Klug, ♀); *albocaudata*, p. 84, Guinea (? *acraensis*, Fab., var.); *hypopolia*, p. 87, Orenburg; *melanopyrrha*, p. 90, and *aurulento-caudata*, p. 92, Mexico; *citrostigata*, p. 95, North America; *pluto*, *ibid.*, Mexico; *nigrovittata*, p. 98, Corsica; *badia*, p. 107, and *rufozonana*, p. 112, Mexico; *tuberculilabris*, *ibid.*, Abyssinia; *spodia*, p. 113 [no loc. given]; *lepidodea*, p. 115, ? Dalmatia; *pyropyga* [sic], p. 117, Caffraria; *godofredi* (Sichel), p. 119, St. Vincent; *atroferruginea*, p. 122, Italy, Greece; *laticincta*, p. 124, Corsica; *semicinerea* [sic], p. 126, Dalmatia; *repleta*, p. 128, Orenburg; *belieri* (Sichel), p. 131, Sicily; *mezicana* (Sichel), p. 133, Mexico; *nitidula* (Sichel), p. 135, Chili; *oxygona*, p. 141, Spain; *irregularis*, p. 142, Armenia; *dives*, p. 143, Dalmatia; *tarsata* (Sich.), p. 147, Mexico; *cincto-femorata* (Sich.), p. 151, N. Holland; *pygmea* [sic], *ibid.*, Mexico; *nigrocinctula* (Sich.), p. 159, Algeria, France; *rutilans*, *ibid.*, Cyprus; *pyralitarsis*, p. 160, New York; *rypara* [sic], p. 164, Africa; *arietina*, p. 168, Algeria [but immediately and emphatically stated by its author to be only a var. of *personata*, Ill. !]; *quadririgata* (Sich.), p. 170, Malaga, Algeria; *rubricrus*, p. 171, Greece; *fulvodimidiata*, p. 181, Hérault; *dimidiozonata*, p. 184, Corsica, Algeria; *combusta*, p. 188, Egypt; *pyrozonata*, *ibid.* [no loc. given]; *volucellaformis*, p. 189, *pulsella* and *histro*, p. 190, *unistrigata* and *luteodimidiata*, p. 192, Mexico; *nigro-æruginea*, p. 191, and *simia*, p. 193 [no loc. given].

Anthophora. Cresson (Trans. Amer. Ent. Soc. ii. p. 289 *et seq.*) tabulates the North-American species of this genus, and describes the following new species:—*A. smithii*, Colorado, Dacota; *walshii*, Illinois, *californica*, California, and *montana*, Colorado, p. 290; *ursina*, p. 291, West Virginia; *canadensis*, Ontario, *occidentalis*, Colorado, and *terminalis*, Canada and Colorado, p. 292.

Anthophora sichelii, Radoszkowsky, Horæ Soc. Ent. Ross. vi. p. 100, Corsica; *A. agama* (Sichel), Radoszkowsky, *l. c.* p. 101, Sicily and Greece; *A. pilifrons*, Packard, First Ann. Rep. Peabody Acad. 1869, p. 57, Quito; *A. conica*, Packard, *l. c.*, Brazil.

Centris braccata, Packard, *l. c.* p. 57, Peru; *C. quadrimaculata*, Packard, *ibid.*, Brazil; *C. armillatus*, Cresson, *l. c.* p. 298, Brazil.

Euglossa bombiformis, Packard, *l. c.* p. 57, Quito.

Bombus. Gerstäcker describes the following new species from the Alps of Southern Germany:—*B. martes*, *l. c.* p. 317; *B. opulentus*, p. 319; *B. mesomelas*, p. 321; *B. mendax*, p. 323; *B. mucidus*, p. 324; *B. proteus*, p. 325; *B. mastrucatus*, p. 326.

Bombus distinguendus, Morawitz, *l. c.* p. 32 ($\sigma = B. fragrans$, Nyl.), Russia.

Trigona mellicolor, Packard, *l. c.* p. 56, Brazil.

VESPIDÆ.

Odynerus nasidens (Latr.). A variety of this species is described by Packard, *l. c.* p. 60.

SMITH (Trans. Ent. Soc. Lond. 3rd series, vol. iii. p. 310) remarks on the form of the σ of his *Paragia vespiformis*, and figures that sex (pl. 6. fig. 2).

SMITH quotes a letter from E. C. Wilson describing the nidification of *Paragia tricolor* near Adelaide, Australia (Proc. Ent. Soc. Lond. p. 17).

Nortonia, g. n., De Saussure, Stettiner entom. Zeitung, 1869, p. 53. Characters of *Eumenes*; but the petiole is funnel-shaped. Resembles also *Montezumia*. Sp. *N. analie*, sp. n., *ibid.*, Rockhampton, Australia.

New species:—

Melipona molesta, Puls, Ann. & Mag. Nat. Hist. 4th ser. vol. iv. p. 295, San Luis, Argentine Republic.

Odynerus albocinctus, Puls, *l. c.*, Mendoza, Argentine Republic; *O. dietrichianus*, De Saussure, *l. c.*, p. 54, Rockhampton, Australia.

Pterochilus albopictus, Kriechb. Verh. zool.-bot. Ges. Wien, xix. p. 599, Syria.

Montezumia andeus [sic], Packard, *l. c.* p. 60, Quito.

Paragia excellens, Smith, Trans. Ent. Soc. Lond. 3rd series, vol. iii. p. 309; and *P. sobrina*, Smith, *ibid.*, Australia.

Rhynchium magnificum, Smith, *l. c.* p. 210, Australia.

Eumenes ovalauiensis, De Saussure, *l. c.* p. 53, Ovalau, Fiji Islands.

Alastor graeffei, De Saussure, *l. c.* p. 55, Ovalau.

POMPILIDÆ.

Pepsis, *Priocnemis*, and *Pompilus*. Taschenberg (Zeitschr. gesamm. Nat. Sachs. u. Thüring. xxxiv. 1869, pp. 26 *et seq.*) recharacterizes these genera, and redescribes such of the known species as exist in the Museums of Halle University and Berlin, with some new species. He gives the following observations on synonymy:—*Pepsia stellata* (Fab.) ♀ = *auripennis* (Deg.) ♂; *Priocnemis capensis* (F.) = *severa* (Drury); *Dolichurus ater* (Latr.) = *corniculus* (Spin.).

New species:—

Dolichurus. Smith (Trans. Ent. Soc. Lond. 3rd series, vol. iii.) describes the following new species:—*D. carbonarius*, p. 303, Australia; *D. ignitus*, p. 304, Port Natal; *D. taprobanæ*, *ibid.*, Ceylon.

Pepsis. Taschenberg, *l. c.*, describes the following species:—*P. præsidialis*, p. 27, Parana; *apicata*, Lagoa Santa, *discolor*, Congonh, and *cupripennis*, Rio de Janeiro, p. 28; *aciculata*, Rio de Janeiro, Banda Oriental, p. 29; *gracillima*, Columbia, and *defecta*, Rio Grande, p. 30.

Pepsis quitonensis, Packard, *l. c.* p. 61, Quito; *P. purpuripes* and *P. vinipennis*, Packard, *ibid.*, Brazil.

Priocnemis. Taschenberg, *l. c.*, describes the following species:—*P. brevipennis*, p. 32, Lagoa Santa; *concolor*, Java, Padang, and *dubius*, Lagoa Santa,

p. 33; *brasiliensis*, Rio de Janeiro, and *propinquus* (no locality), p. 34; *pachymerus*, p. 35, Mendoza; *punctulatus* and *abnormis*, p. 36, Lagoa Santa; *cæruleus*, p. 37, Parana; *velutinus*, Brazil?, and *ustulatus* (? *Hemipepsis ustulata*, Mus. Berol., Dahlb.), Mexico; *angustithorax*, p. 39, Mexico; *gigas*, p. 40, Java; *brunniceps* and *hottentottus*, Cape of Good Hope, and *sigillipes*, Banda Oriental, New Friburg, p. 41 (Mus. Berol.); *flavicollis*, Cape of Good Hope, and *maculatellus*, Parana, p. 42; *rufofemoratus* [sic], p. 43, Parana, Rozario.

Agenia. Taschenberg, *l. c.*, describes the following species:—*A. maculata*, p. 44, Java; *pallida*, Lagoa Santa, *tricolor*, Parana, and *amabilis* (Mus. Berol.), New Friburg, Brazil, p. 45; *annulata*, p. 46, Rio de Janeiro.

Pogonius frontalis, Tasch. *l. c.* p. 47, Parana.

Pompilus. Taschenberg, *l. c.*, describes the following species:—*P. coriarius*, p. 49, Singapore, Java; *brevicornis*, p. 50, Illinois, Mexico; *clatiger*, Chartum, and *dilutevittatus*, Canaries, p. 51; *mexicanus*, Mexico, and *cæruleus*, Mendoza, Parana, p. 52; *eupterus*, p. 53, New Holland; *rufo-unguiculatus*, Java, and *ruficeps*, Chartum, p. 54; *marginicollis* (Mus. Berol.), p. 55, Rozario, Barbacena; *bicolor* [no locality given], and *costatus* (Mus. Berol.), New Friburg, Lagoa Santa, p. 56; *scalaris* (Mus. Berol.), p. 57, Banda oriental; *separatus*, Mendoza, New Friburg, and *semicinctus* (Mus. Berol.), Mendoza, Banda oriental, p. 58; *argenteus*, Lagoa Santa, and *torquatus* (Mus. Berol.), Banda oriental, p. 59; *erubescens* and *rubiginosus*, (Mus. Berol.), Banda oriental, p. 60; *funeris* (Mus. Berol.), p. 61, Mendoza; *friburgensis* and *serraticornis*, p. 62, *amœnus*, p. 63, *agenioides* and *pubipennis*, p. 64, New Friburg; *adustus* and *gastricus* (Mus. Berol.), p. 65, Mendoza; *semiphumbeus*, Congonh, Parana, and *areatus*, Lagoa Santa, p. 66; *tricolor*, p. 67, New Friburg; *multifasciatus*, p. 68, Venezuela.

Pompilus vinicolor, Packard, *l. c.* p. 62, Quito.

Aporus semirufus, Tasch. *l. c.* p. 69, Chartum.

Salix tomentosus, Tasch. *l. c.* p. 70, Mexico.

Ferreola denticulata, Tasch. *l. c.* p. 72, Chartum.

Ceropales. Taschenberg, *l. c.*, describes the following species:—*C. abdominalis*, p. 73, New Friburg (? *longipes*, Smith); *trimaculata*, Lagoa Santa, and *nigripes* (Mus. Berol.), New Friburg, Mendoza, p. 74; *abnormis*, p. 75, Rio de Janeiro.

CRABRONIDÆ.

Sphex petiolata (Smith) = *costipennis* (Spin.); *Chlorion cæruleum* (Drury) = *cyaneum* (Dahlb.); *Stethorectus* (Smith) = *Podium* (Westw.); *S. ingens* (Smith) = ? *P. giganteum* (Er.); *Pelopæus cæruleus* (Linn.) = *cyaneus* (F.); *P. tubifex* (Latr.) = *pectoralis* (Dahlb.); *P. fistularius* (Ill.) = *histrion* (Lepell.); *P. figulus* (Dahlb.) = *vindex* (Lepell.); *P. cementarius* (Dru.) = *lunatus* (F.); *Psammophila affinis* (Kirb.) = *lutaria* (Fab.); *P. viatica* (L.) = *arenaria* (F.); Taschenberg, *l. c.* p. 407 *et seq.*

Pison. Smith (Trans. Ent. Soc. Lond. 3rd series, vol. iii. pp. 289–300) has enumerated 22 species of this genus previously known, and described 13 as new. He has also raised the subdivision *Pisonitus* (Shuck.) to the rank of a genus, with 4 species; and created a new genus, *Parapison*, for the reception of one already known species, and 3 new.

SMITH, *l. c.*, supplies the following notices respecting some of the previously known species of *Pison*:—*P. xanthopus* (Brullé) = *obscurus* (Shuck.);

spinolæ (Shuck.) = *australis* (Sauss.) = *tasmanicus* (Smith); *P. auratus* (Shuck.) is not, as stated by that author, from the Cape of Good Hope but from Australia, p. 290. *P. nitidus* (Smith, Trans. Ent. Soc. Lond. 1868, p. 248) is distinct from *nitidus* (Smith, Journ. Proc. Linn. Soc. Zool. iii. p. 160); and the name of the former must be changed to *fenestratus* (Smith), p. 291.

Smith (*l. c.* pl. 6. fig. 7) has figured the wing of his *Pisonitus rugosus*.

New genera :—

Pseudosphex, g. n., Taschenb. *l. c.* p. 420. Radial cell of ant. wings oval, not appendiculated; first and second cubital cells respectively receiving the first and second recurrent nervures; head oblique, wider than metathorax; antennæ inserted in the middle of forehead; clypeus wide and short; mandibles tridentate at apex; claws of tarsi unidentate beneath. Sp. *P. pumilio*, sp. n., *ibid.*, Mendoza.

Parapodium, g. n., Tasch. *l. c.* p. 423. Radial cell of ant. wings elongate, attached to the radius at its apex; first cubital cell taking the first recurrent nervure, the second cubital cell subtriangular, and receiving the second nervure; head short, face orbicular, antennæ inserted beneath its middle; mandibles simple; thorax elongate, subcylindric; abdomen lanceolate, scarcely longer than the petiole; claws of tarsi unidentate in the middle. Sp. *P. biguttatum*, sp. n., *ibid.*, Venezuela.

Parapsammophila, g. n., Tasch. *l. c.* p. 429. Radial cell of ant. wings rounded at apex, not appendiculated; second cubital cell joined to the radial cell, and receiving both the recurrent nervures; third cubital cell closed in front and behind; hinder part of first segment of abdomen narrowed, but the petiole not biarticulate; claws of tarsi bidentate at base; anterior tarsus of ♀ pectinate; mandibles dentate in the middle. Sp. *P. miles*, sp. n., p. 430, *lateritia* and *lutea*, spp. nn., p. 431, Chartum.

Ammoplanus, g. n., Giraud, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 469, pl. 12. f. 1. Near *Celia*. Head broad, flattened in front; antennæ inserted close to the mouth. Stigma ovoid, incrassated; radial cell very short, transverse; cubital cells two, of which only the first is closed, receiving the recurrent nervure near its middle; two complete discoidal cells. Tibiæ and tarsi without spines. Abdomen subpetiolated. Sp. *A. wesmaeli*, sp. n., p. 470, Vienna; *A. perrisi*, sp. n., p. 470, Spain.

Acanthostethus, g. n., Smith, *l. c.* p. 306, pl. 6. Ocelli placed in a curve. Antennæ gradually thickened to the apex. Clypeus transverse, its lateral angles subdentate; mandibles edentate, acute; labrum concealed. Metathorax with two stout acute spines. One marginal cell, extending more than halfway to the apex of the wing, and two submarginal cells, the first longer than the marginal, and more than twice as long as the triangular second submarginal; first recurrent nervure entering the first submarginal cell towards its apex, the second uniting with the first transverso-cubital nervure. Abdomen subsessile, ovoido-conic; first ventral segment produced at the base, forming an obtuse angle. Genus founded on the characters of the ♀ only, and resembling *Nysson*. Sp. *A. basalis*, sp. n., p. 307, pl. 6. fig. 3, Australia.

Aulacophilus, g. n., Smith, *l. c.* p. 305, pl. 6. Eyes large, deeply emarginate. Anterior margin of the clypeus rounded; mandibles edentate. An-

tennæ thickened towards the apex. Anterior and intermediate tibiæ with a single apical spine. One elongate marginal cell, and two submarginal cells, the first twice the length of the second; the first recurrent nervure uniting with the first transverso-medial; the second received a little within the second submarginal cell. Abdomen cordiform, petiolated, the elongate petiole clavate at its apex. Habit of *Polybia* among the *Vespidæ*. Sp. *A. vespoidea*, sp. n., pl. 6. fig. 4, Brazil.

Miscothyris, g. n., Smith, *l. c.* p. 307, pl. 6. Eyes very large; ocelli placed in a triangle. Antennæ subclavate. Mandibles bidentate; clypeus triangular; labrum concealed. Metathorax short, truncate. One elongate marginal cell tapering to a point, and three submarginal cells, the first being three-fourths of the length of the second and third, the second oblong-quadrate, the third oblique, and widest at its extremity. Hinder tibiæ incrassate, slightly curved, and denticulate. Abdomen subtruncate at the base, incurved and tapering to the apex; second segment produced into a compressed tubercle beneath. Genus founded on the characters of the ♂ only. Sp. *M. thoracicus*, sp. n., p. 308, pl. 6. fig. 5, Australia.

Parapison, g. n., Smith, *l. c.* p. 298. Separated from *Pison* and *Pisonitus* on account of the obliteration of the second submarginal cell of the fore wings, which in those genera is always present and petiolated, although in some species minute. Spp.: *P. obliterated*, Smith; *P. rufipes*, sp. n., p. 298 and pl. 6. fig. 6 (wing), India; *P. ruficornis*, sp. n., *l. c.* p. 300, Australia; *P. agilis*, sp. n., *ibid.*, Ceylon.

Silaon [sic], g. n., Piccioli, *Bullet. d. Soc. Ent. Ital.* i. p. 282. The characters are those of *Pisonitus* (Shuck.), with the following exceptions:—Eyes entire, more widely separated, leaving ampler space for the frons and vertex and for the ocelli, which form a right-angled triangle; antennæ shorter, originating lower down, and having the third joint not longer than the first. The orthography should be *Syllaon*, according to the Greek derivation given by the author in a note (p. 283). This genus is established on the ♀ only. Sp. *S. compeditus*, sp. n., p. 283, pl. 1. fig. 2, Fiesole.

New species:—

Pison. Smith (*l. c.*) describes the following new species:—*P. tibialis*, *basalis*, and *simillimus*, p. 292, *P. aurifex*, p. 293, *P. separatus* and *fuscipennis*, p. 294, *P. decipiens* and *dimidiatus*, p. 295, *P. festinus*, p. 296, all from Australia; *P. tuberculatus*, *ibid.*, New Zealand; *P. insularis*, p. 297, New Hebrides; *P. fabricator*, *ibid.*, Hong Kong; *P. coriformis*, *ibid.*, Mexico.

Astata costæ, Piccioli, *l. c.* pp. 38–40, pl. 1. fig. 1, ♀ = *oculata*, Jur. ♂ ♀, Monte Ceceri, near Florence.

Larrada chrysonota, Smith, *l. c.* p. 304, Australia; *L. luteipennis*, Cresson, *Trans. Amer. Ent. Soc.* ii. p. 293, Cuba.

Priononyx bifoveolata, Taschenberg, *l. c.* p. 403, New Friburg.

Enodia nigropectinata, Tasch. *l. c.* p. 409, and *albopictinata* (sic), Tasch. *l. c.* p. 410, Chartum.

Chlorion bicolor, De Saussure, *Stettiner entom. Zeitung*, 1869, p. 56, Monte Video; *C. metallicum* and *pretiosum*, Tasch. *l. c.* p. 421, La Plata; *C. pallidipenne* and *nobilitatum*, Tasch. *l. c.* p. 222, Parana.

Spher. Taschenberg, *l. c.*, describes the following species:—*S. siamensis*, 1869. [VOL. VI.]

p. 413, Siam; *metallica*, p. 414, Chartum; *nigrocærulea*, p. 415, Venezuela; *mexicana*, p. 416, Mexico; *argentina*, p. 417, Mendoza, Rozario; *ruficauda*, p. 418, S. America; *micans*, p. 419, Parana, Mendoza, Rio (? *dorsalis*, Lepell.).

Sphex godeffroyi, De Saussure, *l. c.* p. 57, Australia, Cape York; *S. mandibularis*, Cresson, *l. c.* p. 293, Cuba.

Podium fumipenne, Tasch. *l. c.* p. 425, Parana; *sexdentatum*, Tasch. *l. c.* p. 426, and *dubium*, Tasch. *l. c.* p. 427, New Friburg.

Psammophila dispar, Tasch. *l. c.* p. 429, Chartum.

Ammophila rubriceps, Tasch. *l. c.* p. 432, Cape of Good Hope; *gracillim* and *propinqua*, Tasch. *l. c.* p. 433, Chartum; *anomala*, Illinois, and *erythropu* Java, Tasch. *l. c.* p. 434; *A. limbata*, Kriechb. Verh. zool.-bot. Ges. Wies. xix. p. 597, Corfu.

Tachytes australis, De Saussure, *l. c.* p. 57, Australia, Cape York.

Cerceris. Radoszkowsky describes the following new species (Horæ Soc. Ent. Ross. vi.):—*C. semilunata*, p. 105, Amour River; *C. hispanica*, *ibid.* Andalusia; *C. pucili*, p. 106, Siberia.

BEMBECIDÆ.

Hogardia. Riley (First Ann. Report Ins. Missouri, p. 27) describes the habits and gives a figure of *Stizus* (= *Hogardia*) *grandis* (Say).

Bembex (errore *Bombex*) *dalmatica*, sp. n., Kriechb. *l. c.* p. 598, Dalmatia.

Monedula decemmaculata, sp. n., Packard, First Ann. Report of Peabody Acad. 1869, p. 60, Brazil.

SCOLIIDÆ.

Pterombrus, g. n., Smith, *l. c.* p. 302, pl. 6. Antennæ 12-jointed, inserted on each side of a bituberculate prominence of the face; 1st joint of the flagellum globose, the three next subequal, the rest decreasing in length to the apex. Prothorax produced forwards into a neck, and extending backwards to the insertion of the wings. One elongate marginal cell, and three submarginal cells. Tarsi slender. Abdomen elongate, petiolated; aculeus exerted. Founded on the characters of one sex, probably ♀, and similar in some respects to *Myzine*. Sp. *P. enigmaticus*, sp. n., p. 303, pl. 6. fig. 1, Brazil.

Discolia ovalaensis, sp. n., De Saussure, *l. c.* p. 62 = ? *Scolia venusta* (Smith), Ovalau, Fiji Islands.

Dielis obesa, sp. n., De Saussure, *ibid.*, Patagonia and Uruguay.

Scolia bisignata, sp. n., Packard, *l. c.* p. 61, Quito.

MUTILLIDÆ.

Rhagigaster morio (Westw.). The ♀ is described by De Saussure (*l. c.* p. 58), with a doubt whether it be not a *sp. n.*

Zebeboria xanthorrhæi (Smith). Both sexes are described by De Saussure, *l. c.* p. 60, the ♀ for the first time.

Mutilla. The following known species are described by Sichel & Radoszkowsky (Horæ Soc. Ent. Ross. vi.):—*M. quinquefasciata* (Oliv.), p. 162; *M. corniculata* (Pallas), p. 163, pl. 7. fig. 1; *M. capitata* (Lucas) = *parvicollis* (Costa) = (?) *agrestis* (St. Farg.), p. 164; *M. erythrocephala* (Fab.), p. 167; *M. petiolaris* (Fab.), p. 168; *M. cornuta* (Oliv.) = *erythrocephala* (Coqueb.) =

caucasica (Kolen.) = *Rudia megacephala* (Costa), p. 169; *M. calva* (Latr.) = *melanocephala* (Fab.) = *triareolata* (Spin.) = *Rudia hastata* (Costa), p. 171.

Thynnus clypearis, sp. n., De Saussure, l. c. p. 59, ♂ (♀?), Sydney, Australia.

Mutilla cephalica sp. n., Sichel & Radoszkowsky, l. c. p. 166, South France, Russia, and Greece.

Methoca mandibularis, sp. n., Smith, l. c. p. 301, Shanghai.

FORMICIDÆ.

PERKINS has published (Amer. Nat. iii. pp. 360-364) a semipopular account of the Driver Ant (*Anomma arcens*, Westw. ?) in Western Africa.

EATON (Ent. Monthly Mag. v. p. 298) records the unnaturally early development (in April) of the winged sexes of *Formica nigra* (Linn.), from a nest situated near the hot-water pipes of a cactus-house in the botanical gardens at Cambridge.

Epitritus, g. n., Halid. MS., Emery, Bullet. d. Soc. Ent. Ital. i. p. 136. Near *Strumigenys*, but distinguished by having the antennæ 4-articulate, as is also the case in *Orectognathus*. But *Orectognathus* has the 2nd joint of the flagellum the largest; *Epitritus* the 4th. Head shorter and broader than in *Strumigenys*; eyes invisible from above; pronotum large, obtusely produced at the humeral angles; metanotum bidentate; tibiæ short; wings wanting. Established on a single ♀. Sp. *E. argiolus*, sp. n. (Hal.), ibid., fig., Lucca. L. *Cremastogaster lastrygon*, sp. n., Emery, l. c. p. 135, Sicily.

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CHRYSIDIDÆ.

Chrysis hirsuta, sp. n., Gerstäcker, Stett. ent. Zeitung, 1869, p. 135, and *C. cribrata*, sp. n., Gerstäcker, l. c. p. 186, Upper Carinthia.

ICHNEUMONIDÆ.

JORDAN (Ent. Monthly Mag. vi. p. 138) mentions that *Mesochorus pectoralis* (Ratz.) was reared by him from a larva of *Pterophorus tephrodactylus* (Hub.), and also notices the parasitism of *Rogas bicolor* (Spin.) upon larvæ of that plume.

TAPPES figures (Ann. Soc. Ent. Fr. 4^e sér. ix. pl. 1. fig. 15) *Pezomachus* (= *Theroscopus*) *pedestris* (Gravenhorst), a parasite of *Cryptocephalus duodecimpunctatus* (Fab.), and (l. c. fig. 16) the ♂ of *Blacus* (= *Pygostolus*) *falcatus* (Nees), a parasite of *Cryptocephalus bipunctatus* (Linn.).

Paniscus. Riley (First Ann. Report Ins. Missouri, p. 89) notices the habits of *P. geminatus* (Say).

Microgaster. Riley (ibid.) figures *M. militaris* (Walsh). According to the figure, this insect is certainly not a *Microgaster*, but possibly an *Alysia*.

Hormiopterus, g. n., Giraud, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 478. Characters of *Hormius*, except the antennæ, which are 37-jointed, very slender and filiform. Sp. *H. ollivieri* [sic], sp. n., p. 479, Algeria.

New species :—

Ichneumon. The following new species are described by Kawall (Bull. Soc. Nat. Mosc. xlii. 1869), all from Courland :—*I. leucacanthus* and *tuberculatus*, p. 506; *I. palpator*, p. 507; *I. contrectator* and *cupidus*, p. 508; *I. appetens* and *eichwaldi*, which may be a *Cryptus*, p. 509; *I. avidus*, p. 510.

Pacilostictus (? *Cryptus*) *ratzeburgi*, Kawall, *l. c.* p. 503, Courland; bred from pupæ of *Fidonia piniaria*.

Hemiteles (?) *cressonii*, Riley, First Ann. Report Ins. Missouri, p. 177, pl. 2. fig. 7, from Missouri; *H. utilis*, Norton, Trans. Amer. Ent. Soc. ii. p. 326, note, bred from cocoons of *Lophyrus abietis*.

Cryptus lophyri, Norton, *ibid.*, also bred from cocoons of *L. abietis*, Connecticut.

Pimpla chelonix, Giraud, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 149, France.

Arotes (Grav.). Cresson, Trans. Amer. Ent. Soc. ii. p. 260, tabulates the North-American species of this genus, and describes the following new species:—*A. vicinus*, Massachusetts, and *A. venustus*, Mass. and W. Virginia.

Aleiodes parasiticus, sp. n., Norton, *l. c.* p. 327, note, bred from cocoon of *Lophyrus abietis*, Connecticut.

Aleiodes. Cresson, *l. c.* p. 377 *et seq.*, tabulates the North-American species of this genus, including the following new species:—*A. texanus*, Texas, *fumipennis*, Illinois, *mexicanus* and *fascipennis*, Mexico, p. 378; *pedalis*, Mexico, *terminalis*, East., Midd., South. and West. States, *abdominalis*, East. and Midd. States, and *lectus*, Illinois (? ♂ of *abdominalis*), p. 379; *atriceps*, Mexico, *intermedius*, E., M., S. & W. States, *canadensis*, Canada, *discoideus*, Illinois, and *ornatus*, Mexico, p. 380; *fulvus*, Canada, *aciculatus*, E., M., & W. States, and *burrus*, Conn., Ills., and Mexico, p. 381; *rileyi*, Missouri, *femoratus*, W. Virginia, *melleus*, Massachusetts, and *fusciceps*, Mexico, p. 382.

Microgaster gallicolus [sic], Giraud, *l. c.* p. 480, France [belongs apparently to Förster's genus *Apanteles*, as the author states it to have only two cubital cells]; *M. gelechia* [sic], Riley, *l. c.* p. 178, Missouri.

CHALCIDIDÆ.

Melittobia audouini. Giraud (*l. c.* pp. 151–156) describes the habits of this insect, = *Anthophorabia retusa* (Newport) = *Cirrhospilus acasta* (Walk.).

Arthrolysis. Giraud (*l. c.* p. 483) remarks on the imperfection of this genus of Förster, founded only on the ♂. *Pteromalus scabriculus* (Nees) is a ♀ of the same genus.

Dichalysis. Giraud (*ibid.*) remarks that this genus of Förster, founded only on the ♂, = *Psilocera* (Walk.) = *Eupsilocera* (Westw.), and that the ♀ is to be sought in the genus *Metopon* (Walk.).

Sympiesis. Giraud (*l. c.* p. 145) redescribes *S. sericeicornis* (Nees) = *Eulophus eneugamus* (Walk.) = *Entedon laticornis* (Ratz.).

Pteromalus sieboldi (Ratz.) is redescribed by Giraud (*l. c.* p. 147).

CHAPMAN (Ent. Monthly Mag. v. pp. 297–298) describes the pairing of *Pachychirus* (= *Cheiropachys*) *quadrum* (Walk.), reared by him from branches of an apple-tree infested by *Scolytus rugulosus* (Ratz.).

New species:—

Callimome albipes, Giraud, *l. c.* p. 482, France.

Megastigmus albifrons, Walker, Trans. Ent. Soc. Lond. 3rd series, vol. iii. p. 314, California.

Arthrolysis guyoni, Giraud, *l. c.* p. 484, pl. 12. figs. 3 & 4, France.

Pirene. Riley (First Ann. Report Ins. Missouri, p. 176, pl. 2. fig. 6) describes the habits of, and figures a new species, probably of this genus, from Missouri.

Eurytoma bolteri, Riley, l. c. p. 177, pl. 2. fig. 9, Missouri.

Eupelmus guencei, [sic] Giraud, l. c. p. 487, Europe.

WESTWOOD (?; under the initials "I. O. W.") mentions and figures in the 'Gardeners' Chronicle,' 1869, p. 1230, a species of the *Eurytomides* belonging to the genus *Isosoma*, and for which (without describing it) he proposes the name *Isosoma orchidearum*. Pupæ of both sexes of this insect were found, in company with uninjured Curculionideous larvæ, between the overlapping leaves of an undetermined exotic species of the *Orchidaceæ*. The circumstances seem to corroborate Walsh's opinion that *Isosoma* is a vegetable feeder, and not, like the rest of the *Chalcididæ*, insectivorous.

Pteromalus verditer, Norton, Trans. Amer. Ent. Soc. ii. p. 327, bred from cocoons of *Lophyrus abietis*, Connecticut.

(Cheiropachus [sic]?) nigrocyanus, Norton, ibid., also bred from cocoons of *Lophyrus abietis*, Connecticut.

PROCTOTRYPIDÆ.

The three genera *Spilomicrus*, *Levotropa*, and *Dryinus*, placed among the *Chalcididæ* on p. 303 of the 'Record' for 1868, should have been arranged under the heading *Proctotrypidæ*.

WESTWOOD refers to a *Calyoza* from Port Natal with pectinated 13-jointed antennæ in both sexes, and corrects an error in vol. ii. of Trans. Ent. Soc. Lond. p. 56, where the ♂ is represented with the antennæ 12-jointed (Proc. Ent. Soc. Lond. 1869, p. 11).

GALLICOLÆ.

FÖRSTER (Verh. zool.-bot. Gesellsch. Wien, xix. pp. 327-370), anticipating his promised monograph of the species of this group, gives synoptical tables of the seven families into which he divides it, and of the genera therein contained. Those families are:—1, the *Ibaloidæ*; 2, *Cynipoidæ* (in relation to which and its allies he notes Hartig's error—corrected by Reinhard—of the first, instead of the second, segment of the abdomen being fully half as long as or longer than the rest of the abdomen); 3, *Allotrioidæ*; 4, *Eucæloidæ*; 5, *Megapelmoidæ*; 6, *Onychioidæ*; and 7, *Figitoidæ*. Considering the *Gallicolæ* as one family, usually termed *Cynipidæ*, these must be treated as subfamilies.

1. The *IBALOIDÆ*, restricted in Europe to a single genus and species, *Ibalia cultellator* (Latr.), receive no further elucidation.

2. *CYNIPHOIDÆ*. In this division (including 27 genera, of which several are new) the following observations occur:—*Teras* (Hartig) is changed to *Dryoteras*, being already used in the *Lepidoptera* (cf. 'Record' 1868, wherein is noted the Recorder's change of *Teras* to *Diptolepis*, for the same reason); *Trigonapsis crustalis* (Hart.) = *megaptera* (Panz.); the ♂ of *Phanacis centaureæ* (Först.) has at last occurred to the author, and appears to differ widely from the ♀ in its colour and extremely abbreviated wings; *Aulax splendens* (Hart.) = (*Xestophanes*) *potentillæ* (De Vill.).

The following new genera are characterized :—

Bathyaspis (p. 332). Maxillary palpi 4-, labial palpi 3-jointed; antennæ filiform, in ♂ 15-, in ♀ 14-jointed, first joint of funiculus longer than second; mesonotum smooth, with continuous parapsidal furrows; scutellum almost round, smooth, with a flat impression in the middle, rugose, and without grooves at the base; abdomen in the ♀ laterally compressed, in the ♂ flattened; wings with the radial cell scarcely double as long as broad, and closed at the margin, the basal section of the radius slightly arched, the second cubital cell situate near the base of the radial. Sp. *B. aceris*, sp. n., *ibid.*, bred from galls on *Acer platanoides*.

Hololexis (p. 333). Antennæ filiform, 14-jointed, first joint of funiculus very long, much longer than the two preceding together; clypeus rounded but not margined; mesonotum with continuous parapsidal furrows; radial cell closed at the fore margin, twice as long as broad; basal section of radius curved (not elbowed, as in *Rhodites*); second cubital cell wanting. Sp. *H. rufipes*, sp. n., *ibid.*, bred from monothalamous galls of wild rose, but not agreeing with *Rhodites eglanteriæ* (Hart.), which, however, is a true *Hololexis*.

Ameristus (*ibid.*). Antennæ in ♂ 15-, in ♀ 13-14-jointed; first joint of funiculus longer than second; mesonotum entirely smooth, without trace of parapsidal furrows; scutellum impressed at the base, without separate grooves; abdomen compressed at the sides, in the ♂ almost pedunculate; radial cell elongate, open at the margin; second cubital cell situated at the base of the radial. Sp. *Neuroterus politus* (Hartig).

Entrophia (*ibid.*). Antennæ filiform or slightly clavate, in the ♂ 15-, in the ♀ 13-15-jointed, first joint of funiculus longer than second; mesonotum smooth or slightly coriaceous, parapsidal furrows deep, very distinct; scutellum impressed at the base, the impression anteriorly straight across (not arched as in *Spathegaster*); abdomen laterally compressed, in ♂ pedunculate; radial cell elongate, closed at the fore margin; second cubital cell as in *Ameristus*. Sp. *E. lissonota*, sp. n., p. 334, Aix.

Isocolus (p. 334). Antennæ of ♂ 14-, ♀ 13-jointed, first joint of funiculus only slightly longer than second; mesonotum transversely rugulose, with continuous parapsidal furrows, sides of mesosternum striate; scutellum broadly truncate at apex, the grooves at its base very large, almost triangular; radial cell open at the fore margin, base, and apex, and not double as long as broad; second cubital cell as in *Ameristus*. Sp. *I. scabiosa* (Gir.).

Liodora (*ibid.*). Maxillary palpi 5-, labial palpi 10-jointed; face not striate; antennæ filiform or slightly clavate, in ♂ 15-, in ♀ 14-jointed, first joint of funiculus longer than second; mesonotum entirely smooth, parapsidal furrows continuous, generally deep; scutellum with two more or less distinct, separate, seldom confluent, grooves at the base; radial cell elongate, closed at fore margin; second cubital cell as in *Ameristus*. Sp. *L. sulcata*, sp. n. (in error *sulcata*), p. 335, Aix, Switzerland, and Sweden.

Callirhytis (p. 335). Antennæ in ♂ 16-, in ♀ (?) 15-jointed (apex broken), distinctly clavate; mesonotum transversely rugulose, parapsidal furrows abbreviated in front; scutellum transverse, rugulose, sides margined, with two small grooves at base; abdomen compressed; radial cell much elongated,

open at fore margin; basal section of the radius curved, not geniculate. Sp. *C. hartigii*, sp. n., ibid. (There is already a species named *hartigii* by the Recorder, Ent. Mo. Mag. 1867, vol. iv. p. 101, in *Andricus*, the next genus to *Callirhytis*.)

Dryophanta (ibid.). Maxillary palpi 5-, labial palpi 3-jointed, as in the five next genera; antennæ 13-14-jointed, coarsely pubescent, first joint of funiculus longer than second; mesonotum punctured, with depressed hairs, straightly truncate behind, parapsidal furrows continuous; scutellum without distinct grooves at base; legs with coarse standing-out hairs; abdomen at the apex with scattered hairs (not thickly crowded, depressed and silky, as in *Cynips*); radial cell very elongate, open at fore margin, with the second cubital cell at its base. Sp. *D. folii* (L.).

Aphilothrix (p. 336). Differs from *Dryophanta* in its antennæ and legs not having coarse hairs. Sp. *A. corticis* (L.).

Eubothrus (ibid.). Face aciculate-punctured; antennæ in ♂ 14-, in ♀ 13-jointed, filiform, first joint of funiculus shorter than second; mesonotum somewhat rugulose, parapsidal furrows continuous, sides of mesosternum aciculate; scutellum with two large basal grooves, reaching the middle, but distinctly separate; radial cell elongate, open at the fore margin, base, and apex; the basal and lateral sections of the radius almost entirely straight; second cubital cell almost at the base of the radial, imperfectly closed by a curious vein; second section without longitudinal furrows at the base. Sp. *scabiosa* (Gir.), but which has already been given by the author at p. 334 as the type of his genus *Iscolus*, a mistake not noticed in the list of errata.

Liposthenes (ibid.). Antennæ in ♂ 14-, in ♀ 13-jointed, filiform, first and second joints of funiculus equal in length, the first not bowed in the ♂; mesonotum coriaceous, parapsidal furrows continuous; scutellum with two distinct basal grooves not reaching the middle; radial cell elongate, open at fore margin, base, and apex; the basal section of the radius arched, much thickened, the lateral section very fine, curved at the base; second cubital cell wanting; second segment with no longitudinal furrows. Sp. *L. glechomæ* (Hart.).

Periclistus (p. 337). Face aciculate; antennæ in ♂ 14-, in ♀ 12-13-jointed, first and second joints of funiculus equal in length; mesonotum coriaceous, sides of mesosternum aciculate; scutellum with two distinct grooves at the base; second segment of abdomen very large, with no longitudinal furrow at base, third segment very small in ♀; radial cell closed at fore margin, broader than long, with second cubital cell at its base. Sp. *P. caninæ* (Hart.).

Xestophanes (ibid.). Antennæ filiform, in ♂ 14-, in ♀ 13-jointed, first joint of funiculus equal to or somewhat longer than the second, curved in the ♂; mesonotum entirely smooth, parapsidal furrows continuous; scutellum with two large and distinct basal grooves; radial cell longer than broad, open at fore margin, second cubital cell widely removed from its base; second segment of abdomen with no longitudinal basal furrows. Sp. *X. potentillæ* (De Vill.).

Sapholytus (ibid.). Maxillary palpi 5-, labial palpi 2-jointed; antennæ filiform, in ♂ 15-, in ♀ 13-14-jointed, first joint of funiculus longer than second, curved in ♂; face aciculate; mesonotum rugulose, parapsidal furrows continuous, rarely indistinct or wanting; sides of mesosternum acicu-

late; second segment of abdomen furrowed at base; radial cell open at fore margin, with the second cubital cell widely separated from its base. Sp. *S. apicalis* (Hart.).

3. ALLOTROIDÆ (*Aphidivoræ*, Gir.). *Xystus erythrocephalus* (Hart.) = *Allothia victrix* (Westw.), p. 340.

The following new genera are characterized:—

Phanoglyphis (p. 338). Antennæ, as in the two following genera, in ♂ 14-, in ♀ 13-jointed; mesonotum smooth, with continuous parapsidal furrows; scutellum with two distinct or confluent basal grooves; radial cell closed at fore margin, not twice as long as broad; second cubital cell widely removed from its base, and not entire. Sp. *P. xanthocroa*, sp. n. (p. 339), Lüttich.

Hemicrisis (p. 339). First joint of funiculus much longer than second, in ♂ curved and hollowed out; mesonotum very finely punctured and pubescent; parapsidal furrows much abbreviated in front, strongly excavated behind; scutellum slightly transversely impressed at the base, with no grooves; radial cell closed at fore margin, almost twice as long as broad, with second cubital cell close to its base, and almost entirely closed. Sp. *H. ruficornis*, sp. n., p. 339, Aix.

Pezophycta (ibid.). First joint of funiculus longer than second, not curved in ♂; mesonotum smooth, no parapsidal furrows; scutellum slightly transversely impressed at the base, with no grooves; wings much abbreviated; veins and cells very imperfect and badly defined; joints 1 and 5 of the hind tarsi equal in size, the first a little thicker than the following. Sp. *P. brachyptera* (Hart.).

Nephyta (ibid.). Antennæ of ♂ 14-jointed, of ♀ not known; first joint of funiculus scarcely longer than second, not curved; mesonotum smooth, not divided by furrows; scutellum as in *Pezophycta*; wings somewhat abbreviated, narrow, scarcely reaching beyond apex of abdomen, with the radial cell very short, closed at the fore margin, rarely half free. Sp. *N. discreta*, sp. n., p. 340, Aix.

Dilyta (p. 340). Antennæ of ♂ 14-, of ♀ 13-jointed; first joint of funiculus longer than second; mesonotum smooth, not divided; scutellum as in *Pezophycta*; radial cell open at fore margin and apex, with the second cubital cell widely removed from its base, and not perfect. Sp. *D. subclavata*, sp. n., ibid., Aix.

Alloxysta (ibid.). Differs from *Dilyta* in its elongate wings, the radial cell of which is only open at the fore margin. Sp. *A. macrophadnus*, (Hart.).

4. EUCELLOIDÆ. The author recharacterizes:—*Cothonaspis* (Hartig), in a restricted sense, considering *pentatoma* (Hart.) as its type; *Clidotoma* (Westw., in error *Kleidotoma*), type *geniculata* (Hart.); *Glauraspidia* (Thoms.), type *subtilis* (Dahlb.); and *Eucæla* (Westw.), type *cubitalis* (Hart.).

Eucæla floralis (Dahlb., Thoms.) = *trichopsila* (Hart.); *E. mandibularis* (Zett.) = *basalis* (Hart.).

The following new genera are characterized:—

Diglyphosema (p. 345). Head smooth, cheeks divided from the face by a sharp ridge, striated beneath; the face with two longitudinal grooves be-

neath; antennæ as widely separated from each other as from the margins of the eyes, in ♀ 13-jointed, thickened towards the apex, but with no decided club; pronotum with moderately strongly margined sides; mesonotum with deep, strong, converging parapsidal furrows, which meet at the scutellum; scutellum with a large cup, reaching beyond the apex, and with elliptic grooves, situate in the middle, not at the hinder margin; metasternum and base of second abdominal segment bare; wings pubescent, rounded at apex, and fringed with hairs; radial cell open at the fore margin. Sp. *D. eupatorii*, sp. n., p. 345, Aix, bred from dry stalks of *Eupatorium cannabinum*.

Gronotoma (p. 346). Like the preceding, but with the sides of the mesosternum beneath the longitudinal furrow not smooth, but very finely aciculate, almost coriaceous, and with the radial cell entirely closed at the fore margin. Spp.: *G. sculpturata*, sp. n., *ibid.*, Aix; *Eucæla allotriæformis* (Gir.).

Disorygma (*ibid.*). Head &c. as in preceding; antennæ closer to margins of eyes than to each other, in ♂ 15-, in ♀ 13-jointed, with no defined club; the first joint of funiculus not longer than second in ♀, in ♂ longer, emarginate, and thickened towards the apex; parapsidal furrows of mesonotum parallel or slightly converging; scutellum with a large cup; sides of metasternum and base of second abdominal segment bare; wings pubescent, rounded at apex, and fringed with hairs; radial cell open at fore margin. Sp. *D. divulgata*, sp. n., *ibid.*, Aix (? also *Cothonaspis emarginata*, Hart.).

Microstilba (*ibid.*). Differs from *Disorygma* in the antennæ being not closer to the eye-margins than to each other, with first joint of funiculus in ♂ strongly emarginate, and in the radial cell being closed at the fore margin. Spp.: *M. bidentata*, sp. n., p. 347, Aix; *Eucæla heterogena* (Gir.) and *Cothonaspis bistriata* (Thoms.).

Ectolyta (p. 347). Head smooth, cheeks divided from the face by a furrow, striated beneath; antennæ 13-jointed, joints 4-12 gradually shorter; mesonotum (as in the 15 following genera) with no parapsidal furrows; scutellar cup roundish ovate; sides of metasternum hairy, but not tomentose; second segment of abdomen glabrous at the base; wings pubescent, rounded at the sides, with a fringe of hairs; radial cell open at fore margin. Sp. *E. incrassata* (Thoms.).

Erisphagia (*ibid.*). Antennæ in ♂ 15-, in ♀ 13-jointed, with no distinct club; joints of funiculus gradually thicker, the last joint distinctly thicker and longer than the penultimate; sides of metasternum and base of second segment of abdomen glabrous; wings as in *Ectolyta*, but with the radial cell closed at the fore margin, and with the cubitus distinct to the apex of wing. Spp. *E. depilis* and *curta* (Gir.).

Leptopilina (p. 348). Cheeks divided from face by a fine furrow, the impression of which is moderately broad but not deep; antennæ in ♂ 15-, in ♀ 13-jointed; joints of funiculus of equal length, but the last eight somewhat thickened, forming a slight club; scutellum very finely rugulose, with a flat, entirely smooth, indistinctly margined cup; sides of metasternum bare; base of second segment of abdomen crowned with tomentose hairs; wings pubescent, slightly emarginate at the apex, with a fringe of hairs; radial cell closed. Sp. *L. longipes* (Hart.).

Rhynchacis (*ibid.*). Cheeks not divided from face by a furrow; antennæ in ♀ 13-jointed; first joint of funiculus longer than second, the three last

forming a very distinct club; scutellum sharply striated on the sides, the cup flat, with a groove behind; the point of the scutellum rostrate behind and beneath the cup, and especially conspicuous from the sides; sides of metasternum bare and smooth; second segment of abdomen crowned with tomentosity at the base; wings rounded out at the apex, with a strong fringe of hairs; radial cell open at the fore margin, both sections of the radius not arched. Sp. *R. nigra* (Hart.).

Tetrarhoptra (p. 349). Cheeks divided from face by a narrow furrow, the facial grooves varying in depth; antennæ 13-jointed, with 4-jointed club, the first joint longer than second; scutellum thickly and finely striated, rounded at the apex, with a small cup; sides of metasternum wholly bare, or only tomentose immediately over the coxæ; the second segment of abdomen crowned with tomentose hairs at the base; wings more or less rounded out or incised at the apex, pubescent, with fringe of hairs; radial cell open, the first and second sections of the radius straight. Spp. *T. heterotoma* and *tetratoma* (Thoms.), but not *tetratoma* (Hart.).

Pentacrita (ibid.). Malar furrow and facial grooves slight; antennæ as in *Tetrarhoptra*, but with 5-jointed club; scutellum sharply and finely striate, rounded at the point, the cup small, elongate; rest much as in *Tetrarhoptra* Spp.: *P. retusa* (Hart.), *tomentosa* and *cordata* (Gir.), *pentatoma* and *albipennis* (Thoms.), but not *pentatoma*, Hartig, which is a *Cothonaspis*.

Hexacola (ibid.). Malar furrow fine, facial grooves broad and shallow; club of antennæ 6-jointed; scutellar cup not large, elliptic, with a groove; the hinder margin; apex of wings more or less rounded out; rest as in preceding genus. Sp. *H. picicrus* (Gir.).

Heptameris (p. 350). Vertex finely transversely striate; malar ridge fine, facial impressions deep; antennæ with 7-jointed club, the first joint of which is not so thick as the second; sides of the prosternum sharply striated above, with tomentose spots before the striæ; scutellum striate, with a very small blunt denticle on the lateral margin, elongate cup, a round groove behind, and two punctures in front; rest as in preceding genus. Sp. *H. pygmaea* (Dahlb.).

Nedinoptera (ibid.). Club of antennæ 7-jointed, with its first joint scarcely thinner than the second; first joint of funiculus twice as long as second; scutellum thickly striated at the sides; sides of metasternum without tomentosity, the second segment of abdomen crowned with hairs at the base; wings abbreviated. Sp. *N. halophila* (Thoms.).

Apistophyza (p. 351). Malar furrow fine; face with a shallow, long impression on each side over the oral margin; antennæ 13-jointed, first joint of funiculus distinctly longer than second, the three last somewhat thickened but not forming a distinct club, all joints of funiculus much longer than broad; scutellar cup small, much elevated; sides of metasternum and base of second segment of abdomen thickly tomentose; wings narrowly acuminate, reaching almost to apex of abdomen; radial cell open at the fore margin, the first section of the radius shorter than the second, which is thickened. Sp. *A. microptera* (Hart.).

Aphyoptera (ibid.). Malar ridge fine, slightly striate beneath, facial impressions as in preceding; antennæ in ♂ 15-jointed, with the first joint of funiculus somewhat longer than the second, and distinctly emarginate, the following joint cylindrical, not quite twice as long as broad; scutellar cup

small; wings reaching a little beyond the middle of abdomen, rounded at the point, radial cell very small (? closed at fore margin); sides of metasternum bare, shining; second abdominal segment crowned with tomentose hairs at the base. Sp. *A. inustipennis*, sp. n., *ibid.*, Aix.

Aphilopectera (*ibid.*). Head smooth, but with the occiput finely transversely striated; malar ridge and facial impressions as in preceding genus; club of antennæ 5-jointed; scutellum sharply furcate laterally, the cup long, elliptic, much narrowed from the base, the two basal grooves separated by a sharp carina; sides of metasternum bare, but with a small tomentose spot above the coxæ, and the metanotum laterally tomentose; second segment of abdomen as last above; wings as long as abdomen, narrow, the radial cell open at fore margin, the second section of the radius longer than the first. Spp. *A. anisomera*, sp. n., p. 352, and (*Eucala*) *maritima* (Thoms.).

Agroscopa (p. 352). Head, viewed from above, blunt, conic, very small; antennæ in ♂ 15-jointed, first joint of funiculus distinctly longer and broader than the second, strongly emarginate, the following joints cylindrical, of equal length, longer than broad; scutellum entirely flat and smooth, with a small groove at the apex; sides of metasternum bare, smooth; second segment of abdomen as above; wings very abbreviated, not reaching beyond the base of abdomen, and with no radial cell. Sp. *A. helgolandica*, sp. n., *ibid.*, Heligoland.

Miomæra (*ibid.*). Malar ridge very fine, facial impressions small, moderately deep; antennæ in ♀ 12-jointed, with slightly developed 7-jointed club; scutellum with a very small and narrow, elliptical, finely margined cup, with a small round groove in the middle and another at the hinder margin; second segment of abdomen slightly crowned with hair at the base; wings hairy, rounded at apex, with a fringe of hairs; radial cell closed at fore margin. Sp. *M.* (in error, *Mionectis*) *aberrans*, sp. n., p. 353, Aix.

Idiomorpha (p. 353). Malar furrow fine; facial impressions broad, not deep; antennæ in ♀ 12-jointed, with 7-jointed club, first joint of funiculus longer than second, the fourth and fifth semiconnate; hinder margin of pronotum carinato-elevate; scutellum nearly round, with a large and entirely flat cup, which has at the hinder margin a deep round groove, and a row of punctures on the sides; sides of metasternum bare and smooth; second segment of abdomen crowned with tomentose hairs at the base; wings as in *Miomæra*, but with radial cell open at fore margin. Sp. *I. melanocera*, sp. n., *ibid.*, Aix.

Episoda (*ibid.*). Malar furrow very fine and shallow, facial impressions broad and flat; antennæ in ♀ 14-jointed, filiform, with no distinct club, the first joint of funiculus not longer than second; scutellum rugose, with a very large, strongly margined cup, the hinder margin of which is elevated and clear of the apex of scutellum; metasternum and second segment of abdomen as in preceding genus; wings rounded at apex, hairy, with a fringe of hairs, the radial cell closed, the cubitus indistinct. Sp. *E. xanthoneura*, sp. n., p. 354, Aix.

Psilodora (p. 354). Malar furrow slight, with a few scattered punctures below it; facial impressions large and flat; antennæ in ♂ 15-jointed, first joint of funiculus not emarginate, and as long as the second; in ♀ 13-jointed, with 8-jointed club, the joints of funiculus verticillato-pilose, the first longer than the second; hinder margin of pronotum sharply turned up; mesonotum

with two abbreviated furrows in front; scutellum rugose, with a more or less blunt denticle on the lateral margin, the cup very large, strongly margined, and with a large groove on the hinder margin; metasternum and abdomen as in preceding genus; wings entirely bare, with no trace of hair-fringe, the radial cell closed. Spp. *P. boyenii* and *maculata* (Hartig).

Hypolethria (ibid.). Malar furrow &c. as in preceding; antennæ in ♂ 15-jointed; the joints of funiculus elongato-cylindrical, the first joint not emarginate, somewhat smaller than the second; in ♀ 13-jointed, with no defined club; mesonotum as in the two next genera, with no furrows; scutellum finely rugulose, its cup very large, elevated clear of the point of scutellum, and with a groove at the hinder margin; metasternum and second segment of abdomen as in preceding, the abdomen exceedingly strongly compressed at the sides, with a very narrow dorsal surface; radial cell closed. Sp. *H. melanoptera* (Hart.).

Aglautoma (ibid.). Malar furrow fine; antennæ in ♀ 13-jointed, with 8-jointed club, the first three joints of funiculus very elongate, and thinner than the following, with the first longer than the second joint; in the ♂ 15-jointed, with the first joint of funiculus exceedingly elongate, almost as long as the three following together, scarcely curved; scutellum with a small, ovate, margined cup; metasternum and second segment as in preceding genus; wings hairy, rounded at apex, with a fringe of hairs, the radial cell closed, the second section of the radius entirely straight. Sp. *A. codruba* (Hart.), of which the author has found ♀ at Aix. Distinguished from the allied species of *Rhoptromeris* by the very elongate joints of funiculus, and by the almost filiform tarsi.

Ganaspis (p. 355). Malar furrow very slight; facial grooves not especially large; antennæ in ♀ 13-jointed, almost filiform, with the 6-7 last joints only slightly thicker than the preceding; in ♂ 15-jointed, the first joint of funiculus only slightly longer than the second, and distinctly bowed; scutellar cup not deep, immarginate, entirely smooth, and with a round groove at the hinder margin; sides of metasternum bare and smooth; second segment of abdomen covered with hair at the base; wings as in preceding genus, the radial cell closed at the fore margin, and at its inner angle, with a small oblique continuation near the first section of the radius. Sp. *G. mundata*, sp. n., ibid., Aix.

Chrestosema (ibid.). Malar furrow distinct, entirely smooth beneath, vertex elevated, ocelli moderately large; antennæ in ♀ 13-jointed, with no defined club, the first joint somewhat longer than the second; in ♂ 15-jointed, with the first joint of funiculus almost as long as the two following joints, all the rest of equal length, cylindrical, nearly twice as long as broad; mesonotum with two fine middle furrows, abbreviated behind, and two very broad and flat lateral impressions, abbreviated in front; scutellum finely rugulose, its cup large, elliptic, almost twice as long as broad, finely margined, with a round groove at the hinder margin; metasternum and second segment as in *Aglautoma*; wings hairy, rounded at apex, with a hair-fringe, and the radial cell closed at fore margin. Sp. *C. erythropea*, sp. n., p. 356, Aix.

Psichaera (p. 356). Malar ridge slight; face beneath with broad, long impressions; antennæ in ♂ 15-, in ♀ 13-jointed, with no distinctly defined club; mesonotum (as in the next ten genera) with no parapsidal furrows; scutellum rugulose, with its sides strongly margined and apex dentate, and

its cup large, considerably overtopping the apex of scutellum, strongly margined, and giving off a sharply defined keel in the scutellar groove towards the base; metasternum and second segment as in preceding genus; wings broad, hairy, rounded at apex, with a hair-fringe, the radial cell very broad and closed at free margin. Sp. *P. longicornis* (Hart.).

Rhoptromeris (ibid.). Malar furrow slight, facial grooves broad but not deep; antennæ in ♂ 15-jointed, the second joint of funiculus more or less (sometimes strongly) thickened and elongate, always longer than the first; in ♀ 13-jointed, with distinct 7-jointed club; scutellar cup small; metasternum as in preceding; second segment crowned with hair at the base; wings hairy, rounded at apex, and hair-fringed; radial cell closed at fore margin, narrow; the first and second sections of the radius almost equal in length, the inner angle with a straight or oblique continuation. Spp.: *R. eucera* (Hart.)—of which *biscapus* (Hart.) and *nodosa* (Gir.) are the ♂, and *clavipes* (Hart.) is a var.,—*heptoma* and *tristis* (Hart.), and *fovealis* (Thoms.).

Eutrias (p. 357). Antennæ as long as the mesothorax, with strongly defined 3-jointed club, the first joint of funiculus twice as long as the second, and joints 3-8 globose; scutellar cup very small; metasternum and second segment as in preceding genus; wings hairy, rounded at apex, hair-fringed, with the radial cell open at fore margin. Sp. *E. tritoma* (Thoms.).

Adieris (ibid.). Malar division indistinct, facial grooves very elongate; antennæ 13-jointed, in ♀ with 8-jointed club; scutellar cup large, elliptic, strongly margined; wings as in preceding, but with radial cell open at fore margin to the base and apex, and the first section of radius much shorter than second; metasternum as in preceding; second segment crowned with hair at the base. Sp. *A. reclusa*, sp. n., ibid., Aix.

Piezobria (p. 358). Malar furrow very slight, facial impressions wide and shallow; antennæ in ♀ 13-jointed, with no defined club, joints of funiculus (except 1 & 2) roundish, the first longer than second; hind margin of pronotum sharply elevated, thickly tomentose at the sides; scutellum rugulose, sides untoothed, apex emarginate, so that it is bluntly bidentate, the cup large; metasternum and second segment as in *Eutrias*; wings as in preceding genus, with short fringe of hairs, and the radial cell open at base and fore margin. Sp. *P. bicuspidata*, sp. n., ibid., Aix.

Pilinothrix (ibid.). Malar furrow slight, facial grooves broad; antennæ in ♀ 13-jointed, with 9-jointed and moderately distinct club; scutellar cup large, rotundate, somewhat excavated; metasternum and second segment as in preceding genus, abdomen with the sides exceedingly strongly compressed, the dorsal surface pinched up, the anal valve brought forward, cultriform; wings as in preceding, hair-fringed, with the radial cell open at fore margin. Spp.: *P. designata*, sp. n., ibid., Aix; *P. giraudi* (= *Eucæla melanoptera*, Gir. nec Hartig, which is a *Hypoethria*).

Anectolis (p. 359). Malar furrow indistinct, facial grooves broad and deep; antennæ in ♀ 13-jointed, with no defined club, the first joint of funiculus rather longer and thinner than second, the rest of equal length and thickness, except the last, which is slightly longer than the preceding; scutellum rugulose, with a large, excavated, strongly margined, rotundate cup; metasternum and second segment as in preceding; wings as in preceding genus, with radial cell open, much elongated, the first section of the radius distinctly bowed, the first and second cubital cells divided by a short perpen-

dicular vein. Sp. *A. indagatrix*, sp. n., *ibid.*, Aix; also probably *Eucela filicornis* (Thoms.).

Hexaplasta (*ibid.*). Malar furrow fine, facial grooves shallow; antennæ 13-jointed, with 6-jointed distinct club, first joint of funiculus longer than following joints; scutellum slightly striate, cup large, shallow, smooth and shining, with a round groove behind; second segment crowned with hair at the base; radial cell open, first section of radius slightly shorter than second. Spp. *H. hexatoma* (Hart.) and *rufiventris* (Gir.).

Trybliographa (*ibid.*). Malar furrow fine, facial grooves broad; antennæ in ♀ 12-jointed, with 8-jointed club, and first joint of funiculus somewhat longer than second; in ♂ 15-jointed, first joint of funiculus not longer than second, not distinctly curved; scutellum rugulose, with a large, rotundated, excavated, margined cup, which has a deep groove at its hinder margin; metasternum as in preceding; second segment of abdomen crowned with tomentose hairs at the base; radial cell open. Spp.: *T. scutellaris*, *diaphana*, *atra*, *moniliata*, *rufipes* (Hart.), *nigripes*, *antennata* (Gir.), *fumipennis*, *octotoma*, *albipennis*, *enneatoma* (Thoms.).

Diranchis (p. 360). Antennæ 15-jointed, first joint of funiculus $1\frac{1}{2}$ times as long as second, slightly bowed, the second and following joints almost of equal length; scutellum rugulose, with a moderately large, ovate, margined cup; sides of metasternum thickly tomentose over the hinder coxæ, second segment of abdomen crowned with tomentose hairs at the base; wings hairy, rounded at apex, hair-fringed, with the radial cell open and the first section of radius distinctly shorter than the second. Only known in the ♂ sex, which, as the author suggests, may possibly be the ♂ of *Aphistophyza*. Sp. *D. copulata*, sp. n., *ibid.*, Rhine bank at Cologne.

5. MEGAPELMOIDÆ (*Anacharoidæ*). The author adopts this name, from the typical genus *Megapelmus* (Hart.), as the prior *Anacharis* (Dalm.) is anticipated for the well-known water-plant. He recharacterizes *Xyalaspis* and *Megapelmus* (Hart.), and *Ægilips* (Hal.), and describes the following new genus and species:—

Synopsis (p. 361). Maxillary palpi 5-, labial palpi 3-jointed; antennæ filiform, in ♂ 14-jointed, the first two joints of funiculus of equal length; mesonotum not divided behind from the scutellum, smooth, with no parapsidal furrows; metanotum only indistinctly and imperfectly reticulate-divided; abdomen narrow, somewhat compressed at the sides, the pedicle smooth, a little longer than the hind coxæ; radial cell closed, the two cubital cells marked by a thick spot. Sp. *S. aquisgranensis*, sp. n., *ibid.*, Aix.

Megapelmus rufiventris (Hart.) = *immunis*, Walk.; *Xyalaspis larigata* (Hart.) = *Ægilips nitidula* (Dalm., *Cynips*).

6. ONYCHIOIDÆ. The author recharacterizes *Aspicera* (Dahlb.), *Onychia* (Hal.), and *Homalaspis* (Gir.).

7. FIGITOIDÆ. The author recharacterizes *Ceroptres* (Hart.), *Lonchidia* (Thoms.), *Figites* (Latr.), *Melanips* (Hal.; *Amblynotus*, Hart., Reinh., Thoms.), *Sarothrus* (Hart.; *Amphitectus*, Hart., Gir.; *Melanips*, Gir., partim), and *Melanips* (Thoms.,

nec Hal., which he renames *Diceræa*). He gives his reasons (p. 368) for placing *Ceroptres* in the *Figitoidæ*.

The following new genera are characterized :—

Anolytus (p. 365). Eyes bare, no malar margin; antennæ in ♀ 13-, in ♂ 14-jointed; mesonotum coriaceous, with no parapsidal furrows; scutellar basal grooves indistinct or wanting; sides of mesosternum always smooth; radial cell moderately elongate, open at fore margin, with no second cubital cell; abdomen hairy at base of second segment, third segment very large. Sp. *A. rufipes*, sp. n., *ibid.*

Zygosis (*ibid.*). Cheeks margined; eyes with sparse pubescence; antennæ in ♀ 13-, in ♂ 14-jointed, first joint of funiculus longer than second; thorax smooth, mesonotum very highly polished, shining, with continuous parapsidal furrows; scutellum with two smooth grooves at the base; sides of mesosternum shining, finely striate beneath, only divided from the mesosternum by a fine furrow; radial cell closed all round; second cubital cell with two genuine veins, situated almost under the base of the radial, closed beneath by a spurious vein; second segment of abdomen not hairy at base, smooth. Sp. *Z. urticeti* (Dahlb., *Figites*, with which *Psilogaster heteropterus*, Hart., is synonymous).

Homorus (p. 366). Cheeks margined, eyes pubescent; antennæ in ♀ 13-jointed, joints 4-11 of funiculus scarcely longer than broad; in ♂ 14-jointed, the first joint of funiculus very distinctly curved; mesonotum with continuous parapsidal furrows; scutellum rugulose; sides of mesosternum furrowed; radial cell closed on all sides, second cubital cell only defined by spurious veins; second segment of abdomen smooth and bare at the base. Sp. *H. abnormis* (Gir.).

Pychnotrichia (*ibid.*). Eyes with sparse pubescence, cheeks and temples margined; antennæ in ♀ 13-, in ♂ 14-jointed, joints of funiculus cylindrical, longer than broad; mesonotum with continuous parapsidal furrows; scutellum rugulose, with two grooves at the base; sides of mesosternum striated beneath, and not divided from mesosternum by a sharp ridge; wings thickly pubescent, the radial cell elongate, closed on all sides, second cubital cell only defined by spurious veins; second segment of abdomen smooth and bare at the base. Spp.: *P. erythrope*, sp. n., *ibid.*, Aix; (*Figites*) *validicornis* (Thoms.) and *lævigatus* (Reinh., with which *urticarum*, Thoms., is synonymous).

Trischiza (p. 367). Eyes bare, cheeks margined; antennæ filiform, the first and second joints of funiculus equal in length; parapsidal furrows distinct; scutellum rugulose, smooth at the base, with two grooves; sides of mesosternum smooth, radial cell open at the fore margin, base, and apex; a second cubital cell not defined; base of second segment of abdomen bare and smooth. Sp. *T. agaricolarum* (Dahlb., *Figites*).

VAN Vollenhoven, Tijdschr. voor Entom. 2^{de} serie, deel iv. p. 117, refers *Italia* to the *Evanidæ*, but no reason is assigned.

SMITH (Ent. Monthly Mag. v. p. 298) records the very interesting fact of the discovery of a male *Cynips* (*sensu str.*). Both sexes of *C. aciculata* (Osten-Sacken), reared from galls on the black oak (*Quercus spongifica*), in America, were communicated to Smith by Darwin. Walsh has observed that the males are obtained from galls which hatch early in the season,

two months before the great autumnal brood, which consists invariably of females. See remarks by Smith on this subject in Proc. Ent. Soc. Lond. 1869, pp. 11, 12.

MÜLLER remarks on the scent emitted by *Cynips lignicola* (Hart.), and suggests that its object is to protect the insect from birds (Proc. Ent. Soc. Lond. 1869, p. 25).

SMITH mentions the occurrence of a gall of *Biorhiza aptera* (Fab.) on the trunk of an oak, instead of below the ground, as is usually the case (ibid., p. 2).

Aulax albinervis, sp. n., Van Vollenhoven, l. c. p. 126, Holland.

Eucoila effluens, sp. n., Van Vollenhoven, l. c. pl. 3. fig. 5.

TSCHIEK (Verhandl. zool.-bot. Gesellsch. in Wien, xix. p. 559) describes a small gall from *Quercus pubescens*, from which he has bred in quantity a new species of *Spathogaster*. This he describes under the name of *S. giraudi*.

URO CERIDÆ.

NORTON (Trans. Amer. Ent. Soc. ii. p. 349 *et seq.*) characterizes and redescribes the known North-American species of *Oryssus* (p. 350), *Xyphydria* (p. 352), *Urocercus* (tab. p. 356), and *Tremex* (p. 364). He also characterizes one new genus and species, and refers to allied genera not yet observed in North America.

Teredon, g. n., Norton, l. c. p. 366. May be considered a subgenus of *Tremex* (Jurine), which it resembles precisely in appearance of head and body, but from which its fusiform, 5- or 6-articulate antennæ (of which the 3rd joint is shorter than the 4th, and the 5th longest, unless it be composed of two joints closely soldered, of which there is some appearance) and its dilated hinder tarsi will serve to distinguish it. Spp. *T. cubensis* and *latitarsis* (Cresson).

Urocercus zonatus, sp. n., Norton, l. c. p. 357, New York and Maryland (P. ♂ of *U. edwardsii*, Brullé).

TENTHREDINIDÆ.

NORTON (l. c. p. 211 *et seq.*) characterizes and redescribes the recorded North-American species of *Taxonus*, *Strongylogaster* (tabulated at p. 214; typical underwings of *Strongylogaster* and allies figured at p. 219), *Pæcilostoma* (p. 224), *Tenthredo* (tabulated at pp. 225 & 226), *Lophyrus* (tab. p. 322), *Lyda* (tab. 332), *Cephus* (p. 342), *Janus* (p. 344), *Phyllæcus* (p. 345), and *Xyela* (p. 347). He also characterizes certain allied genera not yet discovered in North America, and describes many new species, including five *Hymenoptera* parasitic upon *Lophyrus abietis* (for addenda, see pp. 367 & 368).

Cimbex. According to Van Vollenhoven, l. c., *C. betulæ* (Zaddach) = *sylvorum* (Fab.), *C. saliceti* (Zadd.) = *lutea* (Linn.), p. 89; *C. axillaris* (Panz.) = *humeralis* (Fourcr.), *C. lateralis* (Leach) = *vitellinæ* (Linn.), which is di-

stinct from *lucorum* (Linn.), and *C. cratægi* (Zadd.)=*betuleti* (Klug)=*Trichiosoma lucorum* (Westw.), p. 90.

Cladius. According to Van Vollenhoven, l. c. p. 93, *C. luteicornis* (Ste.)=*viminalis* (Fall.).

Nematus. According to Van Vollenhoven (l. c.), *N. rufescens* (Hart.) is the ♀ of *histrion* (St. Farg.), p. 94; *N. prasinus* (Hart.)=*virescens* (Hart.)=*viridis* (Ste.), and *N. gallarum* (Hart.)=*viminalis* (Linn.), p. 97.

Cryptocampus. According to Van Vollenhoven (l. c.), *Nematus populi* and *medullarius* (Hart.)=*C. amerinæ* (Linn.), p. 97.

Tenthredo. According to Van Vollenhoven (l. c.), *T. tessellata* (Klug)=*instabilis* (Klug), p. 108; and *T. intermedia* (Klug)=*coryli* (Panz.), p. 109.

NORTON, l. c. pp. 325-328, gives an account of the habits of *Lophyrus abietis* (Leach), from cocoons of which he has bred the following parasites:—*Ichneumon rubicundus* (Cresson), *I. fungor* (Norton), *Pimpla inquisitor* (Say), *Campoplex genuinis* (Norton), *Musca carnaria* [? *Tachina*, sp.], and new species of *Cryptus*, *Hemiteles*, *Aleiodes*, *Pteromalus*, and *Cheirpachus* [sic].

MÜLLER (Ent. Monthly Mag. vi. p. 29) describes, at some length, the economy of *Nematus saliceti* (Fallén). As this name does not occur in any published list, it may perhaps be intended for *saliceti* (Först.) or *salicis* (Linn.).

New species:—

Taxonus amicus, Norton, l. c. p. 213, Canada (? *dubitatus* var.); *T. albidopictus*, Norton, ibid., Illinois, Virginia.

Strongylogaster. Norton, l. c., describes the following new species:—*S. pallidicornis*, p. 216, New York; *longulus*, Maine and Massach.; *distans*, California, p. 220; *annulosus*, Massach., and *meritorius*, Cuantla, p. 221; *nigritorius*, Cuantla (probably=*meritorius*, var.), *illuminatis*, Cordova, and *fulviventris*, Mexico, p. 222; *lineatus*, *nigricans*, and *nigredo*, p. 223, Mexico.

Pacilostoma inferentia [sic], Norton, l. c. p. 224, Connecticut.

Tenthredo. Norton, l. c., describes the following new species:—*T. ruficolor*, p. 228, Canada; *eximius*, p. 231, New Hampshire and Maine; *varipictus*, p. 234, California; *varians*, Canada, and *discrepans*, English River, H. B. T., p. 235; *mutans*, p. 236, Canada; *concessus*, p. 238, Good Hope, H. B. T.; *cinctitibius*, p. 239, Caribou Island; *attractus*, p. 240, English River; *confusus*, p. 241, United States.

Lophyrus. Norton, l. c. describes the following new species:—*L. tropicus*, p. 322, and *cordoviensis*, p. 323, Cordova, Mexico; *akhursti*, p. 324, New Jersey; *pinetum*, p. 328, Ohio; *edwardsi*, p. 330, California.

Lyda. Norton, l. c., describes the following new species:—*L. credita*, Mexico, and *bicolorata*, Albany, N. Y., p. 334; *variegata*, p. 335, Cordova; *canadensis*, p. 336, and *excavata*, p. 337, Canada; *pallimacula*, ibid., English R., and Connecticut; *pacifica*, p. 338, California; *luteicornis*, p. 339, Connecticut; *inconspicua*, p. 341, Pennsylvania.

Lyda parisiensis, Giraud, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 474, pl. 12. f. 2, Vincennes.

Nematus. Van Vollenhoven, l. c. p. 119, indicates as new *N. immaculatus*, the imago of a larva figured by Brischke; and describes *N. catachloris*, p. 120, pl. 3. fig. 1; both from Holland.

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Emphytus majalis, Van Vollenhoven, *l. c.* p. 121, pl. 3. fig. 2, Holland.

Phyllotoma pinguis, Van Vollenhoven, *l. c.* pl. 3. fig. 3, Holland.

Selandria. Van Vollenhoven (*l. c.*) describes the following new species:—*S. humeralis*, p. 122; *S. soror* and *S. phthisica*, p. 123, pl. 3. fig. 4; all from Holland.

Macrophya klugii, Van Vollenhoven, *l. c.* p. 124, Holland.

Allantus. Kriechbaumer (Verhandl. zool.-bot. Gesellsch. in Wien, xix. pp. 587–597) describes the following new species:—*A. sulphuripes*, p. 587, Grinzing; *parvulus*, p. 589, Amasia; *sibiricus*, p. 590, Siberia; *xanthorius*, p. 591, Bulgaria, and var. *amasiensis*, p. 592, Amasia; *orientalis*, p. 592, Brussa and Greece; *monozonus*, p. 593, Crimea; *vittatus*, *ibid.*, Brussa; *maculatus*, p. 594, Aleppo; *balteatus* and *tricolor*, p. 595, and *pectoralis*, p. 596, Tunis.

Phyllæus clavata (sic), Norton, *l. c.* p. 345, California; *P. bimaculatus*, Norton, *l. c.* p. 346, Connecticut.

Xyela minor, Norton, *l. c.* p. 349, Washington, Pennsylv., Mass.

Philia texana, Norton, *l. c.* p. 367, Texas.

Cladius simplicicornis, Norton, *ibid.*, Maine.

Cræsus laticulus, Norton, *l. c.* p. 368, Massachusetts and Virginia.

LEPIDOPTERA

By W. F. KIRBY, M. E. S., &c. &c.

A. *Works in progress.*

BERCE, E. Faune Entomologique Française. Lépidoptères. Descriptions de tous les Papillons qui se trouvent en France, indiquant l'époque de l'éclosion de chaque espèce, les localités qu'elle fréquente, la plante qui nourrit la chenille, le moment où il convient de la chasser. Dessins et gravures par T. Deyrolle. 2^{me} volume. Hétérocères. Paris, 1868: pp. 270, pls. 19–33, and 2 plates of details.

This volume contains the *Sphinges* and *Bombyces*; and the plates are at least as well executed as in the first volume. Figures of all the French *Sesiidæ* are given; and descriptions are given of all the species figured, the omission of which was a great drawback to the usefulness of the first volume.

BUTLER, A. G. *Lepidoptera Exotica*, or descriptions and illustrations of *Exotic Lepidoptera*. Parts 1 & 2. June and September 1869. London: 4to, pp. 1–16, pls. 1–6.

This work is similar in form to Hewitson's *Exotic Butterflies*. The pages and plates are numbered consecutively. Butler proposes to figure chiefly such species as he has previously described without figures.

CISTULA ENTOMOLOGICA, sive insectorum novorum Diagnoses. Pars I. London: Oct. 1869, 8vo. pp. 16.

The first part of this magazine contains a series of descriptions, by Butler, of new species of butterflies in Druce's collection.

EDWARDS, W. H. The Butterflies of North America, with coloured drawings and descriptions. Parts I.-IV. Philadelphia, 1868-69.

Five coloured plates, very creditably executed, accompany each part. In the third part a systematic arrangement of the North-American butterflies is commenced. Edwards proposes to issue twenty parts to form a volume, and will then decide whether he shall continue the work.

HERRICH-SCHÄFFER. Sammlung neuer oder wenig bekannter aussereuropäischer Schmetterlinge. 2^{ter} Band, Lief. 1, 8 col. plates, pp. 1-4. Regensburg, 1869.

The text is little more than a list of the species figured. The first four plates are a coloured reissue of those published to illustrate the author's paper on new *Lepidoptera* from Godeffroy's collection, published in Stett. ent. Zeit. 1869.

HEWITSON, W. C. Exotic Butterflies, being illustrations of new species; with coloured drawings and descriptions. Parts 69-72, Jan. to Oct. 1869.

——. Illustrations of Diurnal Lepidoptera.—Part IV. *Lycænida*. London, 1869: 4to, pp. 115-136, pls. 47-54; *Amblypodia*, pp. 14 a-14 h, pls. 3 a-3 c; Supplement, pp. 1-16, pls. 1-5.

This portion of Hewitson's great work on the *Lycænida* contains the continuation of *Thecla*, and a supplement, bringing the preceding genera down to the present date.

——. Equatorial Lepidoptera: being remarks on and descriptions of new species of Butterflies collected by Mr. Buckley in Ecuador. Parts I.-III. London, 1869: 8vo, pp. 1-48.

In these three parts 87 new species are described, belonging to the Families *Papilionida*, *Pierida*, *Heliconida*, *Acræida*, *Nymphalida*, *Morphida*, *Satyrida*, and *Erycinida*.

MAASSEN, J. P. Beiträge zur Schmetterlingskunde. 1^{ste} Lieferung. Elberfeld, 1869, pp. 2, 10 plates.

The first part of this work, which is to be continued quarterly or bi-monthly, contains figures of 9 species of *Saturnida*, some new. The text is limited to a notice of the synonymy and localities of the species figured, and an indication of the collection in which they are contained.

MORRIS, F. O. A Natural History of British Moths. IV. Parts lviii.-lxiii. London, 1869: pp. 121-219, pls. cxv.-cxxxvi.

This work is being published at somewhat irregular intervals; each part contains two coloured plates, which appear to be

tolerably accurate. The numbers published in 1869 contain the *Tineina*, from the genus *Dasycera* to the genus *Elachista*. The text is restricted to a brief notice of the names, times of appearance, and localities of each species, and also of the larvæ and food-plants, when they are known. No descriptions of species are given.

RAMBUR, P. Catalogue Systématique des Lépidoptères de l'Andalusie. 2^{me} livraison. 8vo. Paris, 1866: pp. 93-412, ix. pls. 11-22.

The first instalment of this important work was published in 1858, and contained the *Rhopalocera*. The second part, now published, contains the *Heterocera* as far as the *Bombycidae*. As before, the plates are far in advance of the text, and chiefly represent *Noctuae*, *Geometrae*, and *Pyrales*. The genera are all characterized at such length as to render it impossible to give an abridgment of the characters of the new ones.

SEPP, —. Nederlandsche Insecten. Tweede Serie. Tweede Deel. Bijgeengebragt door S. C. Snellen van Vollenhoven. Nos. 35-38, pp. 152-178, pls. 35-39. Sgravenhage, 1869.

WALLENGREN, H. D. J. Skandinaviens Heterocerfjärilar. Andra Delen, Spinnarne, Första Haftet. Lund, 1869: 8vo, pp. 136.

This is the third instalment of Wallengren's work on the *Lepidoptera* of Scandinavia, and contains the commencement of the *Bombyces*. The characters of the families, tribes, and genera are given in Latin and Swedish; the descriptions of the species are in Swedish. Several new genera are characterized, but no new species.

B. Separate Works.

CARRINGTON, T. C. The Lepidopterist's Register. 4to. London, 1869: pp. 340.

A ruled ledger, so arranged as to enable a collector of British *Lepidoptera* to preserve in a convenient form the full history of every specimen in his cabinet.

DE L'ORZA, P. Les Lépidoptères Japonnais à la grande Exposition internationale de 1867. Catalogue raisonné des espèces qui y ont figuré avec la description des espèces nouvelles. 8vo. Rennes, 1869: pp. 49.

It is to be regretted that De l'Orza was not acquainted with Butler's paper on the Diurnal *Lepidoptera* collected by Whitely in Hakodadi (Journ. Linn. Soc., Zoology, vol. ix. pp. 50-58), as he has in several instances redescribed Butler's species.

KNAGGS, H. G. The Lepidopterist's Guide, intended for the use of the young collector, containing full instructions for the collecting, management, observation, and preservation

of *Lepidoptera* in all their stages. 8vo. London, 1869 : pp. 122.

Knaggs, finding it impossible to publish the continuation of his "Notes on Collecting *Lepidoptera*" in the Entomologist's Monthly Magazine, decided on issuing them separately in the present handy little volume: The book is so arranged that the headings of the pages form a sufficient index to its contents.

NEWMAN, E. An illustrated natural history of British Moths, with life-size figures from nature of each species and of the more striking varieties; also full descriptions of both the perfect insect and the caterpillar, together with dates of appearance, and localities where found. Roy. 8vo. London, 1869 : pp. 486.

Contains accurate woodcuts, accompanied by descriptions and a good index, of all the British moths, according to Doubleday's arrangement, as far as the end of the *Noctuæ*.

ROSNY, L. DE. Traité de l'éducation des vers à soie au Japon, traduit du japonais par ordre de S. Exc. le Ministre de l'Agriculture. 2^{me} édition, revue et corrigée. Paris, 1868 : 8vo, 12 plates and coloured frontispiece, pp. viii, lviii, 171.

Contains a full account of the Japanese method of cultivating the mulberry and rearing the silkworm. It is preceded by an historical introduction by De Rosny, and is followed by extracts from various Japanese authors, vocabularies, &c. The book will interest the historian and philologist as well as the sericulturist.

SCUDDER, S. H. Occasional Papers of the Boston Society of Natural History.—I. Entomological Correspondence of Thaddeus William Harris, M.D. 8vo. Boston, 1869 : pp. 375, portrait and 4 coloured plates.

More than a third of this volume relates to *Lepidoptera*, and the plates are chiefly devoted to their transformations. In the Appendix, Dr. Harris's original descriptions of new species are reprinted from the 'New England Farmer.'

STANTON, H. T. The *Tineina* of Southern Europe. 8vo. London, 1869 : pp. viii, 370, plate and woodcuts.

A résumé of all the species of *Tineina* observed by authors in various parts of Southern Europe, including reprints of the original descriptions of all exclusively southern species. The descriptions are given in the original languages to avoid any danger of a wrong turn being given to them in translation.

WALKER, F. Characters of undescribed *Lepidoptera* Heterocera. London, 1869 : 8vo, pp. 112.

In this work Walker publishes descriptions of a great number of new species from various public and private collections. As the work is indispensable to all students of exotic *Heterocera*,

our notices of the numerous new genera are confined to indications of their affinities and types.

WALLACE, A. Report on the Culture of the Japanese Silkworm, *Bombyx yama-mai*, in England, in 1867-68. 8vo. Colchester, 1869: pp. 64.

In this pamphlet, which will be noticed more in detail in its place, the author records the varying success obtained by himself and his correspondents in rearing the Japanese Oak Silkworm.

C. Papers published in Journals &c.

a. Descriptive &c.*

BARRETT, C. G. An analytical view of the Lepidopterous Fauna of Haslemere and its vicinity. Ent. Monthly Mag. vol. v. pp. 211-216.

Mr. Barrett has obtained 1088 species of Lepidoptera during six years' collecting in the neighbourhood of Haslemere.

——. Notes on some British species of *Eupæcilia*. Ibid. pp. 244-246.

BEHR, H. Description of a new genus of *Pieridæ*, and certain new species of Butterflies from California. Trans. Amer. Ent. Soc. ii. pp. 303, 304.

As no parts of the Trans. Amer. Ent. Soc. for 1869 have yet reached England, our present notice of this publication is confined to a few separate papers kindly supplied by Messrs. W. H. Edwards and J. Lintner.

BETHUNE, C. J. S. Notes on Canadian *Lepidoptera*. Canad. Entom. i. pp. 9-11, 17, 18, 43-45, 70-72, 85-89.

Contains many critical observations on synonymy.

—— and JONES, J. M. Nova Scotian Lepidoptera. Proc. & Trans. of Nova Scot. Inst. of Nat. Sci. at Halifax, ii. pt. 3. pp. 78-87 (plate).

A list of a small collection of *Lepidoptera* formed in Nova Scotia by J. M. Jones, the President of the Nova Scotian Institute. A new species of *Anarta* is described and figured.

BOISDUVAL, J. A. Lépidoptères de la Californie. Ann. Soc. Entom. Belge, xii.; also published separately, pp. 94.

In this paper Boisduval reprints his original article on Californian *Lepidoptera* from Ann. Soc. Entom. France for 1852, prefixing a memoir of Lorquin, from whom he received several collections, and adding descriptions of all the species he has obtained since 1852. It is to be regretted that Boisduval does

* Papers on sericulture are omitted here; but an abstract of the more important ones is given under *Bombycidæ*.

not seem to have made himself sufficiently acquainted with all that has been published on the same subject in Europe and America; and we fear that many of his species have been already characterized under other names. We are indebted to Mr. W. H. Edwards, of Coalburgh, Kanawha Co., W. Virginia, for the identification of several of these; and the present Recorder has been able to determine others.

BURY, C. The Death's Head and the Bees. Zoologist, 1869, pp. 1913-1915.

BUTLER, A. G. A monographic revision of the Lepidoptera, hitherto included in the genus *Adolias*, with descriptions of new genera and species. Proc. Zool. Soc. Lond. 1868, pp. 599-615, pl. 45.

———. Description of a new genus of Heterocerous Lepidoptera, founded upon the *Papilio charmione* of Fabricius. Ibid. 1869, pp. 43-45, woodcuts.

———. Descriptions of several new species of Nymphalidian Rhopalocera. Ann. & Mag. Nat. Hist. 1869, 4th series, iii. pp. 17-21, pl. 9.

———. Descriptions of new Rhopalocera from the collection of Herbert Druce, Esq. Cistula Entomologica, pars i. October 1869, pp. 1-16.

———. Descriptions of species of Lepidoptera confounded with others described by Linnæus and Fabricius. Ent. Monthly Mag. v. pp. 270-273.

———. Descriptions of new or little-known forms of Diurnal Lepidoptera. Trans. Ent. Soc. Lond. 1869, pp. 273-276, pl. 5.

———. Remarks on certain caterpillars &c. which are unpalatable to their enemies. Ibid. pp. 27-29.

COUPER, W. Northern Insects. Canad. Entom. i. pp. 67, 68.

EDWARDS, W. H. Descriptions of new species of Diurnal Lepidoptera found in the United States. Trans. Amer. Ent. Soc. ii. pp. 311, 312, and 369-376.

ERSCHOFF, N. Ueber die Lepidopteren-Faunen St. Petersburg's u. Berlin's. Hor. Soc. Entom. Ross. vi. pp. 17-25.

FELDER, R. Diagnosen neuer von dem k. k. Oberlieutenant H. v. Hedemann in Mexico in den Jahren 1865-1867 gesammelter Lepidopteren. Erste Folge. Verhandl. zool.-bot. Gesellsch. in Wien, 1869, pp. 465-480.

FREY, H. Die schweizerischen Microlepidopteren. Mittheil. schweiz. entom. Gesellsch. iii. pp. 28-43.

Continued from vol. ii.

GIRARD, J. Observations Hyménoptérologiques.—III. Des galles d'un Lépidoptère sur le *Limoniastrum guyonianum*, et des Parasites qui les habitent. Ann. Soc. Ent. France, 4^e série, tome ix. pp. 476–478.

A notice of a new gall-making Lepidopteron from Algeria, about to be characterized by M. Guénée as the type of a new genus, *Ecocecis*.

GOOSSENS, T. Description de Chenilles d'*Eupithecia*. Ann. Soc. Ent. France, 4^e série, tome ix. pp. 515–520, pl. 11.

GRAAF, H. W. DE, and SNELLEN, P. C. T. Microlepidoptera nieuw voor de Fauna van Nederland. Tijdschr. voor Entom. 2 Serie, iv. Deel, pp. 203–215.

The chief additions are to the *Tineina*.

HERRICH-SCHÄFFER. Neue Schmetterlinge aus dem "Museum Godeffroy" in Hamburg. Erste Abtheilung: die Tagfalter. Stettiner entom. Zeitung, 1869, pp. 65–80, pls. 1–4.

The species described in this paper were collected in Australia and the South-Sea Islands.

———. Die Schmetterlinge der Insel Cuba. (Fortsetzung.) Corr. Blatt zool.-min. Ver. Regensburg, 1868, pp. 113–118, 147–156, and 179–186; 1869, pp. 153–160.

Contains a portion of the Cuban *Noctuina*.

———. Prodromus Systematis Lepidopterorum. (Fortsetzung.) Ibid. 1868, pp. 119–138, 172–176; 1869, pp. 56–64, 67–77, 130–141, 163–172, 184–204.

———. Notizen über die Erscheinungszeit der Tafeln der verschiedenen lepidopterologischen Werke Jacob Hübner's und Berichtigungen zu denselben. Ibid. 1869, pp. 173–176, 204–216.

In these papers Herrich-Schäffer publishes some very valuable information as to the dates of publication of Hübner's works and of his own.

HOFMANN, ERNST. Ueber sacktragende Motten-Arten. Abhandl. d. naturhist. Gesellsch. in Nürnberg, iv. pp. 55–63.

HOFMANN, OTTMAR. Beiträge zur Naturgeschichte der Coleophoren. Stettiner entom. Zeitung, 1869, pp. 107–122, 187–190.

HOPFFER, C. Bericht über Felder's Lepidopteren der Reise der Fregatte Novara. (Fortsetzung.) Stettin. entom. Zeitung, 1869, pp. 427–453.

A review of the second part of Felder's great work on the Lepidoptera of the Voyage of the Novara. The date of the second part has been disputed (see Zool. Record for 1866, p. 433); but Hopffer seems to have fairly established the fact of its having been published, as alleged, in 1865.

HUBER, A. F. Bericht über meine Lepidopteren-Ausbeute des Jahres 1868 in der Umgegend von St. Petersburg. Hor. Soc. Entom. Ross. vi. pp. 127-134.

JÄGGI, F. Zweite lepidopterologische Excursion in's Wallis, 1868. Mittheil. schweiz. entom. Gesellsch. iii. pp. 82-104.

241 species were captured in this expedition, mostly *Rhopalocera* and *Geometridæ*.

JORDAN, R. C. R. A notice of the "Skandinaviens Fjädermott" of H. D. J. Wallengren. Ent. Monthly Mag. vol. vi. pp. 119-125, 149-152.

A review of Wallengren's well-known paper on the *Pterophoridae* of Sweden, with special reference to the British species of this family.

JOURDHENILLE, C. Calendrier du Microlépidoptériste. Recherche des Chenilles. (1^{re} partie, Janvier à Avril.) Ann. Soc. Ent. France, 4^e série, tome ix. pp. 533-548.

By the publication of this useful compilation, the author hopes to promote the study of the Micro-Lepidoptera, which have hitherto been much neglected in France.

KEFERSTEIN, A. Betrachtungen geknüpft an meine Schmetterlingsammlung. Stettiner entom. Zeitung, 1869, pp. 191-230.

A lengthy paper, treating of the geographical distribution of *Lepidoptera*, and other subjects of general interest relating to them. It contains, however, little or no new matter.

KINDBERG, N. C. Anteckningar om Ostergötlands Dagfjärilar. Öfvers. af Kongl. Vetensk. Akad. Förh. 1867, pp. 677-680.

KIRBY, W. F. On the Diurnal Lepidoptera of the extra-tropical northern hemisphere. Journ. Roy. Dublin Soc. vol. v. pp. 163-172.

This essay contains general remarks on the geographical distribution of European genera in other parts of the world; and several tables are appended in illustration.

—. On the Diurnal Lepidoptera described in Gmelin's edition of the *Systema Naturæ*. Trans. Ent. Soc. Lond. 1869, pp. 355-362.

Twenty-four species are enumerated in this paper, several of which have been identified by an examination of the types still existing in the Royal Dublin Society's Museum.

KNAGGS, H. G. Notes on the British species of *Scoparia*. Ent. Monthly Mag. vol. v. pp. 291-293, pl. 1, and woodcuts.

—. Notes on new and rare British Lepidoptera (excepting *Tineina*) in 1869. Entom. Annual, 1870, pp. 121-144.

A résumé of the principal additions made to our knowledge of the British Lepidoptera during the year 1869.

KODERMANN, P. C. Die Schmetterlinge der St. Lambrecht Gegend in Obersteiermark. Mittheil. d. naturw. Vereines f. Steiermark, vol. v. pp. 61-75.

A local list of *Lepidoptera*, extending as far as the end of the *Bombyces*, with notes on larvæ, variation, localities, &c.

LEDERER, J. Verzeichniss der von Herrn Jos. Haberhauer bei Astrabad in Persien gesammelten Schmetterlinge. Horæ Soc. Entom. Rossicæ, tom. vi. pp. 73-93, pls. iv., v.

MABILLE, P. Notices sur les Lépidoptères de la Corse, avec la liste des Acidalides de ce pays, la 2^e partie de l'énumération monographique des Eupithécies de la Corse, et la description de quatre *Eupithecia* nouvelles pour la faune Parisienne. 3^e Notice. Ann. Soc. Ent. France, 4^e sér. tome ix. pp. 53-80, pl. 2.

MACALISTER, A. Notes on some larva-cases from Australia. Proc. Nat. Hist. Soc. Dubl. v. pp. 129-135.

Chiefly relates to larva-cases of the genus *Oiketicus*, in the broad sense.

MANN, J. Lepidopteren gesammelt während dreier Reisen nach Dalmatien in den Jahren 1850, 1862 und 1868. Verhandl. zool.-bot. Gesellsch. in Wien, 1869, pp. 371-388.

A list of the species obtained by Herr Mann and his daughter during three different journeys to Dalmatia, with descriptions of a few new species.

MILLIÈRE, P. Iconographie et Description de Chenilles et Lépidoptères inédits. 19^e-22^e livraisons. Ann. Soc. Linn. de Lyon, tome xvi. pp. 1-82, pls. 85-92, tome xvii. pp. 1-88, pls. 93-100; also published separately.

MINOT, C. S. Brief notes on the transformations of several species of *Lepidoptera*. Canad. Entom. ii. pp. 27-29.

NOLCKEN, Baron v. Lepidopterologisches. Stettiner entom. Zeitung, 1869, pp. 267-290.

Information concerning various species acquired by the author during a journey through Germany, Switzerland, and England.

PACKARD, A. S. The characters of the Lepidopterous family *Noctuidæ*. Proc. Portl. Soc. of Nat. Hist. i. pp. 153-156.

PEYERIMHOFF, HENRI DE. Supplément au Catalogue des Lépidoptères d'Alsace. Bull. Soc. d'Hist. Nat. de Colmar, 8^e and 9^e Années 1867 et 1868, pp. 27-39.

The catalogue to which this forms a supplement appeared in the years 1861 and 1862, in the same journal.

REAKIRT, TRYON. Descriptions of some new species of Diurnal Lepidoptera. Series iii. Proc. Acad. Nat. Sciences, Philadelphia, 1868, pp. 87-91.

RITCHIE, A. S. Notes on the small Cabbage Butterfly, *Pieris rapæ*. Canad. Naturalist, n. s. iv. pp. 293-300.

Contains a history of the introduction and spread of this insect in Canadâ, with suggestions for checking its increase.

ROGENHOFER, A. Ueber Zwitter von *Rhodocera*, B. Verhandl. zool.-bot. Gesellsch. in Wien, 1869, pp. 191, 192.

— . Lepidopterologische Mittheilungen. Ibid. pp. 917-920.

RONDANI, C. Larva e parassito della *Tischeria complanella*, Lin. Annuario della Società dei Naturalisti in Modena, iii. pp. 20-23, tav. iv.

— . See also "HYMENOPTERA."

SALVIN, O. Descriptions of new species of Butterflies from Tropical America. Ann. & Mag. Nat. Hist. 1869, 4th series, vol. iv. pp. 163-181.

— . A synopsis of the genus *Clothilda*. Trans. Ent. Soc. Lond. 1869, pp. 391-397.

SAUNDERS, W. Entomological Notes. Canad. Entom. i. pp. 3-6, 25-27, 53-57, 65-67, 73-77, 93-101.

SCUDDER, S. H. Supplement to a list of the Butterflies of New England. Proc. Bost. Nat. Hist. Soc. xi. pp. 375-384.

The original list appeared in Proc. Ess. Institute, vol. iii. 94 species are enumerated in the present list, including some new *Hesperidæ*.

— . A preliminary list of the Butterflies of Iowa. Trans. Chicago Academy of Sciences, vol. i. pp. 326-337.

This paper contains a list of 47 species collected by J. A. Allen and E. P. Austin in Iowa; and four others from Illinois are included as probable natives. A few species are described as new.

SCOTT, A. W. On the genus *Charagia* of Walker. Trans. Ent. Soc. N. S. Wales, ii. pp. 25-35.

— . Description of a new genus belonging to the family Hepialidæ of Stephens. Ibid. pp. 36-39.

— . On the *Agrotis vastator*, a species of moth, now infesting the sea-board of New South Wales. Ibid. pp. 40-48.

— . On the *Ornithoptera Cassandra*. Ibid. pp. 49-53.

SNELLEN, P. C. T. Aantekeningen over nederlandse Lepidoptera. Tijdschr. v. Ent. ser. ii. vol. v. pp. 76-94.

These notices are intended as supplementary to Snellen's work on Dutch Lepidoptera.

SNELLEN, P. C. T. Aanteekening over de europesche soorten der Cymatophorina. Ibid. pp. 106-109.

SPEYER, A. Notizen. Stettiner entom. Zeitung, 1869, pp. 81-83.

STAINTON, H. T. Observations on Tineina. Entom. Annual, 1870, pp. 1-18.

——. New British Tineina. Ibid. pp. 156-159.

STAUDINGER, O. Bemerkungen über einige zweifelhafte oder verkannte Lepidoptera, besonders nach den Sammlungen von Ochsenheimer und Treitschke bestimmt. Stettiner entom. Zeitung, 1869, pp. 84-93.

Chiefly consists of notes made during a visit to the Museum in Pesth.

STEFANELLI, P. Catalogo illustrativo dei Lepidotteri Toscani. Parte prima. Ropaloceri. Ann. Soc. Ent. Ital. i. pp. 138-160, 236-245, 295-305.

A list of 120 *Rhopalocera* occurring in Tuscany, with notes on variation and localities.

TRIMEN, R. On some remarkable mimetic analogies among African Butterflies. Trans. Linn. Soc. Lond. vol. xxvi. pp. 497-522.

In this paper Trimen describes the existence of the same system of mimicry among African butterflies as has previously been noticed by Bates and Wallace to prevail among Amazonian and Malayan butterflies.

WALDERDORFF, H. v. Eupithecia actcata, H.-S., eine neue Spannerart. Corresp.-Blatt zool.-min. Vereins in Regensb. 1869, pp. 82-90.

Includes notices of the larvæ of several other *Lepidoptera* which feed on *Actæa spicata*.

WALLACE, A. R. Notes on Eastern Butterflies. Trans. Ent. Soc. Lond. 1869, pp. 77-81, 277-288, 321-349.

These notes relate to genera belonging to the families *Nymphalidæ*, *Eurytelidæ*, and *Libytheidæ*. Many new species are described.

WATSON, JOHN. On the plumules or battledore scales of *Lycanidæ*. Memoirs of the Lit. & Phil. Society of Manchester, 3rd series, iii. pp. 128-133, pls. 1-3.

——. Further remarks on the plumules or battledore scales of some of the *Lepidoptera*, with illustrations by Mr. J. Sidebotham. Ibid. pp. 259-269, pls. 5-7.

These papers are reprinted in the Monthly Microscopical Journal, ii. pp. 73-79, 314-320, pls. 21-23, 34-36.

WEIR, J. JENNER. On Insects and Insectivorous Birds, and especially on the relation between the colour and the edibility of *Lepidoptera* and their larvæ. Trans. Ent. Soc. Lond. 1869, pp. 21-26.

WHITE, F. BUCHANAN. Notes on Scotch Lepidoptera. Ent. Monthly Mag. vol. v. p. 204.

The species referred to are *Calocampa exoleta*, *Selenia illunaria*, and *Melanthia ocellata*.

WONFOR, T. W. On certain butterfly-scales characteristic of sex. Quart. Journ. Microscop. Science, vol. viii. pp. 80-83, pl. 1, ix. pp. 19-22, pl. 5.

In these papers Wonfor describes and figures a number of the plumules or battledore scales which are peculiar to the males of certain species of butterflies.

ZELLER, P. C. *Lycæna medon* (*agestis*) and *artaxerxes*, are they distinct? Ent. Monthly Mag. vol. v. pp. 187-190.

A translation of a paper published in the Stettin. entom. Zeitung, 1868, pp. 401-405.

— Three Lepidopterological excursions near Meseritz, in the Prussian province Posen. Ibid. vol. vi. pp. 43-54.

— Skandinavien Heterocer-Fjärilar biskrifne af H. D. J. Wallengren. Skymnings fjärilarne. Lund, 1863, 8vo. Stettiner entom. Zeitung. 1869, pp. 379-392.

A review of Wallengren's little-known work on the *Sphingina* of Sweden.

b. Anatomical and Physiological.

BALBIANI, —. Sur le mécanisme de la fécondation chez les Lépidoptères. Comptes Rendus, lxxviii. pp. 781-784.

Balbani has ascertained by anatomical observations that the silkworm disease cannot be communicated to the offspring by the male parent.

GIRARD, J. Etudes sur la chaleur libre dégagée par les animaux invertébrés, et spécialement les Insectes. Annales des Sciences Naturelles, Zoologie, 5^e série, vol. xi. pp. 135-274.

A considerable portion of this important paper relates to Lepidoptera.

HOFMANN, O. Beiträge zur Kenntniss der Parthenogenesis. Stettiner entom. Zeitung, 1869, pp. 299-303.

Relates to *Solenobia triquetella* and *pineti*.

SPEYER, A. Zwitter Bildungen bei *Sphinx nerii* und einige

Worte über den Hermaphroditismus der Insecten überhaupt. Stettiner entom. Zeitung, 1869, pp. 235-255.

In this paper Speyer describes two hermaphrodite specimens of *Sphinx* (*Daphnis*) *nerii*, reared by R. Grenzenberg at Danzig from among a brood of 60 pupæ, and makes some general remarks on the occurrence of hermaphroditism in Lepidoptera, and on the various theories which have been proposed to account for it.

SPEYER, A. Bemerkungen über den Bau und die systematische Stellung der Gattung *Acentropus*, Curt. Ibid. pp. 400-406.

GENERAL NOTES.

R. C. R. JORDAN disputes the received classification of the *Lepidoptera* (Ent. M. Mag. vi. p. 152). He is inclined to place them between the *Trichoptera* and *Hymenoptera*, and regards their affinity to the *Diptera* as more remote. He thinks that the *Sesiidæ* have a true homological resemblance to the *Hymenoptera*, and that in a natural series we should place the genus *Trochilium* at the beginning of the *Lepidoptera*, and the *Psychidæ*, or *Acentropus*, at the end.

ZELLER (Stettin. entom. Zeitung, pp. 381-385) gives a translation of Wallengren's detailed classification of the neururation in *Lepidoptera*, and of the characters of the three groups into which, following Duméril, he divides the *Heterocera* (*Closterocera*, *Nematocera*, and *Chetocera*).

KEFERSTEIN (Stett. ent. Zeit. pp. 220-222) discusses the probable number of *Lepidoptera* now existing in the world. He estimates the number of known species of diurnal *Lepidoptera* at 5109; and allowing for new discoveries on the one hand, and the elimination of varieties on the other, he assumes the actual number to be about 6000. Staudinger enumerates 392 European (?) species, which Keferstein takes as 400 in round numbers. He then computes Europe as the fifteenth part of the world; and taking the number of European *Heterocera* in Staudinger's Catalogue in round numbers, he multiplies them by 15, and arrives at the following results as representing the probable number of existing species:—

Papilionidæ	6,000 species.
Sphingidæ	2,850 "
Noctuidæ	15,000 "
Geometridæ	10,800 "
Pyrilidæ	805 "
Tortricidæ	8,550 "
Tineidæ	21,750 "
Pterophoridaæ	1,275 "
Alucitidæ	225 "
Total....	67,255 "

This calculation, however, is invalidated, not only by the total omission of the families *Bombycidae* and *Crambidae*, but from the author having forgotten to eliminate from his calculations the numerous Siberian and other exotic *Lepidoptera* enumerated in Staudinger's Catalogue. Nor is it probable that the fauna of Europe could be taken as a fair average of that of the whole world in the manner proposed by Keferstein.

GIRARD has published (Ann. des Sci. Naturelles, Zool. 5^e série, tome xi. pp. 135-274) a lengthy paper on the temperature of the invertebrata, a considerable portion of which relates to *Lepidoptera*. He considers the high temperature he has observed in the larva of *Galleria cerella* to be due to the nature of its food, and remarks on hibernation, the power of various insects to resist cold, questions the assertion of Nobili and Melloni that larvæ always possess a higher temperature than perfect insects, and details all the most important experiments made by previous observers as well as by himself, and fully describes the apparatus necessary for such investigations. In all cases the temperature in male *Lepidoptera* is much higher than in the female. The temperature of larvæ varies much, being sometimes above and sometimes below that of the surrounding atmosphere. Smooth larvæ, when about to change, are slightly warmer than the surrounding temperature, both externally and internally. But in hairy larvæ, such as *Bombyx rubi*, the internal temperature is much higher, from the covering resisting the radiation of heat. Girard's experiments on exposed pupæ tend to show that their temperature gradually increases during their development. When pupæ are withdrawn from the cocoon, their temperature is much higher than that of the surrounding air; but if they are left exposed, soon sinks rapidly. It appears that the temperature of the bodies of larvæ is equable, but that in flying insects that of the thorax is always much greater than that of the abdomen. Girard has always observed that the musky odour observable in *Sphinx convolvuli* and *ligustri* (vide Cosmos, 1860, tom. xvii. p. 280) is peculiar to the males. It issues from the anus; and he considers it to proceed from some accessory gland of the generative apparatus. He thinks that the male of *Bombyx mori* has a strong flight in the wild state, as Martins has reared some in the open air at Montpellier; and in the third generation the males had already recovered the power of flight. In summing up, Girard notes a few points which still require investigation, states that he has confirmed the observations of Newport and Dutrochet, that the temperature is always highest in the imago in insects with complete metamorphosis, and mentions the following observations of his own as new. In adult insects the temperature of the surface of the body never sinks below that of the surrounding air; but it frequently does so in naked larvæ, or in pupæ removed from the

cocoon. In winter the temperature of smooth larvæ and pupæ is nearly the same as that around them. Sometimes pupæ differ in temperature under the same conditions, indicating variations in temperature during their development. In *Bombices* the males are warmer than the females. In flying insects the heat is concentrated in the thorax, and increases in proportion to their powers of flight. This corresponds with the development of the muscles. The heat increases in proportion to the exercise of normal activity. By introducing the tube of a very slender thermometer into the annus, Girard has been able to ascertain the internal temperature without violence. He is inclined to place insects, as a group styled "animals with mixed temperature," between "animals with constant temperature" (mammals and birds) and "animals with variable temperature," or reptiles, amphibia, fish, and all invertebrata except insects.

Girard also (Ann. Soc. Entom. Fr. Séances, 1869, pp. 54-56) publishes a few observations on the temperature of the bodies of *Lepidoptera* and other insects, and (*l. c.* pp. 69, 70) some notes on the times of appearance and casual variation of various *Lepidoptera*.

GOOSSENS (Ann. Soc. Entom. France, Séances, 1869, pp. 60, 61) has observed an organ between the head and first pair of legs in various larvæ, which he suggests may secrete a fluid which moistens the blood. Goossens and Berce subsequently state (*l. c.* pp. 64-66) that the existence of this organ has already been recorded by Bonnet and Lacordaire, the former having devoted two whole memoirs to the subject; Réaumur, to whom these observations were communicated, considered it to be an organ of prehension.

L. TROUVELET states his opinion (Proc. Bost. Nat. Hist. Soc. xi. pp. 118-120) that the common occurrence of arrest of development in one wing of a Lepidopterous insect is caused by the fluids from the abdomen rupturing the membrane of the wing during the process of expansion, either in consequence of some obstruction to the circulation, or of too dry an atmosphere. He also (*l. c.* pp. 136, 137) details the precautions necessary to be taken to obtain a union between two different species of *Lepidoptera*.

J. HELINS inquires whether the larvæ of those *Lepidoptera* which pass the winter in the egg state are developed within the shell before or after hibernation. Ent. M. Mag. vi. p. 166.

J. JENNER WEIR (Trans. Ent. Soc. Lond. 1869, pp. 21-26) details his experiments on insects which are refused by birds. The imagos of *Orgyia antiqua* ♀, *Spilosoma menthastri*, *Anthocera filipendula*, and of other brightly coloured day-flying moths, are either refused, or eaten with great hesitation. Day-flying moths have usually brightly coloured under-wings; and Weir believes that birds generally seize these first, causing but

little injury to the moth, which frequently escapes. All hairy, spiny, and gaily coloured larvæ, feeding exposed, are refused by birds, even before the hairs become developed: and in some cases the pupæ are also refused. On the other hand, all nocturnal, dull-coloured larvæ with fleshy bodies and smooth skins, all green caterpillars, and all larvæ of *Geometridæ* which resemble twigs, are greedily eaten.

A. G. BUTLER (*l. c.* pp. 27-29) states, in a paper supplementary to Jenner Weir's, that the imago of *Zygæna filipendulæ* and the larvæ of *Abraxas grossulariata* and of *Halio wavarina* are rejected by lizards, frogs, and spiders.

ALEX. WALLACE (*Proc. Ent. Soc. Lond.* 1869, p. 7) remarks that the larvæ of *Bombyx cynthia*, which are both brightly coloured and covered with tubercles, are eaten by various birds.

A. R. WALLACE (*l. c.* p. 7) thinks that the gay colours of many larvæ are protective, and serve to warn birds against unsuitable food. He does not expect to find that all brightly coloured larvæ are peculiarly protected; but gay colouring would be of advantage to a larva if it protected it from but one enemy; and this theory might account for its occurrence in larvæ, where sexual selection was out of the question.

H. D'ORVILLE states (*Ent. M. Mag.* vi. p. 16) that the larvæ of *Cucullia verbasci* and *absinthii* are greedily devoured by birds as soon as they attain to conspicuous colour and size.

C. HORNE (*Zoologist*, 1869, pp. 1767, 1768) publishes some notes on the speed of butterflies and moths. He has noticed butterflies keeping up easily with a train going twenty-five miles an hour, and with a steamer going nine or ten knots against the wind. He has also seen a large Indian moth, *Anisoneura hypocyana*, soar to such a height as to baffle several birds which attacked it during its ascent.

F. C. NOLL remarks on the acuteness of the sense of smell in *Lepidoptera*. *Der Zoolog. Garten*, x. pp. 254, 255.

V. SIGNORET, in a paper on *Phylloxera vastatrix*, takes occasion to enumerate the *Lepidoptera* which are stated to be destructive to the vine. *Ann. Soc. Entom. Fr.* 1869, pp. 549-596.

F. O. STANDISH states that larvæ are frequently attacked by the thread-worm. *Entomologist*, iv. p. 325.

W. F. KIRBY communicated a paper on the "Application of the Law of Priority to Genera in Entomology" to the Entomological Society, at the meeting held Dec. 7, 1868. A long discussion followed, to which Mr. Dunning afterwards appended some acute comments. (*Proc. Ent. Soc. Lond.* 1868, pp. 43-48.)

VON HEYDEN has published a list of the *Lepidoptera* figured by Frivaldsky in the publications of the Hungarian Academy, for 1865. *Berl. entom. Zeitschr.* 1869, pp. 60-62.

STAINTON publishes a note on the date of Hübner's works. *Ent. M. Mag.* vi. p. 140.

DE ROO VAN WESTMAAS publishes some directions for killing insects, especially *Lepidoptera*. *Tijdschr. voor Ent.* 2nd series, ii. pp. 128-133.

On a preservative solution invented by Prof. Verrill, and useful for the preservation of larvæ, see W. Saunders, *Canad. Entom.* i. p. 6, and E. Newman, *Entomologist*, iv. p. 219.

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T. BLACKMORE publishes a list of the *Lepidoptera* captured by him at Tangier, Morocco, in the early spring of 1868. Ent. M. Mag. v. pp. 299-301.

BOHEMAN has published a list of *Lepidoptera* occurring in Gottland. Öfvers. af Kongl. vetensk. Akad. Förh. 1867, pp. 624-636.

ERSCHOFF has published (Hor. Soc. Entom. Ross. vi. pp. 17-25) a tabular comparison of the *Lepidopterous* faunas of Berlin and St. Petersburg, as far as the end of the *Geometridæ*, from which it appears that the former locality possesses 71 species more than the latter.

A. FRITSCH has published a calendar of the times of appearance of various *Lepidoptera* in Hungary. Sitz. Akad. Wiss. Math.-Nat. Cl. lviii. pp. 612-620.

GRENIER (Ann. Soc. Ent. France, Séances, 1868, p. 107) notes the unusually early appearance of various *Lepidoptera* in 1868, owing to the forwardness and heat of the summer.

P. MABILLE has left Corsica, after a residence of three years, and has given (Ann. Soc. Entom. France, 4^e série, tome ix. pp. 53-80) a further instalment of his notes on the *Lepidoptera* of that island. He argues that all the Corsican subspecies are perfectly distinct from those of the mainland, and regards their full specific claims as unquestionable.

A. S. PACKARD (Guide to the Study of Insects, pp. 229-357) treats of *Lepidoptera* generally, and those of North America in particular, at considerable length. Numerous woodcuts and three plates are given, illustrating structural peculiarities, metamorphoses, and perfect insects.

PEYERIMHOFF has published (Bull. Soc. d'Hist. Nat. de Colmar, 1857-68, pp. 27-39) a supplement to his catalogue of the *Lepidoptera* of Alsace. He states that the third and last part of his catalogue is deferred till the Alsatian *Tineidæ* can be examined. Nearly 500 species of this family are contained in his own collection and in that of the Colmar Museum.

W. B. PRYER remarks on the *Lepidoptera* found near Shanghai. He has obtained 21 species of butterflies near Shanghai, and 6 more at Fung-whang Shan; 23 *Sphingidæ*, and 62 *Noctuæ*. *Pyrales* and *Tinæ* are common, but *Geometræ*, with the exception of two or three species, very scarce. The general scarcity of *Lepidoptera* he attributes to the great number of bats and predaceous insects. Journ. N. China Branch of Roy. Asiatic Society, n. s. iv. pp. 77, 78.

VOLLENHOVEN has published a list of the *Lepidoptera* collected by MM. Pollen and Van Dam in Madagascar (Pollen & Van Dam, Recherches sur la Faune de Madagascar, pp. 3-5), and has described three new species (*l. c.* pp. 12, 13).

WALLENGREN has published a list of the *Lepidoptera* of North-east Scania. Öfvers. af Kongl. vetensk. Akad. Förh. 1866, pp. 8-12.

Lists of *Lepidoptera* captured in various districts of Britain are published:—by G. Norman, in Morayshire, *Noctuidæ* (Ent. M. Mag. v. pp. 201-204; previously published in Entomologist, iv. pp. 169-174, vide Zool. Record, 1868, p. 312); by the same in Perthshire and Morayshire, *Noctuidæ* (Ent. M. Mag. vi. pp. 166-169); by F. Buchanan White in Ross-shire (*l. c.* v. pp. 281-285); by A. Edwards in Worcestershire (*l. c.* vi. p. 15); by C. S. Gregson in Wiltshire (moreland) (*l. c.* p. 115); by J. Traill in Orkney (Entomologist, iv. pp. 197-199); by F. C. Harman at Cirencester (*l. c.* pp. 235, 236); and by Mr. and Mrs. Ramsay Cox in the New Forest (*l. c.* pp. 368-370).

Lists of *Lepidoptera* captured in Canada are published in the Canadian Entomologist, i., as follows:—at Saguenay by W. Saunders, pp. 11–13; at Amherstburg, Ontario, by E. B. Reed, pp. 19, 20; at Ottawa, *Rhopalocera*, by R. Billings, pp. 45–47.

Dwarf specimens of *Vanessa urticae* and *Zygæna flipendulæ*, from the Isle of Man, were exhibited at the Entomological Society by H. W. Bates, on behalf of E. Birchall (Proc. Ent. Soc. Lond. 1863, p. 38); also dwarfs of *V. urticae*, by F. Bond (*l. c.* 1869, p. 49); and of *V. urticae*, *Smerinthus populi*, *Saturnia carpi*, and *Pygæa bucephala*, by W. C. Boyd on behalf of R. L. Davis, who had bred them at Waltham Cross in 1868. The opinion of most of the members present was that dwarf specimens were caused by rapidity of development in unusually hot summers.

The irregularity in appearance of various *Lepidoptera* is discussed by J. Greene (Entomologist, iv. pp. 260–263) and F. Merrifield (*l. c.* pp. 276–278).

RHOPALOCERA.

TRIMEN, in his paper on mimetic analogies among African Butterflies (Trans. Linn. Soc. Lond. xxvi. pp. 497–522) remarks on the remarkable immunity from the attacks of all enemies enjoyed by the *Danaidæ*, *Heliconiidæ*, and *Acræidæ*. He attributes this to the disagreeable odour they emit when handled, accompanied with a discharge of yellow fluid, and sometimes with the protrusion of a pair of exsertile organs from the extremity of the abdomen. These insects are also remarkable for the extraordinary toughness and elasticity of all their tissues. He adds in a note, “This elasticity of structure is not confined to the butterflies in question, being a character of many moths, and markedly of some belonging to the families *Agaristidæ* and *Zygenidæ*. It is remarkable that the three South-African moths, in which I have found this peculiarity most developed, viz. *Pais decora*, *Eusemia euphemia*, and *Glaucopsis formosa*, all have a strong and offensive odour, emit drops of white or yellow fluid, and are slow-flying, brightly-coloured, and abundant species.”

Trimen thinks that ichneumon-flies are almost the only check upon the inordinate increase of the *Acræidæ* and *Danaidæ*. He has seen dragonflies catch butterflies of the more active group *Pieridæ*, and neglect the slow-flying *Acræidæ*; while Bowker, in Caffraria, has observed small lizards stalk down *Junonia æone*, a very wary and active butterfly, and leave the *Acræidæ* unmolested. He also discusses the question of the position of the family *Papilionidæ*, and agrees with Bates in placing it next to the *Hesperidæ*.

The various African *Danaidæ* and *Acræidæ* mimicked by butterflies of other families are then enumerated, and very interesting details are given as to their distribution, &c., accompanied with a table of species. The final results are summed up as follows:—“It has been shown (1st) that the mimicking butterflies invariably occur in districts inhabited by the species mi-

micked ; (2nd) that in eight cases the mimickers are known to be very much scarcer than the species which they copy ; (3rd) that in five cases where the *Danaïs* or *Acraea* presents local forms, or merely slight varieties, even these are mimicked by individuals of the mimicking species ; (4th) that in three cases where the sexes of the insect mimicked differ remarkably from each other, the sexes of the mimicker present corresponding differences ; and (5th) that in four cases observed by me in nature, it was next to impossible to distinguish the living mimicker from the species which it imitated."

JOHN WATSON has published (Mem. Lit. & Phil. Soc. Manchester, iii. pp. 128-133, 259-269, pls. 1-3, 5-7) a series of very interesting and important observations on the plumules of Diurnal Lepidoptera, illustrated with very numerous figures by J. Sidebotham. These peculiar scales are confined to the males in various genera of Diurnal Lepidoptera, and vary greatly in structure. Watson suggests that they serve as air-vessels to give buoyancy to the insects. They vary much in number in different species, or even in different individuals of the same species. They are most easily detected on freshly captured insects. After remarking on the plumules of the *Lycenidae* in his first paper, and on the difference between those of *Lycæna* and *Danaïs*, Watson adds :—

"The points desired to be insisted on as useful in this investigation are :—

"1. That these plumules are always identical in different individuals of the same species, and therefore mere geographical or other varieties may be detected by this test ; and that

"2. In species nearly allied, so closely as to make them difficult of distinction, these scales will be often found very different, forming very certain and unquestionable divisions ; while, on the other hand, species of easy separation in other physiological peculiarities have sometimes almost identical plumules."

In Watson's second paper he remarks on the absence of plumules in all those species of *Prioneris*, *Papilio*, *Charaxes*, and *Gonepteryx* which possess a serrated costa. The only species of *Pieris* on which Watson could detect no plumules were *agathon*, *protodice*, and *callidice*, although the closely allied *daphidice* and *hellica* possess them in abundance. The plumules of the *P. lycimnia* group somewhat resemble those of *Euplæa*. Watson suggests the term *Idiolepidæ* as more appropriate than plumules. They are generally found on the upper surfaces of the wings, sometimes most abundant on the primary, sometimes on the secondary, usually in or near the discoidal cells of both wings ; but in the genus *Euplæa* they occur "only in the upper part of the secondary wings, where overlapped by the primary, and fringing the light-coloured patch on the inferior wings ; here they exist in *Euplæa midanus* in large and compact masses,

presenting an appearance similar to a bed of bulrushes at the edge of a marshy lake."

Watson then argues against Bates's views concerning the specific identity of *Heliconia melpomene* and *thelxiope*, from the difference in the plumule, and concludes with a list of the genera in which plumules have been detected. *Argynnis* possesses plumules, but none exist either in the section *Brenthis* or in the genus *Melitæa*. Similarly *Athyma* has plumules, while *Neptis* has none. Plumules are most frequent in the Argynnide genera of the *Nymphalidæ*.

Altogether, Watson has found plumules existing in 507 species, belonging to 30 genera.

T. W. WONFOR (Quart. Journ. Microscop. Society, viii. pp. 80-83, pl. 1) states that the so-called "battledore scales" described in works on the microscope as existing on the underside of butterflies of the genera *Polyommatus* and *Pieris* are only to be found on the upperside of the males. He has found "battledores" on various British species of *Polyommatus*, and "tasselled" or brush-tipped scales on various species of *Pieris* and *Hipparchia*. "These scales are placed in rows under the ordinary scales, and at the intervals, so that, if the ordinary scales be removed from the upper portion of the wings, the 'battledores' will be found arranged in rows, plentifully on the fore wings, but more sparsely on the hind wings." He adds directions for examining and mounting the scales.

In a second paper (*l. c.* ix. pp. 19-22, pl. 5) Wonfor records his having observed plumules on the males of various *Pieridæ*, *Polyommati* with blue males (for he has not been able to find any in the species with brown males), and of the silver-spotted fritillaries. He believes that the rows of scales can be inflated and raised at will by butterflies so as to increase their buoyancy. He also states that the ordinary scales attain their full size in the pupa, but that they overlap both laterally and longitudinally, and that the expansion of the membrane of the wing draws the rows of scales further and wider apart, until they present the appearance seen in a fully developed wing. Further notes by Wonfor on the eggs, scales, &c. of Lepidoptera are published, *l. c.* pp. 426-428.

T. A. CHAPMAN (*Ent. M. Mag.* vi. p. 95) mentions having found *Satyrus juno*, ♂, in copula with *Vanessa urticae*, ♀. The eggs of the latter, on dissection, were distinct and visible, but small and not well developed.

R. MELDOLA relates an instance of a frog fascinating butterflies. *Entom.* p. 232.

BE. L. RAGONOT publishes notes on butterflies found near Paris (*Ent. M. Mag.* vi. pp. 146-148). He enumerates 55 species, or about half the number known to inhabit the Paris district. He suggests that *Melitæa dictynna* may be mixed with *athalia* in English collections. [This is not likely, as *dictynna* is one of the most distinct species of the genus.]

SCUDDER has published (Amer. Naturalist, iii. pp. 330, 331) a list of New-England butterflies, with indications of their food-plants.

Papilionides.

A. W. SCOTT (Trans. Ent. Soc. N. S. Wales, ii. pp. 49-53) has given a full description of his *Ornithoptera cassandra*, and a detailed comparison with all the other *Ornithoptera* of the *Priamus* group.

Papilio. Hewitson (Exot. Butt.) describes and figures the following known species of this genus:—*P. warscewiczii*, Hopff. (= *soratensis*, Salv. & Godm.), l. c. pt. 70, April 1869, *Papilio*, pl. 10. f. 30; *P. euterpinus*, Salv. & Godm. l. c. f. 31; *P. xenothopleura*, Salv. & Godm. l. c. f. 32, 33; *P. dares*, Hew. l. c. pt. 72, Oct. 1869, *Papilio*, pl. 11. f. 34; *P. philetus*, Hew. l. c. f. 35, 36; *P. phalacus*, Hew. l. c. f. 37; *P. hippocoon*, Fabr. (= *dionysos*, Doubl. ♀), l. c. Pap. pl. 12. f. 38-41.

Papilio merope. Trimen (Trans. Linn. Soc. xxvi. pp. 506-511) remarks on the various forms of this insect, and comes to the conclusion that *Pap. sulphureus*, Beauv., is a mere variety, but that *P. meriones*, Feld., is distinct. *P. meriones* is a Madagascar species, and the female resembles the male. The following named forms are polymorphous females of the true *P. merope*:—*P. cenea*, Stoll (S. Africa); *P. hippocoon*, Fab. (S. & W. Africa); *P. dionysos*, Doubl. (W. Africa); *P. trophonius*, Westw. (S. & W. Africa). He discusses the origin of the group, and seems uncertain whether it originated in Africa or Madagascar. No continental form of female at all resembling the male is known, nor is any dimorphous female known to occur in Madagascar. The following forms are figured by Trimen:—*P. meriones*, ♀, pl. 42. fig. 1, Madagascar; *P. merope*, ♂, pl. 43. fig. 1, Knysna; *P. merope*, ♀ (= *cenea*, Stoll), pl. 43. f. 3, Knysna (mimics type of *Danaüs echeria*); *P. merope*, ♀ (= *cenea*, var.), pl. 43. f. 4, Natal (mimics Natal form of *D. echeria*); *P. merope*, ♀ (intermediate between *cenea* and *hippocoon*), pl. 43. fig. 2, Kaffraria; *P. merope*, ♀, second form (*P. hippocoon*, Fabr., var.), pl. 43. f. 6; *P. merope*, ♀, fourth form (*P. trophonius*, Westw.), pl. 43. f. 5.

BUTLER also remarks (Trans. Ent. Soc. Lond. 1869, pp. 275, 276) on the various forms of *P. merope*, and describes and classifies those in the British Museum. He figures one new one (pl. 5. f. 1). He considers that the West-African forms (*P. brutus*, &c.) ought to be considered distinct from those of South Africa (*P. merope*, &c.), at least provisionally. He also (Ent. Mo. Mag. vi. p. 148) states that H. T. Usher, Administrator of the Gold Coast, while collecting at Lagos in 1862, captured a male *P. merope* in copula with a female form closely resembling *Danaüs niavius*, thus bearing out the correctness of the supposed polymorphism of this species. He remarks (l. c. p. 171) that in the southern form of *P. merope* the outer margin of the anterior wings is strongly undulated in both sexes, while in the western form (*P. brutus*) the margin is almost entire.

H. W. BATES (Proc. Ent. Soc. Lond. 1869, pp. 8, 9) remarks on the distribution and variation of the *machaon* group of *Papilio*. The greatest divergence of forms from the type occurs in N.E. Asia, in the middle of the range of the group.

PACKARD (Guide to Study of Insects, p. 247, fig. 180) notices and figures *Papilio daunus*, Boisd., from Kansas. He also (l. c. pp. 247-248) quotes

Saunders's description of the larva of *P. troilus*. He also figures the pupa of *P. philenor* (p. 248, fig. 181).

HEWITSON remarks on the species of *Papilio* collected by Buckley in Ecuador, and describes one new species. *Equat. Lep.* p. 1.

HERRICH-SCHÄFFER describes *Papilio godeffroyi*, Semper. *Stettin. entom. Zeitung*, 1869, p. 78.

H. LUCAS describes *P. marchandii*, Bois., in full. *Ann. Soc. Entom. France*, 1869, p. 532.

T. L. MEAD describes a female specimen of *P. calverleyi*, Grote (= *asterias*, var., Edw.), taken in Florida. *Amer. Naturalist*, iii. p. 332.

DE L'ORZA states (*Lépid. Japon.* pp. 9-11) that the Japanese specimens of *Papilio memnon* belong to the Chinese form figured by Cramer under the name of *P. androgeus*. The larvæ of *Papilio memnon*, *P. helenus*, and *P. demetrius* are said to feed on the orange-tree in Japan, and that of *P. xuthus* on various kinds of Umbelliferae. The reputed Siberian specimens of the last-named insect come from China, via Kiachta. De l'Orza has also obtained two pupæ of *P. aleinous* attached to the stalk of an *Aristolochia*, and he therefore concludes that the larva feeds on that plant.

SCUDDER (Harris Correspondence) publishes Harris's descriptions and notes on the transformations of *Papilio asterias* (p. 270), *P. troilus* (p. 271, pl. 2, fig. 1, pl. 4, fig. 16), and *P. philenor* (pp. 148, 273).

W. SAUNDERS (*Canad. Entom. i.*) describes the larvæ of *P. turnus*, pp. 53, 74, and *P. troilus*, p. 73.

BOISDUVAL describes the larva of his *Papilio zolicaon* from Lorquin's observations (*Ann. Soc. Entom. Belge*, xii. p. 29). He also states (*l. c.*) that the Californian specimens which he previously referred to *Parnassius clarus*, Ev., do not belong to that species, but to *P. clodius*, Mén.

MILLIERE describes and figures a variety of *Thais polyxena* from Dalmatia. *Ann. Soc. Linn. Lyon*, xvii. p. 8, pl. 94. f. 1, 2.

New species :—

Papilio (Ornithoptera) miranda, Butler, *Lepidoptera Exotica*, p. 3, pl. 1, Sarawak.

Papilio. Butler describes the following new species :—*P. luctuosa*, *Cist. Ent. i.* p. 12, Peru; *P. zonaria* (= *P. sinon*, *Cram. Pap. Ex. iv.* pl. 317, c, d, nec Fabr.), *Ent. Mo. Mag.* v. p. 271, San Domingo; *P. kerosa*, *l. c.* vi. p. 55, *P. zanoa*, *l. c.*, and *P. juda*, *l. c.* p. 56, all from Sarawak; *P. joësa*, *Entomologist*, iv. p. 348, Queensland.

Hewitson describes the following new species from Ecuador :—*P. lacydes*, *Equat. Lep.* p. 1; *P. philetus*, *Trans. Ent. Soc. Lond.* 1869, p. 31; *P. phalæcus*, *l. c.* p. 32.

Papilio alliacmon (Boisd. MSS.) [= *dehaami*, Feld.], De l'Orza, *Lépid. Japon.* p. 9, Japan; *P. brevicauda*, Saunders (= *P. asterias*, var. ?), Packard's *Guide to Study of Insects*, pp. 245-247, and note, Newfoundland; *P. burtoni*, Reakirt, *Proc. Acad. Nat. Sci. Philad.* 1868, p. 89, New Granada; *P. forzæ*, Boisd. (= *P. calliste*, Bates, see Deyrolle, *Petites nouv. Entom.* 1869, no. 6), *l'Insectologie horticole*, 1869, p. 103, Venezuela; *P. schmeltzii*, Herrich-Schäffer, *Stettin. entom. Zeitung*, 1869, p. 78, pl. 1. f. 1; *Samml. aussereurop. Schmett.* ii. f. 106, Ovalau.

Thais deyrollei, Oberthür, *Petites nouv. Entom.* 1869, no. 2, Pontic Alps.

For further remarks on this species, and its claim to be considered distinct from *T. cerisyi*, see Staudinger & Deyrolle in Nos. 5 & 6 of the same journal.

Pierides.

HEWITSON (Equat. Lep. pp. 2-4) remarks on the species of this family collected by Buckley in Ecuador, and gives a full list of the species of *Leptalis* obtained.

HOPFFER (Stettin. entom. Zeitung, 1869) thinks that *Leptalis nasua*, Feld. (♀ = *L. kadeni*, Feld.), may be a var. of *L. lwyi*, Luc. [=, according to R. Felder in litt.]. Hopffer also (p. 432) considers that *Pieris euthemia*, Feld., is the same as *P. stamnata*, Luc.; *P. leptis*, Feld. = *P. paulina*, Boisd. nec Cram. He thinks (p. 434) that *Idmais fatma*, Feld., is an aberration of *I. eris*, Klug. He also (l. c. p. 432) refers *Anthopsyche theopompe*, Feld., to *eupompe*, Klug., as a variety, and describes the variation of this insect. *A. heuglini*, Feld., is apparently the same as *evagore*, Kl. (l. c. p. 433). He further states (l. c. pp. 434, 435) that Boisduval has described the males of two species as the sexes of his *Terias mexicana*.

Boisduval's *T. mexicana*, ♀, is = *T. damaris*, Feld., ♂. *T. lemmia*, Feld., is probably a var. of *T. jucunda*, Boisd. (l. c. p. 435).

HERRICH-SCHÄFFER (Stettin. entom. Zeitung, 1869) describes specimens of *Elodina pallene* and *parthia* from Rockhampton (p. 75). He also (l. c. p. 76) describes *Pieris teutonia*, and describes and figures *P. coronea* (l. c. pl. 1. f. 3), *P. athama* (pl. 1. f. 2), and *P. periclea* (pl. 1. f. 4), and remarks that Hewitson considers the last species to be identical with *P. perimale*. He also describes *Callidryas goryophone* and *florella*, and remarks on *Terias drona* and *T. hecabe* (l. c. p. 77). He refigures *P. periclea*, *P. athama*, and *P. coronea*. Sammlung aussereurop. Schmett. ii. f. 103-105.

PACKARD (Guide to Study of Insects, p. 249, fig. 182) notices the transformations of *Pieris oleracea*, Harr., and figures the larva and imago. He also (l. c. p. 250) quotes Saunders's account of the transformations of *Colias philodice*.

Leucophtisia sinapis. Butler remarks on the habits of this species in Switzerland. Proc. Ent. Soc. Lond. 1869, p. 8.

L. lathyri, Dup. nec Hübn. Bellier de la Chavignerie publishes some notes on this species, which he considers perfectly distinct in habits, localities, flight, and times of appearance from *L. sinapis*. He characterizes the second brood as var. *æstivalis*. He believes that the true *L. lathyri* is confined to the neighbourhoods of Digne and Aix in Provence. Ann. Soc. Entom. Fr. 1869, pp. 512, 513.

BEHR mentions his having found the larva of a true *Pieris* in South Australia on a species of *Loranthus*. Trans. Amer. Ent. Soc. ii. p. 303.

Pieris plexaris, Don. = *P. discors*, Gmel., according to Kirby, Trans. Ent. Soc. Lond. 1869, p. 357.

P. rapæ. Stefanelli describes a new variety under the name of *leucotera*. Bull. Soc. Ent. Ital. i. p. 147.

P. brassicæ and *rapæ*. J. M. Bramwell records the occurrence of black specimens near Perth. Entomologist, iv. p. 258.

P. napi, var. *bryoniae*, has occurred near Plymouth (!) according to J. Gatecombe. Entom. iv. p. 301.

Pontia oleracea. Scudder reprints Harris's original description of this

insect from the 'New-England Farmer,' and figures the pupa from Harris's drawings. Harris's Correspondence, p. 361, pl. 4. f. 9-11.

Anthocharis douei, Pierr. T. Blackburn states (Ent. M. Mag. v. p. 299), on Butler's authority, that this species is the true *Papilio eupheno* of Linnæus. Compare Butler (*infra*, p. 358), E. M. M. p. 271, and Staudinger, Stettin. entom. Zeitung, 1869, p. 92.

A. tagis. Mabille (Ann. Soc. Entom. Fr. 1869, p. 55) considers the Corsican form of this species (*insularis*, Staud.) to be quite distinct from the continental type.

A. cardamines and *A. damone*. Girard records the occurrence of varieties with a black spot on the centre of the hind wings. Ann. Soc. Entom. Fr. Séances, 1869, p. 70.

Callidryas fiadrina, Hew. = *C. thauruma*, Reak., according to Reakirt. Proc. Acad. Nat. Sci. Philad. 1868, p. 91.

Rhodocera rhamni and *cleopatra*. Rogenhofer describes some hermaphrodite specimens. Verh. zool.-bot. Ges. in Wien, 1869, pp. 191, 192.

Colias. Edwards (Butt. N. Amer.) figures the following known species: — *C. alexandra*, *Colias*, pl. 1. f. 1-4; *C. helena* (Edw. nec Herr.-Schaff., = *C. chippewa*, Edw. in litt.), l. c. f. 5-7; *C. christina*, Col. pl. 2. f. 1-4; *C. behrii*, l. c. f. 5-7; *C. eurytheme*, Col. pl. 3.

C. aurorina. Lederer (Hor. Soc. Ent. Ross. vi. pp. 74, 75), remarks on the variation of this insect. He seems to think that *C. chloë*, Ev., is distinct, but that *C. libanotica*, Led., is a mere variety of *aurorina*. He also records the discovery of the larva of the latter species.

Colias viluensis, Ménétriés. De l'Orza (Lépid. Japon. p. 16) compares this insect with the allied European species.

C. eurydice, Boisd., is redescribed by him (Ann. Soc. Entom. Belge, xii. p. 40). *C. wosnesenskii*, Mén., is a synonym of the male, and *Rhodocera lorquini*, Boisd., is the female of this insect.

C. hyale and *C. palæno*. On the occasional occurrence of yellow females in these species compare Doubleday, Entom. M. Mag. vi. p. 111; and H. R. Cox, Entomologist, iv. p. 363.

C. philodice. Transformations described by W. Saunders, Canad. Entom. i. p. 54.

New genera and species:—

Neophasia, n. g., Behr, Trans. Amer. Ent. Soc. ii. p. 303. Intermediate between *Pontia* and *Pieris*. Head globuliform, eyes large and prominent for the shape of the thorax; palpi very slender, longer than the head, compressed, hirsute; antennæ of moderate length, terminating in a fusiform club; abdomen slender, shorter than the hind wings; wings elongated, very delicate, discoidal cell produced into the middle of the wing; tip of fore wings acute. Type *Pieris menapia*, Feld.

coniochloroma, n. g., Butler, Cistula Entomologica, i. p. 15. Shape of wings like *Tachyris neombo*, veins of fore wings as in *Eronia*, only one vein emitted before the end of the discoidal cell; veins of hind wings as in *Eronia idotea*; antennæ as in *E. leda*; head very large. Type *H. idiotica*, n. sp., Butl. l. c., hab. — ?

Globiceps * *paradoxa*. Under this name C. & R. Felder publish a preli-

* This name is preoccupied in *Hemiptera*.

minary notice of a singular insect from Calabar, which somewhat resembles a *Cicada*, but which they consider to be allied to *Pontia*. Petites nouvelles Entom. no. 8.

Euterpe latona, Butler, Cistula Entomologica, i. p. 13, locality unknown; *E. anaitis* and *E. clemene*, Hewitson, Equatorial Lepidoptera, p. 4, Ecuador.

Leptalis. Hewitson (*l. c.*) describes the following new species of this genus from Ecuador:—*L. larunda*, p. 4; *L. lua* and *L. idonia*, p. 5; *L. lysis* and *L. lelex*, p. 6; *L. leonora* and *L. lygdamis*, p. 7; *L. teresa*, p. 8.

Leptalis deione (misprinted *desine*), Hewits. Entom. M. Mag. vi. pp. 68, 86, Nicaragua; *L. carthesis*, Hew. Trans. Ent. Soc. Lond. 1869, p. 71, Demerara.

Neophasia terlooii, Behr, Trans. Amer. Ent. Soc. ii. p. 304, California.

Thyca. Butler (Ann. & Mag. Nat. Hist. 1869, iii.) describes the following new species:—*T. ithiela*, p. 242, Penang; *T. fragalactea*, p. 243, North Coast of Australia; *T. lucerna*, *l. c.*, and *T. ochreopicta*, p. 244, both from the Philippines.

Pieris trimenia, Butler, Cistula Entomologica, i. p. 13, Port Natal (= *P. agathina*, var. B, Trimen, Rhop. Afr. Austr. p. 29, pl. 11. f. 2); *P. crucivora*, De l'Orza, Lépid. Japon. p. 12, Japan (= *P. brassica*, var. *crucivora*, Boisd.); *P. elisa*, Vollenhoven in Pollen & Van Dam's 'Recherches sur la Faune de Madagascar,' Insectes, p. 12, pl. 2. f. 3, Mayotte; *P. paroreia*, Hewitson, Trans. Ent. Soc. Lond. 1869, p. 72, Cape-Coast Castle; *P. ninonia*, Boisdual, Ann. Soc. Entom. Belge, xii. p. 38, n. 5 (= *menapia*, Feld. = *tau*, Scudd., fide W. H. Edwards in litt.); *P. nasturtii*, Boisd. (= *napi* or *oleracea*, var. ? Boisd.), *l. c.* (= *venosa*, Scudd., W. H. E.); *P. resedæ* (= ♀ præc. ? Boisd.), *l. c.* p. 39 (= *castorea*, Reak., W. H. E.); and *P. iberidis*, Boisd. (= *cruciferarum*, var. ? Boisd.), *l. c.* (= *pallida*, Scudd., W. H. E.), all from California; *P. hulda*, Edwards, Trans. Amer. Ent. Soc. ii. p. 370, California.

Euchloë jalone, Butler, Cistula Entomologica, i. p. 14, White Nile; *E. olina*, Butler, *l. c.*, Natal; *Anthocharis euphenoides*, Staudinger, Stettin. entom. Zeitung, 1869, pp. 92, 93 (= *Pap. eupheno*, Esp. nec Linn. = *Euch. calceuphenia*, Butler, Ent. M. Mag. v. p. 271), S. Europe; *E. crameri*, Butler, *l. c.* p. 271 (= *Pap. belia*, Cram. nec Linn.), S. Europe; *Anth. thunbergii*, De l'Orza, Lépid. Japon. p. 14 (probably = *A. scolymus*, Butl., W. F. K.), Japan; *A. angelina*, Boisd. Ann. Soc. Entom. Belg. xii. p. 40, California (*A. cooperii*, Behr, Trans. Amer. Ent. Soc. ii. p. 304, fide W. H. Edwards in litt.; probably = *A. cethura*, Feld. fide R. Felder in litt.); *A. edwardsii*, Behr, *l. c.* California; *A. reaktirii*, Edwards, *l. c.* p. 369, California.

Calidryas. Butler describes the following new species:—*C. flava*, Ann. & Mag. Nat. Hist. 4th series, iv. p. 202, Celebes; *C. rotata*, *l. c.*, St. Domingo; *C. solstitia*, *l. c.* p. 203, Chili; *C. minuscula* (= *C. argante*, var. ?), Cistula Entomologica, i. p. 16, Havannah; *C. latoma*, *l. c.*, locality unknown.

Colias simoda, De l'Orza, Lépid. Japon. p. 16, Japan; *C. keewaydin*, Ent. wards, Butt. N. Amer. *Colias*, pl. 4, United States; *C. sugartia*, Led Hor. Soc. Ent. Ross. vi. p. 75, pl. 4. f. 1, 2, Asrabad. votera.

Terias. R. Felder (Verh. zool.-bot. Ges. in Wien, 1869) describes following new species from Mexico.—*T. ingrata* (= *T. gratiosa*, Reak. n. th Doubl., Hew.) and *T. sidonia*, p. 465; *T. nelphe*, *T. celata*, and *T. leucilla*, p. 466.

Terias mandarina, De l'Orza, Lépid. Japon. p. 18, Japan; *T. parvula*, Herrich-Schäffer, Stettin. entom. Zeitung, 1869, p. 78, Rockhampton; *T. ecuadora*, Hewitson, Equat. Lepid. p. 2, Ecuador.

Danaides.

HERRICH-SCHÄFFER (Stettin. ent. Zeitung, 1869) figures *Euplaea eleutho*, var. ♀ (pl. 2. f. 7); *E. eleutho*, var. *angasii* (pl. 2. f. 6), and *E. eleutho*, var. *eschscholtzii* (pl. 2. f. 9). He also (l. c. p. 69) remarks that *E. montrouzieri* and *lewini* are only local forms of the same insect, and describes a male specimen of *E. eleutho* from Godeffroy's collection. He refigures *E. eleutho* and vars. *angasii* and *eschscholtzii*, Samml. aussereurop. Schmett. ii. f. 107-109.

KIRBY states (Trans. Ent. Soc. Lond. 1869, p. 358) that *Euplaea prothoe*, Godt. = *affinis*, Gmel. = *phanareta*, Schall.; and that *E. cunice*, Godt. = *nemertes*, Hübn. = *leucostictos*, Gmel. He adds that Butler has also discovered the identity of *E. prothoe* with *E. phanareta*.

TRIMEN (Trans. Linn. Soc. xxvi.) treats of the South-African species of *Danaïs* which are mimicked by other butterflies, as follows:—*D. damocles* (p. 505) is mimicked in Angola by *Diadema damoclina*; *Dan. egialea* (p. 506) is mimicked by *Diad. dubia*; *Dan. echeria* (p. 506, pl. 42. f. 3, 7) is mimicked in Natal by *Diad. mima*, *Papilio echerioides*, *P. merope*, var. ♀ *cenea*, and *P. leonidas*, var. *brasidas*; *Dan. niavius* (p. 511, pl. 42. f. 6) is mimicked in West Africa by *Diad. anthedon* and *Pap. merope*, var. ♀ *hippocoon*; *Dan. chrysippus* (p. 512, pl. 42. f. 5) is mimicked by *Diad. bolina*, ♀. *Dan. chrysippus* var. *dorippus*, is mimicked by *Diad. bolina* ♀ var. *inaria*, and *Dan. chrysippus*, var. *aleippus*, by an unnamed variety of the *Diadema*. *Dan. chrysippus* is also mimicked by *Pap. merope*, var. ♀ *trophonius*; and in West Africa by *Romaleosoma eleus*. In the Eastern Hemisphere *D. chrysippus* is mimicked by *Cethosia penthesilea*, and *Argynnis niphe*, ♀.

Trimen also records his observing a specimen of *Dan. chrysippus* (no doubt a male) pertinaciously pursuing a *Diad. bolina*, ♀.

Danaïs archippus is figured in all its stages, Amer. Ent. i. pp. 28, 29; and the larva is described by Scudder from Harris's MSS (Harris Correspondence, p. 275), and by W. Saunders (Canad. Entom. i. p. 74).

Euplaea. Herrich-Schäffer (Stettin. entom. Zeitung) describes the following new species:—*E. sericata* and *E. incompta*, p. 69, from Vanna Valava; *E. schmeltzi*, p. 70, pl. 2. f. 8, Upolu; *E. graeffiana* (Heer, MSS.?), l. c. pl. 2. f. 5, Vanna Valava. He remarks that Hewitson considers the figure of *E. graeffiana* to represent *E. hisme*, but that in his opinion *E. hisme* is identical with *E. eunice*. He refigures *E. schmeltzi* and *E. graeffiana*, Samml. aussereurop. Schmett. ii. f. 110, 111.

Danaïs melittula, sp. n., Herrich-Schäffer, Stettin. entom. Zeitung, 1869, p. 70, Upolu; *D. vashti*, sp. n., Butler, Cistula Entomologica, i. p. 1, Old Calabar; *D. ishma*, sp. n., Butler, l. c. p. 2, Gilolo.

Heliconiides.

HEWITSON (Equatorial Lepidoptera, p. 9) remarks on the species of *Heliconia* collected by Buckley in Ecuador, and describes a variety of *H. theliopoe*. He also proposes (l. c. p. 22) to separate the insect figured as *Ithomia lavinia* in his Exot. Butt. i. pl. 15. f. 34, under the name of *I. mirza*; but this name cannot be retained, as Herrich-Schäffer has restricted the name *lavinia* to it in his Prodr. Syst. Lep. i. p. 47, and given the name *Hymenitis vanilia* to the insect figured by Hewitson (l. c. figs. 35, 36).

Hewitson represents the neuration of several species of *Ithomia* in Exot. Butt. 70, April 1869, *Ithomia*, pl. 27.

HOPFFER (Stettin. entom. Zeitung, 1869, pp. 451, 452) states that *Melinæa phasis*, Feld. = *Heliconia ethra*, Godt. nec Hübn.

Hamadryas moorei, MacL., is a species of *Neptis* (*Nymphalides*) according to Gerstaecker, Bericht über Entom. 1865-1866, 2^{te} Hälfte, p. 71.

New species :—

Heliconius. Butler (Ann. & Mag. Nat. Hist. iii.) describes and figures the following new species :—*H. zelinde*, p. 17, pl. 9. f. 1, West coast of America ; *H. primularis*, p. 18, pl. 9. f. 2, Guayaquil, Rio Napo ; *H. zobeide*, p. 18, pl. 9. f. 3, Pará, Peru. *H. dryalus*, Hopff. (= *Eneides ethra*, Hübn., nec *Heliconia ethra*, Godt.), Stettin. entom. Zeitung, 1869, pp. 451, 452 ; *H. guarica*, Reak. Proc. Acad. Nat. Sci. Philad. p. 91, New Granada.

Heliconia. Hewitson (Equatorial Lepidoptera) describes the following new species from Ecuador :—*H. cythera*, p. 9 ; *H. alithea* and *H. immaculata*, p. 10 ; *H. hierax*, p. 11.

Heliconia diotrepes, Hew. Trans. Ent. Soc. Lond. 1869, p. 33, Nicaragua.

Olyras insignis, Salvin, Ann. & Mag. Nat. Hist. iv. p. 163, Calobre, Veragua.

Athesis acrisione, Hewits. Equatorial Lepidoptera, p. 12, Ecuador.

Dircenna bairdii, Reakirt, Proc. Acad. Nat. Sci. Philad. 1868, p. 89, New Granada.

Ithomia. Salvin (Ann. & Mag. Nat. Hist. iv.) describes the following new species :—*I. frater*, p. 163, Pozzuzo, East Peru ; *I. tricolor*, p. 164, Apolobamba, North Bolivia ; *I. semifulva*, l. c., Guadalquiza, Ecuador, and Pozzuzo ; *I. pardalis*, p. 165, Guadalquiza ; *I. peruana*, p. 166, Pozzuzo ; *I. picta*, l. c., New Granada ; *I. cayana*, p. 167, Cayenne ; *I. rufocincta*, l. c., Oaxaca, Mexico ; *I. simplex*, p. 168, *I. parva*, l. c., *I. vicina*, p. 169, all from Costa Rica ; *I. lyra*, l. c., Guatemala, Costa Rica.

Ithomia. Hewitson describes the following new species from Ecuador :—*Mechanitis mamecus*, Entom. M. Mag. vi. p. 97 = *Ithomia mamecus*, Equat. Lep. p. 13 ; *I. achæa* and *I. antonia*, Eq. Lep. p. 14 ; *I. æmilia* and *I. æthra*, p. 15 ; *I. varina*, Ent. M. Mag. vi. p. 97, Equat. Lep. p. 15 ; *I. phagesia*, l. c. p. 16 ; *I. alphasibæa* and *I. ægineta*, p. 17 ; *I. thabena* and *I. harbena*, p. 18 ; *I. tabera* and *I. epona*, p. 19 ; *I. antea* and *I. cænina*, p. 20 ; *I. ticiida*, *I. tici-della*, and *I. lamia*, p. 21 ; *I. alissa*, p. 22.

Hewitson also (Exot. Butt. pt. 70, April 1869, *Ithomia*, pl. 27) describes and figures the following :—*I. cleonica*, figs. 169, 170, New Granada ; *I. gedera*, fig. 171, Ecuador ; *I. azeka*, fig. 172, New Granada ; *I. zerepha*, fig. 173, Cayenne ; *I. alidella*, fig. 174, hab. — ? ; *I. zalmunna* (= *theudelinda*, var. ?), figs. 175, 176, Ecuador.

Melinæa mæonis, Hew. Equat. Lep. p. 11, Ecuador.

Mechanitis mantineus, Hew. l. c. p. 12, Ecuador ; *M. franis*, Reak. Proc. Acad. Nat. Sci. Philad. 1868, p. 90, New Granada.

Eucides acacetes, Hew. l. c. p. 22, Ecuador.

Acræides.

TRIMEN (Trans. Linn. Soc. xxvi.) discusses the various African species of *Acræa* which are mimicked by other butterflies, as follows :—*A. gea* (p. 514) is mimicked in Ashanti by *Panopea hirce*, *Papilio cynorta* (= *P. boisduvalianus*), and probably by *Melanitis phegea*, var. *hammakoo* ; *A. euryta* (p. 515) is mi-

micked in West Africa by varieties of *Panopea hirce* and by *Melanitis phegea* (type); *A. aganice* (p. 516, pl. 42, f. 2) is mimicked in South Africa by *Panopea tarquinia* (pl. 42, f. 4); *A. lycoa* (p. 516) is apparently mimicked by *Panopea lucretia*; *A. zetes* (p. 517, pl. 42, f. 8, 9) is mimicked in West Africa by *Panopea boisduvalii*; and in South Africa the variety *acara* of *A. zetes* is mimicked by a variety of the *Panopea*; *A. egina* (p. 518) is probably mimicked by *Papilio ridleyanus*, which, however, almost equally resembles *A. zetes* and *A. perenna*.

Acræa albofasciata, sp. n., Hewitson, Equat. Lep. p. 23, Ecuador; *A. dammii*, sp. n., Vollenhoven, Recherches sur la Faune de Madagascar, par MM. Pollen & Van Dam, Insectes, p. 12, pl. 2, f. 4, Madagascar.

Nymphalides.

HEWITSON (Equatorial Lepidoptera, pp. 23-31) alludes to the most interesting species of *Eresia*, *Catagramma*, *Callithea*, *Agrias*, *Prepona*, and *Siderone* taken by Buckley in Ecuador. He also states (*l. c.* pp. 23, 24) that *Eresia ithomiola*, Salvin, = *E. peloria* ♀, and describes another variety of the female of the same species from Ecuador. He also (*l. c.* p. 29) mentions two varieties of *Catagramma maimuna* from Ecuador, and points out the differences between *C. alicia* and *C. vaninka*. He also questions the correctness of separating the genera *Pandora* and *Batesia*. [The former name is preoccupied in conchology.]

WALLACE monographs the genera *Mynes* and *Prothoe* (Trans. Ent. Soc. Lond. 1869, pp. 77-81). He describes the female of *M. geoffroyi* and some varieties of both sexes. He refers *M. leucis* and allies to the genus *Prothoe*, and remarks on the habits, sexual variation, and geographical distribution of *P. franckii*, *leucis*, and *mulderi*. He also (*l. c.* pp. 337-348) gives lists of the Eastern species of *Cethosia*, *Cirrochroa*, *Terinos*, *Atella*, *Laogona*, and *Parthenos*, and describes several new ones. He remarks on the characters of the genus *Terinos*, and describes a variety of *T. robertsia*. He also describes the female of *Parthenos tigrina*.

DE L'ORZA (Lépid. Japon. p. 25) states that Boisduval possesses both sexes of *Argynnis paulina*, Nordm., from Japan; and as he mentions that he himself has a bad specimen of *A. sagana*, Doubl., his expressions seem to throw some doubt on *A. paulina* being really the female of *A. sagana*, as stated by Berner. He questions (*l. c.* p. 28) whether *Vanessa angelica*, Cram., is really the true *c-aureum* of Linnaeus. He also mentions (p. 29) that he has a Japanese specimen of *V. v-album* intermediate between European specimens and the N.-American *V. j-album*.

BUTLER (Trans. Ent. Soc. Lond. 1869, p. 273, pl. 5, figs. 2, 3) describes and figures a variety of *Argynnis aglaia* from Chamouny. He also states that *A. adippe* (*aglaia* by misprint) and *A. niobe* are apparently only varieties of one species. He also figures *Charaxes etesipe*, Godt. (*l. c.* pl. 5, figs. 5, 6), and remarks on the species (p. 274). He claims (*l. c.* p. 274, note) that his sectional description of *C. jocaste*, taken in connexion with the locality, sufficiently characterizes the species, and that Felder's *C. achæmenes* must be placed as a synonym. This, however, is a fallacy, as Butler's specimens came from Senegal, and Felder's from Natal.

W. SAUNDERS (Canad. Entom. i.) describes the larvæ of the following *Nymphalidæ*:—*Argynnis myrina*, p. 55; *Vanessa antiopa*, p. 75; *V. milberti*,

p. 76; *V. interrogationis*, p. 76; *Pyrameis cardui*, p. 93; *P. huntera*, p. 105; *Limenitis disippus*, p. 94.

SCUDDER (Harris Correspondence) publishes Harris's descriptions of the larvæ of *Limenitis ursula*, p. 276, pl. 4. f. 15; *Cynthia cardui*, p. 277, pl. 1. f. 1, 2; *C. atalanta*, p. 279; *Vanessa antiopa*, *V. progne*, and *V. c-aureum*, p. 280; and a note of Doubleday's on the larva of *Melitæa ismeria*.

SALVIN has published (Trans. Ent. Soc. Lond. 1869, pp. 391-397) a synopsis of the genus *Clotilda*. He enumerates six species, including two which he describes as new. A table of species is also given.

Cirrochroa. Reakirt describes the female of *C. tyche*, Proc. Acad. Nat. Sci. Philad. 1868, p. 89; Wallace describes the female of *C. orissa*, Trans. Ent. Soc. Lond. 1869, p. 340.

Argynnis. Edwards (Butt. N. Amer.) figures and describes the following known species of this genus:—*A. diana*, *Argynnis*, pl. 1; *A. cybele*, pl. 2; *A. aphrodite*, pl. 3; *A. nokomis*, pl. 4; *A. atlantis*, pl. 5; *A. callippe*, pl. 6; *A. hesperis*, pl. 7; *A. monticola*, pl. 8; *A. leto*, pl. 10. He thinks that the fossil *Vanessa pluto*, Heer, from Croatia, was an *Argynnis* allied to *diana*, and remarks that *A. cybele* and *aphrodite* are confounded by most authors and in all the European collections; and that Boisduval's description of *A. callippe* will include at least two other species. He also objects to the genus *Brenthis* being separated from *Argynnis*.

KIRBY describes the male of *A. ella*. Journ. Roy. Dubl. Soc. v. pp. 171, 172.

MEEK describes a variety of *A. selene*. Ent. M. Mag. vi. p. 95.

NEWMAN publishes the life-history of *A. euphrosyne*. Entomologist, iv. p. 251.

W. HAMBROUGH records the supposed occurrence of *A. niobe* at Lyndhurst. Entom. iv. p. 351.

Argynnis and *Melitæa*. Packard (Guide to Study of Insects, p. 252) describes the transformations of *A. atlantis*, Edw., figures *A. aphrodite* (p. 253, fig. 183), quotes Saunders's description of the transformations of *A. myrina* (pp. 253-255), notices *Melitæa phaeton* and figures it in all its stages (pp. 255, 256, figs. 184-186), and figures the larva of *M. harrisii*, Scudd. (p. 258, fig. 187).

ERSCHOFF figures aberrations of *Melitæa maturna* (Hor. Soc. Ent. Ross. vi. p. 26, pl. 3. f. 1) and *Argynnis arsilache* (l. c. p. 26, pl. 3. f. 2).

Melitæa. Ragonot (Ent. M. Mag. vi. p. 147) remarks on the differences between *M. athalia* and *M. dictynna*. He is inclined to think that the latter species may yet be found in England. Boisduval (Ann. Soc. Entom. Belge, xii. p. 57) redescribes *M. leanira*, Behr, and states that *M. editha*, Boisd. = *M. anicia*, Doubl., Hew. [The two species are distinct, according to W. H. Edwards in litt.]

M. phaeton. On the habits of this insect see W. H. Edwards and B. Pülings, Canad. Entom. i. pp. 59-61 (note), 80.

SCUDDER states (Proc. Bost. Soc. Nat. Hist. xi. p. 379) that *Melitæa ænone*, Scudd. = *M. nycteis*, Doubl., and that the synonyms formerly quoted by him under *M. harrisii*, Scudd., also belong to *M. nycteis* (*ænone*).

Grapta. Edwards enumerates eight American species of this genus, none of which is identical with the European *c-album* (Trans. Amer. Ent. Soc. ii. p. 375). Lintner discusses the characters of *G. c-aureum* and *interro-*

BUTLER (Ann. & Mag. Nat. Hist. iii p. 20, note) states that the East-Indian form of *Diadema lasinassa*, Cram.=the true *Pap. bolina*, Linn., and must receive that name, while the *Diad. bolina* of recent authors must take the name of *missippus*, applied by Linnæus to the female of that species.

Harma hypatha. Hewitson describes the male of this species from Old Calabar. Trans. Ent. Soc. Lond. 1869, p. 75. n. 7.

BUTLER (P. Z. S. 1868, pp. 599-615, pl. 45) has revised the species of the genus *Adolias*, and divided them into the 6 following genera:—*Adolias*, Boisd., type *aconthea*; *Tanaëcia*, type *pulasara*; *Symphædra*, Hübn., type *æropus* (the *dirtea* group is also included in this genus); *Dichorragia*, type *nesimachus*; *Stibochiona*, type *coresia*; *Neurosigma*, type *siva*. He describes varieties of various species, and the male of *Adol. sahadera*. He states that the male of *A. octogesima* appears to be the same as *A. alpheda*, male, but that the supposed female seems to belong to the *appiades* group of the genus. He describes and figures the true *cocythus* of Fabricius, and figures *A. monina*, Fabr. (= *cocyta*, Fabr. = *puseda*, Moore). He states that Vollenhoven has probably described two species as the sexes of his *A. gandarva*. He describes the female of *A. appiades* and of *Tanaëcia peleia*, Fabr. (*peleia* ♂ = *palguna*, Moore), and the male of *T. varuna*. He also asserts that *Adol. confinis*, Feld. = *Abrota jumna*, Moore, and not *A. ganga*. [We are, however, informed by W. S. Atkinson that these supposed species are only vars. In any case the name *confinis* has the priority over *jumna*.]

Apatura. Hewitson (Ex. Butt. 71, Oct. 1869, *Apatura*, pl. 1) figures *A. pavonii*, f. 3, 4, and *A. laurentia* ♀, f. 5, 6. Butler (Cistula Entomologica, p. 8) describes the females of *A. lucasii* and *A. laurentia*, and remarks that Hübner has figured the female of *A. druryi* as that of *A. laura*.

Charaxes. Butler (Lepidoptera Exotica, p. 5, pl. 2) describes the females of *C. smaragdalis*, f. 1, and *C. saturnus*, f. 2, from Congo. He also remarks that *Nymphalis caledonia*, Hew., should form a new genus intermediate between *Charaxes* and *Prothoe*.

Paphia. Hewitson (Ex. Butt. 69, Jan. 1869, *Paphia*, pl. 2) figures *C. tyrianthina*, Salvin & Godman, f. 4, and *C. cyanea*, S. & G., f. 5, 9.

Stiderone zethus, Westw., is a synonym of *S. strigosus*, Gmél., according to Kirby, Trans. Ent. Soc. Lond. 1869, p. 359.

New genera and species:—

Tanaëcia, n. g., Butler, P. Z. S. 1868, p. 610. Type *Adolias pulasara*, Moore. Sexes nearly alike; palpi with a slender bristle-like terminal joint slightly variable in length; middle discocellular of front wing feebly recurved; first branch of subcostal nervure in hind wings emitted at some distance from base, the second just beyond.

Dichorragia, n. g., Butler, l. c. p. 614. Type *Adolias nesimachus*, Boi. Allied to *Apaturina*; hind-wing cell partially closed by an interrupted R. Bil. rather delicate lower discocellular nervule.

Stibochiona, n. g., Butler, l. c. p. 614. Type *Hypolimnias coresia*, Hübner. Allied to *Diadema*; discoidal cells of both wings distinctly closed; middle discocellulars of fore wing forming a continuous arch; upper discocellular of hind wing obliquely arched, the lower a little longer than the upper, slightly arched, and meeting the median nervure somewhat obliquely at the origin of the second and third branches.

Neurosigma, n. g., Butler, *l. c.* p. 615. Type *Adolias siva*, Westw. Allied to *Romaleosoma*, with which it agrees in body, palpi, and antennæ; discoidal cells closed; upper discocellular of fore wing very minute; middle short, transverse; lower long, transverse, gently waved, meeting third median nervule close to origin of second; upper discocellular of hind wing short and branched inwardly; lower long, arched outward, slightly angulated in centre, and meeting third median nervure just beyond the origin of second.

Cethosia cyrene, Wallace, Trans. Ent. Soc. Lond. 1869, p. 338, Waigiou.

Clothilda insignis, Salvin, *ibid.* p. 394, Costa Rica; *C. cubana*, Salv. *l. c.* p. 396, Cuba.

Cirrochroa satellita, Butler, *Cistula Entomologica*, i. p. 9, Hongkong; *C. calypso*, Wallace, Trans. Ent. Soc. Lond. 1869, p. 339, Borneo; *C. ducalis* Wall. *l. c.* p. 340, New Guinea, Waigiou.

Terinos nympha, Wall. *l. c.* p. 342, Sarawak; *T. viola*, Wall. *l. c.* p. 343, Singapore, Sumatra; *T. fulminans*, Butl. *Cist. Ent. i.* p. 9, Sarawak.

Atella celebensis, Wall. *l. c.* p. 344, Macassar.

Argynnis. Boisduval (*Ann. Soc. Ent. Belge*, xii.) describes the following species of this genus as new, from California:—*A. epithore*, p. 58; *A. monomia* (= *A. nenoquis*, Reak., fide W. H. Edwards in litt.), *A. egleis* (= *A. montivaga*, Behr, W. H. E.), *A. juba* (= *A. coronis*, Behr, W. H. E.), p. 60; *A. hydaspe* (= *A. monticola*, Behr, W. H. E.), *A. adiante*, p. 61.

Argynnis halcyone, Edwards, Butt. N. Amer. *Argynnis*, pl. 9, Colorado; *A. behrensii*, Edwards, Trans. Amer. Ent. Soc. ii. p. 370, California.

Melitæa. Boisduval (*l. c.*) describes the following Californian species as new:—*M. callina* (= *M. collina*, Behr, = *M. mylitta*, Edw. fide W. H. Edwards in litt.), p. 54; *M. epula* (= *M. pratensis*, Behr, W. H. E.), p. 54; *M. orsa*, p. 55; *M. helcita* (= *M. hoffmanni*, Behr, W. H. E.), p. 55; *M. pola*, p. 56; *M. sonore* (= *M. gabbi*, Behr, W. H. E.), p. 56.

Melitæa packardii, Saunders, Packard's Guide to Study of Insects, p. 256, Canada; *M. vesta*, Edwards, Trans. Amer. Ent. Soc. ii. p. 371, Texas; *M. arachne*, Edw. (= *M. minuta*, ♀?, Edw.), *l. c.* p. 372, Colorado.

Eresia. Salvin (*Ann. & Mag. Nat. Hist.* 4th series, vol. iv.) describes the following new species:—*E. nigripennis*, p. 170, Costa Rica; *E. actinote*, *E. ithomiola* (= *E. peloria*, Hewitson, ♀: comp. Hew. *Equat. Lep.* p. 23), p. 171, and *E. pusilla*, p. 172, all from East Peru. Hewitson (*Equatorial Lepidoptera*) describes the following from Ecuador:—*E. ildica* and *E. letitia*, p. 24; *E. casiphia* and *E. elæa*, p. 25; *E. sestia* and *E. mylitta*, p. 27; *E. neria*, Ent. M. Mag. vi. p. 98, *Eq. Lep.* p. 27; *E. tissa*, *Eq. Lep.* p. 27; *E. trimaculata* and *E. alceta*, p. 28.

Eresia alsina, Hew. Trans. Ent. Soc. Lond. 1869, p. 33, Nicaragua; *E. pullescens*, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 469; *E. graphica* and *E. socia*, p. 470; *E. archesilea* and *E. obscurata*, p. 471, all from Mexico.

Synchlœa misera (Boisd. MSS.), R. Felder, *l. c.* p. 471, Mexico.

Laogona hylæus, Wallace, Tr. Ent. Soc. Lond. p. 345, Dorey; *L. hypatia*, *l. c.* p. 345, Java.

Prapta oreas, Edwards, Trans. Amer. Ent. Soc. ii. p. 373, California; *G. satyrus*, Edw. *l. c.* p. 374, Colorado; *G. umbrosa*, Lintner, *ibid.* p. 313, United States.

Junonia zipha, Butler, Cist. Ent. i. p. 6, Old Calabar; *J. timorensis*, Wall. Trans. Ent. Soc. Lond. 1869, p. 346, Timor.

Salamis amarantha, Butler, l. c. p. 6, Old Calabar.

Cybdelis. Hewitson (Ex. Butt. 69, Jan. 1869) figures and describes the following new species:—*C. calamis*, f. 23, 24, Bolivia; *C. cardases*, f. 25, Ecuador; *C. cecidas*, f. 26, 27, Ecuador; *C. campaspe*, f. 28, 29, New Granada.

Cybdelis boliviana, Salvin, Ann. & Mag. N. H. 4th ser. iv. p. 175, Bolivia.

Myscelia rogenhoferi, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 472, Mexico.

Eunica. Salvin (l. c.) describes the following new species:—*E. chlorochroa*, p. 172, Cosnipata; *E. elegans*, p. 173, Apolobamba, Pozzuzo, Cosnipata; *E. tenebrosa*, l. c., Pozzuzo; *E. brunnea*, p. 174, Cosnipata.

Eubagis sosthenes, Hewitson, Tr. Ent. Soc. Lond. 1869, p. 34, Nicaragua.

Perisama hilara, Salv. l. c. p. 175, Cosnipata.

Callicore neglecta, Salv. l. c. p. 176, West of S. America, Guatemala.

Catagramma titania, Salv. l. c. p. 177, Guatemala; *C. casta*, Salv. l. c. p. 178, Mexico; *C. aphidna*, Hew. Trans. Ent. Soc. Lond. 1869, p. 72. n. 3, Venezuela.

Pyrrhogyra neis, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 473, Mexico.

Epicalia esite, R. Felder, l. c. p. 472, Mexico; *E. regina*, Salv. Ann. & Mag. N. H. 4th ser. iv. p. 178, Caraccas.

Callithea buckleyi, Hewitson, Equat. Lep. p. 29, Ecuador; *C. whitelyi*, Salvin, Ann. & Mag. N. H. 4th ser. iv. p. 179, Cosnipata; *C. optima*, Butler, Lepidoptera Exotica, p. 12, pl. 5. f. 1, 2, Santa Cruz, Peruvian Amazons. Butler remarks that this species is intermediate between the two groups into which the genus has hitherto been readily separable.

Cyrestis nais, Wallace, Tr. Ent. Soc. Lond. 1869, p. 347, Timor; *C. seneca*, Wall. l. c., Sula Islands.

Timetes funestis, Butler, Cist. Ent. i. p. 10, Bolivia.

Prothoe westwoodii, Wallace (= *Mynes leucis*, var. F, Hew.), l. c. p. 81, Aru Islands; *P. hewitsoni*, Wall. (= *M. leucis*, var. G, Hew.), l. c., New Guinea, Mysol.

Mynes guérini, Wall. l. c. p. 78, Queensland; *M. doubledayi*, Wall. l. c. p. 79, Ceram.

Limenitis [*Neptis*] *kämpferi*, De l'Orza, Lépid. Japon. p. 24, Japan.

Heterochroa mephistopheles, Butler, Cist. Ent. i. p. 7, Bogotá; *H. caphira*, Hewitson, Trans. Ent. Soc. Lond. p. 73, Venezuela; *H. emathia*, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 473, Mexico.

Diadema. Wallace, l. c., describes the following new species of this genus:—*D. pandora*, p. 281, Bouru; *D. saundersi*, p. 282, Timor; *D. hewitsoni* (= *D. pandarus*, var., Hew. P. Z. S. 1858, pl. 54. figs. 1, 2), Ké Islands; *D. fraterna*, p. 284, Macassar; *D. anomala* (= *D. perimele*, ♂, Feld. nec Cram., and ♀ = *D. antilope*, Westw. nec Cram.), p. 285, Malacca, Java; *D. albula*, p. 287, Timor.

Diadema damoclina, Trimen, Trans. Linn. Soc. xxvi. p. 505, note, Angola and Congo; *D. mima*, Trim. l. c. p. 506, note, pl. 43. fig. 7, Natal; *D. octocula*, Butl. Ann. & Mag. N. H. 4th ser. iii. p. 19, pl. 9. f. 5, Tologa; *D. formosa*, Herr.-Schäff. (= *D. pandarus*, var. ?), Stettin. entom. Zeitung, p. 71, pl. 4. f. 17, Vanna Valava. Refigured, Samml. aussereurop. Schmett. ii. f. 119.

Hestina zella, Butler [= *H. persimilis*, Westw.], Trans. Ent. Soc. Lond. 1869, p. 9, fig., East Indies.

Romuleosoma crockeri, Butler (= *R. cyparissa*, Doubl. MSS. in Brit. Mus. nec Cram.), Ann. & Mag. N. H. 4th ser. iii. p. 20, pl. 9. f. 6, Ashanti.

Euryphene elpinice, Hew. Ent. M. Mag. vi. p. 97, Old Calabar.

Aterica zeugma, Hewitson, Tr. Ent. Soc. Lond. 1869, p. 73, Old Calabar; *A. abesa*, Hew. l. c. p. 74, Cape-Coast Castle.

Harma. Hewitson (Ex. Butt. 71, Oct. 1869) describes and figures the following new species from Congo:—*H. adelina*, *Harma*, pl. 3. f. 9, 11; *H. altisidora* (= *adelina*, ♂?), f. 10, 12; *H. uselda*, f. 13, 14; *H. hesiodus*, *Harma*, pl. 4. f. 15–18.

Adolias. Butler describes the following new species:—*A. decoratus*, P. Z. S. 1868, p. 605, pl. 45. f. 2, 9, Singapore; *A. vacillaria*, l. c. p. 606, pl. 45. f. 1, Borneo; *A. xiphones*, l. c. p. 609, pl. 45. f. 6, Moulmein; *A. zichri*, Cist. Ent. i. p. 6, Sarawak.

Tanaëcia supercilia, Butler, P. Z. S. 1868, p. 610, pl. 45. f. 7, Penang; *T. violaria*, Butl. l. c. p. 612, pl. 45. f. 8, Singapore.

Symphædra canescens, Butler, l. c. p. 612, pl. 45. f. 5, Borneo; *S. cyanipardus* (= *Adolias dirtea*, Doubl., Hew. nec Fabr.), Butl. l. c. p. 613, Silhet, Borneo.

Euripus robustus, Wallace, Trans. Ent. Soc. Lond. 1869, p. 348, Tondano, Celebes.

Agrias beatifica, Hewitson, Equat. Lep. p. 30, Ecuador.

Apatura proserpina, Scudder, Trans. Chic. Acad. Sci. i. p. 332, Iowa; *A. zalmunna*, Butler, Trans. Ent. Soc. Lond. 1869, p. 274, pl. 5. f. 4, Brazil; *A. macar*, Wallace, ibid. p. 349, Macassar; *A. alicia*, Edwards, Butt. N. Amer. *Apatura*, pl. 1, New Orleans; *A. phæacia*, Hewitson, Exot. Butt. 71, Oct. 1869, *Ap.* pl. 1. f. 1, 2, and *A. zanoa*, Hew. (= *A. namonna*, aberr. ?), l. c. f. 7, 8, both from Darjeeling.

Charaxes. Butler (Cist. Ent. i.) describes the following new species of this genus:—*C. druceanus*, p. 4, Old Calabar; *C. zephyrus* and *C. alladinis*, hab. — ? He also figures and describes the following:—*C. zelica*, Ent. M. Mag. vi. p. 28, Lepidoptera Exotica, p. 12, pl. 5. f. 3, Ashanti?; *C. orilus* (Wallace in litt.), Lep. Ex. p. 13, pl. 5. f. 5, Timor; *C. hannibal* (Wall. in litt.), l. c. p. 14, pl. 6. f. 5, Tondano, Macassar; *C. jupiter*, l. c. p. 14, pl. 5. f. 4, 7, Dorey; *C. gilolensis* (Wall. in litt.), l. c. p. 14, pl. 5. f. 6, pl. 6. f. 3, Batchian, Gilolo; *C. papuensis* (Wall. in litt.), p. 15, pl. 6. f. 1, 4, Dorey, Aru; *C. borneensis* (Wall. in litt.), p. 16, pl. 6. f. 2, Sarawak.

Paphia. Salvin (Ann. & Mag. N. H. 4th ser. iv.) describes the following new species:—*P. lineata*, p. 179, Apolobamba; *P. indigotica* and *P. zelica*, p. 180, Veragua; *P. proserpina*, p. 181, Guatemala.

Paphia vestina, Hewitson, Equat. Lep. p. 31, Ecuador; *P. artacæna*, Hew. Ex. Butt. 69, Jan. 1869, *Paph.* pl. 2. f. 6, 7, and *P. cleomestra*, Hew. l. c. f. 8, 10, from New Granada; *Nymphalis hedemanni*, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 473, *N. pithyusa*, Feld. l. c. p. 473, *N. callidryas*, Feld. l. c. p. 474, all from Mexico.

Morphides.

BUTLER (Cistula Entomologica, i. p. 3) proposes to establish a subfamily under the name of *Morphinæ*, to be placed between the *Brassolinæ* and

Nymphalinea, and indicates the following genera as belonging to it:—*Morpho*, *Clerome*, *Drusilla*, *Discophora*, *Amathusia*, and *Bia*.

Amathusia ottomana, sp. n., Butler, Ent. M. Mag. vi. p. 55, Borneo; *A. westwoodii*, sp. n., Butl. l. c. (= *A. amythaon*, Westw. nec Doubl.), N. India.

Morpho luna, sp. n., Butler, Cistula Entomologica, i. p. 4, Mexico; *M. phanodemus*, sp. n., Hewits. (= *hecabe*, var. ?), Equat. Lep. p. 32, Ecuador.

Brassolides.

Caligo hemichroa, sp. n., Butler, Cistula Entomologica, i. p. 3, Minas Geraes.

Dasyophthalma vertebralis, Butl. l. c. p. 2, Pará.

Narope nesope, Hewitson, Equat. Lep. p. 32, Ecuador.

Satyrides.

BUTLER remarks (Lepidoptera Exotica, i. p. 10) that *Euptychia gemma*, Hübner, (= *Papilio cornelius*, Fabr., and must receive that name.

Chionobas. Scudder (Packard's Guide to Study of Insects, p. 263, figs. 191–196) gives outlines of the undersides of the hind wings in the various American species of this genus. Packard (l. c. fig. 190) figures *C. semidea*. Scudder also (Harris Correspondence, pp. 43, 107) publishes Harris's notes on the synonymy of *Hipparchia* (*Chionobas*) *semidea*.

DE L'ORZA (Lépid. Japonais, p. 32) states that *Satyrus menetriesii*, Bremer, = *S. deidamia*, Eversm., and that the species occurs in Japan, North China, and, according to Herrich-Schäffer, also in Siberia.

LEDERER describes and figures a variety of *Satyrus bryce* from Astrabad as var. *parthica*. Hor. Soc. Ent. Ross. vi. p. 83, t. 4. f. 12, 13.

MILLIÈRE (Ann. Soc. Linn. Lyon, xvii. p. 1, pl. 93. f. 1–4) describes the transformations of *Satyrus fidia*, and figures it in all its stages.

E. L. RAGONOT notices a variety of *Satyrus janira* taken near Paris. Ent. M. Mag. vi. p. 148.

New genera and species :—

Cyllopsis, g. n., R. Felder, Verhandl. zool.-bot. Gesellsch. in Wien, 1869, p. 474. Allied to *Taygetis*; eyes naked, palpi much more slender; terminal joint acute, not distinctly aciculate, extending more than twice the length of the head. In shape and coloration of hind wings like *Cyllo*. Type *C. hede-manni*, sp. n., R. Felder, l. c., Mexico.

Pindis, g. n., R. Felder, l. c. p. 475. Allied to *Taygetis*; palpi porrected, densely clothed with scales to the tip, middle joint half as long as the head, slightly setose, terminal joint similar, thrice the length of the middle one, obtuse. Wings broad, rather short, fore wings waved and truncated at the apex; hind wings strongly dentated, rather convex at the apex. Type *P. squamistriga*, sp. n., R. Felder, l. c., Mexico.

Idiomorphus zinebi, Butler, Ann. & Mag. Nat. Hist. 4th ser. iii. p. 19, pl. v. f. 4, Gold Coast.

Taygetis kerea, Butler, Lepidoptera Exotica, p. 11, pl. 4. f. 2, Vera Paz.

Pronophila. Hewitson describes the following new species from Ecuador :—*P. tena*, Entom. M. Mag. vi. p. 98, Equat. Lep. p. 33; *P. alusana*, Ent. M.

Mag. vi. p. 98, Equat. Lep. p. 34; *P. pomponia*, Eq. Lep. p. 33; *P. porcia*, l. c. p. 34; *P. panacea*, l. c. p. 35.

Haetera polita, Hew. Trans. Ent. Soc. Lond. 1869, p. 34, Nicaragua.

Euptychia. Butler (Lepidoptera Exotica) describes and figures the following new species of this genus:—*E. cærulea*, p. 6, pl. 3. f. 1, 2, Maranhã; *E. mare*, p. 6, pl. 3. f. 6, Pará (= *E. cæleste*, var. ♀, Butler, olim); *E. zeba*, p. 7, pl. 3. f. 3, Pebas, East Peru (= *E. antonoe*, local form?); *E. fulgora*, p. 7, pl. 3. f. 4, Pebas; *E. quadrina*, p. 7, pl. 5. f. 5, Maranhã; *E. ziza*, p. 9, pl. 4. f. 1, Pebas; *E. zeredatha*, p. 9, pl. 4. f. 3, Rio (= race of *E. eous*?); *E. ithama*, p. 9, pl. 4. f. 4, Valley of the Polochoic, and S. Lorenzo, plain of Sadama; *E. binocula*, p. 10, pl. 4. f. 5, Cayenne; *E. jesia*, p. 10, pl. 4. f. 6, South Ecuador; *E. zaldi*, p. 11, pl. 4. f. 11, Chætum, Vera Paz.

Euptychia zia, Butler, Entomologist, iv. p. 347, Queensland.

Euptychia. Hewitson (Equat. Lep.) describes the following new species:—*E. cælica*, p. 35, *E. albofasciata* and *E. ashna*, p. 36, all from Ecuador; *E. tiessa*, from Ecuador, Quito, and Chontales.

Chionobas californica, Boisduval, Ann. Soc. Entom. Belge, xii. p. 62, California.

Satyrus ætus, Boisd. (= *S. sylvestris*, Edw. fide W. H. Edwards, in litt.), l. c. p. 63, California.

Epinephile. Lederer (Hor. Soc. Ent. Ross. vi.) describes the following new species of this genus from Astrabad:—*E. cadusia*, p. 84, pl. 4. f. 10, 11; *E. amardea*, p. 84, pl. 5. f. 3, 4; *E. dysdora*, p. 85, pl. 5. f. 1, 2.

Cacnonympa kodiak, W. H. Edwards, Trans. Amer. Ent. Soc. ii. p. 375, Kodiak; *C. brenda*, Edwards, l. c., California.

Eurytelides.

WALLACE (Trans. Ent. Soc. Lond. 1869, pp. 321–331) monographs the eastern species of *Elymnias*, remarking on the habits, variation, and distribution of the species, and describing several new ones. He states (l. c. p. 331) that *Eurytela horsfieldi* and *stephensi* of Boisduval are the sexes of one species. He also (pp. 332–334) gives a list of the eastern species of *Ergolis*, with critical notes.

Elymnias. Wallace (l. c.) describes the following new species of this genus:—*E. thycana*, p. 323, India; *E. borneensis*, p. 324, Sarawak; *E. sumatrana* (= *E. penanga*, Hew. nec Westw.), p. 325, Sumatra; *E. timandra*, p. 326, N. India; *E. hewitsoni* (= *E. leucocyma*, Hew. nec Godt.), and *E. hicetas*, p. 327, from Macassar; *E. riminalis*, p. 328, Bouru; *E. papua*, p. 329, New Guinea; and *E. melantho*, p. 330, Gagie Island.

Ergolis isæus, sp. n., Wall. l. c. p. 333, Singapore, Sumatra; *E. timora*, p. n., Wall. l. c., Timor.

Libytheides.

Libythea antipoda, Boisd., = *L. geoffroyi*, Godt., according to Hoppfer, Stett. entom. Zeitung, 1869, p. 446. Male of *L. antipoda* described by Wallace, Trans. Ent. Soc. Lond. 1869, p. 336.

Libythea bachmani (= *motya*, var. ?) is described by Saunders, Canad. Entomologist, i. p. 25.

Libythea ceramensis, sp. n., Wallace, l. c. p. 336, Ceram; *L. batchiana*, Wall. l. c. p. 336, Batchian.

Erycinides.

HERRICH-SCHÄFFER (Corr.-Blatt. zool.-min. Ver. Regensb. 1868, pp. 119-131) has continued his Prodrömus through this subfamily, adopting Bates's catalogue published in the Journ. Linn. Soc. Zool. vol. ix. without alteration. He notes (p. 128) *Charis calicene*, Hew., as = *C. epijessa*, Prittw. He also (p. 131) refers the genera *Pentila*, *Liptena*, and *D'Urbania* to the *Erycinidæ*, instead of to the *Lycenidæ*, and considers them allied to *Ithomiola*, Feld.

HOPFFER (Stettin. entom. Zeitung, 1869, pp. 442-446) makes the following synonymic notes on the species of *Erycinides* described by Felder in the second part of his work on the Lepidoptera of the 'Novara' expedition:—*Erycina laodamia*, Feld., = *E. psecas*, Saunders; *Desmozona hemixanthe*, Feld., = *Hesperia amulius*, Fabricius; *Lemonias sperthias*, Feld., = *Papilio abaris*, Cramer; *Xenandra helioides*, Feld., = *Pap. helius*, Cram.; *Amblygonia agathon*, Feld., = *Phalena erota*, Cram. pl. 276. f. G., = *Pap. ouranus*, Cram. pl. 335. f. C.

He also states (l. c. pp. 441, 442) that the insect figured by Cramer as the male of *Helicopsis endymion* is the female of Felder's *H. selene*, and that the name *endymion* must be retained for the insect figured by Cramer as the female, which, however, is really the male.

BOISDUVAL (Ann. Soc. Entom. Belge, xii. p. 52) describes *Apodemia mormo*, Felder, under the name of *Chrysobia mormonia*.

Chrysobia, g. n., Boisduval, Ann. Soc. Entom. Belge, p. 52. Type *Lemonias mormo*, Feld. (*mormonia*, Boisd.). Palpi clothed, scaly, last joint nearly naked, slender, much passing the vertex; antennæ moderately long, terminated by a fusiform club, more elongated than in *Lemonias*; discoidal cells of all the wings open.

New species :—

Eurybia jemima, Hewitson, Equatorial Lepidoptera, p. 45, Ecuador.

Necyria juturna, Hew. l. c. p. 48, Ecuador.

Calydna hegias, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 468, Yucatan; *C. sinuata*, Feld. l. c., Mexico.

Eurygona. Hewitson (l. c.) describes the following new species from Ecuador:—*E. athena*, *E. bettina*, and *E. effima*, p. 46; *E. onorata* and *E. issoria*, p. 47; and *E. præclara*, p. 48.

Eurygona cataleuca, R. Felder, l. c. p. 467, *E. pusilla*, l. c., *E. eubule*, l. c., all from Mexico.

Mesene hedemanni, R. Felder, l. c. p. 468, Mexico.

Emesis irata, Butler, Cistula Entomologica, i. p. 12, Bogotá; *E. paphia*, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 467, Mexico.

Nymphidium onceum, Hewitson, Trans. Ent. Soc. Lond. 1869, p. 35, Nicaragua.

Beotis zonata, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 469, Mexico.

Charis sulphurea, R. Felder, l. c., Mexico.

Mesosemia. Hewitson (Equatorial Lepidoptera) describes the following new species from Ecuador:—*M. marsidia* and *M. marsena*, p. 38; *M. ama* and *M. adida*, p. 39; *M. zorea* and *M. latifusciata*, p. 40; *M. ahava* and *M.*

zanza, p. 41; *M. mehida* and *M. zikla*, p. 42; *M. ozora* and *M. loruhama*, p. 43; and *M. reba*, p. 44.

Mesosemia asa, Hew. Trans. Ent. Soc. Lond. 1869, p. 35, Nicaragua, *M. jeziela*, Butler, Cistula Entomologica, i. p. 11, *M. issia*, Butl. l. c., *M. thy-metina*, Butl. l. c. p. 12, all from Bogotá.

Cremna calitra, Hewitson, Equat. Lep. p. 45, Ecuador.

Limnas acroleuca, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 467, Mexico.

Xenandra heliodes, Hopffer, Stettin. entom. Zeitung, 1869, p. 444, Brazil.

Lycænides.

HERRICH-SCHÄFFER (Corresp.-Blatt. zool.-min. Ver. Regensb. 1868, pp. 132-138, 172-176) continues his Prodrömus through this family, as far as Hewitson has yet treated of it in his Ill. Diurn. Lep., and discusses the synonymy of the genera.

HEWITSON (Ill. Diurn. Lep. part 4, Suppl.) figures or remarks on various known species of *Lycænidae* as follows:—*Myrina ciniata*, Hew. p. 6, pl. 3. f. 84, var. ♀; *Dipsas westermanni*, Feld., = *Myrina jangala*, var. (p. 8); *Iolaus euryisus*, ♀, Cram. pl. 4. f. 31, 32; *I. isæus*, ♂, Hew. p. 10, pl. 4. f. 35, 36; *I. cippus*, Fabr. p. 11, pl. 4. f. 39, 40; *Aphnæus marmoreus*, Butl., prob. = *I. bonckeri*, Trim., var. (p. 11). *Dipsas epirus*, Feld., has priority over *Deudoriz despena*, Hew. (p. 12). *Hypolycæna rabe*, Boisd. pl. 5. f. 30, 31; *H. dictæa*, Feld., = *H. phorbas*, ♀, Hew. (p. 15). *Dipsas tarila*, Brem., is described (p. 16), and figures of this insect and of *D. grunus* are referred to on pl. 6 (ined.).

The following known species of this family are noticed by Saunders, in Packard's Guide to the Study of Insects:—*Chrysophanus thoë*, Westw., eggs described p. 264, imago figured p. 357. fig. 269; *Thecla acadica*, Harr., larva and pupa described pp. 265-266; *T. mopsus*, transformations described pp. 266-267; *T. strigosa*, larva and pupa described pp. 267-268; *Thecla* —?, larva and pupa described pp. 268-269.

SCUDDER (Harris Correspondence, p. 275) publishes Harris's description of the larva of *Polyommatus comyntas*, and (pp. 164, 165) notes by Doubleday and Harris on the differences between *P. pseudargiolus*, Boisd., Lec., and *P. dentargiolus*, Harr. MSS. (= *neglecta*, Edw.). He also (p. 143) publishes a letter of E. Doubleday's, asking whether *Thecla hyperici* and *T. fulacer* of Boisdual are not the same as Drury's *acis* and *pau*, and stating that *Polyommatus* [*Chrysophanus*] *epixanthe*, Boisd., is only a var. of *phleas*, but that *phleas*, Harr. [*americana*, D'Urb.], is distinct. He also publishes (l. c. p. 145) a note on the larva of *Pol. (Chr.) torquinius*, copied by Doubleday from Abbot's MSS.

W. SAUNDERS (Canad. Entom. i.) describes the larvæ of the following American *Lycænide*:—*Polyommatus americana*, p. 3; *Thecla acadica*, p. 95; *Thecla* —?, p. 95; *T. mopsus*, p. 96; *T. calanus*?, p. 98; *T. strigosa*, p. 99; *Lycæna neglecta*, p. 100.

He also describes *Lycæna pembina*, l. c. p. 12. He also (l. c. p. 57) describes the eggs of *Pol. thoë*, *P. epixanthe*, and *Th. inorata*.

BOISDUVAL (Ann. Soc. Ent. Belge, xii.) describes *Thecla spinetorum*, Hew.,

p. 42; *T. grunus*, Boisd., p. 43; and *Polyommatus xanthoides*, Boisd. He states that his *Lycæna antægon* = *L. acmon*, Doubl., Hew.

Amblypodia. Hewitson (Ill. Diurn. Lep. part 4, pp. 14 a-14'h) makes the following corrections in the synonymy of this genus:—*A. araxes*, Feld., = *A. amantes*, var., Hew.; *A. aquis*, Feld., = *A. anarte* ♀, Hew.; *A. tyrannus*, Feld., = *A. hercules*, var., Hew.; *A. philander*, Feld., = *A. micale*, Hombr., var.; *A. amphea*, Feld., = *A. absens*, Hew.

DE L'ORZA (Lépid. Japonais) describes *Thecla (Dipsas) lutea* (p. 19) and *T. (D.) scepestriata*, both of Hewitson.

HOPFFER (Stettin. entom. Zeit. 1869, p. 439) points out the differences between *Pseudolycæna bathildis*, Feld., and *P. battus*, Cram. He thinks that *P. spurius*, Feld., = *dolyllas*, Cr. (p. 440).

Thecla. Edwards (Butt. N. Amer.) figures the following known species of this genus:—*T. leta*, *Thecla*, pl. 1. f. 1-4; *T. acadica*, l. c. f. 5-7; *T. ontario*, *Theclu*, pl. 2. f. 1, 2; *T. strigosa*, l. c. f. 3-6.

Hewitson figures (Ill. Diurn. Lepid. part 4) *T. pholeus*, Cram. pl. 50. f. 254; *T. celida*, Luc. pl. 49. f. 246, 247; *T. vesulus*, Cram. pl. 54. f. 310.

SCUDDER describes the male of *Thecla clothilde*, Edw. Proc. Bost. Soc. Nat. Hist. xi. p. 377.

C. G. BARRETT and W. BUCKLER publish notes on the earlier stages of *Thecla rubi*. Ent. M. Mag. vi. pp. 37-39.

Lycæna. Herrich-Schäffer (Stettin. entom. Zeitung, 1869, pp. 72-77) describes and remarks on the following known species of this genus:—*L. flora*, *L. onycha*, *L. palmyra*, *L. perusia*, *L. archias* (?), *L. isophthalma*, *L. erinus*, pl. 4. f. 19. He also figures (l. c. f. 18) the female of *L. cneius*. He refigures the last two species, Samml. aussereurop. Schmett. ii. f. 121, 122.

Edwards (Butt. N. Amer. *Lycæna*, pl. 1) figures *L. violacea*, Edw. (f. 1-4) and *L. lygdamus*, Doubl. (f. 5-7).

LEDERER describes and figures a variety of *Lycæna panagæa* under the name of *arsacia*, from Astrabad. Hor. Soc. Entom. Ross. vi. p. 78, pl. 4. f. 6, 7. He remarks (l. c. pp. 79, 80) on *L. eurypilus*, Frey., and *L. zephyrus*, Friv., which he considers to be vars. of *L. argus*. He considers (l. c. pp. 81, 82) *L. actis*, H.-S., *L. damone*, Ev., *L. iphigenia*, Fr., *L. carmon*, H.-S., and *L. poseidon*, Led., to be all vars. of *L. damon*, and figures a female var. of *L. damone* from Astrabad (pl. 4. f. 8).

MILLIERE describes the transformations of *Lycæna hylas*, var. *panoptes*, and figures it in all its stages. Ann. Soc. Linn. Lyon, xvi. p. 1, pl. 65. f. 1-3.

BUCKLER describes the transformations of *Lycæna ægon*. Ent. M. Mag. v. pp. 241-244.

ZELLER argues against Wallengren's identification of *L. ægon* with *argus*. Linn. Stett. entom. Zeitung. 1869, p. 380.

A. WILSON and Prof. ZELLER publish notes on *Lycæna medon* and *artaxerxes*. Ent. M. Mag. vi. pp. 62-64.

STEFANELLI describes a variety of *Lycæna corydon* under the name of *apennina*. He doubts if it is the variety called *apenninus* by Zeller. Bull. Soc. Entom. Ital. i. p. 159.

BOND notices some curious varieties of *Polyommatus adonis*. Proc. Ent. Soc. Lond. 1868, p. 42.

E. DEMBSKI describes the larva of *Lycæna arion*. Ent. M. Mag. vi. p. 62.

Doubleday and Buckler publish notes on the eggs of the same insect. Ent. M. Mag. vi. p. 91. See also J. Merrin, Entomologist, iv. p. 301.

ZELLER states (Ent. M. Mag. vi.) that the larva of *Lycæna arion* feeds on *Thymus serpyllum* (p. 10). He remarks (p. 11) that although the larva of *L. corydon* feeds on *Coronilla varia* at Frankfort-on-Oder, Glogau, and Meseritz, he thinks it feeds on *Hippocrepis comosa* in the higher parts of Carinthia. He also (pp. 46, 47) describes a variety of *Lycæna medon*.

FRIVALDSKY describes and figures the transformations of *Lycæna iolas*. Proc. Hungar. Acad. 1865, p. 142, pl. 4. f. 1.

A. B. FARN describes the larva and mode of oviposition of *Chrysophanus phleas*. Entomologist, iv. pp. 237-241.

*Corydon**, n. g. (Boisd. MSS.), Hewitson, Ill. Diurn. Lep. part 4, Suppl. p. 1. Allied to and with the neururation of *Epitola*; head of moderate size, eyes smooth; palpi thickly covered with hair, closely embracing the head; tarsi of fore legs thickly armed with a double row of spines. Type *C. boisduvalii*, sp. n., l. c. p. 1, Gaboon.

New species :—

Epitola teresa, Hewitson, Ent. M. Mag. vi. p. 86, Africa (Cameroons).

Myrina. Hewitson (Ill. Diurn. Lep. part 4, Suppl.) describes and figures the following new species of this genus :—*M. deudorix*, p. 2, pl. 2. f. 64, 65, *M. mamertina*, p. 2, pl. 2. f. 66, 67, *M. mariaba*, p. 2, pl. 2. f. 68, 69, all from Mindanao; *M. martina*, p. 3, pl. 2. f. 70, 71, Borneo; *M. mavortia*, p. 3, pl. 2. f. 72-74, Mindanao; *M. meduana*, p. 4, pl. 3. f. 75, 76, Mindanao; *M. anasa*, p. 4 (pl. 6. f. 89, 90, ined.); *M. megistia*, p. 5, pl. 3. f. 77, 78, hab. — ?; *M. milionia*, p. 5, pl. 3. f. 79, 80, Simla; *M. micea*, p. 6, pl. 3. f. 81, Borneo; *M. melisa*, p. 6, pl. 3. f. 82, 83, N. India; *M. mænala*, p. 7, pl. 3. f. 85, 86, Borneo; *M. massyla*, p. 7, pl. 3. f. 87, 88, Cherra Punji; *M. antipha*, p. 7 (pl. 6. f. 91-93 ined.), hab. — ?; *M. ancharia*, p. 8 (pl. 6. f. 94, 95, ined.), hab. — ?

Amblypodia. Hewitson (l. c.) describes and figures the following new species of this genus :—*A. anunda*, p. 14a, pl. 3a. f. 32, Borneo; *A. elfeta*, p. 14b, pl. 3a. f. 40, Sullia Islands; *A. ocrida*, p. 14b, pl. 3a. f. 38, 39, Mindanao; *A. corinda*, p. 14c, pl. 3a. f. 33-35, Philippines; *A. myrzala*, p. 14c, pl. 3b. f. 41, 42, *A. hesba*, p. 14d, pl. 3b. f. 47, *A. anotria*, p. 14d, pl. 3c. f. 56, all from Mindanao; *A. tephis* (*Arhopala tephis*, Boisd. MSS.), p. 14d, pl. 3c. f. 57, 58, Gilolo; *A. anea*, p. 14e, pl. 3c. f. 55, Darjeeling; *A. aronya*, p. 14e, pl. 3b. f. 45, 46, Mindanao; *A. albopunctata*, p. 14e, pl. 3b. f. 43, 44, Maulmain; *A. asopia*, p. 14f, pl. 3c. f. 50, 51, Maulmain; *A. canulia*, p. 14f, pl. 3c. f. 54, Philippines; *A. selta*, p. 14f, pl. 3a. f. 36, 37, Maulmain; *A. alacornia*, p. 14f, pl. 3c. f. 52, 53, Borneo; *A. atkinsoni*, p. 14g, pl. 3b. f. 48, 49, Maulmain.

Iolus belli, Hewitson, l. c. suppl. p. 9, pl. 4. f. 33, 34, *I. iulus*, l. c. p. 9, pl. 4. f. 41-43, both from Sherborough Island; *I. illurgis*, p. 10, pl. 4. f. 37, 38, Darjeeling.

Deudorix diopites, Hewitson, l. c. p. 11, pl. 5. f. 52-54, Philippines; *D. diocles*, l. c. p. 12, pl. 5. f. 55, 56, Natal.

Hypolyceana. Hewitson (l. c.) describes the following new species of this

* Name preoccupied in several departments of Zoology.

genus:—*H. kina*, p. 13, pl. 5. f. 32-34, Darjeeling; *H. ithna*, p. 20, pl. 5. f. 35, 36, Philippines; *H. eltola*, p. 14, pl. 5. f. 37, 38, Andaman Islands; *H. zela*, p. 14, pl. 5. f. 41-43, Sherborough Island; *H. libna*, p. 15, pl. 5. f. 39, 40, hab.—?

Dipsas duma, Hew. l. c. p. 15 (pl. 6. f. 15 ined.), North India.

Thecla. Hewitson (l. c. part 4) describes and figures many new species of this genus. Several of these were described in a pamphlet published in 1868 (Zool. Rec. 1868, p. 306); but as the species were not enumerated then, they are here included among the new species. *T. carpasia* (Descriptions of *Lycanida*, p. 15), p. 116, pl. 47. f. 223, 224, Mexico; *T. carpophora*, (Desc. Lyc. p. 16), p. 116, pl. 47. f. 221, 222, Mexico; *T. carthæa* (Desc. Lyc. p. 15), p. 116. n. 173, pl. 47. f. 215, 216, Mexico; *T. aufidena*, p. 117, pl. 47. f. 213, 214, Nicaragua; *T. bassania* (Desc. Lyc. p. 14), p. 117, pl. 47. f. 217, 218, Mexico; *T. catadupa*, p. 117, pl. 47. f. 219, 220, Ecuador; *T. selina*, p. 118, pl. 50. f. 255, Amazon; *T. bactriana* (Desc. Lyc. p. 11), p. 118, pl. 50. f. 252, 253, Amazon; *T. bebrycia* (Desc. Lyc. p. 13), p. 119, pl. 50. f. 258, 259, Mexico; *T. brescia* (Desc. Lyc. p. 13, = *stagira*, var. ?), p. 119, pl. 50. f. 260, 261, Mexico; *T. vibidia*, p. 119, pl. 49. f. 242, 243, Amazon; *T. roconia*, p. 120, hab.—?; *T. zebina*, p. 120, pl. 49. f. 237, 238, Nicaragua; *T. orcyntia*, Hew. (Desc. Lyc. p. 11), p. 121, pl. 50. f. 262-265, Guatemala; *T. keila*, p. 121, pl. 52. f. 280, 281, Guatemala; *T. thoria*, p. 121. pl. 49. f. 239, 241, Venezuela; *T. tiasa*, p. 122, pl. 48. f. 229, 230, Amazon; *T. thestia*, p. 122, pl. 48. f. 231, 232, Amazon; *T. voltinia*, p. 123, pl. 48. f. 227, 228, Amazon; *T. volana*, p. 123, pl. 48. f. 225, 226, Amazon; *T. ocrisia* (Desc. Lyc. p. 5), p. 123, pl. 48. f. 235, 236, Ecuador, Mexico; *T. ocrida* (Desc. Lyc. p. 5), p. 124, pl. 48. f. 233, 234, Amazon; *T. thyesta*, p. 124, pl. 49. f. 248, 249, Amazon; *T. zigira*, p. 125, pl. 49. f. 250, 251, Amazon & Venezuela; *T. timæa* (name preoccupied in the genus), p. 125, pl. 51. f. 268, 269, Pará; *T. panthæa*, p. 126, pl. 51. f. 274, 275, Amazon; *T. gedrosia* (Desc. Lyc. p. 10), p. 126, pl. 51. f. 270, 271, Tapajos; *T. villia*, p. 126, pl. 51. f. 272, 273, Amazon; *T. blenina* (Desc. Lyc. p. 12), p. 127, pl. 50. f. 256, 257, Mexico; *T. lebena* (Desc. Lyc. p. 9), p. 127, pl. 51. f. 266, 267, Cayenne; *T. tympania*, p. 128, pl. 51. f. 276, 277, Pará; *T. bethulia*, p. 128, Pará (figured as *T. tympania*, pl. 51. f. 278, 279); *T. teucris* (Desc. Lyc. p. 3), p. 129, pl. 52. f. 290, Amazon; *T. tegula* (Desc. Lyc. p. 4), p. 129, pl. 52. f. 291, 292, Tapajos; *T. terentia* (Desc. Lyc. p. 2), p. 129, pl. 52. f. 282, 283, Upper Amazon; *T. thabenu* (Desc. Lyc. p. 1), p. 130, pl. 52. f. 288, 289, Amazon; *T. temesa* (Desc. Lyc. p. 1), p. 130, pl. 52. f. 284, 285, Amazon, Cayenne; *T. talayra* (Desc. Lyc. p. 1), p. 130, pl. 52. f. 286, 287, Rio Janeiro; *T. ledæa* (Desc. Lyc. p. 8), p. 191, pl. 52. f. 293, 294, Ega; *T. tegæa* (Desc. Lyc. p. 2), p. 131, pl. 54. f. 308, 309, hab.—?; *T. sangala* (Desc. Lyc. p. 35), p. 132, pl. 54. f. 314, 315, Venezuela; *T. tarania* (Desc. Lyc. p. 3), p. 132, pl. 54. f. 311-313, Minas Geraes; *T. cydrara* (Desc. Lyc. p. 17), p. 133, pl. 53. f. 295, 296, Amazon; *T. ufentina* (Desc. Lyc. p. 17), p. 133, pl. 53. f. 297, 298, Amazon (St. Paulo); *T. teatea* (Desc. Lyc. p. 4), p. 133, pl. 53. f. 299, Pará; *T. opalia* (Desc. Lyc. p. 6), p. 134, pl. 53. f. 300, 301, Amazon; *T. viceta* (Desc. Lyc. p. 18), p. 134, pl. 53. f. 302, 303, Amazon; *T. zora*, p. 134, pl. 53. f. 304, 305, Pará; *T. gargara* (Desc. Lyc. p. 8), p. 135, pl. 53. f. 306, 307, Pará; *T. velina* (Desc. Lyc. p. 18), p. 135, pl. 54. f. 316, 317, Tapajos; *T. besidia* (Desc. Lyc.

p. 24), p. 136, pl. 54. f. 318, 319, Amazon; *T. socia* (Boisd. MSS., Desc. Lyc. p. 29), p. 136, pl. 54. f. 320, 321, Brazil.

Thecla borus, Boisduval, Ann. Soc. Entom. Belge, xii. p. 45 (= *T. californica*, Edwards, fide W. H. E. in litt.); *T. nelsoni*, Boisduval l. c.; *T. chalcis* (Behr, MSS.), Edw. Trans. Amer. Ent. Soc. ii. p. 376, all from California.

Lycæna. Boisduval (l. c.) describes the following Californian species as new:—*L. regia* and *L. lupini*, p. 46; *L. nivium* (= *calchas*, Behr, fide W. H. E. in litt.), p. 47; *L. philemon* (= *cajona*, Reak. = *anna*, Edw. = *argyrotoxus*, Behr, W. H. E.), p. 47; *L. rufescens* (= *achaja*, Behr), p. 48; *L. erymus*, p. 48; *L. polyphemus* and *L. evius*, p. 49; *L. nestus* and *L. phileros*, p. 50; *L. rhæa*, p. 51; *L. suasa* (= *fuliginosa*, Edw. W. H. E.), p. 51.

Herrich-Schäffer (Stettin. entom. Zeitung, 1869) describes the following new species of this genus:—*L. samoa* (= *L. cnejus*, F., ♀, Samml. aussereurop. Schmett. ii. f. 120), p. 73, pl. 4. f. 18, Vanna Valava; *L. platissa*, p. 74, pl. 4. f. 20, Samml. aussereurop. Schmett. ii. f. 122, *L. serpentata* and *L. berenice*, S. e. Z. p. 74, all from Rockhampton; *L. candrena*, p. 74, Viti Levu, Ovalau, and Vanna Valava; *L. dryopa*, p. 75, Ovalau; *L. alsulus*, p. 75, Rockhampton and Upolu.

Lycæna ladonides, De l'Orza (= *L. ladon*, Ménétriés, nec Cramer), Lépidoptères Japonais, p. 20, Japan; *L. emelina* (Boisduval, MSS.), De l'Orza, l. c. p. 21, Japan and China; *L. marina*, Reak. Proc. Acad. Nat. Sci. Philad. 1868, p. 87, Mexico; *L. hyrcana*, Lederer, Hor. Soc. Entom. Ross. vi. p. 78, pl. 4. f. 6, 7; *L. erschoffii*, Led. l. c. p. 80, pl. 4. f. 4, 5, both from Astrabad; *L. orcus*, Edwards, Trans. Amer. Ent. Soc. ii. p. 376, California.

Chrysophanus discifer, Herrich-Schäffer, Stettin. entom. Zeitung, 1869, p. 72, pl. 4. f. 21, Samml. aussereurop. Schmett. ii. f. 123, Brisbane; *C. diene* Scudder, Trans. Chic. Acad. Sci. i. p. 330, Iowa; *Polyommatus caspius*, Lederer, Hor. Soc. Entom. Ross. vi. p. 76, pl. 4. f. 3, Astrabad; *P. nivalis*, Boisduval (= *mariposa*, Reak. fide W. H. Edwards in litt.), Ann. Soc. Entom. Belge, xii. p. 44; *P. æroë*, Boisd. (= *castro*, Reak., W. H. E.), l. c. p. 44, both from California.

Hesperides.

HERRICH-SCHÄFFER (Corr.-Blatt. zool.-min. Ver. Regensb. 1869, pp. 59-64, 67-77, 130-141, 163-172, 185-204) continues his Prodomus through this family. He reviews the characters and synonymy of the genera very fully, and gives an analytical table of the 32 genera which he admits. He gives similar tables of the species which he includes in the 8 first genera admitted, viz. *Pyrrhopyga*, *Myscelus*, *Erycides*, *Eudamus*, *Telemiades*, *Netrocoryne*, *Goniloba*, and *Cobalus*, in which many new species are shortly characterized, without localities, except for the genera.

HERRICH-SCHÄFFER's table of the genera of *Hesperidæ*, somewhat abridged, is as follows:—

- | | |
|--|------------------------|
| 1. Hind wings without a connecting bristle, hind tibiæ without strong spines | 2 |
| " " of the male with distinct bristle, hind tibiæ with strong spines | 34. <i>Euschemon</i> . |

2. Hind tibiæ only with terminal spurs 3
- " " with middle spurs also 7
3. Fore wings of the male with a costal fold 4
- " " with no costal fold; palpi long, porrected. 6
4. Club of the antennæ thickest before the middle 5
- " " thickest beyond the middle.
20. *Chaetocneme*.
5. Hind tibiæ longer than the first joint of the tarsi.
- " " much shorter than the first joint .. 19. *Brachycneme*.
6. Tip of the antennæ slightly curved, longish egg-shaped, rounded at the
 extremity 15. *Carterocephalus*.
- " " longish club-shaped, terminating in a short slender
 hook 11. *Ægiale*.
7. Tip of the antennæ not hooked 8
- " " more or less hooked 14
8. Club of the antennæ longish egg-shaped, perfectly rounded at the ex-
 tremity 9
- " " formed into a slightly compressed and curved egg-
 shape, rounded at the extremity 10
- " " gradually formed, very long and narrow .. 18
9. Fringes of the hind wings entire 1. *Pyrrophyga*.
- " " more or less interrupted.
2. *Myscelus*.
10. Male with no patch of scales on the fore wing 11[?]
- " " with a patch of scales 13. *Telesto*.
11. Male with a costal fold 17. *Pyrghus*.
- " " with no costal fold. [No. 12 is omitted.] 13
13. Last joint of the body compressed, conical, placed horizontally.
16. *Cyclopides*.
- " " sharply pointed, almost vertical.
14. *Thymelicus*.
14. Male with no costal fold on the fore wings; subcostal nervure of fore wings
 arising from or beyond the middle of the median nervure. 15
- " " with costal fold; subcostal nervure arising far before the middle
 of the median nervure 17
15. Hind tibiæ of the male with a pencil of hair .. 12. *Trapezites*.
- " " without a pencil 16
16. Third joint of the palpi pointed, nearly vertical. 10. *Ancylorhynpha*.
- " " linear or conical, more horizontal.
8. *Goniloba*, *Cobalus*; 9. *Pamphila*.
17. Markings as in *Myscelus*, below the subcostal nervure a pale triangle
 with the point towards the inner nervure. 3. *Erycides*.
- If pale spots are present in cell 16 of the fore wings, they are directed
 towards the anal angle. 4. *Eudamus*; 5. *Goniurus*.
- If pale spots are present the lower ones are directed towards the base.
- a. Middle cell of hind wings without a transparent spot.
6. *Telemiades*.
- β. " " with a transparent spot.
7. *Netrocoryne*.

18. No costal fold or tibial pencil. 19
 Tibial pencil, but no costal fold. 22
 Costal fold, but no pencil 23
 " and pencil 33. *Antigonus*.
19. Third joint of the palpi cylindrical, thread-shaped, long, horizontally por-
 rected. 21. *Ismene*.
 " " conical, depressed, seldom reaching much beyond
 the bristly scaling of joint 2 20
20. Subcostal nervure of fore wings arises before the middle of the median
 nervure 21
 " " " " arises at or beyond the middle.
 24. *Thracides*.
21. An oblique band runs to the hinder angle of the fore wings.
 22. *Cecropterus*.
 No such band on the fore wings. 25. *Astycus*.
22. 3rd joint of the palpi obtusely egg-shaped, reaching little beyond the
 scantily bristled middle joint, oblique band in cell 1b contracted
 towards the base 23. *Pterygospidea*.
 Fore wings with distinct white spots in cells 2, 3, and in the middle
 cell; middle spurs wanting in many species.
 26. *Pythomides*.
 All the wings without white spots (fore wings with white costal dots),
 except a row of white dots running through the middle of both pairs,
 All the species with middle spurs 27. *Achlyodes*.
23. Club of the antennæ thickest before the middle.
 28. *Telegonus*.
 " " thickest in the middle 24
24. Third joint of the palpi linear. 30. *Phareus*.
 " " forming a short club. Wings with very large
 transparent spots 29. *Phanus*.
 " " conical, somewhat depressed 25
25. Middle cell and cell 2 of fore wings with a large pale triangle.
 31. *Plesioneura*.
 " " " " no such triangle.
 32. *Nisoniades*.

HERRICH-SCHÄFFER describes and figures (Stettin. entom. Zeitung, 1869) the following species of this family previously described by Hewitson:—*Hesperilla dirphia*, Hew. (= *Telesto doubledayi*, Felder), p. 79, pl. 3. fig. 10; *Hesperilla doclea*, Hew. (= *Tel. kochii*, Feld.), p. 80, pl. 3. fig. 12; *Trapezites petalia*, Hew., pl. 3. fig. 11; *T. eliena*, Hew., pl. 3. fig. 13; *T. phigalia*, Hew., pl. 3. fig. 15. He remarks (p. 80) on the last two species, which he is inclined to regard as sexes. These are all refigured, Samml. aussereurop. Schmett. ii. figs. 112–115, 117.

Hesperia. Hewitson (Ex. Butt. 70, April 1869, *Hesperia*, pl. 4) figures the following species previously described by him:—*H. palaea*, f. 31; *H. feralia*, f. 32; *H. propertius*, Fabr. (= *H. memuca*, Hew. olim), f. 33, 34; *H. almoda*, f. 35; *H. cunaxa*, f. 38, 39; *H. immaculata*, f. 41.

SCUDDER publishes a description by Harris of the larva of an American species of this family. Harris Correspondence, p. 281.

He also (Trans. Chic. Acad. Sci. i.) describes a variety of *Hesperia napa*,

Edw., p. 335; both sexes of *H. conspicua*, Edw. (p. 336), and states his belief that *H. logan*, Edw., and *H. delaware*, Edw., are the same species.

He likewise states (Proc. Bost. Nat. Hist. Soc. xi. p. 382) that *Hesp. samoset*, Scudd., = *H. hegon*, Scudd.

Pyrrhopyga. Hewitson (Ex. Butt. 69, Jan. 1869, *Pyrrhopyga*, pl. 1) figures the following known species previously described by him:—*P. hadassa*, f. 1; *P. telassa*, f. 2, 3; *P. marteni*, f. 4; *P. aspitia*, f. 5.

Hesperia. Saunders (Packard's Guide to Study of Insects) notices the eggs and larvæ of *H. hobomok*, pp. 269, 270; *H. wamsutta*, p. 270, imago figured p. 269, fig. 198; and *H. mystic*, pp. 270–271. See also Canad. Entom. i. pp. 65–67; 100.

Leucochitonea. Hewitson, Ex. Butt. 72, Oct. 1869, *Leuc.* pl. 1, describes and figures the following species previously described by him:—*L. lincea*, figs. 1, 2; *L. lucaria*, fig. 4; *L. libethra*, figs. 5, 6; *L. lerina*, figs. 7, 8; *L. lucullea*, figs. 9, 10.

New species:—

Pyrrhopyga verbenæ, Butler, Ent. M. Mag. v. p. 272, South America. Figured in Clerck's Icones, pl. 44. f. 3, 4, without a name; *P. kelita*, Hewitson, Ex. Butt. 69, April 1869, *Pyrrhopyga*, pl. 1. f. 6–8, Bolivia; *P. bogotana*, Reak. Proc. Acad. Nat. Sci. Philad. 1868, p. 90, New Granada; *P. affinis*, *P. denticulata*, *P. ponina*, Herrich-Schäffer, Corr.-Blatt. zool.-min. Ver. Regensb. 1869, p. 165, Tropical America.

Myscelus intersecta, Herr.-Schäff. l. c. p. 166, *P. epimachia*, H.-S. l. c. p. 167, both from Tropical America.

Erycides lincea, *E. distans*, and *E. apicalis*, Herr.-Schäff. l. c. p. 168, *E. albicilla*, H.-S. l. c. p. 169, all from tropical America.

Eudamus canus, *E. flammula*, *E. carmelita*, *E. ceculus*, and *E. decurtata*, Herr.-Schäff. l. c. p. 170; *E. stylites* and *E. protillus*, H.-S. l. c. p. 171; *E. fulminans*, *E. passalus*, and *E. colossus*, H.-S. l. c. p. 172; *E. perniciosus*, *E. bahiana*, *E. cretellus*, *E. latimargo*, and *E. bifascia*, H.-S. l. c. p. 185; *E. chersis*, *E. cephise*, *E. panthius*, and *E. clavicornis*, H.-S. l. c. p. 186; *E. cenis* and *E. casica*, H.-S. l. c. p. 187; *E. caicus*, *E. cajeta*, *E. mexicana*, and *E. calchas*, H.-S. l. c. p. 188, all from tropical America.

Telemiades capio and *T. umber*, Herr.-Schäff. l. c., *T. arcturus* (= *avitus* ♀ Cr. ?), and *T. ceramina*, p. 189, all from tropical America.

Netrocoryne cæcutiens, Herr.-Schäff. l. c. p. 189, Tropical America.

Goniloba dolores, Reakirt, Proc. Acad. Nat. Sci. Philad. 1868, p. 87, Mexico; *G. caprotina*, Herrich-Schäffer, Corr.-Blatt. zool.-min. Ver. Regensb. 1869, p. 191; *G. calus*, *G. macareus*, *G. concors*, *G. corusca*, and *G. conflua*, H.-S. l. c. p. 192; *G. caniola*, *G. conformis*, *G. corrugata*, and *G. luctuosa*, H.-S. l. c. p. 193; *G. mathiolus* and *G. complanula*, H.-S. l. c. p. 194; *G. lubricans*, *G. complana*, *G. clavus*, *G. clothilda*, *G. cruda*, *G. protoleca*, and *G. conjuncta*, H.-S. l. c. p. 195; *G. corope*, *G. parumpunctata*, *G. aphilos*, *G. hemeterius*, and *G. exoteria*, H.-S. l. c. p. 196: hab. — ?

Cobalus dissoluta and *C. pica*, Herr.-Schäff. l. c. p. 198; *C. diversa*, *C. vitellina*, and *C. quadrata*, H.-S. l. c. p. 199; *C. dama*, *C. trimaculata*, and *C. corope*, H.-S. l. c. p. 200; *C. neroides*, *C. nero* [an Fabr. ?], *C. hypargyra*, *C. telata*, *C. catocala*, *C. decora*, *C. saturnus*, *C. decrepida*, and *C. philippina*, H.-S. l. c. p. 201; *C. sulphurifera*, *C. cingulicornis*, *C. deleta*, *C. (?) diluta*, *C. grossula*, *C. samedæ*, *C. elegantula*, and *C. subcoarctata*, H.-S. l. c. p. 202; *C. cannæ*, *C.*

bistrigula, *C. lumina*, *C. asella*, *C. centralis*, *C. vopiscus*, *C. tertianus*, *C. lutulenta*, *C. cinnamomea*, and *C. umber*, H.-S. l. c. p. 203; *C. lurida*, H.-S. l. c. p. 204: hab. — ?

Hesperia. Scudder (Proc. Bost. Soc. Nat. Hist. xi.) describes the following new species from New England:—*H. quadraguina* and *H. acanootus*, p. 381; *H. hianna*, p. 392; and *H. mesapaco*, p. 383.

Hesperia iona, Scudder, Trans. Chic. Acad. i. p. 336, Iowa; *H. wakulla*, Edwards, Trans. Amer. Ent. Soc. 1869, p. 311, *H. eufala*, Edw. l. c., both from Florida; *H. melane*, Edw. l. c. p. 312, California; *H. phœnicis* (Atkinson, MSS.), Hewitson, Ex. Butt. 69, April 1869, *Hesperia*, pl. 4, f. 36, 37, India; *H. eltola*, Hew. l. c. f. 40, Darjeeling.

Pamphila. Herrich-Schäffer (Stettin. entom. Zeitung, 1869, p. 79) describes the following new species:—*P. angustula*, Vanna Valava; *P. ancilla* and *P. olivescens*, pl. 3. f. 14, Samml. aussereurop. Schmett. ii. f. 116, both from Rockhampton.

Aneyloxypha simplex, R. Felder, Verh. zool.-bot. Ges. in Wien, 1869, p. 476, Mexico.

Telestus sexguttata, Herr.-Schaff. Stett. ent. Zeit. 1869, pl. 3. fig. 16; *Hesperilla sexguttata*, l. c. p. 80, Rockhampton. Refigured as *Tel. sexg.*, Samml. aussereurop. Schmett. ii. f. 118.

Purgus georgina, Reakirt, Proc. Acad. Nat. Sci. Philad. 1868, p. 88, Mexico; *P. alana*, Reak. l. c. p. 90, New Granada.

Leucochitonea. R. Felder (l. c.) describes the following new species of this genus from Mexico:—*L. lugubris*, *L. pastor* (Kollar, MS.), and *L. canescens*, p. 476; *L. pulcherius* (Moritz, MS.), and *L. hyalophora*, p. 477; *L. pulverulenta*, p. 478; *L. emorsa*, p. 479; *L. funebris*, p. 480.

Leucochitonea lacæna, Hewitson, Ex. Butt. 72, Oct. 1869, *Leuc.* pl. 1. fig. 3, Brazil.

Helias pallida, R. Felder, l. c. p. 478, Mexico.

Nisoniades martialis, Scudder, Trans. Chic. Acad. Sci. i. p. 335, Iowa.

HETEROCERA.

WALLENGREN has continued his work on the *Lepidoptera* of Scandinavia by a third instalment, in which the *Bombyces* are commenced. He divides his group *Nematocera* into the following families, the first five of which only are included in the present part:—

I. Alæ completæ.

I. Pedes omnes calcares carentes. I. HEPIALOIDÆ.

II. Pedes saltem posteriores calcaribus præditi.

1. Costæ abdominales al. posticarum 3.

A. Costæ dorsales al. anticarum 2.

1. Costa subcostalis al. post. usque ad basin libera, tantum costula transversa cum costa mediana interdum connexa. Lingua nulla II. COSSIDÆ.

2. Costa subcostalis al. post. est ramulus costæ medianæ. Lingua distincta, brevis III. COCHLIOPODÆ.

B. Costa dorsalis al. anticarum 1, sed extrorsum furcata. IV. PSYCHIDÆ.

2. Costæ abdominales al. posticarum 1-2, rarissime deficientes.
- A. Retinaculum nullum.
1. Areola radialis al. anticarum nulla.
- V. ACHALINOPTERYGIDÆ.
2. Areola radialis al. anticarum adest.
- VI. PLATYPTERYGIDÆ.
- B. Retinaculum adest.
1. Costa independens al. ant. in medio inter angulum anteriorem et angulum posteriorem areolæ discoidalis oriens.
- a. Costa subcostalis al. post. usque ad basin libera, nec cum costa mediana nisi costula transversa interdum connexa.
1. Costa independens al. post. reliquis æqualis.
- a. Costa independens al. post. in medio inter angulum anteriorem et angulum posteriorem areolæ discoidalis oriens.
- † Pedes hirsuti.
- * Ramulus subcostalis al. ant. adest.
- VII. NOTODONTIDÆ.
- ** Ramulus subcostalis al. ant. deest.
- XI. BREPHIDÆ.
- †† Pedes squamati . . XII. GEOMETRIDÆ.
- b. Costa independens al. post. ad angulum posteriorem areolæ discoidalis propius oriens.
- * Ocelli desunt XII. GEOMETRIDÆ.
- ** Ocelli adsunt VIII. CYMATOPHORIDÆ.
2. Costa independens al. post. reliquis multo subtilior, interdum deficiens.
- a. Pedes antichi hirsuti et ramulus radialis cum ramulo subradiali costæ medianæ al. post. semper in trunco brevi extra areolam discoidalem conjunctus.
- VII. NOTODONTIDÆ.
- b. Pedes antichi nudi, sed cum hirsuti, ramulus radialis costæ medianæ al. post. semper a ramulo subradiali extra cellulum est separatus.
- XII. GEOMETRIDÆ.
- b. Costa subcostalis al. post. e costa mediana anteriore oriens, ut fere sit ejus ramulus.
- XII. GEOMETRIDÆ.
2. Costa independens al. ant. ad angulum anteriorem areolæ discoidalis propius oriens. . . . XII. GEOMETRIDÆ.
3. Costa independens al. ant. deest.
- IX. ARCTIOIDÆ.
4. Costa independens al. ant. ad angulum posteriorem areolæ discoidalis proprius oriens.
- a. Costa subcostalis al. post. usque ad basin libera, et ad ramulum radialem, e medio marginis anterioris cellulæ discoidalis fere orientem, appropinquata.
- VI. PLATYPTERYGIDÆ.
- b. Costa subcostalis al. post. aut ramulus costæ medianæ, aut areolam subcostalem distinctam, contagione costæ medianæ.
1. costula transversa clausam, prope basin formans. Larva cylindrica, antrorsum attenuata, verrucis hirsutis capiteque minuto prædita IX. ARCTIOIDÆ.
- (Gen. *Stilbia* et *Emmelia* in fam. sequenti.)

c. Costa subcostalis al. post. fere libera, sed ad intimam basin cum costa mediana plerumque connexa, areolam subcostalem vero nullam distinctam formans, et ramulus radialis ex angulo anteriore areolæ discoidalis oriens. Larva cylindrica, æqualis, nuda l. pilis rarioribus obsita capiteque crasso..... X. NOCTUIDÆ.

2. Alæ deficientes aut rudimentales.

I. Imago vitam extra folliculæ agens.

A. Corpus imaginis lanuginosum . . IX. ARCTIOIDÆ.

B. Corpus imaginis aut parce pilosum, aut adpresse squamatum.

XII. GEOMETRIDÆ.

II. Imago vitam in folliculo agens . . . IV. PSYCHIDÆ.

These families are again divided into tribes; and to each tribe is prefixed a similar table, in Latin and Swedish, of the species included in it. The account of each species is most minute, even including notices of its eggs and parasites; many new genera are characterized; and the book will be found extremely valuable to all Entomologists who are working at the *Heterocera* of any part of Northern or Central Europe.

RAMBUR (Cat. Syst. Lép. d'Andalusie, ii. pp. 97-130) enters into the structure of the *Lepidoptera*, especially that of the *Heterocera*, at great length, in a note. Many other remarks on the structure of various species are scattered through the book, which it would occupy too much space to refer to in detail.

He also (l. c. pp. 93-95) discusses the position of various abnormal exotic genera. He considers *Castnia* to be intermediate between the *Hesperidæ* and the *Zeuzeridæ* and *Hepialidæ*; *Coronis* he places near *Urania*, in a group of uncertain position; and he thinks that *Agarista*, with the allied genera *Ægocera*, *Hecatesia*, and *Pais*, should be placed near the *Arctiidæ*.

ROGENHOFER records new localities for several Austrian *Heterocera*. Verh. zool.-bot. Ges. in Wien, 1869, pp. 919, 920.

On the irregularity in the times of appearance of certain *Heterocera* see remarks by H. Harpur Crewe, Entomologist, iv. p. 260; and by W. Saunders and P. S. Sprague, Canad. Entom. i. pp. 26, 27, 41, 42.

E. MELDOLA (Entomologist, iv. p. 303) thinks that moths frequent nettles to imbibe the honey-dew with which they are often covered.

SPHINGIDÆ.

HERRICH-SCHÄFFER (Samml. aussereurop. Schmett. ii.) figures the following known *Sphingidæ*:—*Cantethia noctuiformis*, Walk., f. 552; *Hemeropterus pseudothyreus*, Grote (= *Callionma oichus*?, H.-S. nec Cr.), f. 554; *Cherocampa robinsonii*, Grote (= *C. falco*, Walk.?), f. 555; *C. lycetus*, Cram.?, f. 557; *C. butus*, Cr. ??, f. 559; *Pachylia resumens*, Walk., f. 556.

Sphingidæ. The following species are noticed among others in Packard's Guide to the Study of Insects:—*Ellema harrisii*, larva described by Saunders, p. 272; *Macrosila quinquemaculata*, p. 273, fig. 109, figured by Packard in all its stages; *M. carolina*, larva described and figured, p. 274, fig. 200; *Thyreus abbotii*, larva and imago figured, p. 276, fig. 203

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SCUDDER (Harris Correspondence) publishes Harris's descriptions of the larvæ of *Smerinthus juglandis*, p. 281; *Ceratonia quadricornis*, *Sphinx cinerea* (pl. 2. f. 6), *S. convolvuli*, Smith & Abb. (= *S. cingulata*, Fabr.), and *S. carolina*, p. 282; *Philampelus achemon* (pl. 3. f. 11), *Chærocampa pampinatrix* (pl. 1. f. 10), and *C. chærilus*, p. 283; *Thyreus abbotii*, p. 284, pl. 3. f. 1. He also (*l. c.* pp. 125-129) publishes notes by Doubleday, taken from Abbot's drawings, on various N. American *Sphingidæ* and their larvæ. The most important notes relate to *Smerinthus modestus*, ♀, *Sphinx carolina*, Don. (= *quinguemaculatus*, Haw.), *S. hylæus*, *S. ello*, and several undetermined species. Doubleday (*l. c.* p. 157) remarks that *S. pæcila*, Steph., probably = *S. sordida*, Harr.

ZELLER remarks (Stettin. entom. Zeitung, 1869, p. 386) that *Smerinthus ocellata* has a very different posture in repose from its European congeners, and suggests that this species and its allies will probably ultimately form a separate and very natural genus [*ocellata* is the type of the genus *Laothoe*, Fabr., which has priority over *Smerinthus* itself]. He also states (*l. c.* p. 387) that the larva of *Deilephila gulfii* will eat *Euphorbia*.

In consequence of the confusion existing as to the correct application of the names (*Macroglossa* *fuciformis* and *bombyliiformis*, Zeller proposes (*l. c.* pp. 387, 388) to reject both, and to call one species *loniceræ* or *caprifolii*, and the other *scabiosæ* or *enantiae*. [The former is certainly *fuciformis*, L.; his description of *bombyliiformis* (S. N. ed. 10) is less satisfactory; and the two species seem to be confounded in his subsequent works.]

BOISDUVAL redescribes *Sesia thetis*, Grote & Robinson, from California, as new, under the name of *Macroglossa thetis* (Comp. Zool. Rec. 1868, p. 326).

MAREY publishes notes on the movements of the wings of *Macroglossa stellatarum* in flight. Ann. Sci. Natur. Zool. 5^e sér. tome xii. pp. 68, 69.

Chærocampa. On S. American larvæ resembling snakes, and supposed to belong to this genus, see Proc. Ent. Soc. Lond. 1869, p. 22.

SPRYER states that the Fabrician description of *Sphinx* (*Deilephila*) *lineata* applies to the American species and not to the European *D. livornica*. Stettin. entom. Zeitung, 1869, p. 83.

J. HELLINS and H. G. KNAGGS record their noticing a musky odour emitted by the male of *Sphinx convolvuli*. [This observation has long been made in France; and the male of *S. ligustri* emits a similar but weaker odour.] Ent. M. Mag. v. p. 206, vi. p. 166.

RILEY (First Rep. on Insects of Missouri, pp. 94-96, fig. 38) describes the habits of the "Potato- or Tomato-worm" of N. America (*Sphinx 5-maculata*, Haw.) and figures it in all its stages.

Acherontia atropos. The Rev. C. Bury has noticed a specimen enter his beehive, and has heard sounds from the interior resembling those known to be made by the insect. This was on June 15, and the specimen escaped him for the time; but on Oct. 2 he discovered a specimen asleep in the folds of a piece of carpeting with which his hives had been covered. He supposes this specimen to be the same as the one previously observed, and concludes that the insect had been robbing his hives all the summer. Zoologist, 1869, pp. 1913-1915.

DE L'ORZA (Lépid. Japon. p. 37) gives a general description of *Smerinthus dryas*, Walker, and places *S. sperchius*, Ménétriés, as a synonym of it.

Smerinthus excæcatus. On a musical larva, supposed to be that of this in-

sect, see E. B. Reed, T. L. Mead, and F. G. Sanborn, *Canad. Entom. i.* pp. 40, 41, 47, 48.

GOOSSENS (*Ann. Soc. Entom. France, Séances, 1869*, pp. 61, 62) states that he has observed that the horn of young larvæ of *Smerinthus quercus* secretes a viscous fluid, which he believes to be useful to protect them from falls before their legs acquire sufficient strength, when the discharge becomes superfluous and ceases.

New species:—

Macroglossa sieboldi, Boisdual in De l'Orza's *Lépidoptères Japonais*, p. 35, Japan; *M. erato*, Boisd. *Ann. Soc. Entom. Belge*, xii. p. 65, California.

Ellopus blaini (Gundl. in litt.), Herr.-Schaff. *Samml. aussereurop.* Schmett. ii. f. 553, Cuba.

Enyo cinnamomea, Herr.-Schaff. *l. c.* p. 3, f. 558, N. Australia.

Cherocampa japonica, Boisd. in De l'Orza's *Lépid. Japon.* p. 36, Japan.

Sphinx sequoia, Boisd. *Ann. Soc. Entom. Belge*, xii. p. 66; *S. strobil*, Boisd. *l. c.* p. 67, both from California.

Smerinthus ophthalmicus, Boisd. *l. c.* p. 67, California.

STYGIIDÆ.

Atychia gaditana, sp. n., Rambur, *Cat. Syst. Léop. d'Andalusie*, ii. p. 159, Cadix (= *A. nana*, Tr. var. ?); *A. rhagensis*, Lederer, *Hor. Soc. Entom. Ross.* vi. p. 91, pl. 5. f. 10, Astrabad.

ÆGERIIDÆ.

PACKARD (*Guide to Study of Insects*, pp. 277–279) notices and figures the following American species of this family:—*Ægeria exitiosa*, Say, figs. 206, 207; *Æ. polistiformis*, Harr., p. 278 (not figured); *Æ. tipuliforme*, fig. 208; *Æ. quinquecaudata*, Rid., fig. 209; *Melittia cucurbita*, Harr., fig. 210.

SCUDDER (*Harris Correspondence*, pp. 359–361) reprints Harris's original descriptions of *Ægeria persica*, *Æ. cucurbita*, and *Æ. pyri* from the 'New-England Farmer.' He also (p. 284) publishes Harris's description of the larva of *Æ. cucurbita*, and (pp. 129, 130) Doubleday's description of two undetermined species (or sexes ?) of *Trochilium* figured by Abbot. In another letter published by Scudder (*l. c.* p. 161), Doubleday notes that *Æ. cucurbita*, Harr., = *Melittia satyriniformis*, Hübn., and that *Æ. exitiosa*, Harr., = *Paranthrene pepsidiformis*, Hübn.

RAMBUR (*Cat. Syst. Léop. d'Andalusie*, ii. p. 146) describes *Trochilium uroceriforme*, Treitschke, and refers to it a species figured by himself in part 1 (pl. 2. fig. 2) as *Sesia monedulaformis*, which has been incorrectly referred by Staudinger to *andrenaformis*, Lasp. He adds that *uroceriforme* is possibly the same as *crabroniformis*, Fabr., and that *andrenaformis*, Lasp., has priority over *anthraciformis*, Lasp.; and therefore the latter name, which Rambur subsequently applied to a Corsican species, ought not to be used in its earliest application. He also (*l. c.* p. 148) describes his *Sesia synagrisformis*, previously figured in part 1 (pl. 2. fig. 1), which he considers to be only a large variety of *rhingiiformis*, Hübn.; and (*l. c.* note) mentions that he cannot agree with Staudinger in placing *rhingiiformis* as a variety of *tabaniformis* or *asiliformis*. He also describes *Sesia tengisformis* (*l. c.* pp. 149, 150), barely characterized by Boisdual (*Gen. et Ind. Meth.* p. 42), and subsequently confounded by Herrich-Schäffer with *sanguinolenta*, Led., and by

Staudinger with *monspeliensis*, Staud. He also describes *S. meriiformis*, similarly characterized by Boisduval (*l. c.*), which has been confounded by authors with various species, but which = *arifrons*, Zell., = *affinis*, p., Staud.

ZELLER (Stettin. entom. Zeitung, 1869, p. 388) remarks on the identity of *Trochilia melanocephala*, Dalm., with *Sesia laphriaeformis*, Hübner, and *Sphinx crabroniformis*, Schneider's Mag. p. 428. Although Schneider's name is the oldest, it has been applied to three other species, and therefore Dalman's is preferable. Zeller also (*l. c.* p. 389) discusses the identity of De Geer's "Papillon bourdon-cousin" (*Sphinx culex*, Retzius) with *Sesia mutillæformis*, Ochsenheimer.

MILLIÈRE figures *Sesia himmighoffeni*, Staud., Ann. Soc. Linn. Lyon, xvi. pl. 89. f. 1.

LEDERER (Hor. Soc. Entom. Ross. vi. p. 86, pl. 5. fig. 5) describes and figures a variety of *Sesia stiziformis*, Herrich-Schäffer, from Astrabad.

FRIVALDSKY (Proc. Hungar. Acad. 1865, p. 143, pl. 4. f. 2) describes and figures the imago and pupa of *Sesia uroceriformis*, Tr., and (pl. 4. f. 3) the imago of *S. bibioniformis*, Esp.

E. G. MEEK and W. BUCKLER record the discovery of the larva of *Sesia ichneumoniformis*, and describe it. Ent. M. Mag. vi. pp. 89, 90.

Egeria exitiosa, Say. Habits fully described, and both sexes figured by Riley, First Rep. on Insects of Missouri, pp. 47-50.

R. W. FEREDAY records the occurrence of *Sesia tipuliformis* in New Zealand. He supposes it to have been introduced with currant-bushes. Ent. M. Mag. vi. p. 146.

Sesia. Boisduval (Ann. Soc. Entom. Belge, xii.) describes the three following species as new, from California:—*S. nomadæformis*, p. 63; *S. chrysidipennis*, p. 64; *S. bibionipennis*, p. 64.

Sesia mysiniiformis, sp. n., Rambur. Cat. Syst. Léop. d'Andalusie, ii. p. 151 (= *affinis*, p., Staud., = *doleriformis*, p., Herrich-Schäffer), Andalusia.

URANIIDÆ.

Nyctalemon zodiaca, sp. n., Butler (= *N. orontes*, Walker, nec Linn., Clerck), North China; and *N. zampa*, sp. n., Butler (= *N. patroclus*, Drury, Walker, nec Linn.), Silhet. Ent. M. Mag. v. p. 273.

CASTNIIDÆ.

BOISDUVAL (Ann. Soc. Entom. Belge, xii.) describes *Agarista* (*Alypia*) *octomaculata*, Godart [Fabricius], and redescribes as new the four following Californian species, published by Grote and Robinson in Trans. Amer. Ent. Soc. i. (comp. Zool. Rec. 1868, p. 326) under the same names:—*A. dipsaci*, p. 68; *A. lorquini*, p. 69; *A. sacramenti*, p. 69; *A. mariposa*, p. 70.

Alypia octomaculata, Fabr. Riley (First Rep. on Insects of Missouri, pp. 136, 137, pl. 1. f. 18, 19) describes the transformations of this insect, and figures the larva and imago. W. V. Andrews states (Amer. Naturalist, ii. pp. 666, 667) that the larva is very destructive to the vine on the east side of New York.

SCUDDER (Harris Correspondence) publishes Harris's description of the larva of *Alypia octomaculata*, Fabr. (p. 285), and Melsheimer's remarks on the resemblance between the larvæ of *A. octomaculata* and *Eudryas grata* (p. 116).

New species :—

Castnia inornata, Walker, Lepidoptera Heterocera, p. 106, hab. —?

Eusemia butleri, Walker, l. c. p. 111, hab. —?

Agarista [*Alypia*] *grotei*, Boisduval, Ann. Soc. Entom. Belge, xii. p. 70.

Callidula erycinoides, Walker, l. c. p. 3, hab. —?

ZYGÆNIDÆ.

RAMBUR (Cat. Syst. Léop. d'Andalusie, ii. p. 166) describes *Zygæna nevadensis*, figured by him in part 1 (pl. 1. fig. 10); *Z. sarpedon*, var. *hispanica* (l. c. p. 167); *Z. bætica* (l. c. p. 170), figured by him in his Faune entom. And. pl. 12. fig. 9; *Z. fausta*, var. *fortunata* (l. c. p. 172, note); *Z. stachadis*, Borkh. (l. c. p. 174), which he considers to be a race of *trifolii*, and which = *trifolii*, var., Ramb. part 1, pl. 1. f. 5; *lavandulæ*, Hübn., and *medicaginis* and *charon*, Boisd.; *Z. trifolii*, var. (l. c. p. 177), figured in part 1, pl. 1. figs. 6-8 (fig. 8 = *syracusæ*, Zell.). In the course of his remarks on the *Zygænida* he criticises Boisduval's works on the family very severely.

ZELLER (Stettin. entom. Zeitung, 1869, pp. 389, 390) states that the larva of *Zygæna heringii* does not differ from that of *Z. minos*, and that he considers the former insect to be a mere variety of the latter. He also remarks on Wallengren's discovery that *Z. scabiosæ* has only one pair of spurs on the hind tibiae, and that the neuration of the wings of the genus, in which Wallengren has recorded some interesting peculiarities, may probably furnish valuable specific characters.

LEDERER (Hor. Soc. Entom. Ross. vi. p. 87) states that *Zygæna dorycnii* is probably a variety of *Z. peucedani*.

W. JAGGER notices some varieties of *Zygæna filipendulæ*. Ent. M. Mag. vi. p. 117; Entomologist, iv. p. 305.

FRIVALDSKY describes and figures *Ino budensis*, Spey. (Proc. Hungar. Acad. 1865, p. 146, pl. 4. f. 5), and *Zygæna læta*, Esp. (l. c. p. 145, f. 4), the latter with its pupa and cocoon.

RAMBUR (l. c. pp. 184, 185) discusses the varieties of *Procris statice*, &c. He considers *obscura*, Zell., *heydenreichii*, *micans*, and *chrysocephala*, Herr.-Schäff., and *gerion*, Hübn., to be vars. of *statice*, admitting, however, that some of these forms may be distinct. He adds in a note that he considers *P. chloros* and *P. sæpium* to be identical. He also (l. c. p. 186) describes his *P. cognata* in full.

ZELLER (l. c. pp. 390, 391) considers *Ino geryon* to be undoubtedly distinct from *I. statice* on account of the difference in the antennæ, which he describes in a note, and of the metamorphoses. He altogether disbelieves (l. c. pp. 391, 392) that *I. pruni*, W. V. (*Rhagades pruni*, Wallengr.) feeds on plum, and indicates heath as its probable food-plant.

New species :—

Zygæna cambysca, Lederer, Hor. Soc. Entom. Ross. vi. p. 86, pl. 5. fig. 6, *Z. manlia*, Led. l. c. p. 87, pl. 5. fig. 7, both from Astrabad: *Z. alpina*, Berce (Boisduval, MS.), Lépid. de la France, ii. p. 73, Savoy; *Z. ledereri*, Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 169, Andalusia; *Z. pennina*, Rambur, l. c. p. 169, note, Chamounix; *Z. faustula*, Rambur, l. c. p. 171, note, Mont Salève.

Procris. Rambur (Cat. Syst. Léop. d'Andalusie, ii.) describes the following new species of this genus :—*P. bellieri*, l. c. p. 184, note, Sicily; *P. cuprea*, l. c. pp. 185, 186, note, South Russia; *P. soror*, l. c. p. 187, Andalusia (= *congnata*, Luc.? nec Ramb.).

Syntomis fortunei, De l'Orza, Lépid. Japon. p. 38, Japan; *S. compta* and *S. submarginalis*, Walker, Lepidoptera Heterocera, p. 89, Benares.

Glaucopis tricolor, Packard, First Report Peabody Acad. Sci. p. 62, Napo and Maranon.

Eucerea melanopyga, Walker, Lepidoptera Heterocera, p. 42, hab. —?

NYCTEOLIDÆ.

Earias vernana, Hübn. Rogenhofer describes the transformations of this species. Vêrh. zool.-bot. Ges. in Wien, 1869, pp. 917, 918.

Euxestis, n. g., Lederer, Hor. Soc. Entom. Ross. vi. p. 88. Allied to *Nycteola*; head depressed, front broad, vertical; eyes naked; ocelli wanting; palpi short and slender, not quite reaching to the forehead, last joint short and obtuse; tongue spiral; antennæ pectinated, with short cilia of equal length; abdomen and legs scaly; hind tibiæ with two pairs of strong spurs; fore wings with a scaly tooth on the inner margin. Type *E. dentula*, n. sp., Led. l. c. p. 89, pl. 5. f. 8, Astrabad.

LITHOSIIDÆ.

Ctenucha rubroscapus, Ménétr., is fully described by Boisduval, Ann. Soc. Entom. Belge, xii. p. 71.

SCUDDER (Harris Correspondence, p. 161) publishes Doubleday's note that *Crocota rubicundaria*, Harr., = *Lithosia læta*, Boisd., and that *Ctenucha semidiaphana*, Harr., = *Glaucopis fulvicollis*, Hübn.

Psychomorpha epimenis, Dru., described and figured by Packard, Guide to Study of Insects, p. 281, fig. 211.

BUTLER figures *Annemopsyche expandens*, Walk., and *A. charmione*, Fabr., and the neuraton of the latter. P. Z. S. 1869, p. 44.

RAMBUR (Cat. Syst. Léop. d'Andalusie, ii. p. 215, note) proposes the generic name *Ecteina* for *Lithosia mesomella*; but Hübner's name *Cybosia* has been already adopted for this insect by various English entomologists, and it appears to be quite unnecessary to change it.

RAMBUR (l. c. p. 211) describes his *Lithosia flaveola* in full. It is figured l. c. i. pl. 2. fig. 3.

He also figures and describes in full *L. bipuncta*, Hübn. (l. c. ii. p. 203, pl. 11. fig. 1).

BIRCHALL publishes notes on some Italian larvæ of *L. caniola*, Ent. M. Mag. vi. p. 67.

New genera and species :—

Olima *, Walker, Lepidoptera Heterocera, p. 5 (*Chalcosiidae*), type *O. nyctemeroides*, sp. n., l. c. p. 6, hab. —?

Lama, Walker, l. c. p. 7 (*Pericopidae*). Type *Eucyane melaxantha*, Walk.

Annemopsyche, Butler, P. Z. S. 1869, p. 44. Allied to *Nyctemera*; body

* Preoccupied in *Rhopalocera*.

moderately slender, subcylindrical, head very small, thorax short, abdomen not reaching beyond the wings, conical at tip; legs slender, front legs simple, tibiae with one spur in the middle, hind legs with three, one subapical and two terminal; wings elongated, slender, fore wings with the costa scarcely arched, inner margin almost entire; discoidal cell very long, first discoidal nervure bifurcated, upper discocellular nervure oblique, with the second discoidal nervure nearly continuous, lower discocellular nervure transverse; hind wings subpyriform, the apical area longer; discoidal cell very long, all the nervures distinctly separated, upper discocellular nervure oblique, lower angularly transverse; wings mostly black and white. Type *Papilio charmione*, Fabr.

Xanthesthes, n. g., Rambur (= *Argina*, Hübn.), Cat. Syst. Léop. d'Andalusie, ii. p. 228, note. Allied to *Deiopeia*; type *Phalena cribraria*, Cram.

X. guttata, Ramb. l. c. p. 229, note, Madagascar; *X. albocincta*, Ramb. l. c., Madagascar.

Phagoptera (n. g.?, uncharacterized, but near *Hyypsa*). Boisduval (Ann. Soc. Entom. Belge, xii.) describes the following Californian species as new:—*P. cinnamomea*, p. 80, *P. quercus* and *P. salicis*, p. 81.

Ctenucha nivosa, Walker, Lepidoptera Heterocera, p. 6, hab. —?; *C. corvina* and *C. robinsonii*, Boisduval, Ann. Soc. Entom. Belge, xii. p. 71, *C. marrisii*, Boisd. l. c. p. 72, all from California.

Jōsia lativittata, Walker, Lepidoptera Heterocera, p. 6, hab. —?

Pericopsis tristis, Walk. l. c. p. 7, hab. —?

Lama triferata, Walk. l. c. p. 8, Espiritu Santo.

Euschema auristriga, Walk. l. c. p. 8, hab. —?

Vitessa triplaga, Walk. l. c. p. 8, hab. —?

Cyclosia spilophila, Walk. l. c. p. 4, hab. —?

Elerusia fasciata, Walk. l. c. p. 5, N. India; *E. atroatra*, Walk. l. c. p. 64, Australia.

Lithosia remota, Walk. l. c. p. 9, Moreton Bay; *L. uniola*, Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 209, *L. sordidula*, Rambur, l. c. p. 210, both from Andalusia; *L. decia*, Boisduval, Ann. Soc. Entom. Belge, xii. p. 72, *L. adnata*, *lena*, and *faustimula*, Boisd. l. c. p. 73, *L. nexa*, Boisd. l. c. p. 74, all from California; *L. casta* (Sanborn, MSS.), Packard, Guide to Study of Insects, p. 284, United States.

Eutane partita, Walker, Lepidoptera Heterocera, p. 64, Australia.

Barsine punctifascia, Walker, l. c. p. 9, hab. —?

Bizone trigutta, Walk. l. c. p. 89; *B. quadrinotata*, Walk. l. c. p. 90, both from Benares.

Castulo binotata, Walk. l. c. p. 65, Australia.

Deiopeia lepida, Rambur, Cat. Syst. Léop. d'Andalusie, ii. pp. 225, 226, note, Bourbon, Madagascar?; *D. occultans*, Vollenh. Recherches sur la faune de Madagascar, par MM. Pollen and Van Dam, Insectes, p. 13, pl. 2. fig. 5, Island of Nossi-Bé.

Nola thymula, Mill. Ann. Soc. Linn. Lyon, xvi. p. 9, pl. 85. figs. 11-13, Cannes, described and figured in all its stages. (The larva is erroneously represented with four pairs of prolegs instead of three, Mill. l. c. xvii. p. 35.)

ARCTIIDÆ.

FRIVALDSKY (Proc. Hungar. Acad. 1865) describes and figures *Nemeohilus*

metalkana, Led., p. 146, pl. 4. f. 6, and *Ocnogyna parasita*, Hüb., p. 147, pl. 4. f. 7.

RAMBUR (Cat. Syst. Léop. d'Andalusie, ii. p. 240) doubts whether *Trichosoma pudens*, Luc., may not be a Californian species.

SPRYER states (Stettin. entom. Zeitung, 1869, p. 82) that *Estigmene luctifera*, which has been placed in a separate genus by several authors on account of a horny claw asserted to be present at the extremity of its first pair of legs, possesses no such character, and that the front legs do not materially differ in structure from those of the other *Arctiidae*. Rambur also (Cat. Syst. Léop. d'Andalusie, ii. pp. 237, 238, note) protests against *luctifera* being generically separated from the other species of *Phragmatobia*.

SCUDDER (Harris Correspondence) reprints Harris's original description of *Arctia textor* from the 'New-England Farmer' (p. 360), and his descriptions of the larvæ of *A. arge*, p. 286; *A. americana*, Harr.?, or *A. scribonia*, Stoll?, *A. virginica*, p. 287; *Euchætes ægle*, p. 288, pl. 2. f. 5; *Lophocampa (Halesidota) caryæ*, p. 289; *L. maculata* (pl. 3. f. 9) and *L. tessellaris*, p. 290.

W. SAUNDERS describes the larvæ of *Arctia parthenos* (Canad. Entom. i. p. 5) and *Callimorpha lecontei* (l. c. p. 20).

DE L'ORZA (Lépid. Japon. p. 41) describes *Arctia nivea* (*Dionychopus niveus*, Ménétriés), and suggests that it may be a variety of *Chelonia alba*, Bremer. [Bremer's name would then have priority.]

MILLIÈRE (Ann. Soc. Linn. Lyon, xvi.) describes and figures varieties of *Arctia quenseli* (p. 20, pl. 86. f. 10) and of *A. fasciata* (p. 21, pl. 86. f. 11). He also describes and figures *A. rivularis*, Mén., in all its stages (l. c. xvii. p. 48, pl. 97. f. 10-13).

RAMBUR states (Cat. Syst. Léop. d'Andalusie, ii. pp. 249, 250, note) that *Agarista guttata*, Boisd., and *Chelonia virginalis*, Boisd., both from California, are the same species, which should be placed in or near the genus *Nemeophila*.

Callimorpha hera. Its occurrence near Brighton recorded by T. W. Wonfor. [This insect has been sufficiently often taken on the south coast to satisfy all doubts as to its being truly indigenous.] Entom. iv. p. 213.

BOISDUVAL redescribes his *Arctia (Nemeophila) rufula*, Ann. Soc. Entom. Belge, xii. p. 79. He also redescribes, as new, the following species previously described by Grote and Robinson under the same names:—*Nemeophila cæspitis* and *N. cichorii*, p. 75, and *Chelonia achaia*, p. 76.

New genera and species:—

Cymbalophora, n. g., Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 231. Type *Phalæna pudica*, Esp.

Acymba, n. g., Rambur l. c. p. 235, note. Type *Ph. spectabilis*, Tausch. (*intercisa*, Frey).

Pachylischia, n. g., Rambur, l. c. p. 240. Type *Trichosoma baticum*, Ramb.

Nototrachus, n. g., Rambur, l. c. p. 245, note. Not characterized, because the male is still unknown. Type *N. pierreti*, described and figured by Rambur (Ann. Soc. Ent. Fr. 1841, p. 205, pl. 5, fig. 1) as an hemipterous insect.

Omochorea, n. g., Rambur, Cat. Syst. Léop. de l'Andalusie, ii. p. 253. Type *Chelonia spurca*, Rambur, l. c. i. pl. 4. fig. 3.

Grammia, Ramb., l. c. ii. p. 261, note. Type *Ph. quenseli*, Payk.

Euprepia inquinata, Rambur (= *cribrum*, var. ?), *l. c.* pp. 222, 223 note, Touraine and Poitiers.

Arctia sciurus, Boisduval, Ann. Soc. Entom. Belge, xii. p. 79, California; *A. bimaculata*, Saunders, Canad. Entom. ii. p. 5, Canada.

Chelonis. Boisduval (Ann. Soc. Entom. Belge, xii.) describes the following Californian species as new:—*C. antholea*, p. 76; *C. doris* and *C. nereia*, p. 77.

Antarctica bicolor, Packard, First Rep. Peabody Acad. Sci. p. 63, Napo and Maranon.

Idalus lineosus, Walker, Lepidoptera Heterocera, p. 10, hab. — ?

Spilosoma strigata, Walk, *l. c.* p. 10; *S. cognata*, Walk. *l. c.* p. 11, hab. — ?

Anthena extenuata, Walk. *l. c.* p. 11, hab. — ?

Ecpantheria annulifascia, Walk. *l. c.* p. 11, hab. — ?

Ardices liturata, Walk. *l. c.* p. 12, hab. — ?

Halesidota vitripennis, Walk. *l. c.* p. 12; *H. perflua*, Walk. *l. c.* p. 13, hab. — ?; *H. pustulata*, Packard, First Rep. Peabody Acad. Sci. p. 63, Upper Amazon ?

LIPARIDÆ.

Orgyia leucostigma, Sm. & Abb. The habits and transformations of this insect are described and figured by Riley, First Rep. on Insects of Missouri, pp. 144–147, figs. 81–83. See also Scudder, Harris Correspondence, p. 291.

O. ericea, Germ. Frivaldsky figures and describes a variety under the name of *intermedia*. Proc. Hungar. Acad. 1865, p. 145, pl. 5. f. 1.

O. ramburii, Mab. Described and figured, in all its stages, by Millièrre, Ann. Soc. Linn. Lyon, xvii. p. 60, pl. 99. f. 1–4.

Turriga, g. n., Walker, Lepidoptera Heterocera, p. 15. Type *T. invasa*, sp. n., p. 15, Moreton Bay.

Saltiga, g. n., Walk. *l. c.* p. 16. Type *S. latifera*, sp. n., *l. c.*, hab. — ?

Leucosia, g. n., Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 266, note. Type *Liparis salicis*, auct.

Micropterogyna, g. n., Rambur, *l. c.* p. 281, note. Type *Orgyia antiqua*, auct.

Clethrogyna, g. n., Rambur, *l. c.* p. 281. Type *Orgyia splendida*, Rambur.

Thylacigyna, g. n., Rambur, *l. c.* p. 283, note. Not characterized; type

Orgyia ericea, Germ.

Orgyia semifusca, sp. n., Walker, Lepidoptera Heterocera, p. 65, Australia;

O. ledereri, sp. n., Millièrre, Ann. Soc. Linn. Lyon, xvii. p. 41, pl. 97. f. 1, 2, Sicily.

Ocneria congrua, sp. n., Walker, Lepidoptera Heterocera, p. 14, hab. — ?

Genusa discifera, sp. n., Walk. *l. c.* p. 14, Bengal.

Teara luctipennis, sp. n., Walk. *l. c.* p. 66, Australia.

PSYCHIDÆ.

FRIVALDSKY (Proc. Hungar. Acad. 1865) describes and figures the following *Psychidæ*, mostly with their cocoons:—*Psyche ecksteini*, Led., p. 147, pl. 4. f. 8; *P. zelleri*, Mann, p. 148, pl. 4. fig. 9; *Fumica undulella*, F. v. R. p. 148, pl. 4. fig. 10; *F. sappho*, Mill., p. 149, pl. 4. fig. 11.

MILLIÈRE (Ann. Soc. Linn. Lyon, xvi.) figures and describes *Psyche tenella* (p. 42, pl. 89. f. 6, 7) and *Fumica sieboldi* (p. 44, pl. 89. f. 8, 9).

Psyche anicanella, Br. Its occurrence in Britain is recorded by R. Mitford. Ent. M. Mag. vi. p. 94.

RAMBUR (Cat. Syst. Léop. d'Andalusie, ii. p. 311) describes his *Ptilocephala plumosella* in full. (Figured l. c. i. pl. 3. fig. 3.) He also describes in full and figures *P. malvinella*, Mill. l. c. ii. p. 312, pl. 14. fig. 6.

Thyridopteryx ephemeræformis, Haw. The habits and transformations of this insect (the "bagworm," "basket-worm," or "drop-worm" of the Americans) are described and figured by Riley, First Report on Insects of Missouri, pp. 147-151, fig. 84.

SCUDDER (Harris Correspondence) publishes Harris's and Miss Morris's descriptions of the Drop-worm or Basket-worm (*Oiketicus coniferarum*, Harr. MSS.), pp. 177, 242, 246, 299, f. 28, pl. 3. f. 4. He also publishes Harris's and Melsheimer's notes on the various stages of *Perophora melsheimeri*, pp. 112, 113, 150-152; and see Newman's Entomologist, 1842, pp. 99-101.

Oiketicus. Macalister (Proc. Nat. Hist. Soc. Dubl. v. pp. 129-135) describes the cases of *O. saundersii*, *O. lewinii*, *O. herrichii* (fig. 1), *O. hübnéri*, *O. careyi*, n. sp., fig. 2, and *O. macalisteri*, n. sp., fig. 3. He also describes a pupa-case, probably new, which he does not now consider to belong to an *Oiketicus*. He adds, "From the cases themselves some assistance might be derived in the classification of this group. There are two natural divisions into which they might be arranged:—first, those perforated at both ends; and secondly, those with but one pervious end. Of the first group we have:—first, those with the twigs adherent for their whole length, including *O. saundersii* and *O. lewinii*, distinguished from each other by the first having sticks disposed spirally and separate, and the second having but one row extending for the whole length of the sac, and being nearly closed at one end; secondly, those with twigs pendulous, attached by but one extremity, as *O. hübnéri*. Of those in which the perforation is but at one end we have three forms:—first, not ornamented with twigs, as *O. herrichii*; secondly, with irregularly disposed twigs, as *O. careyi*; thirdly, with even, regular fascies of twigs in storeys, as *O. crameri* and *O. macalisteri*."

Psychideides, nov. fam., Ramb. Cat. Syst. Léop. d'And. ii. p. 313. Contains the genera *Epichnopteryx*, *Fumea*, and *Psychidea* (n. g.). Rambur considers this group to stand between the genera *Psyche* and *Talæporia*, and thus to connect the *Psychidæ* and *Tineidæ*.

New genera and species:—

Trichopsyche, Wallengren, Scand. Heter. ii. p. 51. Subcostal nervure of the hind wings entirely free, not united to the median vein by a transverse nervure. Type *T. fusca*, Haw.

Carchesiopsyche, Wallengr. l. c. p. 52. Subcostal nervure of hind wings entirely absent. Wallengren refers the following described species of *Psychidæ* to this genus:—*plumifera*, Zgl.; *muscella*, W. V.; *angustella*, H.-S.; *plumistrella*, Hb.; and *hirsutella*, W. V.

Cochliotheca, Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 301. Type *Psyche helicinella*, H.-S.

Ptilocephala, Rambur, l. c. p. 307. Type *Psyche mediterranea*, Led.

Psychidea, Ramb. l. c. p. 313, note. Type *Epichnopteryx pectinella*, auct.

Oiketicus careyi, Macalister, Proc. Nat. Hist. Soc. Dubl. v. p. 133, fig. 2, Angaston, S. Australia; *O. macalisteri*, Macal. l. c. p. 134, fig. 3, Gipps Land. The cases alone of these new species are described and figured.

Plataceticus gloverii, Packard, Guide to the Study of Insects, pp. 291, 292, fig. 223, Florida.

Entometa adusta, Walker, Lepidoptera Heterocera, p. 16, Moreton Bay; *E. decaptes*, Walk. l. c. p. 66, and *E. ignobilis*, Walk. l. c. p. 67, both from Australia.

Perina pura, Walk. l. c. p. 17, hab. — ?

NOTODONTIDÆ.

PACKARD (Guide to the Study of Insects) notices and figures *Nerice bidentata*, Walk. p. 292, fig. 224, and *Edema albifrons*, Smith, p. 292, fig. 225.

SCUDDER (Harris Correspondence) publishes Harris's descriptions of the larvæ of *Seirodonta bilineata*, Grote & Rob., p. 301, pl. 1. fig. 5; *Notodonta* (*Glyphisia*?) *ulmi*, Harr. MSS., pp. 245, 302, pl. 2. figs. 2, 3; *N. unicornis*, p. 302, pl. 2. fig. 8; *N. concinna*, p. 303, pl. 1. fig. 3; *N. anguina*, p. 304, pl. 1. fig. 12; *N. albifrons*, p. 304; *N. —*?, p. 305, pl. 1. fig. 6; *Heterocampa —*?, p. 305; *Eudryas grata*, p. 306; *Astasia torrefacta*?, Smith & Abb. p. 307; *Pygæra gibbosa*?, Sm. & Abb.; *P. ministra*, pl. 2. fig. 4, p. 308; *Clostera americana*, p. 310, pl. 3. fig. 3. He also publishes Melsheimer's description of the larva of *Notodonta 6-guttata*, Harr., and Harris's remarks on the true position of *Eudryas grata*, p. 138.

New genera and species :—

Gozarta, Walker, Lepidoptera Heterocera, p. 18. Type *G. fulgurifera*, n. sp., l. c. p. 18, hab. — ?

Lebadia, Walk. l. c. p. 107. Type *L. cervina*, sp. n., p. 107, hab. — ?

Turuptiana, Walk. l. c. p. 19. Allied to *Cerura*. Type *T. obliqua*, sp. n., l. c. p. 19, hab. — ?

Dicranura borealis, Boisduval (= *furcula*, Smith & Abb. nec Linn.), Ann. Soc. Entom. Belge, xii. p. 85; *D. scolopendrina*, Boisd. l. c. p. 86, both from California.

Heterocampa doubledayi, Scudd. (= *Het. manteo*, Doubl. MSS., nec *Lochmæus manteo*, Doubl.), Harris Correspondence, p. 134. Described by Doubleday & Harris, l. c. p. 134, N. America; *H. seminivea*, Walker, Lepidoptera Heterocera, p. 17, Limas.

Edema cana, Walker, l. c. p. 17, N. America.

Clostera incarcerationata, Boisduval, Ann. Soc. Entom. Belge. xii. p. 86, California.

Ptilomacra antiqua, Walker, l. c. p. 67, Australia.

LIMACODIDÆ.

SCUDDER (Harris Correspondence) publishes Harris's descriptions of the larvæ of *Limacodes scapha*, Harr., p. 300, pl. 3. fig. 8, and *L. ehippiatus*, Harr. MSS., p. 301, pl. 1. figs. 7, 8, pl. 2. fig. 10. He also publishes Harris's figures of an undetermined larva of *Limacodes*, p. 176, pl. 2. fig. 7, pl. 3. fig. 6; and that of *L. cippus*, pl. 2. fig. 11.

PACKARD (Guide to Study of Insects) notices and figures *Limacodes scapha*, Harr., p. 290, fig. 219; *Callochlora chloris*, H.-S., l. c. fig. 220; and *Lithacodes fasciola*, Boisd., l. c. fig. 221.

He also (*l. c.* p. 289, pl. 8. fig. 1, 1a) notices and figures the larva and imago of *Empretia stimulea*, Clem.

Chazena, n. g., Walker, Lepidoptera Heterocera, p. 21. Allied to *Naprepa*; type *C. velata*, sp. n., p. 21, Limas.

Doratifera congrua, sp. n., Walk. *l. c.* p. 20, Moreton Bay.

Mecytha antiqua, sp. n., Walk. *l. c.* p. 20, Moreton Bay.

Miresa (?) *subcitrina*, sp. n., Walk. *l. c.* p. 20, hab. — ?

Euclea monitor, sp. n., Packard, Guide to Study of Insects, pp. 288, 289, hab. — ?

DREPANULIDÆ.

SPEYER describes the summer brood of *Platypteryx cultraria*. Stettin. entom. Zeitung, 1869, p. 83.

PACKARD notices and figures a new species of *Dryopteris*, Guide to Study of Insects, p. 293, fig. 226.

Lonomia abneyata, sp. n., Walker, Lepidoptera Heterocera, p. 22, hab. — ? ; *L. vittipalpis*, sp. n., Walk. *l. c.* p. 90, Benares.

SATURNIIDÆ (see also *Bombycidæ*).

MAASSEN (Beitr. z. Schmetterlingskunde, i.) figures the following known species of this family :—*Rhescyntis hercules*, Walk., fig. 1 ; *R. pandora*, Klug, fig. 3 ; *Aricia phlo*, Westw., fig. 4 ; *Actias leto*, Doubl., fig. 10.

BOISDUVAL (Ann. Soc. Entom. Belge, xii. p. 83) describes *Saturnia ceanothi*, Behr (= *euryalus*, Boisd. MS.), and two remarkable varieties of *Telea eglanterina*, Boisd., from California.

R. ALTUM records his experience in rearing *Samia cecropia*, *S. promethea*, and *Telea polyphemus* from pupæ received from New York. Stettin. entom. Zeitung, 1869, pp. 294-298.

Hyperchiria varia. Larva described by Bethune, Canad. Entom. ii. p. 19.

Typhloteta, n. g., Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 377. Type *Saturnia cæcigena*, Cup.

New species :—

Attacus paranensis, Burmeister, is indicated as a new species, Rev. et Mag. de Zool. 1869, p. 38, hab. — ? (probably Buenos Ayres).

Antheræa insignis, Walker, Lepidoptera Heterocera, p. 22, Moreton Bay.

Actias cometes (Boisd. MSS.), Maassen, Beitr. z. Schm. i. fig. 9, Madagascar.

Eudæmonia phoenix (= *semiramis*, Cramer ?), Maassen, *l. c.* figs. 5-7, = *Saturnia phoenix*, Deyrolle, Ann. Soc. Entom. Belge, xii. pl. 1, interior of Brazil, Surinam.

Rhescyntis romulus (Boisd. MSS.), Maassen, *l. c.* fig. 2, Brazil.

Loxolomia (n. g., not characterized) *serpentina*, Maassen, *l. c.* fig. 8, Brazil.

Dysdæmonia tamerlan (Boisd. MSS.), Maassen, *l. c.* fig. 11, Brazil.

Micrattacus lebedoides, Walker, Lepidoptera Heterocera, p. 23, hab. — ?

Dirphia sexfasciata, Walker, *l. c.* p. 23, hab. — ?

Eacles tricolor, Walk. *l. c.* p. 24, hab. — ?

E. suffusa, Walk. *l. c.*, Limas.

BOMBYCIDÆ.

SCUDDER (Harris Correspondence) publishes Harris's descriptions of the larvæ of *Clisiocampa sylvatica*, *Gastropacha americana*, p. 292, *G. velleda*, *Attæus luna* (pl. 4. fig. 14), p. 293, *A. polyphemus* (pl. 4. fig. 17), *A. cecropia*, p. 294, *Saturnia io*, p. 295, *Ceratocampa regalis*, p. 297, *Dryocampa senatoria* (pl. 2. fig. 9, pl. 4. fig. 12), *D. stigma* (pl. 2. fig. 12), *D. pellucida*, p. 298. He also (*l. c.* pp. 130-134) publishes notes by Harris and Doubleday on various *Bombyces*, mostly undetermined, and their larvæ, and copies Harris's remarks on the classification of the group (pp. 135-140, 144, 152-156).

He also (*l. c.* pp. 364-366) reprints various notes on American *Bombycidae* from the first edition of Harris's "Insects injurious to Vegetation," which had been inadvertently omitted in the third edition.

The editors of Ent. M. Mag. (v. p. 230) quote a paragraph from an Australian paper containing an account of a railway-train being stopped by a swarm of hairy caterpillars, which they suppose to have been those of one of the *Bombyces*. The engine could not grip the rails in consequence of the quantities which were crushed beneath the wheels.

Lasiocampa quercus. A gynandromorphous specimen of this insect (left side ♂, right side ♀) has been bred by John Wilson. The abdomen was thicker than in the male, and not tufted. Proc. Ent. Soc. Lond. 1868, p. 38.

G. R. Porritt states that the larva of this species will eat heather. Ent. M. Mag. vi. p. 117.

An Alpine variety of this species is described, and its habits, in all its stages, recorded by J. Fallou, Ann. Soc. Entom. Fr. 1869, pp. 51, 52.

On varieties obtained by breeding, see M. Kershaw, Entomologist, iv. p. 351.

MILLIÈRE (Ann. Soc. Linn. Lyon, xvii.) describes and figures varieties of *Bombyx rubi* (p. 13, pl. 94. f. 7), and of *Lasiocampa potatoria* (p. 13, pl. 94. f. 8), bred by Lederer at Vienna.

E. HOLDSWORTH states (Proc. Ent. Soc. Lond. 1869, pp. 21, 22) that he has bred *Eona punctata*, *Lasiocampa remota*, and *Lebeda hebes* ? of Walker from the same larvæ, at Shanghai.

E. H. TOND records his having had a brood of larvæ of *Eriogaster lanestris* in the summer of 1866, about 100 of which went to pupa. In 1867 the first moth appeared on Feb. 2nd, in 1868 on Feb. 20th, and in 1869 on April 6th, and some still remain in pupa. Ent. M. Mag. vi. p. 16.

Clisiocampa castrensis. Life-history published by E. Newman, Entomologist, iv. p. 189.

C. MILLER and A. H. JONES publish notes on rearing this insect. Ent. M. Mag. vi. p. 114.

C. americana, Harr., is noticed and figured by Packard, Guide to Study of Insects, p. 301, fig. 232.

Sericiculture. Girard reports the failure of the public experiments near Paris in 1869, tried with various species of silkworms. Ann. Soc. Ent. Fr. 1869, pp. 489-492. He also (*l. c.* Séances, pp. 74, 75) publishes notes on double cocoons of various silkworms. These are generally, but not always, of different sexes. Suida has discovered that the power of absorbing humidity exists in the fibre of silk, and not in its gloss. Cosmos, 3^e sér. v. pp. 46, 47.

On experiments made at the Bois du Boulogne in 1866-1868 on sericulture, see Pinçon, Bull. Soc. Imp. d'Acclim. 2^e série, vi. pp. 20-30.

A translation of a paper by P. L. Simmonds on Sericulture in India is reprinted in the same Journal, pp. 533-543, 594-606, from the Revue des Cours Scientifiques.

TORRÈS-CAICEDO states (Bull. Soc. Imp. d'Acclim. 2^e série, vi. pp. 467-469) that the larvæ of *Bombyx spondiæ* and allied species cut the thread of their cocoons before they are completed—and that if the larvæ are killed 24 or 27 hours after they begin to spin, the cocoons can be wound off in a continuous thread without breaking.

GUÉRIN-MÈNEVILLE publishes (Rev. et Mag. de Zool. 1869) a series of articles entitled "Sériciculture Comparée" of more special than general interest. The epidemic is decreasing, he reviews its progress, and disputes Pasteur's conclusions, attributing it to disease in the mulberry; he records Baron de Bretton's success in rearing *B. yama-mai*, remarks on the failure of Japanese eggs of this species, quotes a letter of Bretton's saying that only the leaves of well-grown and acorn-bearing oaks should be given to the worms after their third moult, states that eggs of this species hatch sooner if they have travelled: he records the experience of various sericulturists in rearing *B. mori*, states that it has been reared successfully on the *Maclura*, recommends that silkworms should be reared with great care and in small quantities to obtain healthy eggs, and generally reviews the progress of sericulture during the current year 1869.

Various remarks and papers on sericulture, which it is unnecessary to refer to in detail, will be found scattered through the 'Journal d'Agriculture Pratique' for 1869, under the headings of "Chronique agricole;" "Compte rendu des séances du congrès de Lyon," "Revue étrangère," "Sériciculture," "La Campagne séricole," "Bulletin de l'Industrie séricole," &c. On sericulture in Italy see Personnat, Journ. d'Agric. pratique, 1869, i. pp. 49-52; in Corsica, with reference to Pasteur's remedy for the silkworm-disease, see Maillet, Comptes rendus, lxix. pp. 361-363; in England, &c., with special reference to rearing *S. mori* for the sake of the eggs, see Wallace, Entom. Annual, 1870, pp. 145-155.

Attacus cynthia. On rearing this insect in France in 1868 and on its parasites see Girard, Ann. Soc. Entom. Fr. Séances, pp. 97-99.

De l'Orza states (Lépid. Japon. p. 43) that it is almost naturalized in France, where plantations of *Ailanthus* exist.

On rearing *A. cynthia* in Ireland, see Kirby, Journ. Roy. Dubl. Soc. vol. v. pp. 366-370.

Antheræa yama-mai. Dr. Wallace has published a report on the success obtained by himself and various correspondents in rearing this insect in Great Britain in 1867, 1868: 55 of his correspondents out of 180 were successful in obtaining cocoons. He classifies the varying success of his correspondents, and, in summing up, enumerates the various forms of disease that affect this silkworm, discusses the question of contagion or infection, describes the mode of emergence from the cocoon, the habits of the perfect insect, &c., adds some directions for the treatment of the worms, and quotes a letter from a correspondent in Japan respecting the habits and treatment of the worm in that country.

Dr. Wallace also publishes notes on the cultivation of this silkworm in Scotland and Ireland. Ent. M. Mag. v. pp. 252, 253.

DE L'ORZA (Lépid. Japon. p. 43) suggests that the larva of *A. yama-mai* is probably polyphagous, and may prefer plants which we do not possess.

A. GIRARD (Ann. Soc. Ent. Fr. Séances, 1868, pp. 97-99) records the failure of this silkworm in France in 1868, and the success obtained by Baron de Bretton in Moravia. He remarks (Ann. Soc. Ent. Fr. 1869, p. 492) that the Japanese usually export only bad eggs of this silkworm.

GUÉRIN-MÉNEVILLE observes (*l. c.* Séances, p. 75) that multiple cocoons are very common in this species, sometimes as many as six or seven pupæ occurring in one cocoon. The moths are sometimes developed, and couple inside these cocoons.

On rearing *A. yama-mai* in Bamberg, see Baumann, Mittheil. des Naturf. Ges. in Bern, a. d. Jahre 1867, nos. 619-653, pp. 219-221; and Barlet, Tijdschr. voor Entom. 2 serie, vol. iv. pp. 75-79: on experiments in Ireland, see De' Ricci, Journ. Roy. Dubl. Soc. vol. v. pp. 172-177.

Bombyx mori. Pasteur has published a series of articles in the Comptes rendus (lxviii. pp. 79-82, 628-639, 1229-1234; lxix. pp. 153-160, 744-748) in which he argues that the prevailing silkworm epidemic is hereditary and highly contagious, but that the matter of contagion becomes innocuous after a year. He therefore recommends that silkworms should be carefully reared for breeding from small quantities of eggs previously ascertained by microscopic examination to be healthy. He also comments on the results of various experiments which have been undertaken to test his theory.

For further experiments see articles by Guisquet and Vaillant, Comptes rendus, lxviii. pp. 1574, 1575, and lxix. pp. 150-163; and Cantoni, Journ. d'Agric. Prat. 1869, ii. pp. 307-309, 558, 559.

RAYBAUD-LANGE (Comptes rendus, lxviii. pp. 1275, 1276) attributes the disease to the disengagement of ammoniacal gas from the "frass" of the worm, and states that it may be produced by placing a worm near a glass of ammonia under a cover. His conclusions are disputed by Pasteur, *ibid.* pp. 1433, 1434.

BÉCHAMP (*l. c.* lxix. pp. 139-142) attributes the disease to a *Micromyza* (*M. bombycis*, Béch.), which becoming diseased in consequence of decomposition of the mulberry-leaf, conveys the disease to such weakly silkworms as are predisposed to it.

PIZE (*l. c.* lxviii. pp. 645, 646) has detected fatty degeneration in some eggs of silkworms, which he attributes to their being reared under unfavourable circumstances. He proposes to continue his observations on the subject.

DECLAUX (*l. c.* lxix. pp. 1021, 1022) has discovered that the embryo is not properly developed in eggs of silkworms which have not been submitted to a low temperature for a sufficient period.

CORNALIA details the result of various experiments by Crivelli and Belotti in rearing silkworms from healthy eggs obtained from Dalmatia. He finds it necessary for success to breed from healthy eggs, to keep the worms and the mulberries from which they are supplied perfectly isolated, to rear them early, to avoid possible contagion at the stages when the disease is most infectious, to well ventilate the rooms, to supply the silkworms with good food, and to keep them perfectly clean. The use of disinfectants is also recommended. Cornalia does not believe that the prevailing epidemic is hereditary, or present in the egg. But he acknowledges that he has been unable to come to a conclusion as to the origin of the disease, and the inferences he

draws as to the disease not being hereditary are disputed by Pasteur (Comptes rendus, lxviii. pp. 628-639; see also Monthly Microscopical Journ. i. pp. 304-309, and Rev. et Mag. de Zool. 1869, pp. 123-126).

On the analysis of healthy and diseased silkworms see Mène, Rev. et Mag. de Zool. 1869, pp. 29-31.

On rearing silkworms in the open air at Bordeaux see Gintrac, Cosmos, 3^e sér. v. pp. 223-225; Comptes rendus, lxix. pp. 624, 625. Jeannel (Bull. Soc. Imp. d'Acclim. 2^e série, vi. pp. 415-417) remarks on the same subject.

On the increase and decrease in the weight of the silkworm at different stages, see Von Linstow, Corr.-Blatt. zool.-min. Ver. Regensb. 1869, pp. 43-45, pl. 1.

TAILLON thinks that the silkworm can be reared wherever the mulberry will grow. Comptes rendus, lxix. p. 733.

LEPAGE has been very successful in rearing silkworms at Douera by great attention to diet, ventilation, and cleanliness. Ibid. lxviii. p. 942.

BROUZET recommends that salsify should be alternated with mulberry in the food of silkworms. Ibid. pp. 646, 647.

New genera and species :—

Mesistesoma, Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 341, note. Type *Gastropacha otus*, auct.

Epicnaptera, Rambur, l. c. p. 344. Type *Gastropacha suberifolia*, Dup.

*Phylloxera**, Rambur (= *Chrostogastria*, Hübn.), l. c. p. 346. Type *Gastropacha pruni*, auct.

Selenephra, Rambur, Cat. Syst. Léop. d'Andalusie, ii. p. 347, note. Type *Gastropacha lobulina*, auct.

Diplura, Rambur, l. c. p. 350. Type *G. loti*, Ochs.

Autosphylla, Rambur, l. c. p. 354, note. Type *Cnethocampa neogena*, Boisd.

Macrothylacia, Rambur, l. c. p. 358. Type *Gastropacha rubi*, auct.

Achnocampa, Rambur, l. c. p. 361. Type *A. ilicis*, Ramb. (figured, l. c. i. pl. 5. fig. 4; larva, pl. 14. fig. 1 a).

Lachnocampa, Wallengren, Skand. Heterocer. ii. 1. p. 89 (= *Macrothylacia*, Rambur, *suprà*).

Lobocampa, Wallengr. l. c. p. 102 (= *Chrostogastria*, Hübn.; = *Phylloxera*, Ramb., *suprà*).

Ammatocampa, Wallengr. l. c. p. 113. Subcostal nervure emitting at least one branch towards the front margin of hind wings. Subcostal area of hind wings present, closed, but larger than the discoidal cell, or of equal size. Palpi rather short, of ordinary structure. Detached nervure and styloid branch of the hind wings coalescent, rising from the hinder angle of the discoidal cell. Type *Bombyx ilicifolia*, Linn.

Hydrias cenifascia, Walker, Lepidoptera Heterocera, p. 24, Limas.

Opsirhina punctilinea, Walk. l. c. p. 67, Australia.

Bombyx. Boisdual (Ann. Soc. Entom. Belge, xii. p. 82) describes the following Californian species as new :—*B. frutetorum*, = *castrensis*, Smith & Abbot (= *decipiens*, Walker); *P. drupaccarum*, = *neustria*, Sm. & Abb. (= *disstria*, Hübn.); *P. pseudoneustria*.

* Preoccupied in *Homoptera*.

Lasiocampa carpinifolia, Boisduval, *l. c.* p. 83, = *ilicifolia*, Smith & Abbot (= *occidentis*, Walker), from California.

Totype subnotata, Walker, *l. c.* p. 67, Australia.

ZEUZERIDÆ.

Xyleutes cossus (*Cossus ligniperda*). Newman publishes its life-history. Entomologist, iv. pp. 333-347. Further remarks by J. Brown, pp. 364, 365.

RAMBUR proposes the superfluous generic name *Trypanus* for this insect. Cat. Syst. Léop. d'Andalusie, ii. p. 326.

RAMBUR (*l. c.* p. 332) describes his *Endagria marmorata* in full. (Figured *l. c.* i. pl. 5. f. 6.)

Endagria algeriensis, sp. n., Rambur, *l. c.* p. 331, note, Algeria.

HEPIALIDÆ.

MILLIÈRE (Ann. Soc. Linn. Lyon, xvii. pp. 11, 12, pl. 94. figs. 4-6) describes and figures three varieties of *Hepialus humuli* from the Shetland Islands.

H. STEELE publishes notes on the larva of *H. velleda*. Entom. M. Mag. vi. p. 41.

A. W. SCOTT has published (Trans. Ent. Soc. N. S. Wales, ii.) a monograph of the genus *Charagia*, Walker, and has described the following known species:—*C. virescens*, Doubl. p. 28 (♀ = *rubroviridans*, Walk.); *C. lignivora*, Lewin, p. 29; *C. leucinii*, Walk., p. 30 (♂ = *C. lamberti*, Walk.); *C. splendens*, Scott, p. 31.

New genera and species:—

Alphus, n. g., Wallengren, Skandinavien Heterocerfjärilar, ii. 1, p. 17. Antennæ filiform in both sexes, with one row of lamellæ. Legs as usual. Fore wings with two dorsal nervures. Transverse nervure closing the subdorsal areola of the fore wings thick, the other nervures nearly equal. Type *Hepialus sylvinus*, auct.

Phymatopus, n. g., Wallengren, *l. c.* p. 20. Transverse nervure closing the subdorsal nervure of the fore wings obsolete, slender, scarcely perceptible; hind tibiæ of the male inflated. Type *Hepialus hectus*, auct.

Zelotypia, n. g., Scott, Trans. Ent. Soc. N. S. Wales, ii. p. 37. Allied to *Charagia*; body thick; abdomen long, extending beyond the wings; wings long, narrow, slightly acuminate at the tips, extremely oblique along the exterior border, and crumpled towards the apices; fore wings with an ocellus on each, whose disk is vitreous; posterior pair of legs slender in both sexes. Female.—Head projecting; eyes large and prominent; maxillæ obsolete; palpi short, slender; legs spurless (?), anterior pairs stout, pilose. Type *Z. stacyi*, n. sp., Scott, *l. c.* p. 38, Australia.

Hepialus fasciculatus, Walker, Lepidoptera Heterocera, p. 68, Australia; *H. hectoides* and *H. californicus*, Boisduval, Ann. Soc. Entom. Belge, xii. p. 85, California.

Phassus undulifer, Walker, Lepidoptera Heterocera, p. 102, Benares.

Charagia. Scott (Trans. Ent. Soc. N. S. Wales, ii.) describes the following 1869. [VOL. VI.] 2 E

new species of this genus:—*C. ramsayi*, p. 32, Ash Island, Hunter's River; *C. scripta* (MacLeay, MSS.), p. 33, King George's Sound, W. Australia; *C. scotti* (Ramsay, MSS.), p. 34, Lismore, Richmond River; *C. eximia*, p. 35, Ash Island.

NOCTUIDÆ.

A. S. PACKARD has published (Proc. Portl. Soc. of Nat. Hist. i. pp. 153–156) an essay on the characters of the *Noctuidæ*. He considers that their true position is between the *Bombycidæ* and *Geometridæ*. He thinks they can only be naturally divided into two subfamilies, which he calls *Noctuinae* and *Catocalinae*. The first corresponds to the *Trifidæ* of Guénée, with the addition of a portion of the *Quadrifidæ* as far as *Scoliopteryx*; and the second includes the remainder of the *Quadrifidæ* of Guénée.

MILLIÈRE (Ann. Soc. Linn. Lyon, xvi. p. 22, pl. 87. figs. 1, 2) describes and figures *Tapinostola bondii*, Knaggs, which he erroneously attributes to Doubleday. He also (p. 23, pl. 87. fig. 3–7) describes and figures *Dasypolia templi* in all its stages. He also (p. 38, pl. 85. figs. 3, 4) describes the transformations, and figures the larva and imago of *Cerocala scapulosa*, and (p. 45, pl. 89. figs. 10, 11) of *Cucullia xeranthemi*, and p. 75, pl. 92. figs. 10, 11) of *Ophiusa algira*. He also (p. 69, pl. 92. figs. 1–4) describes the transformations of *Bolina cailino*, and figures it in all its stages, and (p. 78, pl. 92. fig. 11) describes and figures *Euclidia minuta*, var. *immunita*, Staud., from S. Ural.

Millière also (*l. c.* xvii.) describes and figures, in all their stages, the following *Noctuidæ*:—*Leucania hispanica*, Bell. (p. 4, pl. 93. figs. 5–7), *Agrotis ashworthii*, Doubl. (p. 6, pl. 93. figs. 8–11), and *Polia canescens*, Bd., var. *asphodeli*, Ramb. (p. 55, pl. 98. figs. 5–8). He also (p. 52, pl. 98. fig. 2) figures and describes *Cucullia formosa*, Rogenh., and (p. 58, pl. 93. figs. 9, 10) the larvæ and imago of *Alamis albidens*, H.-S.

The following *Noctuidæ* are described and figured by Frivaldsky, mostly with their transformations (Proc. Hungar. Acad. 1865):—*Agrotis fugax*, Ochs., p. 150, pl. 5. fig. 2; *Mamestra leineri*, Freyer, p. 150, pl. 5. fig. 3; *M. cavernosa*, Ev., p. 151, pl. 5. fig. 4; *Dianthæcia dianthi*, Tausch., p. 151, pl. 5. fig. 5; *D. sejuncta*, H.-S., p. 152, pl. 5. fig. 6; *Thecophora fovea*, Tr., p. 152, pl. 5. fig. 7; *Valeria orbiculosa*, Esp., p. 153, pl. 5. fig. 8; *Luperina zollikoferi*, Freyer, p. 154, pl. 5. fig. 9; *Taspidea celsia*, Linn., p. 154, pl. 5. fig. 10; *Hydræcia lunata*, Freyer, p. 155, pl. 6. fig. 1; *Leucania evidens*, Hübn., p. 155, pl. 6. fig. 2; *Caradrina terreæ*, Bd., p. 156, pl. 6. fig. 3; *C. lenta*, Tr., p. 156, pl. 6. fig. 4; *Perigrapha cinctum*, W. V., p. 157, pl. 6. fig. 5; *Orrhodia veronica*, Hübn., p. 158, pl. 7. fig. 1; *Scotochrosta pulla*, p. 158, pl. 7. fig. 2; *Cucullia fraudatrix*, Ev., p. 158, pl. 7. fig. 3; *C. formosa*, Rogenh., p. 159, pl. 7. fig. 4; *Eucarta virgo*, Tr., p. 160, pl. 7. fig. 5; *Plusia cheiranthi*, Tausch. (= *Eugenia*, Ev.), p. 160, pl. 7. fig. 6; *P. modesta*, Hübn., p. 161, pl. 7. fig. 7; *Heliodes rupicola*, W. V., p. 162, pl. 7. fig. 8; *Heliothis cognata*, Freyer, p. 163, pl. 7. fig. 9; *Acontia titania*, Esp., p. 164, pl. 7. fig. 10; *Thalpocharis arcuina*, Hübn. (= *anamæna*, Hübn.), p. 164, pl. 7. fig. 11; *T. pannonica*, Freyer, p. 164, pl. 7. fig. 12; *T. communimacula*, W. V., p. 166, pl. 7. fig. 13 (the larva is said to live on a species of *Coccus*!); *Erastria obliterata*, Ramb. (= *wimmeri*,

Led.), p. 166, pl. 7. fig. 14; *Mesotrosta signalis*, Tr., p. 166, pl. 7. fig. 15; *Chariclea purpurites*, Tr., p. 163, pl. 8. fig. 1; *Metaponia alba*, p. 167, pl. 8. fig. 2; *Catocala hymenea*, p. 167, pl. 8. fig. 3; *Eccrita ludicra*, Hübn., p. 168, pl. 8. fig. 4; *Tozocampa limosa*, Tr., p. 169, pl. 8. fig. 5.

STAUDINGER states (Stettin. entom. Zeitung, 1889, pp. 85-87) that *Tapienostola concolor*, Guén., = *extrema*, Hübn. He has established this by an examination of the original types, and remarks that the type of *extrema* has blackish cilia, which he attributes to a very rare variation in pale-coloured insects, a second example of which he possesses in a specimen of *Notodonta bicolora* ♂. He is inclined to think that Hübner's unrecognizable figure of *T. fulva* is intended to represent a variety of the red form of *T. helmanni*. [These notes are translated by Stainton, Ent. M. Mag. vi. pp. 34-37.] Staudinger further (l. c. p. 88) remarks on the synonymy of *Nonagria neurica*, Hübn. (fig. 381), *N. dissoluta*, Tr., and *arundineta*, Schmidt. Ochsenheimer separated a specimen of *arundineta* in his collection as doubtfully distinct from *neurica* under the name of *dissoluta*, which name Treitschke applied to the excessively rare dark form figured by Hübner as *neurica* (figs. 659-661), and subsequently described by Boisduval as *hessei*. Treitschke, however, considered all these forms to be one species. Staudinger thinks that there are two species, whose synonymy should stand thus:—*neurica*, Hübn., and *dissoluta*, Tr., = *neurica*, p., Hübn., = *hessei*, Bois., with var. *dissoluta*, Ochs., coll., = *arundineta*, Schn. He also states (l. c. pp. 88-90) that *Leucania caricis*, Tr., = *L. loreyi*, Dup., and refers *scirpi*, Dup., and *dactylidis*, Bois., to the same species as varieties. He also refers (l. c. p. 90) *Agrotis corrosa*, H.-S., and *A. latens*, Guén. (and doubtfully *A. ignicola*, Hübn., also), to *A. griseescens*, Tr. He refers *A. latitans*, Guén., to *A. latens*, Hübn. He records (l. c. p. 90, note) the capture, by Frivaldsky, of an *Agrotis* intermediate between *A. hyperborea* and *A. carnica*. He also refers (l. c. pp. 90, 91) *Aporophylla ingenua*, Freyer, *A. scriptura*, Freyer, and *A. orientalis*, H.-S., to *A. australis*, Bois., as varieties. He proposes to call the English form var. *britannica*. He also refers (l. c. p. 91) *Xylina rubescens*, Mén., to *lambda*, Fabr., and considers *somniculosa*, Her., and *zinckenii*, Tr., to be varieties of the same species.

HERRICH-SCHÄFFER (Corr.-Blatt. zool.-min. Ver. Regensb. 1868) states (p. 115) that *Laphygma macra*, Guén., probably = *L. frugiperda*, Abb. He remarks (pp. 115-118) on the Cuban species of *Prodenia* and *Perigea*, and refers *Prod. androgea*, Guén. (nec Cr.) to *P. commelinæ*, Abb. He describes (p. 147) *Callierges sunia*, Guén., and regards (p. 148) *Euthisanotia* (*Glotula*) *timais*, Guén., as = *timais*, Cr., and the type of a new genus. The genus *Norops*, Guén., being preoccupied in *Reptilia*, he substitutes *Euglyphia*, Hübn., for it. He describes (p. 150) *Acontia aprica*, ♀, and *Chlorida virescens*, Fabr., and suggests that the genus *Chlorida* would be better placed with the *Minores* than with the *Heliothidæ*. He suggests that *Eumelia onagræ*, H.-S., may be a variety of *E. lea*, Guén. He gives tables of the Cuban species of the genera *Eumelia*, Hübn. (*Agroptila*, Guén.), *Galgula*, Guén., and *Celæno*, Guén. (preoccupied in *Mammalia*, H.-S.), pp. 151-153. These tables include descriptions, more or less full, of the known Cuban species. He also (p. 156) describes *Arzama densa*, "Wx. Supl. p. 645," giving both generic and specific characters in full; and (p. 179) *Oradesma apicina*, Guén. He remarks (p. 180) on the characters of *Plusia ou* and *P.*

rogationis, Guén., and expresses an opinion that *Hypocala pierreti* and *H. filicornis*, Guén., are the sexes of *Andræmone*, Cr.

RILEY (First Rep. on Insects of Missouri, pp. 67-91) describes the habits of twelve distinct species of "cut-worms" (larvæ of *Noctuidæ*), among which are the following known species:—*Agrotis inermis*, Harr., pp. 72-74, fig. 27, pl. 1. figs. 1-4; *Noctua clandestina*, Harr., p. 79, pl. 1. fig. 13; *Agrotis telifera*, Harr., pp. 80, 81, fig. 28; *A. subgothica*, Haw., pp. 81-82, fig. 29; *A. devastator*, Brace (Sillim. Journ. 1819, i. p. 157), pp. 83, 84, fig. 30 (larva); *Hadena subjuncta*, Grote & Rob., pp. 84, 85, pl. 1. figs. 14-17; *Celæna venigera*, pp. 86, 87, fig. 31 (larva and imago). Riley also alludes to *Agrotis nigricans*, L., var. *maizi*, and to *Hadena amputatrix*, Fitch, the habits of both which species have been described by Fitch; and also to an insect called the "Wheat cut-worm," which is still imperfectly known. Besides these, several species are noticed which were described by Riley in the 'Prairie Farmer' of June 2 or 22, 1866; but as works of this description are practically inaccessible in Europe, we have noticed these species as new.

PACKARD (Guide to the Study of Insects) notices among others the following known species of this family:—*Plusia precatationis*, p. 312, larva described by Saunders; *P. area*, Hübn., p. 313, fig. 242; *Anomis xyliæna*, pp. 313, 314, fig. 243, noticed by Glover; *Xanthoptera semicrocea*, Grote, p. 316, pl. 8. figs. 3, 3a; *Catocala ultronia*, Hübn., p. 317, pl. 8. figs. 4, 4a; *Drasteria ereclitea*, Cr., pp. 317, 318, fig. 247, larva described and figured by Saunders. (See also Canad. Entom. i. p. 4.)

SCUDDER (Harris Correspondence) publishes Harris's descriptions of the larvæ of the following North-American *Noctuidæ*:—*Thyatira 6-guttata*, Harr. MSS., p. 245; *Apatela americana*; *Acronycta sagittaria*, Harr. MSS. (*A. occidentalis*, Grote & Rob.), p. 311; *A. ulmi*, Harr. MSS., p. 312, pl. 3. fig. 10; *A. americana*, Harr. MSS., p. 313, pl. 3. fig. 2; *A. pruni*, Harr. MSS., p. 313, pl. 4. fig. 13; *A. salicis*, Harr. MSS., p. 314, fig. 44; a caterpillar feeding in potato-stalks; *Agrotis*, sp.; *Hadena amica*, p. 316; *Mamestra persicariæ*?, var. *americana*, pl. 1. fig. 11; *M. leucostigma*, Harr. MSS.; *M. picta*, p. 317; *Noctua*, sp.; *Noctua*, sp., pl. 1. fig. 9; *Euclidia*? *ereclitea*, p. 318; *Parthenos nubilis*, p. 319; *Catocala*, sp., p. 320, pl. 4. fig. 8.

E. NEWMAN (Entomologist, iv.) describes the larvæ of *Acronycta meny-anthis* (p. 16), *A. myricæ* (p. 317), and *Hadena glauca* (p. 227).

W. BUCKLER (Ent. M. Mag. v. p. 225) publishes notes on the larvæ of *Heliofobus popularis*, *Charæas graminis*, and *Luperina cespitis*, describes the larvæ of *Aporophylla australis* (l. c. vi. p. 13), *Plusia interrogationis* (l. c. p. 65), and *Hydræcia micæa* (l. c. p. 164).

SNELLEN has published (Tijdschr. v. Ent. ser. ii. vol. v. pp. 106-109) a paper on the European *Cymatophorina*, which he divides as follows:—

1. *Thyatira* (*batis* and *derasa*; the latter species should probably be placed in the genus *Gonophara*, Bruand);
2. *Asphalia* (*flavicornis*, *putris*, *ridens*, *ruficollis*);
3. N. g. (*dilatata*);
4. *Cymatophora* (or, *ocularis*, *albuncula*, Ev.);
5. N. g. (*fluctuosa*, *duplaris*).

Cymatophora ocularis. Eggs described by J. E. Fletcher, Entom. M. Mag. vi. p. 145.

Leucania. H. G. Knaggs points out the distinguishing characters of *Leucania l-album* and *L. comma*. Ent. Ann. 1870, p. 137. On the occurrence of the former insect near Canterbury, see F. J. Parry, Entom. iv. p. 355.

E. NEWMAN figures *L. albipuncta*. Ins. Hunter's Year Book, 1868, p. 6. He also (Entom. iv. p. 191) publishes the life-history of *L. impura*.

RILEY (First Report on Insects of Missouri, pp. 92, 93, figs. 35, 36) describes the habits of the "Stalk-borer" (*Gortyna nitida*, Guén.), an insect injurious to the potato in North America, and figures the larva and imago.

Luperina testacea. A black variety recorded by W. Jagger, Entomologist, iv. p. 305.

Mamestra. Von Nolcken (Stettin. entom. Zeit. pp. 268-272) discusses the characters of *M. leineri*, Freyer, *cervina*, Ev. (nec *cervina*, Germ., = *Crymodus exilis*, var.), and *milleri*, Von Nolck. He is uncertain whether to consider them local forms or good species.

Hydrilla palustris. On its occurrence in England see C. G. Barrett, Ent. M. Mag. vi. p. 113.

Dasycampa rubiginea. Larva described by J. Hellins. Ibid. v. p. 206.

Cirrhædia xerampelina is recorded by Birchall as new to Ireland. Entomologist, iv. p. 263.

Dianthæcia echii, Borkh. (*irregularis*, Hufn.). On its occurrence in England see A. H. Wratistaw (Entomologist, iv. p. 214), R. McLachlan (Ent. M. Mag. v. p. 220), and H. G. Knaggs (Ent. Ann. 1870, p. 138, front. fig. 2). Also figured by E. Newman, Ins. Hunter's Year Book, 1868, p. 8.

Dianthæcia compta. On its occurrence in Ireland, see E. G. Meek (Ent. M. Mag. vi. p. 66) and H. G. Knaggs (Ent. Ann. 1870, p. 139).

Dranthæcia capsophila. Lava described by H. Harpur Crewe (Entomologist, iv. p. 295). Whether distinct from *D. carpophaga*, see H. H. C. and E. Birchall (*l. c.* pp. 295, 312). Double-brooded, E. B. (*l. c.* p. 354).

Polia nigrocincta. On the transformations of this insect see C. S. Gregson (Ent. M. Mag. vi. pp. 64, 116) and H. Doubleday (E. M. M. p. 90).

ROGENHOFER records the observation of H. Berthold, that a sound is produced by the male of *Thecophora forea*, Tr., during flight, which he attributes to the presence of a pale scaleless groove existing on the hind wings. Rogenhofer remarks on the similar sounds produced by *Ageronia feronia* and *Halesidota speculalis*. Verh. zool.-bot. Ges. in Wien, 1869, pp. 918, 919.

Hadena xylinoides. W. Saunders publishes a full account of the larva of this species at different ages. Canad. Entom. ii. pp. 33, 34.

Hadena amica. Erschoff describes and figures an aberration of this species from St. Petersburg. Hor. Soc. Entom. Ross. vi. p. 72, pl. 3. fig. 3.

Chloantha hyperici. Snellen has published some notes on this insect, and has come to the conclusion that it has no characters to warrant its being placed in a new genus. Tijdschr. v. Ent. ser. ii. vol. iv. pp. 175-177, p. 75.

Calocampa exoleta. F. Buchanan White has observed that the two pairs of ventral prolegs are absent in the newly hatched larvæ of this insect, and are gradually developed subsequently. Ent. M. Mag. v. p. 204.

Calocampa vetusta. Huber describes and figures an aberration of this insect from St. Petersburg. Hor. Soc. Entom. Ross. vi. p. 133, pl. 3. fig. 5.

Alaria florida. W. Saunders publishes some notes on this species. Canad. Entom. ii. p. 6.

Heliothis armiger. J. Jenner Weir states that the larvæ are very injurious to tomatoes in Spain and Portugal, feeding inside the fruit. Proc. Ent. Soc. Lond. 1869, p. 28.

Anarta. A. S. Packard (Proc. Amer. Assoc. Adv. Sc. xvi. p. 156) states that *A. nigrolunata*, Pack., = *A. melanota*, Thunb., and that *A. bycicla*, Pack., = *A. melaleuca*, Thunb.

Micra parva. P. Mabille describes a variety of this insect, from Corsica, under the name of *rubefacta*. Ann. Soc. Entom. Fr. 1869, p. 56.

Plusia ni. Zeller's notes on this species, from 'Isis,' 1847, are translated, Ent. M. Mag. vi. p. 12. Figured Entom. Ann. 1870, front. fig. 3.

S. EBRARD states that he has kept a specimen of *Gonoptera libatrix* alive without food for upwards of three months. Ann. Soc. Ent. Fr. Séances, p. 76.

Catocala polygama, Guén. E. B. Reed describes the larva and pupa of this species. Canad. Ent. ii. pp. 30, 31.

Noctua (Chadaca) atosignata, Walk., is figured by Herrich-Schäffer, Samml. aussereurop. Schmett. ii. fig. 562.

New genera and species :—

Pucialia, Walker, Lepidoptera Heterocera, p. 25. Allied to *Acronycta*. Type *P. furcifera*, sp. n., p. 25, Limas.

Turbula, Walker, l. c. p. 26 (*Leucanidæ*). Type *T. petræa*, sp. n., l. c. hab. — ?

Arvaduca, Walker, l. c. p. 27 (*Glottulidæ*). Type *A. dotata*, sp. n., p. 28, Limas.

Monosca, Walker, l. c. p. 29 (*Glottulidæ*). Type *M. subnotata*, sp. n., p. 29, hab. — ?

Libunca, Walker, l. c. p. 35. Allied to *Rhuda*. Type *L. argentea*, sp. n., p. 35, Limas.

Buciara, Walker, l. c. p. 36 (*Xylinidæ*). Type *B. bipartita*, sp. n., l. c., hab. — ?

Ponometia, Herr.-Schäff. Corr.-Blatt. zool.-min. Ver. Regensb. 1868, p. 154. Allied to *Metoponia*, forehead with a conspicuous projection, rounded in front, and somewhat concave above; nervures 3 and 4 of hind wings with long stalks; 5 distinctly weaker. Type *P. ochricosta*, sp. n., p. 154, Cuba.

Deobriga, Walker, Lepidoptera Heterocera, p. 41 (*Plusidæ*). Type *D. chrysopasa*, sp. n., p. 41, hab. — ?

Capitaria, Walker, l. c. p. 42 (*Plusidæ*). Type *C. sublineata*, sp. n., p. 42, Limas.

Tafella, Walker, l. c. p. 42 (*Calpidæ*). Type *T. clavifera*, sp. n., p. 43, Limas.

Pincia, Walker, l. c. p. 43 (*Calpidæ*). Type *P. continua*, sp. n., p. 44, Limas.

Piana, Walker, l. c. p. 48 (*Homopteridæ*). Type *P. ligniplista*, sp. n., p. 48, Moreton Bay.

Burdria, Walker, l. c. p. 50 (*Hypogrammidæ*). Type *B. edemoides*, sp. n., p. 50, Hindostan.

Arabriga, Walker, l. c. p. 52 (*Ommatophoridæ*). Type *A. bimaculata*, sp. n., p. 52, Limas.

Gomora, Walker, l. c. p. 53 (*Ophiussidæ*). Type *G. argentipes*, sp. n., p. 54, Limas.

Tautobriga, Walker, l. c. p. 56 (*Focillidæ*). Type *T. euspila*, sp. n., Limas.

Tipra, Walker, *l. c.* p. 108. Allied to *Azatha*. Type *T. latipes*, sp. n., p. 109, Guiana.

Complutia, Walker, *l. c.* p. 59 (*Thermesiidæ*). Type *C. transversa*, sp. n., p. 59, Limas.

Sarunga, Walker, *l. c.* p. 110. Allied to *Hypernaria*. Type *S. calida*, sp. n., p. 110, Silhet.

Tamba, Walker, *l. c.* p. 94 (*Thermesiidæ*). Type *T. submicacea*, sp. n., p. 94, Benares.

Obdora, Walker, *l. c.* p. 95 (*Thermesiidæ*). Type *O. nigrilinea*, sp. n., p. 95, Benares.

Zinna, Walker, *l. c.* p. 95 (*Thermesiidæ*). Type *Z. nigripalpis*, sp. n., p. 96, Benares.

Tegteza, Walker, *l. c.* p. 104 (*Thermesiidæ*). Type *T. palpalis*, sp. n., p. 104, Bogotá.

RAMBUR (Cat. Syst. Lép. d'Andalusie, ii.) figures the following species of *Noctuidæ*, the greater part of which may be presumed to be new, in advance of the text, and mostly without generic names:—*pineti*, pl. 11. fig. 2; *andalusica*, f. 4; *Caradrina infusca*, f. 5; *ulicis*, f. 6; *Agrotis arenosa*, pl. 12. f. 1; *miroleuca*, f. 2; *xanthenos*, f. 3; *pectinicornis*, f. 4; *Heliothis nubigera*, f. 5; *Pocilia perloides*, pl. 13. f. 2; *extranea*, f. 2; *ostrina*, var., f. 3-5; *pura*, var., f. 6; *serrata*, pl. 14. f. 2, larva; *dejeanii*, f. 3, larva; *ivanii*, f. 4, larva; *extraria*, pl. 15. f. 1; *sanctiflorentis*, f. 3; *hospes*, f. 4; *polygramma*, f. 5; *chlorion*, f. 6; *erratricula* P. Hübn. pl. 16. f. 1, 2; *staudingeri*, pl. 18. f. 7; and *microglossa*, pl. 22. f. 1, 2.

HERRICH-SCHÄFFER (Samml. aussereurop. Schmett. ii.) figures the following new species of *Noctuidæ* under the provisional name of *Noctua*:—*N. novita*, f. 560; *N. abaris*, f. 561; *N. abdara*, f. 563; *N. abydos*, f. 565; *N. acamas*, f. 566; *N. acanthus*, f. 567; *N. acaste*, f. 568; *N. acca*, f. 569; *N. lyctorea*, f. 560; *N. lyra*, f. 571, all from Venezuela; *N. abortiva*, f. 564, Bengal.

HERRICH-SCHÄFFER (Cor.-Blatt zool.-min. Ver. Regensb. 1868) describes several new Cuban *Noctuidæ* belonging to genera unknown to him, but which he does not venture to name, for fear some of them may have been previously characterized. He indicates (p. 179) *characteria*, Cram., as the type of one, near *Glottula*; the others are the following:—*N. g. 1*, nr. *Athyrma*; *præusta*, n. sp., p. 180: n. g. 2, nr. *Basilodes*; *albigutta*, *fastigiata*, and *tristriga*, n. spp., p. 181: n. g. 3, nr. *Calpe*; *dispar*, n. sp., p. 181: n. g. 4, nr. *Plusia*; *purpurascens*, n. sp., p. 182.

He also (*l. c.* 1869) describes the following new species of *Noctuidæ* of doubtful genera from Cuba:—*bifida*, p. 154; *subapicalis*, p. 160.

Leucania adjuncta, Walker, Lepidoptera Heterocera, p. 68, Australia; *L. secta*, *L. latiuscula*, and *L. inconspicua*, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 148, Cuba.

Tapinostola insularis, Herr.-Schäff. *l. c.* p. 148, Cuba.

Polytela inelyta, Walker, Lepidoptera Heterocera, p. 27, hab. —?

Callierges divisa, Herr.-Schäff. *l. c.* p. 147, Cuba.

Laphygma præcipua, Walker, *l. c.* p. 29, and *L. compta*, p. 30, Limas; *L. experta*, p. 30, *L. innotabilis*, and *L. communicata*, p. 31, from Peru; *L. caudata*, p. 32, hab. —?

Prodenia pulchella, Herr.-Schäff. *l. c.* p. 116, Cuba.

Heliophobus submarginalis, Walker, *l. c.* p. 32, hab. — ?

Mamestra pomerana, Schulz. Stettin. entom. Zeit. 1869, p. 51, Pomerania; *M. milleri*, Von Nolcken, S. e. Z. p. 269, Stettin, both perhaps = *M. leineri*, Freyer, var.; *M. parvula*, Herr.-Sch. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 118, Cuba; *M. confundens*, Walker, Lepidoptera Heterocera, p. 69, Australia.

Celena trapezoides, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 153; *C. guttula* and *C. arnoides*, H.-S. *l. c.* p. 154, all from Cuba.

Perigea plumbago, Herr.-Schäff. *l. c.* p. 118, Cuba.

Agrotis cochrani, Riley (Prairie Farmer, 1866), First Rep. on Insects of Missouri, pp. 74-76, fig. 26, larva and imago, Michigan, Indiana, Missouri; *A. scandens*, Riley, Report, pp. 76-79, pl. 1, f. 5-7, United States; *A. jaculifera*, Riley, *l. c.* pp. 82, 83, pl. 1, f. 11, Illinois. Much of this is repeated by Packard, Guide to Study of Insects, pp. 304-314.

Agrotis ortonii, Packard, First Rep. Peabody Acad. Sci. p. 63, Upper Amazon?; *A. costalis*, Walker, Lepidoptera Heterocera, p. 69, and *A. transversa*, Walk. *l. c.* p. 70, from Australia; *A. apicalis*, *A. submuscosa*, and *A. grandirena*, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 149, Cuba; *A. iveni*, Huber, Hor. Soc. Entom. Ross. vi. p. 135, pl. 3, f. 6, St. Petersburg.

Agrotis vastator, Scott, Trans. Ent. Soc. New South Wales, ii. pp. 40-47 (= *A. spina*, Guén.?), Australia. This is the well-known "bougong" moth; and a full description of the moth and its habits are given.

Noctua kermesina, Mabille, Ann. Soc. Entom. Fr. 1869, p. 55, pl. 2, f. 10, Corsica.

Orthosia deprivata, Walker, Lepidoptera Heterocera, p. 71, Australia.

Anchoscelis bicolor, Walker, *l. c.* p. 70, Australia.

Orthodes majuscula, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 148, Cuba.

Xanthia moderata, Walker, *l. c.* p. 33, hab. — ?

Euplexia morosa, Walker, *l. c.* p. 33, hab. — ?; *E. mamestroides*, Walk. *l. c.* p. 71, Australia.

Hadena trichoma, Herr.-Schäff. *l. c.* p. 116, Cuba.

Xylina subcostalis, Walker, *l. c.* p. 34, Limas; *X. saxatilis*, Walk. *l. c.* p. 72, Australia.

Nystalea ignobilis, Walker, *l. c.* p. 34, hab. — ?

Anthæcia suturalis, Walker, *l. c.* p. 37, hab. — ?

Anarta acadensis, Bethune, Trans. Nova Scot. Inst. Nat. Sci. ii. 3, p. 84, fig., Nova Scotia.

Eumelia felina, *tigridula*, *pantherula*, and *uncinula*, Herr.-Schäff. *l. c.* p. 151; *E. apicalis*, H.-S. *l. c.* p. 152, all from Cuba.

Acontia antica and *A. polychroma*, Walker, *l. c.* p. 37; *A. antedens*, p. 38, hab. — ?

Erastria bryophiloides, Walker, *l. c.* p. 38, hab. — ?; *E. ? minima* (Gundl. in litt.), Herr.-Schäff. Corr.-Blatt. zool.-min. Ver. Regensb. p. 152, Cuba.

Galgula pectinata, Herr.-Schäff. *l. c.* p. 152, *G. contraria*, H.-S. *l. c.* p. 153, both from Cuba.

Xanthoptera obliquata, Herr.-Schäff. *l. c.* p. 152, Cuba.

Trothisa pallescens, Herr.-Schäff. *l. c.* p. 154; *T. cinnamomea*, H.-S. *l. c.* p. 155, Cuba.

Brephos hamadryas (Harr. MSS.), Scudder, Harris Correspondence, pl. 1. f. 4, United States; *B. californicus* and *B. melanis*, Boisduval, Ann. Soc. Entom. Belge, xii. p. 83, from California.

Palindia. Herrich-Schäffer (Corresp.-Blatt zool.-min. Vereins in Regensb. 1869) describes the following new species of this species from Cuba:—*P. modestula*, *striapuncta*, and *inferior*, p. 153; *P. reflexa*, p. 154.

Palindia geminata, Packard, First Rep. Peabody Acad. Sci. p. 64, Upper Amazons?; *P. scita*, Walker, Lepidoptera Heterocera, p. 39, hab. —?

Eriopus elegantulus, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 117, Cuba.

Eurhipia blandula, Herr.-Schäff. l. c. p. 180, Cuba.

Plusia modesta and *P. incompta*, Walker, Lepidoptera Heterocera, p. 40; *P. temperata*, p. 41, hab. —?; *P. egenella*, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 183; *P. collateralis*, *P. innata*, *P. incrassata*, and *P. binotula*, H.-S. l. c. p. 184, all from Cuba.

Gonitis apta, Walker, Lepidoptera Heterocera, p. 44, Peru; *G. ignobilis*, p. 45, hab. —?

Pantylidia canescens, Walker, l. c. p. 72, Australia.

Homoptera lucimargo, Walker, l. c. p. 45, *H. albiflos* and *H. niviplaga*, p. 46, *H. brevipennis*, p. 47, all from Limas; *H. viridisquama*, p. 47, hab. —?

Cænipeta celadon, Herr.-Schäff. Corr.-Blatt zool.-min. Vereins in Regensb. 1869, p. 154, Cuba; *C. ænescens*, Walker, Lepidoptera Heterocera, p. 48, hab. —?

Briarda semiplaga, Walker, l. c. p. 49, Limas.

Stictoptera penicillum, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 185, Cuba.

Bolina mesoleuca, Walker, Lepidoptera Heterocera, p. 51, hab. —; *B. leucomelana*, *rectifascia*, *parcicolor*, and *striolaris*, Herr.-Schäff. Corr.-Blatt zool.-min. Ver. Regensb. 1868, p. 186, from Cuba.

Spiramia hypopyroides, Walker, Lepidoptera Heterocera, p. 51, hab. —?

Hypopyra fusifascia, Walker, l. c. p. 53, Moreton Bay; *H. signata*, Walk. l. c. p. 90, Benares.

Hulodes umbrosa, Walker, l. c. p. 91, Benares.

Itonia zylina, Herr.-Schäff. Corr.-Blatt zool.-min. Vereins in Regensb. 1869, p. 157, Cuba.

Hemeroplanis apicigutta, Herr.-Schäff. l. c. p. 160, Cuba.

Ophisma amabilis, Walker, l. c. p. 91, Benares; *O. trajectory*, Walk. l. c. p. 108, Hindostan?

Athyra cordigera, Walker, l. c. p. 102, Bogotá.

Ophiusa albifimbria, Walker, l. c. p. 53, hab. —?

Poaphila basileuca, Walker, l. c. p. 54, Limas; *P. basigutta*, p. 55, hab. —?; *P. fuscipalpis*, Walk. l. c. p. 92, Benares.

Phurys bistriga and *P. helveola*, Herr.-Schäff. l. c. p. 155, Cuba.

Epidromia rotundata, Herr.-Schäff. l. c. p. 159, Cuba.

Argidia cubana, Herr.-Schäff. l. c. p. 158, Cuba.

Thermesia elegantula, Herr.-Schäff. l. c. p. 159, Cuba; *T. imbuta*, Walker, Lepidoptera Heterocera, p. 56, Limas; *T. decisa*, Walk. l. c. p. 92, and *T. constricta*, p. 93, Benares; *T. prompta*, Walk. l. c. p. 103, Bogotá; *T. flagrans*, Walk. l. c. p. 109, hab. —?

Selenis translineata, Walker, l. c. p. 93, Benares.

Hypernaria basisignata, Walker, l. c. p. 57, hab. — ?; *H. anisospila*, Walk. l. c. p. 58, Limas.

GEOMETRIDÆ.

MILLIÈRE (Ann. Soc. Linn. Lyon, xvi.) describes and figures the transformations of the following *Geometridæ*:—*Acidalia decorata*, p. 5, pl. 85. f. 5-7; *A. submutata* p. 7, pl. 85. f. 8-10; *Eubolia basoscheziata*, p. 17, pl. 86. f. 7-9; *Nyssia alpinaria*, p. 28, pl. 88. f. 4-8; *Gnophos ophthalmicata*, Led. (= *G. meyeraria*, Led.), p. 47, pl. 90. f. 1-3; *Camptogramma fluviata*, p. 49, pl. 90. f. 4-10; *Synapsia propinquaria*, p. 59, pl. 91. f. 2-5; *Pseudoterpna cytisaria*, p. 64, pl. 91. f. 8-10; and *Tephрина rippertaria*, p. 73, pl. 92. f. 5-8. He also describes the transformations of *Gnophos* (?) *respersaria*, p. 54, pl. 90. f. 12, 13; and of *Scodiona* (?) *agaritharia*, p. 62, pl. 91. f. 6, 7, and figures the larvæ and imagos. He describes the transformations of *Synapsia soritaria*, p. 57, pl. 91. f. 1, and of *Pseudoterpna coronillaria*, p. 68, pl. 91. f. 13, figuring the larvæ; and the transformations of *P. corsicaria*, p. 67, pl. 91. f. 11, 12, and figures the larva and pupa. He also figures and describes a curious variety of *Abraxas grossulariata*, from a photograph sent him by Doubleday, l. c. p. 53, pl. 90. f. 11.

MILLIÈRE (l. c. xvii.) describes and figures the transformations of the following *Geometridæ*:—*Nemoria pulmentaria*, p. 30, pl. 96. f. 9-12; *N. viridata*, p. 33, pl. 96. f. 13-15; *Tephрина murinaria*, W. V. (to which he refers as var. *cineraria*, Dup., *respersaria*, Borkh., *myosaria*, Esp., and *planata*, Vill.), p. 64, pl. 99. f. 14-16; *T. assimilaria*, p. 66, pl. 99. f. 7-10; *T. partitaria*, p. 68, pl. 99. f. 11-13; and *Acidalia degeneraria*, var. *meridiaria*, Mill., from S. France, p. 83, pl. 100. f. 13-16. He also describes and figures *Melanippe permixtaria*, H.-S., from S. France and Syria, p. 22, pl. 95. f. 15, 16; *Geometra volgaria*, Ev., p. 25, pl. 96. f. 1, which he compares with *G. smaragdaria*; *Argyris ommatophoraria*, p. 51, pl. 98. f. 1. He also describes and figures the larva and imago of *Fidomia pennigeraria*, p. 53, pl. 98. f. 3, 4; and of *Eubolia proximaria*, Ramb., p. 62, pl. 99. f. 5, 6 (to which he is inclined to refer *sorariata*, Dup., as a small var., instead of to *Carsia imbutata*, as Guénée has done). He also describes the transformations and figures the larva and imago of *Acidalia ostrinaria*, p. 70, pl. 100. f. 1, 2; *A. flaveolaria*, p. 75, pl. 100. f. 6, 7, and of *A. rubricata*, p. 80, pl. 100. f. 16, 17. He also describes the transformations and figures the larva and pupa of *A. straminata*, p. 78, pl. 100. f. 10, 11; and describes and figures the larva of *A. degeneraria*, p. 81, pl. 100. f. 12.

PACKARD (Guide to the Study of Insects) notices the following known *Geometridæ*:—*Angerona crocataria*, F., pp. 319, 320, pl. 8. f. 5, 5a; *Nematocampa filamentaria*, Guén., pp. 320, 321, pl. 8. f. 7, 7a; *Ennomos subsignaria*, Hübn., pp. 321-322, pl. 8. f. 6, fig. 248; *Zerene catenaria*, Dru., pp. 323-324, fig. 249, larva; *Anisopteryx vernata*, Peck, pp. 324-325, pl. 8. f. 9, 9a, 9b; *Cidaria diversilineata*, Hübn., p. 325, pl. 8. f. 10, 10a. He also states (Proc. Amer. Assoc. Adv. Sc. xvi. p. 156) that *Melanippe gothicata*, Guén., = *M. hastata*, Linn.

FRIVALDSKY (Proc. Hungar. Acad. 1865) figures and describes the following known species of *Geometridæ*:—*Chondrosoma fiduciaria*, Anker, p. 169, pl. 8. f. 6; *Hibernia ankeriaria*, Staud., p. 170, pl. 8. f. 7; *Acidalia pecharia*, Staud., p. 171, pl. 8. f. 8; *Lignyopectera fumidaria*, Hübn., p. 171, pl. 8. f. 9.

SCUDDER (Harris Correspondence) publishes Harris's descriptions of the

larvæ of the following *Geometridæ*:—*Ennomos philyria*, Harr. MSS. (= *E. tilia*, Harr. MSS., = *magnaria*, Guén.), and *Abraxas* (?) *ribearia*, Fitch, p. 320; *Geometra catenaria*, p. 321, and *Pericallia quercaria*, Harr. MSS. (= *Nematocampa filamentaria*, Guén.), p. 322, pl. 3. f. 5.

SNELLEN publishes notes on the larvæ &c. of *Acidalia promutata*, *Cidaria lignata*, and *C. ferrugata*. Tijdschr. voor Ent. 2nd ser. ii. pp. 221–226.

VON WALDERSDORFF describes the various larvæ which feed on *Actæa spicata*:—*Eupithecia actæata*, sp. n., Corr.-Blatt zool.-min. Vereins in Regensb. 1869, p. 82; *E. argillaceata*, H.-S. (*immundata*, Zell.), p. 87; and *Lobophora appensata*, Ev., l. c. He also notices the larvæ of *Eupithecia linariata*, l. c. p. 90.

E. NEWMAN (Entomologist, iv.) describes the larvæ of *Acidalia emutaria*, p. 190; *Eubolia lineolata*, p. 227; *Lobophora hexapterata*, p. 310; and *Emmlesia unifasciata*, p. 348.

Tetracis lorata, Grote. Minot describes the eggs and larvæ of this species. Canad. Entom. ii. p. 28.

Ennomos lunaria. J. Greene publishes some observations on breeding this insect. Entom. M. Mag. vi. p. 165. On the variation in the position of the lunule on the hind wings of specimens of the summer brood of this insect (*delunaria*, Hübner.), see Delamain, Ann. Soc. Entom. Fr. 1869, Séances, p. 11.

BELLIER DE LA CHAVIGNERIE (Ann. Soc. Entom. Fr. 1869, Séances, pp. 10, 11) states that two or more species have been confounded under the name of *Nyssia alpinaria*. The species figured as *N. alpinaria* by Millière is *N. bombycaria*, Boisd.

R. C. R. JORDAN records the fact of a very pale larva of *Amphidasis betularia* producing the dark variety (*carbonaria*) of the perfect insect. Entom. M. Mag. vi. p. 40.

ROGENHOFER describes an hermaphrodite of *Gnophos dilucidaria*, S. V. Verh. zool.-bot. Ges. in Wien, 1869, p. 918.

Acidalia. P. Mabille gives a list of the species of this genus observed by him in Corsica in 1865–1868, with remarks, and describes two new species. Ann. Soc. Entom. Fr. 1869, pp. 59–63.

On the occurrence of *A. herbariata* in London, see E. G. Meek, Entom. M. Mag. vi. p. 14.

H. G. KNAGGS (Entom. Ann. 1870, pp. 134, 135) states, on Zeller's authority, that *A. manciunata*, Knaggs (= *veterata*, Gregs.) is = *pinguedinata*, Zell. He thinks that *A. asbestaria*, Zell., which Zeller considers to be a variety of the same insect, is distinct.

Hematopis grataria, Fabr. Riley, First Rep. on Insects of Missouri, p. 179, pl. 2. f. 18–21, describes and figures the transformations of this insect.

Abraxas grossulariata. The larva will eat *Sedum telephium*, according to H. Harpur Crewe, Entomologist, iv. p. 260.

Eupithecia. P. Mabille (Ann. Soc. Entom. Fr. 1869, pp. 64–77) publishes the second part of his monograph of the *Eupitheciæ* of Corsica, and describes the larvæ of *E. centaureata*, *E. linariata*, *E. merinata*, Guén. (which he thinks is probably distinct from *E. perfidata*, Mn.), *E. constrictata*, *E. cocciferata*, and *E. dodoneata*. He gives the following synonymic notes:—*E. scopariata*, Ramb., = *E. multiflorata*, Mill. β, *guinardiniaria*, Boisd.; *E. ericeata*, Ramb.,

=*E. expressaria*, H.-S.; *E. pumilata*, Hübn., vars. *globulariata*, Mill., and *pauvillata*, Boisd. He also describes *E. innotata*, var. *meridionalis*, Mab., and *E. cocciferata*, var. *semitinctata*, Mab.

GOOSSENS (Ann. Soc. Entom. Fr. 1869, pp. 515-520, p. 11) describes and figures the larvæ of the following eight species of *Eupithecia*:—*E. nepetata*, Mab.; *E. debiliata*; *E. tripunctaria*; *E. goossensiata*, Mab.; *E. oxydata*; *E. achilleata*, Mab.; *E. assimilata*; and *E. subnotata*.

Eupithecia consignata has been bred by E. Birchall and H. Harpur Crewe, and the transformations are described by the former. Entomologist, iv. pp. 259-260.

Collix sparsata. Larva described by H. Harpur Crewe, l. c. p. 253.

Cidaria populata. Transformations described by J. Traill, ibid. p. 200.

Cidaria russata and *immanata*. Remarks on these forms by G. T. Porritt and H. Doubleday. Ibid. pp. 353, 362.

Cidaria dilutata. Erschoff figures and describes an aberration of this insect from St. Petersburg. Hor. Soc. Entom. Ross. vi. p. 72, pl. 3. f. 4.

Lithostege. Staudinger refers *L. asinata*, Freyer, and *L. coassaria*, Boisd., to the same species, and states that *L. duplicaria*, Hübn., and *L. multiplicata*, Staud., are probably only aberrations of the same. Stettin. entom. Zeit. 1869, pp. 91, 92.

New genera and species :—

Arnissa, Walker, Lepidoptera Heterocera, p. 76 (*Enoehromidæ*). Type *A. simplex*, sp. n., p. 77, Australia.

Obila, Walker, l. c. p. 61 (*Larentidæ*). Type *O. dispar*, sp. n., l. c. p. 61, Limas, Honduras.

Æsymna, Walker, l. c. p. 80. Allid to *Collix*. Type *Æ. stipaturia*, sp. n., p. 80, Australia.

RAMBUR (Cat. Syst. Lép. d'Andalusie, ii.) figures the following species of *Geometridæ*, mostly without generic names, in advance of the text, the greater part of which may be presumed to be new :—*atlanticaria*, pl. 14. fig. 5; *lutosata*, pl. 15. f. 7; *albeolata*, pl. 16. f. 3; *alhambra*, f. 4; *concoloraria*, f. 5; *rufomixtata*, f. 6; *dentatolineata*, f. 7; *Ennomos dryadaria*, pl. 17. f. 1; *plusiaria*, f. 2; *pumicaria*, f. 3; *rubentaria*, f. 4; *granataria*, f. 5; *rhizolitharia*, f. 6; *alfacariata*, pl. 18. f. 1; *Eupithecia perfidata*, f. 2; *miserata*, f. 3; *informata*, f. 4; *attenuata*, f. 5; *callunata*, f. 6; *bæticaria*, pl. 19. f. 1; *Ayea cacuminaria*, f. 2; *crenulata*, f. 3, 4; *catenulata*, f. 5; *unicolaria*, f. 6; *nevadaria*, f. 7; *cauteriata*, pl. 20. f. 1; *discoidaria*, f. 2, 3; *sanguinaria*, f. 4; *consecraria*, f. 5, 6; *bipartita*, f. 7; *herpetiaria*, pl. 21. f. 1; *hesperidata*, f. 2; *rubellata*, f. 3; *compata*, f. 4; *prolongata*, f. 5; *mustellata*, f. 6; *eriguata*, f. 7; *consignata*, f. 8; *fulvocinctata*, pl. 22. f. 3; *sandosata*, f. 4; *iberaria*, f. 5; *griphodeata*, f. 6; *hispalata*, f. 7; *renulata*, f. 8; and *transmutata*, f. 9-12.

Chærodes bipunctaria, Packard, First Rep. Peabody Acad. Sci. p. 64, hab. —?

Idiodes inornata, Walker, Lepidoptera Heterocera, p. 74, Australia.

Cyclidia (?) *decolorata*, Walker, l. c. p. 96, Benares.

Epione mustelinaria, Pickard, l. c. p. 64, Upper Amazon?

Azelina inordinata, Walker, l. c. p. 74, and *A. biplaga*, Walker, l. c. p. 75, both from Australia.

Passa pygæroides, Walker, l. c. p. 75, Australia.

- Monoctenia decora*, Walker, *l. c.* p. 76, Australia.
Tephrosia scitiferata and *T. fulgurigera*, Walker, *l. c.* p. 77, from Australia.
Ophthalmodes mundata, Walker, *l. c.* p. 97, Benares.
Boarmia contributaria, Walker, *l. c.* p. 60, N. America; *B. plagiaria*, Walker, *l. c.* p. 61, hab. —?
Nemoria faustinata, Millière, Ann. Soc. Linn. Lyon, xvii. p. 26, pl. 96. f. 2-8 (described and figured in all its stages), Barcelona.
Thalassodes fimbriaria, Walker, *l. c.* p. 97, and *T. indeterminata*, p. 98, both from Benares.
Aptodes rubivora, Riley, First Rep. on Insects of Missouri, pp. 139, 140, pl. 2. f. 25, Illinois.
Almodes repleta, Walker, *l. c.* p. 111, Silhet.
Anisodes congruaria, Walker, *l. c.* p. 98, Benares.
Drapetodes bilineata, Walker, *l. c.* p. 98, Benares.
Asthena vexata, Walker, *l. c.* p. 78, Australia.
Acidalia (?) *puncticosta*, Walker, *l. c.* p. 105, Bogotá; *A. allardiata*, Mabille, Ann. Soc. Entom. Fr. 1869, p. 59, note, Algeria; *A. atromarginata*, Mab. *l. c.* p. 61, pl. 2. f. 3; *A. honestata*, Mab. *l. c.* p. 62, pl. 2. f. 8, both from Corsica; *A. isabellaria*, Millière, Ann. Soc. Linn. Lyon, xvii. p. 43, pl. 97. f. 3, 4, Spain; *A. inesata*, Mill. *l. c.* p. 72, pl. 100. f. 3-4; *A. belemiata*, Mill. *l. c.* p. 76, pl. 100. f. 8, 9, both from Barcelona.
Tephrosia repandaria, Walker, *l. c.* p. 105, Bogotá.
M. acararia comptata, Walker, *l. c.* p. 78, Australia; *M. posticaria* and *M. solitaria*, Walker, *l. c.* p. 99; *M. acutaria*, p. 100, all from Benares.
Tephrosia scotosiaria, Walker, *l. c.* p. 100, Benares; *T. binavata*, Mabille, Ann. Soc. Entom. Fr. 1869, p. 56, pl. 2. f. 1, 2, Corsica; *T. buffonaria*, Millière, Ann. Soc. Linn. Lyon, xvi. p. 40, pl. 89. f. 2, Hyères.
Liodes homochromata, Mabille, Ann. Soc. Entom. Fr. 1869, p. 57, pl. 2. f. 9, Corsica.
Eusarca terrestraria, Lederer, Hor. Soc. Entom. Ross. vi. p. 90, pl. 5. f. 9, Astrabad.
Zerene taicommaria, De l'Orza, Lépid. Japon. p. 48, Japan.
Larentia approximata and *L. gelidata*, Walker, *l. c.* p. 79, Australia.
Eupithecia acteata (Herr.-Sch. MSS.), Waldersdorff, Corresp.-Blatt. zool.-min. Vereins in Regensb. 1869, pp. 82-87, described in all its stages, Regensburg; Speyer (eadem?), Stettin. entom. Zeitung, 1869, pp. 395-400, Danzig and Bavaria; *E. nepetata*, Mabille, Ann. Soc. Entom. Fr. 1869, p. 68, pl. 2. f. 4, and *E. achilleata*, Mab. (= *millefoliata*, Rössl., var.?), *l. c.* pp. 70, 79, pl. 2. f. 5. described in all their stages; *E. lentiscata*, Mab. *l. c.* p. 75, all from Corsica; *E. goossensiata*, Mab. *l. c.* p. 78, France; *E. sextiata*, Millière, Ann. Soc. Linn. Lyon, xvi. p. 42, pl. 89. f. 5, Aix in Provence; *E. destructata*, Walker, Lepidoptera Heterocera, p. 80, Australia.
Melanippe bulgariata, Millière (= *M. permixtaria*, var., Led. Wien. Ent. Mon. vii. p. 41), Ann. Soc. Linn. Lyon, xvii. p. 23, pl. 95. f. 17, 18, Bulgaria.
Erateina specularis, Walker, *l. c.* p. 62, hab. —?

PYRALIDÆ.

C. S. GREGSON, with special reference to the *Pyralidæ*, objects to the practice of naming insects after their supposed food-plants. Entom. M. Mag. vi. p. 116.

PACKARD (Guide to the Study of Insects) notices the following species of this family:—*Hypera humuli*, Harr., pp. 327, 258, fig. 250; *Pyrallis farinalis*, Harr. (sic.), p. 328; *Asopia costalis*, F., p. 328, fig. 251; *Aglossa cuprealis* (?), p. 329.

MILLIÈRE (Ann. Soc. Linn. Lyon, xvi.) describes and figures *Botys culturalis*, Staud., p. 11, pl. 85. f. 14, and *B. (Pyrausta) trimuculalis*, St., p. 4, pl. 85. f. 4. He also describes and figures the transformations of *Herminia crinalis*, p. 12, pl. 86. f. 1-3, and *Botys asinalis*, p. 15, pl. 86. f. 4-6. He also (l. c. xvii.) figures *Stenia adelalis*, Guén., p. 14, pl. 95. f. 1, 2, and *Metasia olbiensis*, Guén., p. 15, pl. 95. f. 3, 4; and figures and describes *Nodaria hispanalis*, Guén., p. 18, pl. 95. f. 8.

SCUDDER (Harris's Correspondence, p. 322) publishes Harris's descriptions of the larvæ of *Hypera humuli*, and *Botys* (?) sp. pl. 4. f. 18 (= *Pionea eunusalis*, Walk.).

F. B. WHITE publishes notes on the food of the larvæ of *Scoparia* and *Crambus*. Entom. M. Mag. vi. pp. 143, 144.

Herminia cribralis. Figured and described in all its stages by Vollenhoven, Sepp's Nederl. Insecten, 2nd ser. ii. pp. 152-156, pl. 35. f. 1-15.

Pyrallis glaucinalis. Transformations described by W. Buckler, Entom. M. Mag. vi. pp. 111, 112.

Acentropus. Speyer (Stettin. entom. Zeitung, 1869, pp. 400-406) treats of the structure of this genus in minute detail. He considers it undoubtedly Lepidopterous, and proposes for it a new family (*Acentridæ*), which he puts between the *Botyridæ* and *Chilonidæ*. He regards *Acentropus* as a survivor of the original stock of the *Lepidoptera*, and thinks that it is most probable that the *Lepidoptera* have become developed from aquatic ancestors than that *Acentropus* has been developed from the terrestrial *Lepidoptera*.

Acentropus. Von Nolcken (Stettin. entom. Zeitung, 1869, pp. 275-283) discusses the various species of *Acentropus*, and gives the following list of the known forms, 3 of which at least he considers to be well-established species at present:—1. *A. niveus*, Oliv., Paris, ♀ unknown; 2. *A. hansonii*, Steph., ♀ winged; 3. *A. garnonsii*, Curt., ♀ wingless (or with rudiments of wings?); 4. *A. badensis*, n. sp., Lake of Constance, ♀ with short rudiments of wings; 5. *A. germanicus*, n. sp., Stralsund, ♀ unknown; 6. *A. newæ*, Kol., St. Petersburg, in the Neva, ♀ unknown; *A. latipennis*, Möschl., Sarepta, both sexes perfectly winged: a well-marked species in colour, shape of wings, &c.

Rhodaria sanguinalis. E. Newman copies Millière's account of the life-history of this species. Entomologist, iv. p. 288.

Lemiodes pulveralis. On its occurrence in Britain see E. G. Meek, Entom. M. Mag. vi. p. 141; and H. G. Knaggs, Entom. Ann. 1870, pp. 140, 141.

VON NOLCKEN (Stettin. entom. Zeitung, 1869, pp. 272-275) discusses the various figures of *Botys ciliaris*, Hübn., to which he refers *ciliaris* of Treitschke and Von Heinemann, *venosalis*, Lienig, and *virgata*, Reutti, as synonyms: *ciliaris* H.-S., is said to be = *Chilo* (*Calamochrous*, Led.) *acutellus*, Ev.; and *Nascia ciliaris* of Wood and Curtis is suspected by Lederer to be a var. of *Chilo phragmitellus* [?].

Botys verticalis. C. Healy describes the pupation of this species. Entomologist, iv. p. 296.

Crambus fascelinellus. On the earlier stages of this insect see C. G. Barrett, Entom. M. Mag. vi. pp. 144, 145.

Crambus myellus. On its occurrence in Britain see Proc. Ent. Soc. Lond. 1868, pp. 40, 49.

Scoparia. H. G. Knaggs (Entom. M. Mag. v. p. 291) publishes a paper on this genus, illustrated by a plate of all the British species, and a series of enlarged woodcuts as a key to the markings of the wings, by due attention to which he thinks the separation of the species will be easy. He adds, "The bulk of European *Scopariæ* affect high altitudes and boreal latitudes; and it is therefore but natural to expect that our mountains and northern districts will yield many species as yet unsuspected to occur here—some perhaps altogether new."

Pempelia formosella. Larva described by E. Newman, Entomologist, iv. p. 194.

Nephopteryx angustella. Larva described by W. Buckler, Entom. M. Mag. vi. p. 143.

Galleria cereana, Fabr. Riley notices the habits and transformations of this species, and figures it in all its stages. First Rep. on Insects of Missouri, pp. 166, 167, fig. 92.

Hypata, n. g., Walker, Lepidoptera Heterocera, p. 81 (*Crambidae*). Type *H. moderatella*, sp. n., l. c. p. 82, Australia.

¹. New species :—

mea distractalis, Walker, l. c. p. 73, Australia.

yalis sodalis, Walker, l. c. p. 60, N. America.

Hydrocampa inornata, Walker, l. c. p. 105, Bogotá.

Acentropus badensis, Lake of Constance; *A. germanicus*, Stralsund. Von Nolcken proposes these names (Stettin. entom. Zeitung, 1869, p. 283) for some doubtfully distinct forms noticed by him in a preceding part of the same article.

Stenia canuisalis, Millière, Ann. Soc. Linn. Lyon, xvii. p. 16, pl. 95. f. 5-7, Cannes.

Botys disjunctalis, Walker, l. c. p. 96, Benares; *B. præpetalis*, Lederer, Hor. Soc. Entom. Ross. vi. p. 90, pl. 5. f. 11, Astrabad; [*B.?*] *vespertinalis*, Rambur, Cat. Syst. Léop. d'Andalusie, ii. pl. 15. f. 2, Andalusia.

Ehulea gavisalis, Walker, l. c. p. 73, Australia.

Stenopteryx corticalis, Walker, l. c. p. 73, Australia.

Eudorea staudingeralis, Mabilie, Ann. Soc. Entom. Fr. 1869, p. 53, pl. 2. f. 6, Corsica.

Pempelia grossulariæ, Packard, Guide to the Study of Insects, p. 331, fig. 254; Riley, First Rep. on Insects of Missouri, pp. 140-142, fig. 79, pl. 2. f. 17, North America.

Epischia cretaciella, Mann, Verhand. zool.-bot. Ges. 1869, p. 380, Dalmatia, Asia Minor.

Myelois flagella, Lederer, Hor. Soc. Entom. Ross. vi. p. 91, pl. 5. f. 12, Astrabad; *M. lutsignella*, Mann, Verhand. zool.-bot. Ges. 1869, p. 381, Dalmatia.

Acrobasis subcultella, Walker, l. c. p. 81, Australia.

TORTRICIDÆ.

PFYERIMHOFF (Bull. Soc. d'Hist. Nat. de Colmar, 1867-1868, pp. 35-38)

gives the following indications with reference to species of *Tortricidæ* formerly described by him as new:—*Sericoris obesana*=*antiquana*, H.-S.; *castaneana*=*upupana*, Tr.; *Coccyx giganteana*=*fimbriana*, Haw.; *ephippiphorana*=*argyrana*, Hübn.; *stelliferana*=*scopariana*, H.-S.; *squmana*=*splendidulana* Guén.; *confusimicana*=*pygmaæana*, Hübn.; *latifasciana*=*vacciniana*, Zell.; *immetallana*=*nanana*, var. ?; *concretana*=*proximana*, H.-S.; *suasana*=*nigricana*, H.-S.; *incognatana*=*rubiginosa*, H.-S. The genus *Orchemia*, Pey., is to be suppressed: the two species *O. gallicana* and *O. diana* are varieties of *Stigmonota germanana*, Hb.

PACKARD (Guide to the Study of Insects) mentions the following species of *Tortricidæ* among others:—*Lozotænia rosaceana*, Harr., p. 335, pl. 8. f. 12, 12 a; *Anchylopera fragariæ*, Riley, pp. 340, 341, fig. 261.

H. G. KNAGES records the capture in England by J. B. Hodgkinson of *Dicrorampha plumbana*, Scop. (= *zacchana*, Tr., = *ulicana*, Guén., nec auct. angl., = *blepharana*, H.-S.), Entom. M. Mag. vi. p. 66; Entom. Ann. 1870, pp. 142, 143. He also states (Ent. Ann. p. 135) that *Peronea potentillana*, Cooke, = *P. comariana*, Zell.

SNELLEN publishes notes on the larvæ &c. of *Tortrix costana* and *Coptoloma janthinana*. Tijdschr. voor Ent. 2nd series, ii. pp. 227, 228.

T. DE GREY records the capture of the true *Hypermezia augustana* in England, and states on Doubleday's authority that the insect previously called *augustana* in this country = *excæcana*, H.-S., and probably also = *alciana*, Linn.

Tortrix rileyana, Grote. Riley describes and figures the transformation (Type) of this insect. First Report on Insects of Missouri, pp. 153, 154, fig. 1. pl. 2. f. 3, 4.

Tortrix forsterana. Vollenhoven describes and figures the transformations of this species. Sepp's Nederl. Ins. 2nd ser. ii. pp. 162-171, pls. 37, 38. f. 1-30.

SCUDDER (Harris Correspondence, p. 324) publishes Harris's description of the larva of an undetermined American species of *Tortrix*.

Coccyx splendidula has been taken in Ireland by H. Marsden. Entom. M. Mag. vi. p. 66.

Steganoptycha neglectana and *dealbana*. On the characters of these species see Zeller, Entom. M. Mag. vi. pp. 49, 50, note.

Carpocapsa pomonella, Linn. Habits fully described, and the insect figured in all its stages, by Riley, First Rep. on Insects of Missouri, pp. 62-67.

Some remarks by F. Francis on the damage caused to apples by this insect are published in the 'Entomologist,' iv. p. 330, extracted from the 'Field.'

Sciaphila ictericana. H. W. de Graaf has written a long descriptive and synonymic paper on this insect (Tijdschr. v. Ent. ser. 2. vol. v. pp. 95-105), and gives the synonymy as follows:—*ictericana*, Haw., = *longana*, Haw., = ? *lutosana*, Hübn., = *capillana*, Guén., = *loerwiana*, Zell.; varieties, *stratana*, Zell., *insolatana*, Herr.-Schäff.; *luridalbana*, Herr.-Schäff.

Sciaphila communana, H.-S. On its occurrence in England, see F. Bond, Proc. Ent. Soc. Lond. 1869, p. 10.

VON NOICKEN (Stettin. entom. Zeitung, 1869, pp. 283, 284) refers *Euchromia centrana*, H.-S., to *Tortrix inopiana*, Haw., and later English authors.

Eupæcilia. C. G. Barrett (Entom. M. Mag. v. pp. 244-246) points out the distinctive characters of *E. subroseana*, Haw., *heydeniana*, H.-S., *ciliella*, Hübn.,

and *degreyana*, MacL. He also (*l. c.* vi. p. 113) describes a larva, supposed to be that of *E. ambiguana*, but which he failed to rear to the perfect state.

J. MANN (Verhandl. zool.-bot. Ges. 1869, p. 383) states that *Conchylis sodaliana*, Haw., is not identical with *amandana*, H.-S., as supposed by Herrich-Schäffer.

V. GREDLER describes *C. ambiguella*, Hübn., = *roserana*, Fröl. (Treitschke), in full. Ibid. pp. 511, 512.

Sperchia, n. g., Walker, Lepidoptera Heterocera, p. 83 (*Tortricidæ*). Type *S. intractana*, sp. n., p. 83, Australia.

New species :—

Penthina vitivora, Packard, Guide to the Study of Insects, p. 336, pl. 8. fig. 22; Riley, First Rep. on Insects of Missouri, pp. 133–136, pl. 2. f. 29, 30; *P. fullerea*, Riley, Journ. of Horticulture, Boston, Oct. 1868, fig., all from the United States.

Dichelia vicariana, Walker, *l. c.* p. 82, Australia.

Tortric. fimbriana, Walker, *l. c.* p. 101, Benares.

Lozotenia fragariana, Packard, Guide to the Study of Insects, p. 335, Maine; *L. gossypiana*, Packard, *l. c.* pp. 335, 336, hab. — ?

Anchylopera fragariæ, Walsh and Riley, Riley's First Rep. on Insects of Missouri, pp. 142, 143, fig. 80, pl. 2. f. 26, 27; *A. vacciniæ*, Packard, Guide to the Study of Insects, pp. 338–340, pl. 8. f. 21, both from United States.

psia staticæana, Millière, Ann. Soc. Linn. Lyon, xvii. p. 20, pl. 95. f. 9-irred and described in all its stages, Cannes.

TINEIDÆ.

STANTON'S 'Tineina of Southern Europe' is by far the most important publication on this group of *Lepidoptera* which has appeared in the course of 1869. It contains a reprint of all the observations and original descriptions of new species published by authors who have written on this subject, and is divided into 13 chapters as follows:—1. Zeller's observations in Italy and Sicily; 2. J. Mann's captures in South Austria, Italy, and the Italian Islands; 3. Staudinger's observations in Iceland and Spain, preceded by some unpublished extracts from letters addressed by him to Stainton; 4. Millière's observations in the South of France, with descriptions of several new species; 5. Captures by Rev. H. Burney at Mentone, by Rosenhauer and Hoffmann-segg in Andalusia, by Erber in Dalmatia and in the island of Syra, and by D. Reynas (with descriptions of new species by Delaharpe) in Sicily; 6. Observations and captures made by the author in Italy and in the South of France; 7. A résumé of the new species from S. Europe, noticed by Herrich-Schäffer, and of 6 new species of *Butalis* described by Zeller; 8. A résumé of the species from the South of France noticed by Godart and Duponchel; 9. A similar notice of those recorded by Costa and Ghiliani, the former with numerous and valuable critical notes; 10. A notice of the South-European species described by Linné, Fabricius, and Scopoli; 11. A reprint of the notice of *Antispila rivillei*, Staint., from the 'Mém. de Mathém. et de Physique présentés à l'Acad. Roy. des Sciences,' i. p. 177 (1750), to which Stainton's frontispiece refers; 12. A geographical; and 13, a botanical index of all the species noticed.

STANTON (Tineina of Southern Europe) describes the larvæ of *Hypono-* 1869. [VOL. VI.]

meuta egregiellus, Dup., p. 208; *Prays oleellus*, Fonsc., p. 209; *Butalis dorycniella*, Mill., p. 212; *Acrolepia vesperella*, Zell., p. 213 (it appears that *A. smilaxella*, Mill., is identical with this species); *Stigmatophora grabowiella*, Staud., p. 214; *Zelleria oleastrella*, Mill., p. 215; *Depressaria rutana*, Fabr., p. 217; *D. nodiflorella*, Mill., p. 218; *Gelechia figulella*, Staud., p. 219; *G. halymella*, Mill., p. 220; *Ypsolophus trinotellus*, H.-S., p. 222; *Acrolepia solidaginis*, Staud., p. 223; *Zelleria phillyrella*, Mill., p. 224; *Nepticula catharticella*?, Staint., p. 229; *Anchinia laureolella*, p. 232; *Coleophora vicinella*, Zell., p. 234. In many instances descriptions of the perfect insects accompany those of the larvæ; and several undetermined larvæ are also described.

STANTON notes the occurrence of winged females of *Taleporia pubicornis* in Germany (Entom. Ann. pp. 1, 2). He notices the habits of the larva of *Tinea vinculella*, l. c. p. 2. He states that his *Nemophora carteri* is a fictitious species, formed of the fore wings of one species and the hind wings of another, l. c. pp. 2, 3. He also treats of the confusion in the synonymy of *Swammerdamia cæsiella*, Hüb., and the allied species. He describes a variety of *Depressaria costosa*, and speaks of a specimen of *D. nanatella*? in his collection which he thinks may be a distinct species, l. c. p. 5. He records De Grey's opinion that *D. rhodochrella* is only a variety of *D. subpropinquella*, and details Von Heinemann's observations on this species, l. c. pp. 5, 6, and notices Snellen's discovery of the larva of *D. ultimella*, l. c. p. 8. He records the discovery of the larva of *Cosmopteryx lienigiella*, l. c. pp. 10-16. He also describes 5 species of *Tineina* new to Britain:—*Depressariopsis cnicella*, Tr.; *Gelechia muscosella*, Zell.; *Bucculatrix artemisiella*, W.; *Nepticula minusculella*, H.-S.; and one new species, l. c. pp. 156-159. He figures *Gracilaria imperialella*, l. c. front. f. 1, and the anterior wing of *G. hoffmannsiella*, l. c. f. 1 a.

ERNST HOFMANN discusses the habits of the larvæ of the *Tineina*, with special reference to the case-bearing species of the genera *Tinea*, *Incurvaria*, *Nematosis*, *Adela*, and *Coleophora*. Abhandl. d. naturhist. Gesellsch. in Nürnberg, iv. pp. 55-63.

VON NOLCKEN (Stettin. entom. Zeitung, 1869, pp. 284-287) points out the differences between *Laverna festivella*, W. V., and *L. laspeyrella*, Hüb. To the latter species he refers *festivella* of Zeller, but not of other authors. He also (l. c. pp. 287-289) reviews Stainton's paper on the European species of *Cosmopteryx* (Tr. Ent. Soc. Lond. 3rd ser. i.), and gives the following corrected list of species:—1. *lienigiella*, Staint., Zell., H.-S.; 2. *scribaella* (Heyd.), Zell., H.-S.; 3. *eximia*, Haw., Steph., Staint., = *drurella*, Staint., Frey, Fologne, = *druryella*, H.-S.; 4. *schmidiella*, Frey (mentioned by H.-S. under *druryella*); 5. *druryella*, Zell., Frey, = *orichalcea*, Staint. (mentioned by H.-S. under *scribaella*). He also (l. c. p. 289) notes the identity of *Epischmia lafauryella* of the Continent (described Ann. Soc. Entom. Fr. 18 2, p. 189, pl. 7. f. 1) with *E. farrella*, Curt.

SCUDDER publishes Harris's description of the larva of *Porrectaria*, 2 sp. Harris Correspondence, p. 323, f. 46.

Eta compta, Clem. Riley describes the transformations of this species in full, and figures the imago. First Rep. on Insects of Missouri, pp. 151-153, pl. 2. f. 22, 23, Southern United States.

O. HOFMANN records his observations on *Solenobia triquetella* and *pineti* (Stettin. entom. Zeitung, 1869, pp. 299-303). He believes that the food of

the larvæ consists partially of dead animal matter. In some broods both sexes occur, the number of males greatly predominating, while in others only females are to be met with. He believes that if from any cause coition does not take place, eggs are deposited from which only parthenogenetic females are produced. Finally he details the observations which he thinks it desirable to make on the habits of these species, to direct other observers in what direction to prosecute their inquiries.

H. MARSDEN (Entom. M. Mag. vi. pp. 91-94) publishes his observations on breeding *Solenobia pomonæ* and *Xysmatodoma melanella*, from which it would appear that the former insect is an apterous form of the female of the latter.

Tinea pelliionella. N. J. Davies has found the larvæ of this insect feeding on cobwebs. Entom. M. Mag. vi. p. 41.

C. HEALY publishes some observations on the economy and pupation of *T. biselliella*. Entomologist, iv. p. 194.

Yponomeuta padella. Its pupation is described by C. Healy. Ibid. p. 196.

Edia pusiella, Fabr. Figured and described in all its stages by Millière. Ann. Soc. Linn. Lyon, xvii. p. 45, pl. 97. f. 5-9.

Anesychia echiella. On its capture in Britain by Mr. Button, see E. Newman, Entomologist, iv. p. 353.

Hemicostoma lobella. Transformations described and figured by Vollenhoven, Sepp's Nederl. Ins. 2nd ser. vol. ii. pp. 157-161, pl. 36. f. 1-10.

pressaria. Zeller (Stettin. entom. Zeitung, 1869, pp. 39-46) discusses specific distinctness or otherwise of *D. nervosa* and *D. ultimella* at great length, quoting from and criticising the observations of a large number of observers in different parts of Europe on these insects and their transformations. He is inclined to think that Stainton's *D. nervosa* is distinct from the species known by that name on the Continent.

D. enicana has been bred by H. Moncreaff at Southsea. Entomologist, iv. p. 355.

Gelechia atrella. Stainton publishes some notes on its earlier stages. Entom. M. Mag. vi. p. 36.

ZELLER remarks on the characters of *Gel. desertella*, *umbrosella*, and *affinis*. E. M. M. vi. p. 45, note.

Nothris verbascella. C. G. Barrett publishes notes on the earlier stages of this insect. Ibid. vi. p. 163.

Coleophora. O. Hofmann (Stettin. entom. Zeitung, 1869) enumerates the various species of *Coleophora* which feed on *Vaccinium*, and describes in their various stages *C. vitisella* Gregs., Staint. (pp. 111-114), *C. vacciniella*, H.-S. (pp. 114-119), and one new species. He also describes (pp. 187, 188) a fourth *Vaccinium*-feeder, *C. viminetella*, var. *idæella*, Hofm., and, finally, (pp. 188-190) compares the affinities of all the *Vaccinium*-feeding species, with reference to Darwin's theories.

Elachista laticomella. Transformations described and figured by Vollenhoven, Sepp's Nederl. Ins. 2nd ser. vol. ii. pp. 172-178, pl. 39. f. 1-9.

RONDANI describes the larva of *Tischeria complanella*, which is liable to the attacks of one of the *Chalcididæ* (*Tineophaga tischeriæ*, Rond.), Ann. Soc. Nat. Modena, iii. pp. 20-23, pl. 4. An abstract of this paper is published Ann. & Mag. Nat. Hist. 4th series, iv. p. 359.

Cemiostoma scitella. On the damage caused to fruit-trees at Rhoden by

the mining larvæ of this insect, see A. Speyer, Stettin. entom. Zeitung, 1869, p. 81.

New genera and species :—

Sagora, Walker, Lepidoptera Heterocera, p. 101 (*Tineidæ*). Type *S. rutilella*, sp. n., p. 101, Benares.

Paradoxus * (Millière in litt.), Stainton, Tin. South. Eur. p. 167. Allied to *Zelleria*, *Swammerdamia*, and *Anarsia*. Capilli hirsute, epistoma smooth. Ocelli wanting. Antennæ shorter than the fore wings, of moderate thickness. Haustellum of moderate length, labial palpi porrect, strongly thickened with scales, second joint long, squamate-fasciculate, third joint entirely concealed. Fore wings long, subfalcate, moderately ciliated; hind wings lanceolate, with a hyaline basal foveola. Type *P. osyridellus*, sp. n. (Mill. in litt.), Staint. l. c. p. 168, fig., Cannes, Dalmatia, Malaga.

Urodeta, Staint. Tin. South. Eur. pp. 226, 227. Allied to *Elachista*; fore wings more elliptical and not posteriorly expanded; head rough, palpi short. Type *U. cisticolella*, sp. n., Stainton, l. c. p. 227, Cannes. (Stainton thinks that this species may be identical with *Elachista piperatella*, Staud.)

Chimabacche saxipennella, Walker, Lepidoptera Heterocera, p. 85, Australia.

Tinea annosella, Walker, l. c. p. 83, *T. arctiella* and *T. nivibractella*, p. 84. *T. intritella*, p. 85, all from Australia.

Nemotois dalmatinellus, Mann, Verhandl. zool.-bot. Ges. in Wien, Type, p. 384, Dalmatia; *N. panicensis*, Frey, Mittheil. schweiz. Entom. Ges., p. 33, Switzerland.

Hyponomeuta viduata, Walker, l. c. p. 85, Australia.

Depressaria robinella, Packard, Guide to the Study of Insects, p. 349, pl. 8. fig. 14; *D. aridella*, Mann, Verh. zool.-bot. Ges. in Wien, 1869, p. 385, Dalmatia; *D. ontariella*, Bethune (= *D. heracliona* ?), Canad. Entom. ii. pp. 3, 19, Ontario.

Gelechia gallæsolidaginis, Riley, First Rep. on Insects of Missouri, pp. 173-178, pl. 2. f. 1, 2, United States; *G. improbella* and *G. gemmipunctella*, Walker, Lepidoptera Heterocera, p. 86, from Australia; *G. gypsophilæ*, Stainton, Tin. South. Eur. p. 210, Mentone; *G. cisti*, Staint. l. c. p. 211; *G. provincella*, Staint. l. c. p. 221; and *G. hyoscyamella* (Millière in litt.), Staint. l. c. p. 233, all from Cannes.

Parasia aspretella, Lederer, Hor. Soc. Entom. Ross. vi. p. 92, pl. 5. f. 13, Astrabad.

Hypsolophus apludellus, Lederer, l. c. p. 92, pl. 5. f. 14, Astrabad.

Æcophora impletella, Walker, l. c. p. 87, Australia.

Butalis heinemanni, Möschler, Stettin. entom. Zeitung, 1869, p. 372.

Cryptolechia scitipunctella, Walker, l. c. p. 87, Australia.

Coleophora. O. Hofmann (Stettin. entom. Zeitung, 1869) describes the following new species in all their stages:—*C. chrysanthemi*, pp. 107-109, Marksleft; *C. pappiferella*, pp. 109-112, Regensburg and Erlangen; *C. glitzella* (Staint. in litt.), pp. 119-122, Breslau, Stettin.

C. calycotomella (Staudinger, MSS.), Stainton, Tin. South. Eur. p. 225, Cannes, Old Castile.

Chauliodus staintonellus (Millière, MSS.), Stainton, *l. c.* p. 169, South France.
Lithocolletis geminatella, Packard, Guide to Study of Insects, pp. 353-354, pl. 8. f. 15, 15 a, b; *L. curvilineatella*, Pack. *l. c.* p. 354, pl. 8. f. 16; *L. nidificansella*, pp. 354, 355, pl. 8. f. 19, 19 a, all from the United States; *L. sublautea*, Stainton, Tin. South. Eur. p. 197, Mentone.

Lyonetia saccatella, Packard, *l. c.* p. 355, pl. 8. f. 18, 18 a, United States.

Cemiosoma orobi, Stainton, Entom. Annual, 1870, pp. 158, 159, Scarborough.

Nepticula suberivora, Stainton, Tin. South. Eur. p. 228, *N. suberis*, Staint. *l. c.* p. 229, both from Cannes; *N. euphorbiella*, Staint. *l. c.* p. 229, Mentone.

PTEROPHORIDÆ.

R. C. R. JORDAN (Entom. M. Mag. vi. p. 138) records the occurrence of dipterous and hymenopterous parasites in the larvæ of *Pterophorus brachydactylus* and *P. tephrodactylus*.

He also (*l. c.* pp. 119-125, 149-152) publishes an abstract of Wallengren's paper on "Scandinaviens Fjädermott," extracting the characters of all the genera and the principal corrections proposed in the synonymy, and adding a list of the Swedish and British species referable to each genus, accompanied by many valuable critical notes. He describes a specimen of what he takes as an extraordinary variety of *P. fuscus*. A list of British plumes is added to their continental genera, and with indications of the food-plant on which, is given. Jordan also expresses his opinion that the *Pterophoridae* should form an aberrant group of the *Pyralidae* rather than of the *Tineidae*, and should be placed next to *Chilo*. Jordan and Stainton are agreed in referring the genus *Chrysocorys* to the *Pterophoridae* rather than to the *Tineidae*.

GRAAF and SNELLEN state that *Platyptilus ochrodactylus*, H.-S., = *dichrodactylus*, Mühl., and point out how it differs from *bertrami*. Tijdschr. voor Ent. 2nd ser. iv. pp. 214, 215.

C. S. GREGSON describes the larva of *Pterophorus zophodactylus*, Dup. (= *loewii*, Zell.): Entomologist, iv. p. 350. He also suggests (*l. c.* p. 364) that *P. bipunctidactylus*, Haw., = *plagiodactylus*.

STANTON (Entom. M. Mag. vi. p. 36) states that it is the habit of the larva of *Oxyptilus latus*, Mill., to bury itself in the down on the underside of the leaves of its food-plant on assuming the pupa-state.

Pterophorus periscelidactylus, Fitch. Riley (First Rep. on Insects of Missouri, pp. 137, 138, pl. 2. f. 15, 16) describes the transformations of this insect, and figures the pupa and imago. It is also noticed by Packard, Guide to the Study of Insects, pp. 356, 357, pl. 8. f. 23, 23 a, b.

Pterophorus carduidactylus, sp. n., Riley, First Rep. on Insects of Missouri, pp. 180, 181, pl. 2. f. 13, 14, Missouri; *P. teucarii*, n. sp., Jordan, Entom. M. Mag. vi. p. 14 (= *Oxyptilus brittannidactylus*, Gregson, Entomologist, iv. p. 305), North England, Wales, Ireland; *P. scabiodactylus*, n. sp., Gregs. Entom. iv. p. 363 (= *plagiodactylus*, Gregs. olim, nec Staint.), *P. hirundodactylus*, n. sp. Gregs. *l. c.* p. 364, both from England; *P. (Aciptilus) subalternans*, n. sp., Lederer, Hor. Soc. Entom. Ross. vi. p. 93, pl. 5. f. 15, Astrabad.

DIPTERA

By W. S. DALLAS, F.L.S.

A. *Separate Work.*

LOEW, H. Beschreibungen europäischer Dipteren. Erster Band. Also with the title "Systematische Beschreibung der bekannten europäischen zweiflügeligen Insecten, von Johann Wilhelm Meigen. Achter Theil oder zweiter Supplementband, bearbeitet von Hermann Loew." Halle, 1869, 8vo, pp. xvi & 310.

In this work, which Loew intends as supplemental to the great work of Meigen on the European Diptera, the author describes in all 182 species, including, besides many new species, some of those described in scattered papers by himself, Kowarz, Gerstäcker, Egger, Nowicki, and others. The new species will be indicated further on.

B. *Papers published in Journals &c.*

BRAUER, F. Beitrag zur Biologie der Acroceriden. Verhandl. zool.-bot. Gesellsch. in Wien, xix. pp. 737-740, pl. 1-6. Type.

——. Kurze Charakteristik der Dipteren-Larven zur Bekämpfung des neuen von Dr. Schiner entworfenen Dipteren-Systemes. Ibid. pp. 843-842.

——. Beitrag zur Verwandlungsgeschichte der Regenbreme (*Hæmatopota pluvialis*, L.). Ibid. pp. 921-922, Taf. 13. figs. 7-8.

FRAUENFELD, G. VON. Ueber einige Pflanzenverwüster des Jahres 1869. Verhandl. zool.-bot. Gesellsch. in Wien, Band xix. pp. 601-604.

——. Zoologische Miscellen, xvi. Ibid. pp. 933-944.

GUYON —. Histoire Naturelle et Médicale de la Chique (*Rhynchoprion penetrans*, Oken), insecte parasite des régions tropicales des deux Amériques. Revue et Magasin de Zoologie, 1869, pp: 70-75, 212-218, 284-292, 325-331, 384-390, 413-418, & 425-434.

KOWARZ, FERDINAND. Beitrag zur Dipteren-Fauna Ungarns. Verhandl. zool.-bot. Gesellsch. in Wien, Band xix. pp. 561-566.

A list of species of Dolichopodidæ collected in the neighbourhood of Losonc.

LABOULBÈNE, ALEX. Histoire des Métamorphoses du *Ceratopogon dufouri*. Annales Soc. Ent. France, 4^e sér. tome ix. pp. 157-166, pl. 7.

LOEW, H. Diptera Americæ septentrionalis indigena. Centuria octava. Berliner entom. Zeitschr. Band xiii. pp. 1-52.

——. Ditto. Centuria nona. Ibid. pp. 129-186.

——. Ueber einige *Empis*-Arten, welche zu den im xi. Bande besprochenen Verwandtschaftskreisen gehören. Ibid. pp. 65-94.

——. *Drepanephora*, eine neue Gattung der Sapromyzidæ. Ibid. pp. 95-96.

——. Revision der europäischen Trypetina. Zeitschr. ges. Naturwiss. Band xxxiv. pp. 1-24.

——. La Famiglia dei Blefaroceridi (Blepharoceridæ). Bull. Soc. Ent. Ital. i. pp. 85-98, pl. 2.

This is accompanied with a note by Haliday.

——. Ueber Dypteren der Augsburger Umgegend. Bericht. naturh. Ver. Augsb. xx. pp. 39-59.

LOWNE, B. T. On the rictal papillæ of the Fly. Monthly Microsc. Journal, vol. ii. pp. 1-4, pl. 18.

MARNO, ERNST. Die Typen der Dipteren-Larven als Stützen des neuen Dipteren-Systems. Verhandl. zool.-bot. Gesellsch. in Wien, Band xix. pp. 319-326.

MIK, JOSEF. Beiträge zur Dipteren-Fauna Oesterreichs. Verhandl. zool.-bot. Gesellsch. in Wien, Band xix. pp. 19-36, Taf. 4.

NOWICKI, MAX. Der Kopaliner Heerwurm und die aus ihm hervorgehende *Sciara militaris*, n. sp. Verhandl. naturf. Vereines in Brünn, Band vi. Abhandl. pp. 1-69, pl. 1 (1868).

——. Beschreibung neuer Dipteren. Ibid. pp. 70-97, pl. 2 (1868).

OSTEN-SACKEN, R. Biological Notes on Diptera (Galls on *Solidago*). Trans. Amer. Entom. Soc. vol. ii. pp. 229-303 (March 1869).

——. Monographs of the Diptera of North America. Part IV. Smithsonian Miscellaneous Collections, vol. iii. (219) pp. ix & 344, with 4 plates (1868?).

In this important memoir Osten-Sacken commences his monograph of the North-American Tipulidæ, including the sub-families referred to the *Tip. brevipalpi*. In the introductory portion he enters into a valuable discussion of the characters and classification of the Tipulidæ of this group. The volume bears date 1869, but the sheets are dated in 1868. Two appendices contain descriptions of species noticed by previous writers, but unknown to the author, and characters of the genera of *Tipulidæ brevipalpi* which are not represented either in Europe

or in North America, the European genera being noticed in the body of the monograph.

PACKARD, A. S. On Insects inhabiting Salt Water. Proc. & Comm. Essex Instit. vol. vi. pp. 41-51 (March 1869).

PALM, JOSEF. Beitrag zur Dipterenfauna Tirols. Verhandl. zool.-bot. Gesellsch. in Wien, Band xix. pp. 395-454.

Contains a list of Diptera captured in the Tyrol, with notes on the localities and times of capture of the species.

RONDANI, CAMILLO. Di alcuni Insetti Dipteri che aiutano la fecondazione in diversi Perigonii. Archivio per la Zool., l'Anat., e la Fis. ser. 2. vol. i. pp. 186-192.

In this paper Rondani describes various species of Diptera which assist in the fecundation of certain plants belonging to the genera *Aristolochia*, *Arum*, *Ceropegia*, and *Asimina*. The species described belong to the genera *Oscinis*, *Gymnopa*, *Cecidomyia*, *Ceratopogon*, and *Micromyia*.

——. Specierum Italicarum ordinis Dipteriorum Catalogus notis geographicis auctus. Atti Soc. Ital. Sci. Nat. vol. xi. pp. 559-603.

A catalogue of the Italian species of the families *Æstridæ*, *Syrphidæ*, *Conopidæ*, and *Muscidæ*. Two new species are briefly characterized.

——. Ortolidinæ Italicæ, collectæ, distinctæ et in ordinem dispositæ. (Dipterologiæ Italicæ Prodrömi Pars vii. fasc. 3.) Bull. Soc. Ent. Ital. i. pp. 5-37.

——. Sul Genere *Trigonometopus* degli Insetti Dipteri. Ibid. pp. 102-104.

——. Sulle specie del Genere *Ædaspis*, Lw. Nota xv. per la Dipterologia Italiana. Ibid. pp. 161-164.

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SIX, G. A. Opgave omtrent de Dipters welke in het Najaar in de Bosschen van Driebergen voorkomen. Tijdschr. voor Entom. 2^{de} ser. Deel ii. pp. 227-235 (1867).

——. Aanteekening omtrent Inlandsche Dipters. Tijdschr. voor Entom. 2^{de} ser. Deel iv. pp. 178-182.

Contains a further list of Diptera captured by the author near Driebergen and Beek.

SUFFOLK, W. T. On the proboscis of the Blow-fly. Monthly Microsc. Journal, vol. i. pp. 331-442, plates 13-16.

VAN DER WULP, F. M. Eenige Noord-Americaansche Diptera. Tijdschrift voor Entom. 2^{de} ser. Deel ii. pp. 125-164, plates 3-5 (1867).

VAN DER WULP, F. M. Diptera uit den Oost-Indischen Archipel. Tijdschr. voor Entom. 2^{de} ser. Deel iii. pp. 97-119, plates 3 & 4 (1867).

Contains descriptions of new species.

——. Dipterologische Aanteekeningen.—No. 1. Tijdschr. voor Entom. 2^{de} ser. Deel iii. pp. 224-236 (1868).

Notices of the genera *Epidapus*, *Macrocera*, *Platypeza*, and *Lispe*.

——. Dipterologische Aanteekeningen.—No. 2. Tijdschr. voor Entom. 2^{de} ser. Deel iv. pp. 136-154, plate 4.

Contains notices and descriptions of Tachinides.

——. Nog iets over Noord-Americaansche Diptera. Tijdschr. voor Entom. 2^{de} ser. Deel iv. pp. 80-86.

SARRALL, G. H. On the European species of *Syrphus* allied to *S. ribesii*. Ent. Monthly Mag. vol. v. pp. 190-194.

WEYENBERGH, H. Deux Diptères nouveaux de l'archipel des Indes orientales. Archives Néerlandaises, tome iv. pp. 359-362, plate 6 (1869).

——. Nederlandsche Diptera in Metamorphose en Levenswijze beschreven. Tijdschr. voor Entom. 2^{de} ser. Deel iv. pp. 155-174, plates 5 & 6.

WINNERTZ, J. Sieben neue Arten der Gattung *Sciara*. Verhandl. zool.-bot. Gesellsch. in Wien, xix. pp. 657-668.

E. MARNO (Verh. zool.-bot. Ges. in Wien, xix. pp. 319-326) describes and figures the principal characters of the types of the larvæ of Diptera. He adopts Brauer's division of the Diptera into Orthorhapha and Cyclorhapha, and indicates that under the former we have: (1) larvæ with the head not differentiated (type 1, *Cecidomyidæ*), and (2) larvæ with a differentiated head, which may be round (type 2, the remaining *Nematocera*) or elongated (type 3, the *Brachycerous Orthorhapha*); whilst under the latter we have larvæ with an œsophageal frame (type 4, *Proboscidea*), and larvæ without a frame (type 5, *Eproboscidea*.)

BRAUER (Verh. zool.-bot. Ges. in Wien, xix. pp. 843-852) goes further into this matter, and characterizes the larvæ of the Diptera, with the object of showing how they may be classified, and especially how they support the system founded by Schiner upon Brauer's indications. The classification, founded upon the characters of the larvæ, adopted by Brauer is as follows:—

Diptera Orthorhapha.

A. NEMATOCERA.

Tribe I. OLIGONEURA.

Fam. *Cecidomyiidae*.

Tribe II. EUCEPHALA.

Fam. *Mycetophilidae*, *Bibionidae*, *Rhyphidae*, *Simulidae*, *Chironomidae*, *Blepharoceridae*, *Culicidae*, *Psychodidae*, *Ptychopteridae*.

Tribe III. POLYNEURA.

Fam. *Limnobiidae*, *Tipulidae*.

B. BRACHYCERA.

Tribe IV. CYCLOCERA.

Fam. *Stratiomyidae*, *Xylophagidae*, *Cænomyiidae*, *Tabanidae*, *Leptidae*.

Tribe V. ORTHOCERA.

Fam. *Therevidae*, *Acroceridae*, *Bombyliidae*, *Nemestrinidae*, *Midasidae*, *Asilidae*, *Empidae*, *Dolichopidae*.

Tribe VI. ACROPTERA.

Fam. *Lonchopteridae*.

Diptera Cyclorhapha.

A. PROBOSCIDEA.

Tribe I. PSEUDONEURA.

Fam. *Syrphidae*.

Tribe II. ECTMYIDÆ.

Fam. *Muscidae* (incl. *Conopidae*, *Pipunculidae*, *Platypezidae*).

B. EPROBOSCIDEA.

Tribe PUPIPARA.

Fam. *Hippoboscidae*, *Nycteribidae*.

H. WEYENBERGH has commenced (Tijdschr. voor Ent. 2^{de} ser. iv. pp. 155-174) a series of papers on the metamorphoses and habits of the Dutch Diptera. His first paper opens with a bibliographical sketch of the contributions to the subject published in Holland, and includes the history of two species, namely, *Cheilosia chrysocoma* (Meig.) and *Phytomyza obscura* (Fall.).

RONDANI (Atti Soc. Ital. Sci. Nat. xi. pp. 559-603) has commenced a catalogue of the Italian Diptera, with indications of the geographical distribution of the species. The part published includes the *Estridae*, *Syrphidae*, *Conopidae*, and *Muscidae*.

JOSEF PALM has published (Verh. zool.-bot. Ges. in Wien, xix. pp. 395-454) a list of the species of Diptera found in the Tyrol. The number of known species cited by him is 777, of which 316 have occurred only in North Tyrol, 226 only in South Tyrol, and 235 in both districts. The author describes the districts in which his collections were chiefly made.

LOEW publishes (Ber. naturh. Ver. Augsb. xx. pp. 39-59) a notice of the more remarkable species of Diptera collected in the neighbourhood of Augsburg. Several species are described.

SIX publishes (Tijdschr. voor Ent. 2^{de} ser. iv. pp. 178-182) a list of numerous species of Diptera captured by him in the neighbourhood of Driebergen and Beek.

PACKARD (Proc. & Comm. Essex Inst. vi. pp. 41-51) notices and describes various species of Diptera inhabiting salt water.

OSTEN-SACKEN describes (Trans. Amer. Ent. Soc. ii. p. 299) galls formed on the Golden Rod (*Solidago*) by eight species of Diptera, namely:—1. A smooth swelling of stem or branch—*Trypeta solidaginis* (Fitch) and *Cecidomyia hirtipes* (O.-S.); 2. Accumulation of leaves in consequence of arrest of growth of stem or branch—*Trypeta polita* (Loew), *Cecidomyia solidaginis* (Loew), and *Asphondylia monacha*, sp. n.; 3. Enlargement of bud on flower among the racemes—*Cecidomyia racemicola* (O.-S.) and *Cecid. anthophila*, sp. n.; 4. Hardened spot on the leaves—*Cecid. carbonifera* (O.-S.).

CECIDOMYIDÆ.

The following species are noticed by Cohn (Abhandl. schles. Gesellsch. vaterl. Cultur, 1868-69) as injurious to the grain in the corn-fields of Silesia:—*Cecidomyia* (*Diplosis*) *tritici* (p. 187), *C. destructor* (pp. 188-190), and *C. cerealis* (pp. 193-196).

A. MÜLLER (Ent. M. Mag. v. p. 220) notices the spinning-powers of the larvæ of a *Cecidomyia* living in galls on the leaves of *Salix grisea*.

Cecidomyia taxi (Inchb.). A. Müller notices the habits of this species, Ent. M. Mag. vi. p. 61. The same author (*l. c.* pp. 109-111) notices the habits of *salicina* (Schr.), *C. marginemtorquens* (Bremi), and *C. salicis* (Schr.); also p. 137 those of *C. urticæ* (Perr.).

ices on the natural history of the Hessian Fly and other allied species Mr. and in the "Correspondence of T. W. Harris" (Boston Soc. N. H.) pp. 183-207.

New species:—

Asphondylia monacha, Osten-Sacken, Trans. Amer. Ent. Soc. ii. p. 300, on *Solidago*, near Brooklyn.

Cecidomyia anthophila, Osten-Sacken, *l. c.* p. 302, on *Solidago*, near Brooklyn.

Cecidomyia atricapilla, Rondani, Arch. Zool. Anat. Fis. 2nd ser. i. p. 190.

Micromyia lucorum, Rondani, *l. c.* p. 192.

MYCETOPHILIDÆ.

Epidapus. Van der Wulp (Tijdschr. voor Ent. 2^{de} ser. iii. pp. 224-225) notices a species which he refers to this genus, but remarks upon certain characters in which it differs from Schiner's character. He figures the abdomen of his species (*l. c.* pl. 11. fig. 1).

Macrocera. Van der Wulp (*l. c.* pp. 225-226) notices the ♂ of *M. vittata* (Meig.), and remarks that *M. maculipennis* (Macq.) = *M. phalerata* (Hoffm.), and that *M. pusilla* (Meig.) = *M. nana* (Macq.).

Nowicki has published (Verh. naturf. Ver. in Brünn, vi. Abhandl. pp. 1-69) a detailed natural history of an Army-worm observed by him in the pine-forests of Kopaliny. The insect is described by him as a new species (*vide infra*).

Eudicrana, g. n., Loew, Berl. ent. Zeitschr. xiii. p. 141. Allied to *Lasiosoma*; ocelli lateral, middle one obsolete; tibial spurs long; wings large, with a long pubescence, auxiliary vein running into the costa, united with first longitudinal by a transverse venule; second and fourth posterior cells very

long, acuminate towards base. Sp. *E. obumbrata*, sp. n., Loew, *l. c.* p. 141, New York.

New species :—

Ditomyia euzona, Loew, Berl. ent. Zeits. xiii. p. 130, Columbia District.

Plesiastina tristis, Loew, *l. c.* p. 131, Columbia District; *P. lauta*, Loew, *l. c.* p. 132, New York.

Asyndulum coxale, Loew, *l. c.* p. 132, Hudson's Bay Territory.

Asyndulum geranias, Loew, Besch. eur. Dipt. i. p. 15, Rhodes.

Macrocera fastuosa, Loew, *l. c.* p. 16, Carlsbad; *M. inversa*, Loew, *ibid.*, Silesia; *M. tusca*, Loew, *l. c.* p. 17, Tuscany; *M. pumilio*, Loew, *l. c.* p. 18, Middle and South of Germany.

Macrocera hirsuta, Loew, Berl. ent. Zeit. xiii. p. 132; *M. clara*, Loew, *l. c.* p. 133, and *M. inconcinna*, Loew, *ibid.*, Columbia District.

Platyura divaricata, Loew, *l. c.* p. 134, Georgia; *P. diluta*, Loew, *l. c.* p. 134, Columbia District; *P. mendica*, Loew, *l. c.* p. 135, New York; *P. mendosa*, Loew, *ibid.*, and *P. melasoma*, Loew, *ibid.*, Columbia District.

Platyura oclusa, Loew, Besch. eur. Dipt. i. p. 15, Germany.

Bolitophila disjuncta, Loew, *l. c.* p. 19, South Germany; *B. glabrata*, Loew, *ibid.*, Silesia.

Empheria baliuptrea, Loew, Berl. ent. Zeits. xiii. p. 136, Illinois; *didyma*, Loew, *ibid.*, English River; *E. nepticula*, Loew, *l. c.* p. 137, Georgia.

Polylepta fragilis, Loew, *l. c.* p. 138, Massachusetts.

Sciophila onusta, Loew, *l. c.* p. 138, *S. obruncata*, Loew, *l. c.* p. 139, Columbia District; *S. appendiculata*, Loew, *ibid.*, New York; *S. biseriata*, Loew, *l. c.* p. 140, Red River; *S. tantilla*, Loew, *ibid.*, Nebraska.

Lasiosoma quadratula, Loew, *l. c.* p. 141, Maine.

Synteuma polyzona, Loew, *l. c.* p. 142, Middle States.

Bolitina tricineta, Loew, *l. c.* p. 143, Wisconsin.

Phthinia tanypus, Loew, *l. c.* p. 143, New York.

Phthinia winnertzii, Mik, Verh. zool.-bot. Ges. in Wien, xix. p. 22, pl. 4. figs. 7-9, near Görz.

Glaphyroptera melæna, Loew, *l. c.* p. 144, New York; *G. decora*, Loew, *ibid.*, Georgia; *G. opima*, Loew, *l. c.* p. 145, Connecticut; *G. subhumata*, Loew, *ibid.*, New York; *G. oblectabilis*, Loew, *l. c.* p. 146, Middle States.

Glaphyroptera lateralis, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 131, pl. 3. figs. 3 & 4, Wisconsin.

Leja sorocula, Loew, Berl. ent. Zeits. xiii. p. 147, New York; *L. abbreviata*, Loew, *ibid.*, Middle States.

Acnemia psylla, Loew, *l. c.* p. 148, Maryland.

Docosia dichroa, Loew, *l. c.* p. 148, Columbia District.

Rymosia filipes, Loew, *l. c.* p. 149, Connecticut.

Trichonta vulgaris, Loew, *l. c.* p. 149, Maryland, Columbia District; and *T. fœda*, Loew, *l. c.* p. 150, Middle States.

Zygomyia ignobilis, Loew, *l. c.* p. 150, Middle States; *Z. ornata*, Loew, *ibid.*, Pennsylvania.

Epicrypta pulicaria, Loew, *l. c.* p. 151, Pennsylvania.

Mycothera paula, Loew, *l. c.* p. 151, Middle States.

Mycetophila extincta, Loew, *l. c.* p. 152, Middle States; *M. bipunctata*,

Loew, *ibid.*, Wisconsin; *M. mutica*, Loew, *ibid.*, and *M. inculta*, Loew, *l. c.* p. 153, Middle States; *M. pinguis*, Loew, *ibid.*, English River, Maine; *M. scalaris*, Loew, *l. c.* p. 154, Middle States; *M. trichonota*, Loew, *l. c.* p. 155, Columbia District; *M. fallax*, Loew, *l. c.* p. 156, and *M. sigmoides*, Loew, *ibid.*, Middle States; *M. quatuornotata*, Loew, *l. c.* p. 157, Maryland; *M. polita*, Loew, *l. c.* p. 158, New York; *M. monochæta*, Loew, *ibid.*, Columbia District; and *M. procera*, Loew, *l. c.* p. 159, New York.

Mycetophila frigida, Boheman, *Œfvers. Kongl. Vet.-Akad. Förh.* xxii. p. 576, Spitzbergen.

Sciara sciophila, Loew, *l. c.* p. 160, Columbia District; *S. ochrolatis*, Loew, *ibid.*, New York.

Sciara militaris, Nowicki, *Verh. naturf. Ver. in Brünn*, vi. Abhandl. p. 58, pl. 1 (larva, pupa, larvæ on the march, and details of imago).

Sciara. Winnertz (*Verh. zool.-bot. Ges. in Wien*, xix.) describes the following new species of this genus from the Harz:—*S. quercicola*, p. 657, in decayed oaks; *S. nigrescens*, p. 658, among beeches; *S. montana*, p. 659, among beeches; *S. belinga*, p. 661, on conifers; *S. hercynica*, p. 663, on larches and firs; *S. sylvicola*, p. 664, on black poplars and larches; *S. lutaria*, p. 665, in cowdung.

Trichosia hebes, Loew, *l. c.* p. 161, New York.

Trichosia winnertzi, Nowicki, *Verh. naturf. Ver. in Brünn*, vi. Abhandl. p. 70, pine-forests of Kopalin.

BIBIONIDÆ.

Mik (*Verh. zool.-bot. Ges. in Wien*, xix. pp. 35 & 36) notices the characters of the two sexes in *Scatopse transversalis* (Loew), and figures the wings (*l. c.* pl. 4. figs. 21, 22).

New species:—

Dilophus breviceps, Loew, *Berl. ent. Zeitsch.* xiii. p. 162, New Hampshire; *D. obesulus*, Loew, *ibid.*, Columbia District; *D. tibialis*, Loew, *ibid.*, Sitka.

Dilophus dimidiatus, Loew, *l. c.* p. 4, New York.

Dilophus lingens, Loew, *Beschr. eur. Dipt.* i. p. 20, Rhodes.

Scatopse platyscelis, Loew, *l. c.* p. 21, England.

Bibio consanguineus, Loew, *l. c.* p. 21, Russia, Siberia; *B. anglicus*, Loew, *l. c.* p. 22, England.

Bibio anglicus, Verrall, *Ent. M. Mag.* v. p. 268, near London.

Bibio senilis, Van der Wulp, *Tijdschr. voor Ent.* 2^{de} ser. iv. p. 81, Wisconsin.

CHIRONOMIDÆ.

Ceratopogon dufouri. Laboulbène (*Ann. Soc. Ent. Fr.* 4^e sér. ix. pp. 157–166) describes the metamorphosis of this species, and figures with details the larva (pl. 7. figs. 1–6), the pupa (pl. 7. figs. 7, 8), and the imago (pl. 7. figs. 9–17).

New species:—

Chironomus polaris, Boheman, *Œfvers. Kongl. Vet.-Akad. Förh.* xxii. p. 574, *C. arcticus*, Boh. *ibid.*, and *C. brevipennis*, Boh. *l. c.* p. 575, Spitzbergen.

Chironomus oceanicus, Packard, *Proc. and Comm. Essex Inst.* vi. p. 42, fig. p. 45 (larva and pupa figured p. 43). Larva on *Zostera marina* in Salem Harbour.

Ceratopogon formosus, Loew, Besch. eur. Dipt. i. p. 1, Hungary.

Ceratopogon præustus, Loew, Ber. naturh. Ver. Augsburg. xx. p. 50, near Augsburg.

Ceratopogon pictellum, Rondani, Arch. Zool. Anat. Fis. 2nd ser. i. p. 190;
C. aristolochice, Rondani, l. c. p. 191.

Tanypus fulvis, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 130, Wisconsin.

CULICIDÆ.

Culex testaceus, sp. n., Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 128, pl. 3. fig. 1, Wisconsin.

Anopheles annulimanus, sp. n., Van der Wulp, l. c. p. 129, pl. 3. fig. 2, Wisconsin.

TIPULIDÆ.

OSTEN-SACKEN has published (Smiths. Misc. Collections, vol. viii. 219) a monograph of the North-American species of the *Tipulidæ brevipalpi*.

He classifies the group in the same way as in his paper in the Proc. Ent. Soc. Phil. iv. (see 'Record,' 1865, p. 642), dividing it into six sections, named respectively *Limnobina*, *Limnobina anomala*, *Eriopterina*, *Limnophilina*, *Anisomerina*, and *Amalopina*; but he includes in the group two other sections, as intermediate between the Brevipalpi and Longipalpi, namely the *Cylindrotomina* (previously placed with the *Limnobina anomala*) and the *Ptychopterina*, in the latter of which the palpi are long. The author describes the general characters of the insects under consideration, and discusses their bibliography, geographical distribution, &c. He tabulates the sections and the European and North-American genera as follows¹ :—

- I. Two longitudinal veins between fifth vein of posterior margin.
 - A. A single submarginal cell.
 1. Antennæ 14-jointed. 1. LIMNOBINA.
 2. Antennæ 16-jointed
 - * First longitudinal vein ending in costa; tibiæ without spurs. 2. LIMNOBINA ANOMALA.
 - † First longitudinal vein usually incurved towards second, and ending in it; tibiæ with spurs 7. CYLINDROTOMINA.
 - B. Two submarginal cells (no wings in *Chionea*).
 1. Tibiæ without apical spurs. 3. ERIOPTERINA.
 2. Tibiæ with spurs.
 - * Subcostal cross vein posterior to origin of second longitudinal vein.
 - a. Antennæ 16-jointed 4. LIMNOPHILINA.
 - b. Antennæ 6-10-jointed. 5. ANISOMERINA.
 - † Subcostal cross vein anterior to origin of second longitudinal vein. 6. AMALOPINA.

¹ The Table is here slightly abridged.

- II. One longitudinal vein between fifth vein and posterior margin; (palpi long) 8. *PTYCHOPTERINA*.

The *Limnobina* include the following genera :—

- I. Proboscis longer than head and thorax 2. *Geranomyia* (Hal.).
 II. Proboscis not longer than head.
 A. Antennæ pectinate or subpectinate 3. *Rhipidia* (Meig.).
 B. Antennæ of ordinary structure.
 1. A cross vein uniting longitudinal veins 6 and 7.
 5. *Trochobola*¹ (O.-S.).
 2. No cross vein between longitudinal veins 6 and 7.
 a. Forceps of ♂ of two fleshy lobes; auxiliary vein terminating before or close to origin of second vein 1. *Dicranomyia* (Steph.)
 b. Forceps of ♂ of two horny hooks; auxiliary vein usually terminating far beyond origin of second vein.
 4. *Limnobia* (Meig.).

The *Limnobina anomala* include :—

- I. Rostrum at least as long as head.
 A. Wings without submarginal cell 8. *Toxorhina* (Loew).
 B. Wings with a submarginal cell.
 1. Rostrum not much longer than head .. 6. *Rhamphidia* (Meig.).
 2. Rostrum not much shorter than whole body.
 7. *Elephantomyia* (O.-S.).
 II. Rostrum shorter than head.
 A. Discal cell open.
 1. Second basal cell much shorter than first.
 a. Discal cell coalescent with second posterior cell.
 10. *Orimarga*, g. n.
 b. Discal cell coalescent with third posterior cell.
 15. *Thaumastoptera* (Mik).
 2. Second basal cell about equal to first .. 11. *Elliptera* (Schin.).
 B. Discal cell closed.
 1. No marginal cross vein 13. *Atarba*, g. n.
 2. Marginal cross vein present (sometimes faintly marked).
 a. Longitudinal vein 1 ending in costa nearly opposite base of submarginal cell.
 * Submarginal cell but little longer than first posterior.
 14. *Teucholabis* (O.-S.).
 † Submarginal cell much longer than first posterior.
 12. *Antocha* (O.-S.).
 b. Longitudinal vein 1 ending in costa far beyond base of submarginal cell 9. *Dicranoptycha* (O.-S.).

To the *Eriopterina* the author refers :—

- I. No wings 19. *Chionea* (Dalm.).
 II. Wings present.
 A. Five posterior cells. 26. *Cladura* (O.-S.).

¹ = *Discobola* (O.-S., 1865); name preoccupied.

B. Four posterior cells.

1. Inner marginal cell almost an equilateral triangle.
 25. *Cryptolabis* (O.-S.).
2. Inner marginal cell of the usual elongated shape.
 - a. Wings conspicuously hairy on the whole surface.
 16. *Rhypholophus* (Kolen.).
 - b. Wings hairy along the veins 17. *Erioptera* (Meig.).
 - c. Wings not conspicuously hairy, veins glabrous.
 - * First submarginal cell not more than half as long as second.
 - a. Marginal cross vein 0 23. *Goniomyia* (Meig.).
 - β. Marginal cross vein present 24. *Empeda*, g. n.
 - † First submarginal cell much more than half as long as second.
 - a. Distance between subcostal cross vein and tip of auxiliary vein more than twice the length of great cross vein.
 - a. Seventh longitudinal vein straight.
 18. *Trimicra* (O.-S.).
 - b. Seventh longitudinal vein bisinuated.
 20. *Symplecta* (Meig.).
 - β. Distance between subcostal cross vein and tip of auxiliary vein moderate.
 - a. Body uniformly black 21. *Gnophomyia* (O.-S.).
 - b. Body black, scutellum and pleuræ marked with yellow.
 22. *Psiloconopa* (Zett.).

The *Limnophilina* include 4 genera, namely :—

- I. Wings pubescent 29. *Ulomorpha*, g. n.
- II. Wings glabrous.
 - A. Seventh longitudinal vein very short, abruptly incurved towards anal angle 30. *Trichocera* (Meig.).
 - B. Seventh longitudinal vein normal.
 1. A supernumerary cross vein between auxiliary vein and costa.
 27. *Epiphragma* (O.-S.).
 2. No supernumerary cross vein 28. *Limnophila* (Macq.).

The *Anisomerina* are divided as follows :—

- I. Three posterior cells.
 - A. One submarginal cell 32. *Cladolipes* (Loew).
 - B. Two submarginal cells 31. *Anisomera* (Meig.).
- II. Four or five posterior cells.
 - A. Stigma occupying whole space between tip of auxiliary vein and marginal cross vein 33. *Eriocera* (Macq.).
 - B. Stigma occupying less space 34. *Penthoptera* (Schin.)

The *Amalopina* (= *Pediciaformia*, O.-S. olim) include :—

- I. Antennæ 16- or 17-jointed.
 - A. Four posterior cells; wings pubescent . . . 37. *Ula* (Hal.).
 - B. Five posterior cells; wings glabrous.
 1. Small cross vein nearly at right angles to middle line of wing.
 35. *Amalopsis* (Hal.).
 2. Small cross vein very oblique. 36. *Pedicia* (Lat.).

II. Antennæ 13-jointed.

- A. Two cross veins between first longitudinal vein and anterior branch of second vein. 38. *Dicranota* (Zett.).
- B. One cross vein as above.
1. Four posterior cells 39. *Plectromyia*, g. n.
2. Five posterior cells 40. *Rhaphidolabis*, g. n.

Of the two aberrant sections, the *Cylindrotomina* include:—

- I. Head, and intervals of thoracic stripes, with dense deep punctures.
42. *Triogma* (Schin.).

II. Head smooth.

- A. Colouring of *Pachyrhina*, yellow and black.
41. *Cylindrotoma* (Macq.).
- B. Colouring of *Tipula*, brownish and greyish.
43. *Phalacrocera* (Schin.).

And the *Ptychopterina* are divided into:—

- I. First submarginal cell much shorter than second.
46. *Protoplasa* (O.-S.).
- II. Second submarginal cell much shorter than first.
- A. Three posterior cells 45. *Bittacomorpha* (Westw.).
- B. Four posterior cells 44. *Ptychoptera* (Meig.).

Osten-Sacken also characterizes (*l. c.* pp. 330–336) the other described genera of this group which are unrepresented in Europe and North America, referring them to his sections as follows:—*Peripheroptera* (Schin.) to Limnobina; *Styringomyia* (Loew) and *Paratropesa* (Schin.) to Limnobina anomala; *Sigmatomera* (O.-S.) and (?) *Lachnocera* (Phil.) to Eriopterina; *Gynoplistia* (Westw.), *Cloniophora* (Schin.), *Cerozodia* (Westw.), *Ctedonia* (Phil.), and (?) *Polymoria* (Phil.) to Limnophilina; *Evanioptera* (Guér.), *Pterocosmus* (Walk.), *Oligomera* (Dolesch.), and *Physecerania* (Big.) to Anisomerina; (?) *Polymera* (Wied.) to Amalopina; and *Tanyderus* (Phil.) to Ptychopterina.

Plate I. contains figures of the wings of the following species:—*Dicranomyia longipennis* (Schum.), *pubipennis* (O.-S.), and *hæretica* (O.-S.), *Trochobola argus* (Say), *Elephantomyia westwoodi* (O.-S.), *Toxorhina magna* (O.-S.), *Cylindrotoma nodicornis* (O.-S.), *Dicranoptycha sobrina* (O.-S.), *Orimarga alpina* (Zett.), *Elliptera omissa* (Schin.), *Antocha opalizans* (O.-S.), *Teucholabis complexa* (O.-S.), *Atarba picticornis* (O.-S.), *Rhypholophus nubilis* and *rubellus* (O.-S.), *Erioptera chlorophylla*, *venusta*, and *armata* (O.-S.) and an undetermined species, and *Symplecta punctipennis* (Meig.). Plate II. contains wings of the following:—*Trimicra pilipes* (Fab.), *Goniomyia sulphurella* (O.-S.), *Limnophila rufibasis* (O.-S.), *Goniomyia subcinerea* (O.-S.), *Gnophomyia tristissima* (O.-S.), *Limnophila arcolata* (O.-S.) and *montana* (O.-S.), *Epiphragma solatrix* (O.-S.), *Limnophila quadrata* and *luteipennis* (O.-S.), *Cryptolabis paradoxa* (O.-S.), *Anisomera megacera* ♀ (O.-S.), *Trichocera bimacula* (Walk. ?), *Amalopsis calcar* and *inconstans* (O.-S.), *Dicranota rivularis* ♀ (O.-S.), *Rhaphidolabis tenuipes* (O.-S.), *Plectromyia modesta* (O.-S.), *Ptychoptera rufocincta* (O.-S.), and *Bittacomorpha clavipes* (Fab.).

Plates III. and IV. show the characters of the forceps of the males of the
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following species:—*Dicranomyia defuncta* (O.-S.), *badia* (Walk.), *liberta* and *gladiator* (O.-S.), *Rhipidia domestica*, *Limnobia solitaria* and *indigena*, *Elephantomyia westwoodi*, *Teucholabis complexa*, *Antocha saricola*, *Dicranoptycha nigripes* and *sobrina*, and *Cryptolabis paradoxa* (O.-S.), and of *Erioptera armata* (O.-S.), *caloptera* (Say), and *venusta* (O.-S.). *Goniomyia blanda* and *cognatella*, *Gnophomyia tristissima* and *Erioptera vespertina* (O.-S.), *Symplecta punctipennis* (Meig.), *Cladura flavoferruginea*, *Limnophila aprilina*, *ultima*, *luteipennis*, *montana*, and *rufibasis*, *Eriocera fuliginosa* and *spinosa*, and *Ama-lopis nconstans* (O.-S.), and *Bittacomorpha clavipes* (Fab.).

Blepharoceridæ. Loew (Bull. Soc. Ent. Ital. i. pp. 85-98) discusses the characters and limits of this group, to which he refers the genera *Blepharocera* (Macq.), *Liponeura* (Loew), *Apistomyia* (Big.), and a new genus, *Hammatorhina*. *Blepharocera* includes *Asthenia fasciata* (Westw.). Haliday appends to this paper a note on some of the insects mentioned in it (*l. c.* pp. 99-101). Details of the following species are figured (*l. c.* pl. 2):—*Apistomyia elegans*, figs. 1-3 [*Paltostoma superbiens*, figs. 7 & 8], *Blepharocera capitata*, fig. 9, *B. fasciata*, figs. 10 & 11, and *Liponeura cinerascens*, figs. 12 & 13.

The wing of *Dolichopeza sylvicola* ? (Curt.) is figured by Mik (Verh. zool.-bot. Ges. in Wien, xix. pl. 4. fig. 11).

The larvæ of *Tipula flavolineata* (Meig.) and *Ctenophora atrata* (Linn.) have been found by T. A. Chapman in rotten birch-stumps. He describes their emergence. Ent. M. Mag. vi. p. 31.

New genera :—

Longurio, g. n., Loew, Berl. ent. Zeitsch. xiii. p. 3. Head minute; antennæ very short, flagellum of ten joints. Sp. *L. testaceus*, sp. n., Loew, *l. c.* p. 3, Massachusetts.

Hammatorhina, g. n., Loew, Bull. Soc. Ent. Ital. i. p. 94. Allied to *Apistomyia*; antennæ shorter, flagellum of 8 joints, 1 equal to 2 and 3 united; eyes contiguous. Sp. *H. bella*, sp. n., Loew, *l. c.* p. 96, pl. 2. figs. 4-6.

Orimarga, g. n., Osten-Sacken, *l. c.* p. 120. (See Table, p. 428). Sp. *Limnobia alpina* (Zett.), and probably *L. virgo* and *juvenilis* (Zett.).

Atarba, g. n., Osten-Sacken, *l. c.* p. 128. (See Table, p. 428). Sp. *A. picticornis*, sp. n., Osten-Sacken, *ibid.* pl. 1. fig. 13, and pl. 4. fig. 29, Delaware, Columbia ?

Empeda, g. n., Osten-Sacken, *l. c.* p. 183. (See Table, p. 428). Sp. *Limnobia diluta* (Zett.), *flava* and *nubila* (Schum.); *E. stigmatica*, sp. n., Osten-Sacken, *l. c.* p. 184, Trenton Falls.

Utomorpha, g. n., Osten-Sacken, *l. c.* p. 232. (See Table, p. 428). Sp. *Limnophila pilosella* (O.-S.), and perhaps *L. pilicornis* (Zett.).

Plectromyia, g. n., Osten-Sacken, *l. c.* p. 282. (See Table, p. 429). Sp. *P. modesta*, sp. n., Osten-Sacken, *l. c.* p. 284, pl. 2. fig. 18, White Mountains.

Rhaphidolabis, g. n., Osten-Sacken, *l. c.* p. 284. (See Table, p. 429.) Sp. *R. tenuipes*, sp. n., Osten-Sacken, *l. c.* p. 287, pl. 2. fig. 17, Maryland, Saratoga; and *R. flaveola*, sp. n., Osten-Sacken, *l. c.* p. 288, Maryland, Massachusetts.

New species :—

Dicranomyia. Of this genus Osten-Sacken (*l. c.*) describes seven new North-American species, namely:—*D. rostrifera*, p. 65, New York; *D. brevivena*, p. 66, New York and Washington (D. C.); *D. floridana*, p. 67, Flo-

rida; *D. hæretica*, p. 70, pl. 1. fig. 3, New York, Hudson's Bay Territory; *D. halterata*, p. 71, Labrador; *D. globithorax*, p. 74, White Mountains and Washington (D. C.); and *D. rara*, p. 75, New York.

Limnobia sociabilis, Osten-Sacken, *l. c.* p. 95, Illinois.

Elephantomyia westwoodi, Osten-Sacken, *l. c.* p. 109, pl. 1. fig. 5, and pl. 3. fig. 8 (= *E. canadensis*, O.-S. nec Westw.), Trenton Falls.

Rhypholophus innocens, Osten-Sacken, *l. c.* p. 142, Washington (D. C.), New Jersey; *R. nigripilus*, Osten-Sacken, *ibid.*, Washington (D. C.); *R. rubellus*, Osten-Sacken, *l. c.* p. 144, pl. 1. fig. 15, New York, Delaware; and *R. monticola*, Osten-Sacken, *l. c.* p. 145, White Mountains.

Erioptera straminea, Osten-Sacken, *l. c.* p. 157, Middle States (?); *E. armillaris*, Osten-Sacken, *l. c.* p. 158, Trenton Falls, Washington (D. C.), &c.; and *E. forcipula*, Osten-Sacken, *l. c.* p. 163, New Jersey.

Goniomyia manca, Osten-Sacken, *l. c.* p. 178, note, New Jersey.

Limnophila. Osten-Sacken (*l. c.*) describes the following new North-American species of this genus:—*L. unica*, p. 205, White Mountains; *L. fasciolata*, p. 206 (= *L. fasciata*, O.-S. nec Schum.), Massachusetts; *L. poetica*, p. 207, Massachusetts; *L. tenuicornis*, p. 208, White Mountains; *L. niveitarsis*, p. 209, Delaware, Maryland; *L. recondita*, p. 212, New York, Pennsylvania, Georgia, &c.; *L. contempta*, p. 218, Middle States; *L. inornata*, p. 219, Massachusetts; *L. fratria*, p. 220, Northern States; *L. munda*, pl. 3. 2, White Mountains; and *L. cubitalis*, p. 229, Virginia, Ohio.

Oxycera. Three supposed new North-American species are briefly characterized but not named by Osten-Sacken, *l. c.* p. 236.

Ex. Eriocera wilsonii, Osten-Sacken, *l. c.* p. 255, Delaware.

Penthoptera albitarsis, Osten-Sacken, *l. c.* p. 257, Connecticut, Pennsylvania.

Ula bolitophila, Loew, *Beschr. eur. Dipt. i.* p. 4, Carniola, Carinthia, Silesia.

Ula elegans, Osten-Sacken, *l. c.* p. 276, White Mountains; and *U. paupera*, Osten-Sacken, *l. c.* p. 277 (= *U. pilosa*, O.-S. nec Schum.), Washington (D. C.).

Dicranota eucera, Osten-Sacken, *l. c.* p. 281, Washington (D. C.).

Anisomera miki, Nowicki, *Verh. naturf. Ver. in Brünn*, vi. Abhandl. p. 70, East Galicia.

Dolichopeza opaca, Mik, *Verh. zool.-bot. Ges. in Wien*, xix. p. 23, pl. 4. fig. 10, near Freistadt.

Pacilostola gentilis, Loew, *Beschr. eur. Dipt. i.* p. 5, Silesia.

Dactylolabis rhodia, Loew, *l. c.* p. 7, Rhodes; *D. gracilipes*, Loew, *l. c.* p. 8, Black Forest, Karlsbad.

Tipula imbecilla, Loew, *l. c.* p. 9, Rhodes.

Ctenophora tricolor, Loew, *l. c.* p. 10, N. Russia, Siberia; *C. magnifica*, Loew, *l. c.* p. 12, Astrabad.

Dixa clavata, Loew, *Berl. ent. Zeits. xiii.* p. 2, Massachusetts.

STRATIOMYIDÆ.

Nothomyia, g. n., Loew, *Berl. ent. Zeitsch. xiii.* p. 4. Allied to *Microchrysa* and *Orycera*; only one submarginal cell. Sp. probably *Orycera metallica* (Wied.); *M. scutellata*, sp. n., Loew, *l. c.* p. 4, and *M. calopus*, sp. n. Loew, *l. c.* p. 5, Cuba.

New species :—

Rachicercus tristis, Loew, Besch. eur. Dipt. i. p. 24, Spain.

Oxyceira grata, Loew, *l. c.* p. 24, Greece.

Oxyceira picta, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 133, Wisconsin.

Sargus marginatus, Van der Wulp, *l. c.* p. 134, Wisconsin.

Sargus rufescens, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iii. p. 104, pl. 3. figs. 7-9, Halmahera and Waigiou.

Nemotelus cabonarius, Loew, Berl. ent. Zeitschr. xiii. p. 5, Massachusetts.

XYLOPHAGIDÆ.

Xylophagus longicornis, sp. n., Loew, Berl. ent. Zeits. xiii. p. 163, and *X. rufipes*, Loew, *ibid.*, Massachusetts; *X. abdominalis*, sp. n., Loew, *ibid.*, Texas.

Subulu tenthredinoides, sp. n., Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 132, pl. 3. figs. 5-7, Wisconsin.

TABANIDÆ.

Hamatopota pluvialis. Bauer describes and figures the transformations of this species (Verh. zool.-bot. Ges. in Wien, xix. pp. 921, 922, pl. ~~tabes~~ figs. 7, 8).

New species :—

Tabanus leucopterus, Van der Wulp, Tijdschr. voor Entom. 2^{de} ser. p. 98, Aru; *T. erythrocephalus*, Van der Wulp, *l. c.* p. 99, Halmahera; *T. pictipennis*, Van der Wulp, *l. c.* p. 100, pl. 3. figs. 1 & 2, Celebes; *T. triangularis*, Van der Wulp, *l. c.* p. 100, Obi.

Silvius dimidiatus, Van der Wulp, *l. c.* p. 102, pl. 3. figs. 3-5, Salwatty.

Chrysops albicinctus, Van der Wulp, *l. c.* p. 103, pl. 3. fig. 6, Salwatty.

Chrysops æstuans, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 135, pl. 3. figs. 8, 9, Wisconsin.

Pangonia rasa, Loew, Berl. ent. Zeits. xiii. p. 5, Wisconsin.

Lepidoselaga recta, Loew, *l. c.* p. 6, New Granada.

BOMBYLIIDÆ.

Exoprosopa satyrus (Fab.) is figured by Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iii. pl. 3. fig. 10.

New species :—

Lomatia superba, Loew, Besch. eur. Dipt. i. p. 126, Messina; *L. gratiosa*, Loew, *l. c.* p. 127, Andalusia; *L. fasciculata*, Loew, *l. c.* p. 129, Smyrna; *L. grajugena*, Loew, *l. c.* p. 130, Greece; *L. erynnis*, Loew, *l. c.* p. 137, Hungary; *L. obscuripennis*, Loew, *l. c.* p. 141, Andalusia; *L. infernalis*, Loew, *l. c.* p. 144, Syria and Balkan; *L. tysiophone*, Loew, *l. c.* p. 147, Andalusia; *L. polyzona*, Loew, *l. c.* p. 151 (= *L. hecate*, Loew nec Meig.), Rhodes.

Anthrax gallus, Loew, *l. c.* p. 155, Bordeaux; *A. perspicillaris*, Loew, *l. c.* p. 157, Italy, Greece, &c.; *A. hispanus*, Loew, *l. c.* p. 158, Andalusia; *A. mutilis*, Loew, *l. c.* p. 159, Rhodes; *A. occipitalis*, Loew, *l. c.* p. 162, Andalusia.

lusia; *A. misellus*, Loew, l. c. p. 163, Greece; *A. lotus*, Loew, l. c. p. 164, Rhodes; *A. unctus*, Loew, l. c. p. 169, Rhodes; *A. uncinus*, Loew, l. c. p. 171, N.E. Russia, Siberia; *A. præcisus*, Loew, l. c. p. 174, Siberia; *A. melan-chlæus*, Loew, l. c. p. 175, Rhodes; *A. turbidus*, Loew, l. c. p. 177, Andalusia; *A. stenozonus*, Loew, l. c. p. 180, Makri; *A. blandus*, Loew, l. c. p. 181, Makri; *A. melanurus*, Loew, l. c. p. 183, South of Spain; *A. euzonus*, Loew, l. c. p. 184, S. of Spain; *A. niphobletus*, Loew, l. c. p. 186, Magnesia; *A. senecio*, Loew, l. c. p. 188, Corfu; *A. albulus*, Loew, l. c. p. 189, Rhodes and Makri; *A. ventruosus*, Loew, l. c. p. 194, Sicily; and *A. ovatus*, Loew, l. c. p. 196, Ochotsk.

Anthrax proboscidea, Loew, Berl. ent. Zeits. xiii. p. 17, Sonora; *A. pertusa*, Loew, l. c. p. 18, New Mexico; *A. flaviceps*, Loew, ibid., Tamaulipas; *A. ceyx*, Loew, l. c. p. 19, Virginia; *A. fuliginosa*, Loew, l. c. p. 20, California; *A. palliata*, Loew, l. c. p. 20, Illinois; *A. diagonalis*, Loew, l. c. p. 21, California; *A. sagata*, Loew, ibid. Matamoras; *A. curta*, Loew, l. c. p. 22, California; *A. parvicornis*, Loew, l. c. p. 23, Illinois; *A. bigradata*, Loew, l. c. p. 23, Cuba; *A. nigricauda*, Loew, l. c. p. 24, Massachusetts; *A. scrobiculata*, Loew, ibid., Illinois; *A. stenozona*, Loew, l. c. p. 25, Illinois; *A. adusta*, Loew, l. c. p. 26, Cuba; *A. molitor*, Loew, ibid., California; and *A. mucorea*, Loew, l. c. p. 27, Nebraska.

Anthrax terminalis, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iii. p. 108, pl. 3: fig. 12, Halmahera; *A. tripunctata*, Van der Wulp, l. c. p. 109, pl. 4, fig. 1, Salwatty; and *A. trimaculata*, Van der Wulp, l. c. p. 110, pl. 4, fig. 2, Timor.

Exoprosopa dispar, Loew, l. c. p. 202, Rhodes, Naxos; *E. munda*, Loew, l. c. p. 206, Sicily; *E. normalis*, Loew, l. c. p. 208, Greece; *E. mænas*, Loew, l. c. p. 209 (S. of Europe); *E. baccha*, Loew, l. c. p. 214, Balkan Archipelago, Rhodes, &c.; *E. telamon*, Loew, l. c. p. 218, Smyrna, Cos; *E. iris*, Loew, l. c. p. 220, Greece; *E. minois*, Loew, l. c. p. 221, Rhodes and Leros; *E. conturbata*, Loew, l. c. p. 224, S. Russia.

Exoprosopa gazophylax, Loew, Berl. ent. Zeitschr. xiii. p. 12, California; *E. decora*, Loew, l. c. p. 13, Wisconsin; *E. trabalis*, Loew, ibid., Jalapa; *E. sordida*, Loew, l. c. p. 14, Matamoras; *E. cubana*, Loew, ibid., Cuba; *E. bifurca*, Loew, l. c. p. 15, California; *E. agassizii*, Loew, l. c. p. 16, California; *E. nubifera*, Loew, ibid., Cuba; and *E. parva*, Loew, l. c. p. 17, Cuba.

Exoprosopa tristis, Van der Wulp, l. c. p. 107, pl. 3, fig. 11, Timor.

Hemipenthes seminigra, Loew, l. c. p. 27, Saskatchewan.

Argyromæba delila, Loew, l. c. p. 28, California; *A. stellans*, Loew, ibid., Oregon; *A. obsoleta*, Loew, l. c. p. 29, Missouri; *A. pauper*, Loew, ibid., Illinois; *A. euplanes*, Loew, l. c. p. 30, Cuba; *A. contigua*, Loew, ibid., Virginia.

Ploas limbata, Loew, l. c. p. 3, New Mexico.

Ploas valida, Loew, Besch. eur. Dipt. i. p. 247, Greece; *P. simplex*, Loew, l. c. p. 248, Smyrna; *P. pusilla*, Loew, l. c. p. 250, Dalmatia.

Spongostylum pallipes, Loew, l. c. p. 227, Makri; *Tomomyza europæa*, Loew, l. c. p. 228, Rhodes, Asia Minor, and Greece; *T. tenella*, Loew, l. c. p. 231, Spain.

Amictus scutellaris, Loew, l. c. p. 234, Makri; *A. strigilatus*, Loew, l. c. p. 239, Rhodes and Asia Minor; *A. pictus*, Loew, l. c. p. 241, Corfu; *A. se-*

tosus, Loew, *l. c.* p. 243, Makri; *A. validus*, Loew, *l. c.* p. 244, Asia Minor, Cyprus.

Comptosia brunnipennis, Van der Wulp, *l. c.* p. 110, pl. 4. fig. 3, Timor.

Usia calva, Loew, Besch. eur. Dipt. i. p. 250, Asia Minor.

Platypygus bellus, Loew, *l. c.* p. 251, Sarepta.

Geron macropterus, Loew, Berl. ent. Zeitschr. xiii. p. 172, New York; *G. vitripennis*, Loew, *l. c.* p. 173, Middle States; *G. albidipennis*, Loew, *l. c.* p. 174, California.

Mulio americanus, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 141, pl. 4. figs. 1-4, Wisconsin.

ACROCERIDÆ.

BRAUER (Verh. zool.-bot. Ges. in Wien, xix. pp. 737-740) describes the larva and pupa of *Astomella lindenii* (Er.). The larva lives parasitically in the body of *Cteniza ariana* (Koch), from which the imago was bred by Erber. The larva, pupa, and spider are figured by Brauer (*l. c.* pl. 13. figs. 1-6).

New species :—

Acrocera obsoleta, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 139, pl. 3. fig. 17, Wisconsin.

Oncodes costatus, Loew, Berl. ent. Zeitschr. xiii. p. 165, Massachusetts.

Opsebius sulphuripes, Loew, *l. c.* p. 166, New York.

SCENOPINIDÆ.

Scenopinus albidipennis, sp. n., Loew, Berl. ent. Zeitschr. xiii. p. 32, Cuba.

ASILIDÆ.

Dioctria lata (Loew). Nowicki describes the ♂ of this species (Verh. naturf. Ver. in Brünn, vi. Abhandl. p. 96).

New species :—

Asilus (Machinus) avidus, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iv. p. 82, and *A. (Stilpnogaster) anceps*, Van der Wulp, *l. c.* p. 84, Wisconsin.

Dioctria ædipus, Loew, Besch. eur. Dipt. i. p. 63, Syria.

Saropogon notatus, Loew, *l. c.* p. 73, Greece; *S. pollinosus*, Loew, *l. c.* p. 75, Smyrna; *S. comosus*, Loew, *l. c.* p. 77, Corsica; *S. micropterus*, Loew, *l. c.* p. 82, Greece; *S. geniculatus*, Loew, *l. c.* p. 92, Grusia; *S. frontalis*, Loew, *l. c.* p. 94, Andalusia; *S. sodalis*, Loew, *l. c.* p. 97, *S. obesus*, Loew, *l. c.* p. 100, and *S. fucatus*, Loew, *l. c.* p. 102, Andalusia.

Leptogaster flavicornis, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 136, Wisconsin.

Dasypogon laticeps, Van der Wulp, *l. c.* p. 137, pl. 3. figs. 10-16, Wisconsin.

Dasypogon egregius, Loew, *l. c.* p. 110, Bosdagh; *D. melanopterus*, Loew, *ibid.*, Andalusia; *D. octonotatus*, Loew, *l. c.* p. 112, Sarepta.

Holopogon nobilis, Loew, *l. c.* p. 115, Greece.

Pogonosoma minor, Loew, *l. c.* p. 116, France.

THEREVIDÆ.

New species :—

Thereua pallipes, Loew, Besch. eur. Dipt. i. p. 121, and *T. hebes*, Loew, *l. c.* p. 123, Sarepta.

Thereua albiceps, Loew, Berl. ent. Zeitschr. xiii. p. 166, British America; *T. flavicincta*, Loew, *l. c.* p. 168, N. Wisconsin; *T. gilvipes*, Loew, *l. c.* p. 168, Massachusetts; *T. strigipes*, Loew, *l. c.* p. 169, English River.

Thereua comata, Loew, Berl. ent. Zeitschr. xiii. p. 7, California; *T. candida*, Loew, *l. c.* p. 8, Wisconsin.

Psilocephala longipes, Loew, *l. c.* p. 8, Cuba; *P. melampodia*, Loew, *l. c.* p. 9, Illinois; *P. munda*, Loew, *ibid.*, Wisconsin; *P. laticornis*, Loew, *l. c.* p. 10, Cuba; *P. melanoprocta*, Loew, *l. c.* p. 11, Maine, Hudson's Bay; *P. costalis*, Loew, *ibid.*, California; and *P. rufiventris*, Loew, *l. c.* p. 12, Nebraska.

Psilocephala variegata, Loew, *l. c.* p. 170, Canada; *P. scutellaris*, Loew, *l. c.* p. 171, Columbia District; *P. erythrura*, Loew, *l. c.* p. 172, Middle States.

LEPTIDÆ.

New species :—

Leptis tonsa, Loew, Besch. eur. Dipt. i. p. 29, Spain; *L. græcula*, Loew, *l. c.* p. 32, Corfu; *L. florentina*, Loew, *l. c.* p. 34, Florence; *L. nigriiventris*, Loew, *l. c.* p. 33, Bavaria.

Leptis griseola, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 142, pl. 4. fig. 5, Wisconsin.

Chrysopila dispar, Van der Wulp, *l. c.* p. 143, pl. 4. figs. 6–11, Wisconsin.

Chrysopila pulla, Loew, *l. c.* p. 43, Germany; *C. binotata*, Loew, *l. c.* p. 47, Greece; *C. sicala*, Loew, *l. c.* p. 49, Sicily; *C. palparis*, Loew, *l. c.* p. 50, Corfu; *C. obscuribarba*, Loew, *l. c.* p. 53, Rhodes; *C. pallipes*, Loew, *l. c.* p. 54, Makri; *C. pretiosa*, Loew, *l. c.* p. 55, Naxos.

Atherix picta, Loew, *l. c.* p. 60, N. Russia, Siberia.

Ptiolina fasciata, Loew, Berl. ent. Zeitschr. xiii. p. 164, and *P. majuscula*, Loew, *l. c.* p. 165, Hudson's Bay.

Ptiolina lapidaria, Nowicki, Verh. naturf. Ver. in Brünn, vi. Abhandl. p. 74, pl. 2. fig. 1, Western Carpathians.

EMPIDÆ.

LOEW (Berl. ent. Zeitschr. xiii. pp. 65–94) describes several species belonging to the circles of *Empis ciliata*, *E. stercorea*, and *E. chioptera*, which have been detected since the publication of his papers in the 11th volume of the 'Berliner Zeitschrift.' Most of the species are described as new. *E. crassa* (Now.) is described (p. 77).

Clinocera varipennis (Now.). The apex of the ♂ abdomen is figured by Mik, Verh. zool.-bot. Ges. in Wien xix. pl. 4. fig. 13, who also figures the wing of *C. inermis* (Loew), *l. c.* fig. 15.

New species :—

Rhamphomyia tristriolata, Nowicki, Verh. naturf. Ver. in Brünn, vi. Abhandl. p. 77, pl. 2. fig. 2, Tatra; *R. lowi*, Nowicki, *l. c.* p. 78, Tatra; *R. luridipennis*, Nowicki, *l. c.* p. 80, Tatra; *R. simulium*, Nowicki, *l. c.* p. 81, pl. 2. fig. 3, Tatra; and *R. fimbriatipes*, Nowicki, *l. c.* p. 82, Lemberg.

Empis. Loew (Berl. ent. Zeitschr. xiii.) describes the following new

species of this genus:—(*E.-ciliata* group) *E. dedecor*, *l. c.* p. 65, Greece; *E. hæmorrhica*, *l. c.* p. 67, Greece; *E. concisa*, *l. c.* p. 70, Ephesus; *E. divergens*, *l. c.* p. 72, Greece; *E. dasynota*, *l. c.* p. 73, Greece; *E. lugubris*, *l. c.* p. 75, Rhodes; and *E. setigera*, *l. c.* p. 80, South Bavaria: (*E.-stercorea* group) *E. læta*, *l. c.* p. 82, Preth: (*E.-chiptera* group) *E. hoffmannseggii*, *l. c.* p. 84 (= *E. grisea*, Meig.), *E. abbreviata*, *ibid.*, *E. pilimana*, *l. c.* p. 86, *E. vitripennis*, *l. c.* p. 88, Preth; *E. corvina*, *l. c.* p. 90, Augsburg; and *E. tenuipes*, *l. c.* p. 92, Preth.

Empis distans, Loew, Berl. ent. Zeitschr. xiii. p. 32, Georgia; *E. violacea*, Loew, *ibid.*, Mexico; *E. suavis*, Loew, *l. c.* p. 33, Mexico; and *E. superba*, Loew, *l. c.* p. 34, Cuba.

Empis divisa, Loew, Besch. eur. Dipt. i. p. 257, Greece; *E. pulchripes*, Loew, *l. c.* p. 258, Greece; *E. nepticula*, Loew, *l. c.* p. 259, Sicily and Corfu; *E. erosa*, Loew, *l. c.* p. 260, Dalmatia; *E. curta*, Loew, *l. c.* p. 261, Sarepta; *E. brevicornis*, Loew, *l. c.* p. 263, Bavaria; *E. lasionota*, Loew, *l. c.* p. 264, Bavaria, Corfu; and *E. adusta*, Loew, *l. c.* p. 266, Corfu.

Empis crassa, Nowicki, Verh. naturf. Ver. in Brünn, vi. Abhandl. p. 82, Tatra.

Hilara heterogastra, Nowicki, *l. c.* p. 84, Tatra.

Clinocera varipennis, Nowicki, *l. c.* p. 85, pl. 2. fig. 4, and *C. rhynchops*, Nowicki, *l. c.* p. 89, pl. 2. fig. 6, Tatra.

Clinocera lamellata, Loew, *l. c.* p. 267, Bavaria; *C. dimidiata*, Loew, *l. c.* p. 271, Portugal; *C. aquilex*, Loew, *l. c.* p. 272, Bavaria.

Clinocera trinotata, Mik, Verh. zool.-bot. Ges. in Wien, xix. p. 24. figs. 12 & 14, Gasteiner Alps.

Syneches punctipennis, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 1. pl. 3. figs. 18-21, Wisconsin.

DOLICHOPODIDÆ.

KOWARZ publishes (Verh. zool.-bot. Ges. in Wien, xix. pp. 561-566) a list of the species of this family collected by him near Losoncz, in Hungary.

Eucoryphus, g. n., Mik, Verh. zool.-bot. Ges. in Wien, xix. p. 19. Allied to *Diostracus*, *Thinophilus*, and *Medeterus*; antennæ inserted in the middle of the head, joint 1 naked above, 2 transverse, gibbous beneath, clothed with long hairs, 3 transverse, pilose, bicornute (♂), or slightly emarginate (♀). Sp. *E. brunneri*, sp. n., Mik, *l. c.* p. 28, pl. 4. figs. 1-5, Austria.

Oncopygius, g. n., Mik, *l. c.* p. 20. Allied to *Systemus* and *Hypophyllus*; characterized by the remarkably swollen hypopygium. Sp. *Systemus ornatus* (Mik), perhaps = *Hypophyllus distans* (Loew).

New species:—

Dolichopus tanythrix, Loew, Besch. eur. Dipt. i. p. 274, Bohemia.

Gymnopternus basilicus, Loew, *l. c.* p. 277 (= *G. regalis*, Loew, nec Meig.), Sicily; and *G. apollo*, Loew, *l. c.* p. 279, Greece.

Hercostomus præceps, Loew, *l. c.* p. 285, Silesia, Bavaria.

Tachytrechus ocior, Loew, *l. c.* p. 287, Meseritz.

Tachytrechus eucerus, Loew, Ber. naturh. Ver. Augsb. xx. p. 51, near Augsburg.

Hypophyllus sciophilus, Loew, *l. c.* p. 289, Hungary.

Synarthrus subinermis, Loew, *l. c.* p. 290, Hungary.

Nematoproctus præsectus, Loew, *l. c.* p. 292, Hungary.

- Diaphorus lautus*, Loew, l. c. p. 294, Greece; *D. melancholicus*, Loew, l. c. p. 295, and *D. halteralis*, Loew, l. c. p. 296, Hungary.
Asyndetus varus, Loew, l. c. p. 297, Hungary.
Asyndetus ammophilus, Loew, Berl. ent. Zeitsch. xiii. p. 34, Newport, Rhode Island; *A. appendiculatus*, Loew, l. c. p. 36, Newport.
Chrysotus niger, Loew, Besch. eur. Dipt. i. p. 298, Hungary.
Liancalus humilis, Loew, l. c. p. 300, Carinthia.
Medeterus glaucus, Loew, l. c. p. 301, Carinthia.
Saucropus nubifer, Loew, l. c. p. 302, Greece.
Saucropus carbonifer, Loew, Berl. ent. Zeits. xiii. p. 177, New York.
Thripticus bellus, Loew, Besch. eur. Dipt. i. p. 303, England.
Porphypops hartmannifallax, Loew, Ber. naturh. Ver. Augsb. xx. p. 52, near Augsburg.
Psilopus flexus, Loew, l. c. p. 55, near Augsburg.
Psilopus nigricornis, Loew, Besch. eur. Dipt. i. p. 305, Carinthia.
Psilopus splendidus, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iii. p. 111, pl. 4. figs. 4-7, New Guinea.
Campsicnemus manillatus, Mik, Verh. zool.-bot. Ges. in Wien, xix. p. 27, pl. 4. figs. 16, 17, Wildbad-Gastein.

MUSCIDÆ.

Loew. *Tachinides*.

LE VAN DER WULP (Tijdschr. voor Ent. 2^{de} ser. iv. pp. 140-141) discusses fig. 5, characters of the species of Tachinide bred from *Trachæa piniperda* Ch. Utrecht, which had been identified with *Nemorea glabrata* (Meig.), but which he regards as *N. strenua* (Meig.).

Frontina læta (Meig.) belongs to *Baumhaueria*, according to Van der Wulp (l. c. p. 144).

Exorista modesta (Meig. vii.) must receive a new name, as there was a previously described *Tachina modesta* (Meig. iv.) = *Exorista modesta* (Macq.). Van der Wulp proposes to name it *E. verecunda* (l. c. p. 144).

Phorocera concinnata (Meig.). Van der Wulp notices the characters of this species, with which he regards *P. munda* (Meig.) and *Tachina stupida* (Meig.) as identical (l. c. pp. 144, 145).

The species recorded as *Apodacra elegantula* (Zett.) in "Bouwstoffen," iii. p. 160, is *Paragusia frivaldskii* (Schin.) according to Van der Wulp (l. c. p. 151).

VAN DER WULP (l. c. pp. 152, 153) gives a table of Dutch species of this subfamily whose history is known to him, in continuation of a former list. Besides some new species described by him (*vide infra*), he cites *Plagia ambigua* (Fall.), *Exorista vulgaris* (Fall.), *E. mitis* (Meig.), *E. fimbriata* (Meig.), *E. excisa* (Fall.), *E. lucorum* (Meig.), *E. prominens* (Meig.), *E. ferina* (R. D.), *E. affinis* (Fall.), *Meigenia bisignata* (Wied.), *Tachina larvarum* (Lin.), *T. vidua* (Meig.), *Phorocera concinnata* (Meig.), *Baumhaueria vertiginosa* (Fab.), *Thryptocera pilipennis* (Fall.), *T. scipennis* (Fall.), *Macquartia nitida* (Zett.), *Degeeria parallela* (Meig.), *Scopolia latifrons* (Zett.), and *S. ocypterina* (Zett.).

CHARAULT notices the parasitism of *Phorocera concinnata* (Meig.) upon *Liparis dispar*, and the presence in larvæ of the former of a Pteromalian parasite. (Bull. Soc. Ent. Fr. 1869, p. li.)

Ammobia, g. n., Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iv. p. 147.

Head in profile quadrangular; forehead scarcely prominent, its setæ rigid; eyes nearly naked; face perpendicular; buccal setæ rigid, the 2 longest just above the mouth; antennæ with joints 1 & 2 very short, 3 twice or thrice as long as 2, seta indistinctly jointed; wing with a small marginal spine, first posterior cell opening narrowly far from apex of wing, posterior transverse vein slightly oblique, joining the middle of the first posterior cell. Sp. *A. glabriventris*, sp. n., Van der Wulp, *l. c.* p. 148, pl. 4. figs. 10-14, near the Hague.

Stylomyia, g. n., Van der Wulp, *l. c.* p. 149. Allied to *Leucostoma*; head roundish; forehead not prominent; eyes naked; antennæ short, joint 2 setulose, 3 times as long as 2, seta naked, indistinctly jointed; wings with 3rd longitudinal vein reaching the apex, 1st posterior cell closed and pedunculate. Sp. *S. punctulata*, sp. n., Van der Wulp, *l. c.* p. 150, pl. 4. figs. 15-19, Holland.

New species :—

Gymnosoma intermedia, Loew, Ber. naturh. Ver. Augsb. xx. p. 57, near Augsburg.

Tachina glacialis, Boheman, Æfvers. Kongl. Vet.-Akad. Förh. xxii. p. 570, Spitzbergen.

Echinomyia hæmorrhœa, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 145, pl. 4. figs. 13-16, Wisconsin.

Schineria ruficauda, Van der Wulp, *l. c.* p. 146, pl. 4. figs. 17-20, Wisconsin.

Baumhaueria analis, Van der Wulp, *l. c.* p. 148, pl. 4. figs. 21-23, Wisconsin.

Dezia triangularis, Van der Wulp, *l. c.* p. 149, pl. 5. figs. 1-5, Wisconsin.

Plagia auriflua, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iv. p. 137, pl. 4. fig. 1 (wing), parasitic on *Liparis auriflua*; *P. impressa*, Van der Wulp, *l. c.* p. 139, pl. 4. fig. 2 (wing), Holland.

Meigenia bombivora, Van der Wulp, *l. c.* p. 142, pl. 4. figs. 3-5 (wing and head), Holland, bred from a nest of *Bombus agrorum*.

Germaria sabulosa, Van der Wulp, *l. c.* p. 146, pl. 4. figs. 6-9 (wing, head, and antenna), Holland.

Hydrophorus æstuum, Loew, Berl. ent. Zeit. xiii. p. 36, Newport, Rhode Island.

Gynochæta alcedo, Loew, Berl. ent. Zeitschr. xiii. p. 36, Massachusetts.

Thryptocera prasinanæ, Van der Wulp, *l. c.* p. 151, pl. 4. fig. 20 (head), Holland, parasitic on *Halias prasinana*.

Thryptocera kowarzi, Nowicki, Verh. naturf. Ver. in Brünn, vi. Abhandl. p. 94, East Galicia.

Clairvillia flavipalpis, Rondani, Atti Soc. Ital. Sci. Nat. xi. p. 603, Sicily.

Hyalomyia tomentosa, Rondani, *ibid.*, Sicily.

Alophora krieckbaumeri, Schiner, Verh. zool.-bot. Ges. in Wien, xix. p. 841, Tyrol.

Muscides.

Musca harpyia, sp. n., Harris, Entom. Corresp. p. 335 (said to be the common House-fly of Massachusetts); *M. familiaris*, sp. n., Harais, *l. c.* p. 330 (also a house-fly).

Pyrellia centralis, sp. n., Loew, Berl. ent. Zeits. 1868, p. 37, Cuba; and *P. setosa*, *ibid.*, Illinois.

Lucilia leonardi, sp. n., Weyenbergh, Arch. Néerl. iv. p. 362, pl. 6. figs. 6-8, Java.

Anthomyides.

Lispe. Van der Wulp (Tijdschr. voor Ent. 2^{de} ser. iii. pp. 230-235), in describing a new species of this genus, discusses the characters of its other species, and figures the anterior tarsus of the ♂ *L. tentaculata* (De G.), pl. 11. fig. 6, and the ♂ *L. consanguinea* (Löw), fig. 7, the head and intermediate foot of the ♂ *L. litorea* (Fall.), figs. 8 & 9, and the head, antenna, and middle tarsus of *L. hydromyzina* (Fall.), figs. 12-14.

Anthomyia ruficeps (Meig.). Von Röder describes the two sexes of this species (Zeitschr. ges. Naturw. xxxiii. p. 92).

New species :—

Aricia labiosa, Boheman, Öfvers. Kongl. Vet.-Akad. Förh. xxii. p. 571, *A. hyperborea*, Boh. ibid., and *A. megastoma*, Boh. l. c. p. 572, Spitzbergen.

Aricia cinerella, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 150, Wisconsin.

Aricia proxima, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iv. p. 85, Wisconsin.

Cænusia incisurata, Van der Wulp, l. c. p. 86, Wisconsin.

Cænusia tricineta, Loew, Berl. ent. Zeitschr. xiii. p. 177, New Hampshire.

Schenomyza chrysostoma, Loew, l. c. p. 177, New Hampshire.

Linnophora scripta, Nowicki, Verh. naturf. Ver. in Brünn, vi. Abhandl. p. 91, pl. 2. fig. 8, Podolia.

Anthomyia tarsata, Van der Wulp, l. c. p. 151, pl. 5. fig. 6, Wisconsin.

Lispe gemina, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iii. p. 233, pl. 11. figs. 10 & 11 (head and middle foot), Holland.

Lispe apicalis, Mik, Verh. zool.-bot. Ges. in Wien, xix. p. 33, pl. 4. fig. 20, near Vienna.

Helomyzides.

RONDANI (Bull. Soc. Ent. Ital. i. pp. 102-104) discusses the position of the genus *Trigonometopus* (Macq.), which he places among his *Sciomyzinæ*, in immediate juxtaposition with his genus *Pelidnoptera*. He characterizes the genus and the species *T. frontalis* (Meig.).

New species :—

Cordylura gracilipes, Loew, Berl. ent. Zeits. xiii. p. 178, New Hampshire; *C. inermis*, Loew, ibid., New Hampshire; *C. scapularis*, Loew, l. c. p. 179, English River; *C. glabra*, Loew, l. c. p. 180, New Hampshire; *C. munda*, Loew, ibid., Hudson's Bay Territory; *C. latifrons*, Loew, ibid., Middle States; *C. gagatina*, Loew, l. c. p. 182, Canada; *C. acuticornis*, Loew, ibid., Hudson's Bay Territory; *C. megacephala*, Loew, l. c. p. 183, Columbia District; *C. albibarba*, Loew, ibid., New Hampshire.

Cordylura maculipennis, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 152, pl. 5. figs. 7-9, Wisconsin.

Scatomyza hyperborea, Boheman, Öfvers. Kongl. Vet.-Akad. Förh. xxii. p. 572, and *S. obscura*, Boh. l. c. p. 573, Spitzbergen.

Helomyza borealis, Boheman, l. c. p. 573, Spitzbergen.

*Leria barbiger*a, Mik, Verh. zool.-bot. Ges. in Wien, xix. p. 31, pl. 4, figs. 18, 19, Austria.

Supromyzides.

Drepanephora, g. n., Loew, Berl. ent. Zeitschr. xiii. p. 95. Forehead with a tubercle in the ocellar region, at the apex of which there are two thick setæ; ocelli 0; joint 3 of antennæ elongate, broad at base, pointed at apex; face not inflated; scutellum inflated, bituberculate at apex, with 4 ensiform setæ; wings with the auxiliary vein very close to the first longitudinal vein. Sp. *D. horrida*, sp. n., Loew, *l. c.* p. 96, Ceylon.

Sapromyza plumata, sp. n., Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 159, Wisconsin.

Ortalides.

RONDANI publishes (Bull. Soc. Ent. Ital. i. pp. 5-37) a synopsis of the Italian species of the division *Ortaloidi* of this subfamily. He tabulates the genera as follows (*l. c.* pp. 6-9) :—

I. Scutellum setis 2 vel sæpius 4 instructum; si raro 6 tunc calyptrorum squamæ sat parvæ.

A. Vena 3 longitudinalis oriens a quarta satis ante, non contra nec extra apicem areolæ basalis retropositæ.

1. Tibiæ posticæ retro non setulosæ . . . 1. NEUROCTENA (g. n.).

2. Tibiæ posticæ setulis aliquibus extra munitæ.

2. LIGNODESIA (g. n.).

B. Vena 3 longitudinalis oriens a quarta contra, non manifeste ante apicem areolæ basalis retropositæ.

1. Frons ultra oculos plus vel minus sed distincte porrecta.

a. Vena 2 longitudinalis ultra transversam intermediam manifeste producta.

* Antennæ breves, articulo 3 subovato.

3. OTITES (Lat.).

† Antennæ elongatæ, articulo ultimo cultriformi.

a. Scutellum setis 4 instructum . . . 4. MACHEIROCERA (g. n.).

β. Scutellum setis 2 tantum apicalibus præditum.

5. DORICERA (Meig.).

b. Vena 2 longitudinalis contra, non manifeste ultra transversam intermediam producta 6. TETANOIS (Fall.).

2. Frons ultra oculos non aut vix porrecta.

a. Antennæ articulo ultimo vel distincte elongato, vel brevi et dorso concavo, non breviter subovato nec disciformi.

* Arista manifeste pilosula 7. MELIERIA (R. D.).

† Arista nuda vel subnuda.

a. Venæ longitudinales 4 et 5 versus apicem manifeste convergentes; antennæ articulo ultimo non elongato, et dorso excavato 8. CERXYS (Macq.).

β. Venæ longitudinales 4 et 5 non extrinsecus manifeste convergentes; antennæ articulo ultimo elongato et dorso non distincte excavato.

a. Vena 3 longitudinalis in costa, sat magis distans ab apice præcedentis quam sequentis.

9. HERINA (R. D.).

b. Vena 3 longitudinalis in costa, circiter æquidistans ab apicibus 2 et 4. 10. RIVELLIA (R. D.).

b. Antennæ articulo ultimo breviter subovato, vel subdisciformi.

* Areola basalis interior, angulo apicali infero sat elongato; antennæ articulo ultimo subdisciformi. 11. MIENNYIS (R. D.).

† Areola basalis interior, angulo apicali infero non distincte elongato; antennæ articulo ultimo subovato.

12. ORTALIS (Fall.).

II. Scutellum setis saltem sex instructum; calyptra squamis amplis vel amplissimis 13. MEGAGLOSSA (g. n.)

LOEW publishes (Zeitschr. ges. Naturw. xxxiv. pp. 1-24) a revision of the European Trypetina, in which he discusses the generic divisions to be admitted in that group, and, finally, gives a list of the species known to him, which now amount to 143. Of these a considerable number are described as new (*vide infra*).

RONDANI (Bull. Soc. Ent. Ital. i. pp. 161-164) discusses the species which have been referred to the genus *Ædaspis* (Loew). *Æ. flavicans* he regards as an *Orellia*; the type of *Ædaspis* is *Æ. multifasciata* (Loew.); *Æ. schineri* = *Drosomyia vesuviana* (Costa), and forms the genus *Carpomyia*; and *Æ. Rhodani* belongs to *Goniglossum* (Rond.).

sp. n., *itania astrolabei* (Boisd.). The female of this species is described and figured (details) by Van der Wulp (Tijdschr. voor Ent. 2^{de} ser. iii. p. 118, pl. 4. figs 9-12).

FRAUENFELD (Verh. zool.-bot. Ges. in Wien, xix. p. 942) notices the detection by Erber, near Janina, of a *Trypeta*, which he determines as *T. tenera* (Loew), from the Pyrenees, and further identifies with *T. bullans* (Wied.) from Buenos Ayres. This identification has also been made by Loew.

Trypeta polita (Loew) produces small cabbage-like galls on *Solidago altissima*, according to Osten-Sacken (Trans. Amer. Ent. Soc. ii. p. 301).

New genera:—

Neuroctena, g. n., Rondani, Bull. Soc. Ent. Ital. i. p. 9. (See Table, p. 440.)
Sp. *Drosomyza anilis* (Fall.) = *liturata* (R. D.).

Lignodesia, g. n., Rondani, l. c. p. 10. (See Table, p. 440.) Sp. *Sciomyza fuscipennis* (Meig.), *S. fumipennis* (Zett.); *Lign. bellardii*, sp. n., Rond. l. c. p. 11, Italian Alps.

Macheirocera, g. n., Rondani, l. c. p. 13. (See Table, p. 440.) Sp. *M. grandis*, sp. n., Rond. l. c. p. 13 (= *graminorum*, Macq., nec. Meig.), Piedmont.

Megaglossa, g. n., Rondani, l. c. p. 32. (See Table above.) Known sp. *Dytia umbrina* (Fab.), *Platystoma tegularia* (Loew), *D. seminationis* (Fab.). New sp. *M. insularum*, Rond. l. c. p. 33, Sardinia; *M. corticarum*, Rond. l. c. p. 34, Parmese Apennines; *M. gemmationis*, Rond. l. c. p. 35, Italy; *M. plantationis*, Rond. ibid., Parmese Apennines; *M. vegetationis*, Rond. l. c. p. 36, North Italy.

Chelestoma, g. n., Rondani, Bull. Soc. Ent. Ital. i. p. 200. Allied to *Tephritis*: cheeks with six strong setæ on each side of the mouth; fourth

longitudinal vein bent up before the apex of the third, and thence inclined back. Sp. *C. curvinervis*, sp. n., Rond. l. c. p. 200 (cum figg. p. 201), Parmese Apennines.

New species :—

Herina metallica, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 154, pl. 5. fig. 10, and *H. ruficeps*, Van der Wulp, l. c. p. 156, pl. 5. fig. 11, Wisconsin.

Aciura fliola, Loew, Zeitschr. ges. Naturw. xxxiv. p. 12, Andalusia; *A. alacris*, Loew, l. c. p. 24, Sarepta.

Edaspis dichotoma, Loew, l. c. p. 12, Sarepta.

Trypeta quadratula, Loew, l. c. p. 13, Russia; *T. varia*, Loew, ibid., Rhodes.

Trypeta (Aciura) ænea, Van der Wulp, l. c. p. 157, pl. 5. figs. 12–14, Wisconsin; *T. (Tephritis) cribrata*, Van der Wulp, l. c. p. 158, pl. 5. fig. 15 Wisconsin.

Tephritis pæcilura, Loew, l. c. p. 21, Spain; *T. procera*, Loew, ibid. Russia; *T. recurrens*, Loew, l. c. p. 22, Greece; *T. brachyura*, Loew, ibid., Sarepta; *T. tristis*, Loew, l. c. p. 23, Andalusia.

Urophora christophi, Loew, l. c. p. 14, Sarepta; *U. variabilis*, Loew, l. c. p. 15, Russia.

Carphotricha guttulosa, Loew, l. c. p. 15, Spain.

Oxyphora conspicua, Loew, l. c. p. 16, Russia.

Ozyna albipila, Loew, l. c. p. 17, and *O. lutulenta*, Loew, ibid., Sarepta; *O. lauta*, Loew, l. c. p. 18, Naxos and Rhodes; *O. misella*, Loew, l. c. Sarepta; and *O. lingens*, Loew, l. c. p. 20, Carinthia.

Dacus ritsemæ, Weyenbergh, Arch. Néerl. iv. p. 360, pl. 6. figs. 1–5, Java.

Tetanops contarinii, Rondani, Bull. Soc. Ent. Ital. i. p. 16, Italy.

Melieria subapennina, Rondani, l. c. p. 18, Piedmont; *M. etrusca*, Rond. ibid., Tuscany; *M. parmensis*, Rond. l. c. p. 19, Piedmont and Tuscany.

Ceroxys pomariana, Rondani, l. c. p. 22, Parma and Tuscany.

Herina. Rondani (l. c.) describes the following new Italian species of this genus:—*H. helvipes*, p. 24 (= *rufipes*, Macq.), Lucca; *H. ghilianii*, ibid., Sicily; *H. pusilla*, p. 27, Nice.

Ortalis fastuosa, Rondani, l. c. p. 30, Piedmont; *O. immaculata*, Rond. l. c. p. 31, Piedmont.

Psilides.

New species :—

Piophila nitida, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 160, pl. 5, figs. 16–18, Wisconsin.

Loxocera pectoralis, Loew, Berl. ent. Zeitschr. xiii. p. 38, Washington; *L. pleuritica*, Loew, l. c. p. 38, Connecticut, New York.

Psila lateralis, Loew, l. c. p. 38, Washington; *P. bivittata*, Loew, l. c. p. 39, Connecticut; *P. collaris*, Loew, ibid., Connecticut; *P. dimidiata*, Loew, l. c. p. 40, Red River; *P. sternalis*, Loew, ibid., Middle States; *P. levis* (sic), Loew, ibid., New Hampshire.

Loxocera collaris, Loew, l. c. p. 184, Columbia District; *L. fallax*, Loew, l. c. p. 185, Canada.

Chyliza notata, Loew, l. c. p. 185, Columbia District.

Mycetaulus longipennis, Loew, l. c. p. 186, Hudson's Bay Territory.

Oscinides.

Oscinis frit. Cohn notices the habits of this species, and the injury done by it in the corn-fields of Silesia during the summer of 1869 (Abhandl. schl. Gesellsch. vaterl. Cultur, 1868-69, pp. 180-184).

Chlorops tæniopus. This species is also noticed by Cohn (*l. c.* pp. 190-192, and 197). Frauenfeld also notices the damage done by this insect (Verh. zool.-bot. Ges. in Wien, xix. p. 602).

FRAUENFELD describes the production of an excrescence upon *Triticum repens* by a *Chlorops*, which he seems inclined to identify with *C. nasuta* (Schr.). (Verh. zool.-bot. Ges. in Wien, xix. pp. 936-938.)

New species :—

Oscinis aristolochiæ, Rondani, Arch. Zool. Anat. Fis. 2nd ser. vol. i. p. 188 ;
O. delpinii, Rondani, *ibid.*

Hippelates dorsalis, Loew, Berl. ent. Zeitschr. xiii. p. 42, Cuba.

Oscinis carbonaria, Loew, *l. c.* p. 42, Columbia ; *O. dorsalis*, Loew, *l. c.* p. 43, Newport, Rhode Island.

Siphonella reticulata, Loew, *l. c.* p. 43, Cuba.

Elliponeura debilis, Loew, *l. c.* p. 44, Columbia.

Geomyzides.

Rhynoessa albula, sp. n., Loew, Berl. ent. Zeits. xiii. p. 44, and *R. parvula*, sp. n., Loew, *l. c.* p. 45, Rhode Island.

Gymnopa opaca, sp. n., Rondani, Arch. Zool. Anat. Fis. 2nd ser. i. p. 189.

Phytomyzides.

Phytomyza obscurella (Fall.). Weyenbergh describes and illustrates the transformations and natural history of this species (Tijdschr. voor Ent. 2^{de} ser. iv. pp. 171-174, pl. 6).

RONDANI places *Trigonometopus* in his group Sciomyzinæ. (See p. 439.)

New species :—

Lobioptera indecora, Loew, Berl. ent. Zeits. xiii. p. 50, Nebraska ; *L. leucogastra*, Loew, *l. c.* p. 50, Cuba.

Cacoxenus semiluteus, Loew, *l. c.* p. 51, Cuba.

Trigonometopus vittatus, Loew, *l. c.* p. 51, Georgia.

Phytomyza nervosa, Loew, *l. c.* p. 52, and *P. genualis*, Loew, *ibid.*, Columbia District.

Leucopis simplex, Loew, *l. c.* p. 51, New York.

Phyllomyza nitens, Loew, *l. c.* p. 45, Pennsylvania.

Agromyza setosa, Loew, *l. c.* p. 45, Columbia District ; *A. simplex*, Loew, *l. c.* p. 46, Middle States ; *A. virens*, Loew, *ibid.*, Pennsylvania ; *A. magnicornis*, Loew, *ibid.*, Pennsylvania ; *A. angulata*, Loew, *l. c.* p. 47, Pennsylvania ; *A. melampyrea*, Loew, *l. c.* p. 48, Columbia District ; *A. coronata*, Loew, *ibid.*, Cuba, Pennsylvania ; *A. longipennis*, Loew, *ibid.*, and *A. marginata*, Loew, *l. c.* p. 49, Columbia ; *A. parvicornis*, Loew, *ibid.*, Washington ; *A. neptis*, Loew, *l. c.* p. 50, Columbia.

Agromyza jucunda, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 161, pl. 5. figs. 19, 20, Wisconsin.

Hydromyzides.

Ephydra halophila, sp. n., Packard, Proc. & Conn. Essex Inst. vi. p. 46, fig. p. 48: larva in brine at the Equality Salt-works, Illinois.

Hydrellia conformis, sp. n., Loew, Berl. ent. Zeitschr. xiii. p. 41, Newport, Rhode Island.

Scatella mesogramma, sp. n., Loew, l. c. p. 42, Newport, Rhode Island.

Hecamede xanthocera, Loew, Ber. naturh. Ver. Augsb. xx. p. 58, near Augsburg.

PLATYPEZIDÆ.

Platypeza. Van der Wulp (Tijdschr. voor Ent. 2^{de} ser. iii. pp. 226-229) discusses the characters of the Dutch species of this genus, and figures the wings of *P. fasciata* (Fab.), pl. 11. fig. 2, *P. dorsalis* (Meig.), fig. 3, and *P. ornata* (Meig.), fig. 5.

Lonchoptera trilineata (Zett.). Frauenfeld notices the larva of this species (Verh. zool.-bot. Ges. in Wien, xix. p. 941).

Callomyia humeralis, sp. n., Loew, Besch. eur. Dipt. i. p. 256, Hungary.

Callomyia talpula, sp. n., Loew, Berl. ent. Zeits. xiii. p. 175, New Hampshire; *C. tenera*, sp. n., Loew, l. c. p. 176, New York.

Platypeza anthrax, sp. n., Loew, l. c. p. 176, New York.

Platypeza rectinervis, sp. n., Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iii. p. 229, pl. 11. fig. 4 (wing and antenna), Holland.

SYRPHIDÆ.

VERRALL (Ent. M. Mag. v. pp. 190-194) notices the European species of *Syrphus*, allied to *S. ribesii* (Linn.). To this alliance he refers *S. lineola* (Zett.), *vittiger* (Zett.), *grossulariæ* (Meig.), *diaphanus* (Zett.), *ribesii* (Linn.), *vitripennis* (Meig.), *nitidicollis* (Meig.), *ochrostoma* (Zett.), *melanostoma* (Zett.), *latifasciatus* (Macq.), *nitens* (Zett.), and *nigritarsis* (Zett.)

WEYENBERGH (Archives Néerl. iv. p. 360, pl. 6. figs. 9, 10) notices what he regards as the male of Doleschall's *Bacha pedicellata*, and figures its abdomen and wing.

KÜNCKEL publishes (Bull. Soc. Ent. Fr. 1869, pp. xxiv and xxv) some notes on the habits and transformations of various species of *Volucella*.

Cheilosia chrysocoma (Meig.). Weyenbergh describes and illustrates the transformations and natural history of this species (Tijdschr. voor Ent. 2^{de} ser. iv. pp. 164-170, pl. 5).

New species :—

Syrphus signatus, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. ii. p. 144, pl. 4. fig. 12, Wisconsin.

Myiolepta varipes, Loew, Berl. ent. Zeits. xiii. p. 174, Virginia.

Orthoneura ustulata, Loew, l. c. p. 175, New Jersey.

Megaspis sculptata, Van der Wulp, Tijdschr. voor Ent. 2^{de} ser. iii. p. 118, pl. 4. fig. 8, Timor.

Eristalis cupreo-fasciatus, Van der Wulp, l. c. p. 114, Amboyna.

Helophilus albiceps, Van der Wulp, l. c. p. 116, Celebes and Aru.

Temnocera purpurascens, Loew, Berl. ent. Zeitschr. xiii. p. 31, Hayti.

Ceria euprosopa, Loew, Besch. eur. Dipt. i. p. 256, Smyrna.

Merodon cerulescens, Loew, Besch. eur. Dipt. i. p. 252, Rhodes; *M. velox*, Loew, l. c. p. 253, Smyrna, Rhodes.

Xylota eumera, Loew, l. c. p. 254, Sarepta.

APHANIPTERA.

GUYON has completed his memoir on the Chigoe (Rev. et Mag. Zool. 1869, pp. 70, 212, 284, 325, 384, 413, and 425). He here describes the transformations of the insect and the habits of the imago, treats of its medical history, and gives an abridged bibliography of the subject.

Pulex vagabunda, sp. n., Boheman, Öfvers. Kongl. Vet. Akad. Förh. xxii. p. 576, pl. 35. fig. 1, Spitzbergen.

Pulex obtusiceps, sp. n., Ritsema, Tijdschr. voor Ent. 2^{de} ser. iii. p. 175, pl. 7 (1867 ?), in a nest of *Bombus subterraneus*, near Harlem.

NEUROPTERA

By R. M'LACHLAN, F.L.S.

* Descriptive &c.

AUSSERER, CARLO. Neurotteri Tirolesi, colla diagnosi di tutti i generieuropei. Parte I. Pseudo-Neurotteri. Annuario della Società dei Naturalisti in Modena, Anno iv. pp. 71-156, Taf. viii., ix.

BRÄUER, FRIEDRICH. Beschreibung neuer Neuropteren aus dem Museum Godeffroy in Hamburg. Verhandl. zool.-bot. Gesell. in Wien, xix. pp. 9-18.

—. Eine neue Art der merkwürdigen Gattung *Iapyx*, Haliday. Verhandl. zool.-bot. Gesell. in Wien, xix. pp. 557-558.

—. Beschreibung der Verwandlungsgeschichte der *Mantispa styriaca*, Poda; und Betrachtungen über die sogenannte Hypermetamorphose Fabre's. Verhandl. zool.-bot. Gesell. in Wien, xix. pp. 831-840, Taf. 12.

EATON, A. E. On *Centropitulum*, a new genus of the *Ephemeridæ*. Entomol. Monthly Mag. vi. pp. 131-132.

GERSTÄCKER, A. Beitrag zur Insektenfauna von Zanzibar. No. II. *Orthoptera* and *Neuroptera*. Archiv für Naturgesch. xxxv. pp. 201-223.

(The principal portion of this paper refers to true *Orthoptera*, which see.)

HAGEN, H. A. On *Lachlania abnormis*, a new genus and species from Cuba belonging to the *Ephemerina*. Proc. Bost. Soc. Nat. Hist. xi. pp. 372-374. (Omitted in last Record.)

—. Fragmente zur Gattung *Neurothemis*, Brauer. Stettin. entom. Zeitung, xxx. pp. 94-106.

—. Zur Odonaten-Fauna von New Granada, nach Lindig's 1869. [VOL. VI.] 2 H

Sammlungen. Stettin. entomol. Zeitung, xxx. pp. 256-263.

JAKOWLEFF, W. Materialien zur entomologischen Fauna der Wolga-Gegend. Hor. Soc. Ent. Rossicæ, vi. pp. 120-126.

Contains a list of 51 species of *Neuroptera* observed in the district indicated.

KAWALL, J. H. Die Orthopteren und Neuropteren Kurlands. Correspondenzblatt der naturf. Vereins in Riga, xiv.

The Recorder has seen only an author's copy of this paper, without the original paging. It appears to have been published in 1864, but omitted in previous 'Records.' It is little more than a list of names.

M'LACHLAN, R. Synopsis of the species of *Panorpa* occurring in Europe and the adjoining countries; with a description of a singular new species from Java. Trans. Ent. Soc. Lond. 1869, pp. 59-70, pl. iv.

——. Note on *Boreus hyemalis* and *B. westwoodii*. Trans. Ent. Soc. Lond. 1869, pp. 399-401.

——. New species &c. of *Hemerobiina*, with synonymic notes. (First series.) Entomol. Monthly Mag. vi. pp. 21-27.

——. On a Neuropterous Insect from N.W. India belonging to the genus *Dilar*. Entomol. Monthly Mag. v. pp. 239-240.

——. Diagnoses of three new species of *Calopterygina*. Entom. Monthly Mag. vi. pp. 27-28.

——. Description of a new species of *Psocidæ* (*Cæcilius atricornis*) inhabiting Britian. Entomol. Monthly Mag. v. p. 196.

——. Considerations on the Neuropterous genus *Chauliodes* and its allies; with notes and descriptions. Ann. & Mag. Nat. Hist. 4th series, iv. pp. 35-46.

——. Névroptères de Mingrélic. Note sur les Névroptères non-Odonates. Ann. Soc. Ent. Belg. xii. pp. 101-104.

MAKLIN, F. W. Bidrag till kännedom om den geografiska utbredningen i Finland af *Holostomis phalenoides*, L., och *H. altaica*, Fisch. Öfvers. Finska Vet.-Soc. Förhandlingar, xi. pp. 78-81.

RÖDER, VICTOR VON. Ueber *Bittacus hageni*, Brauer. Berlin. entomol. Zeits. 1869, p. 446.

RUDOW, F. Neue Mallophagen. Zeits. gesammt. Naturwiss. 1869, pp. 387-407.

- SELYS-LONGCHAMPS, E. DE. Secondes additions au synopsis des Caloptérygines. Bull. Ac. Roy. Belg. 2^{me} série, xxvii. pp. 645-680.
- . Secondes additions au synopsis des Gomphines. Bull. Ac. Roy. Belg. 2^{me} série, xxviii. pp. 163-208.
- . Note sur quelques Odonates nouveaux de Mexique. Ann. Soc. Ent. Belg. xi. Compt.-rend. pp. lxvii-lxxi.
- . Odonates des îles Seychelles. Ann. Soc. Ent. Belg. xii. pp. 95-99.
- Published also in English in the Ann. & Mag. Nat. Hist. 4th series, iii. pp. 270-277. (See WRIGHT, E. P.)
- . Névroptères de Mingrêlie. Note sur les Névroptères Odonates. Ann. Soc. Ent. Belg. xii. pp. 105-106.
- . Odonates recueillis à Madagascar, et aux îles Mascareignes et Comores. Recherches sur la faune de Madagascar et de ses dépendances d'après les découvertes de F. P. L. Pollen et D. C. van Dam, 5^{me} partie.

WRIGHT, E. PERCEVAL. Notes on the Dragonflies of the Seychelles. Ann. & Mag. Nat. Hist. 4th series, iii. pp. 270-277.

In this paper Dr. Wright prefaces an English translation of Selys-Longchamps's paper (see above) with some remarks of his own on the species he collected in these islands. It should be noted that the exact localities are transposed, in some cases, in the Belgian paper.

† *Anatomical and Physiological.*

BRANDT, ALEXANDER, Jun. Beiträge zur Entwicklungsgeschichte der Libelluliden und Hemipteren. Mém. Ac. Imp. St. Pétersbourg, xiii. pp. 1-33, pls. 1 & 2.

Contains an examination of the embryology of *Calopteryx virgo* and *Agrion puella*.

OUSTALET, E. Note sur la respiration chez les nymphes des Libellules. Ann. Sci. Nat. 5^{me} série, xi. pp. 370-386, pl. 10-12.

PACKARD, A. S., Jun. On the development of a Dragonfly (*Diplax*). Proc. Bost. Soc. Nat. Hist. xi. pp. 365-372. (Omitted in last Record.)

A most valuable contribution to the embryology and earlier stages of the *Libellulidæ*, illustrated by many woodcuts.

PACKARD, in his 'Guide to the Study of Insects,' pp. 578-626, treats these insects as the lowest, or concluding, suborder of true "Insecta," and says:—"They are, in fact, comprehensive or synthetic types, combining, as do all

decephalized embryonic forms, the structures of all the other suborders of insects, and thus presenting, in advance, features which remind us of characters more fully wrought out in higher and more compactly finished groups of insects." According to him the *Neuroptera* comprise the following families:—*Termitidæ*, *Embiidæ*, *Psocidæ*, *Perlidæ*, *Ephememeridæ*, *Libellulidæ*, *Sialidæ*, *Hemerobidæ*, *Panorpidæ*, *Phryganeidæ*, *Lepismatidæ*, *Cempodæ*, and *Poduridæ*.

AUSSERER, in his 'Neurotteri Tirolesi,' gives a lengthy descriptive catalogue of the *Pseudo-Neuroptera* of the Tyrol, on the plan of Brauer's 'Neuroptera Austriaca.' No new species are described, though such must exist in a district eminently favourable to the development of these insects. As a view of the fauna of the country, so far as the Odonata are concerned, the work is probably exhaustive, for the rest very imperfect; and it is disfigured by innumerable typographical errors. The author promises a second part, comprising the true *Neuroptera*. A cordial welcome is due to him as a debutant in the neglected field of European Neuropterology.

TRICHOPTERA.

PACKARD (American Naturalist, iii. pp. 160–161) has published some general notes on the cases of the larvæ of American species, and figures several forms. One of these is a sand-tube placed between two pine-needles: it evidently belongs to some species of *Leptoceridæ*.

MAKLIN (Öfvers. Finska Förhandl. xi. pp. 78–81) notices the distribution of *Holostomis phalænoides* and *H. altaica* in Finland.

M'LACHLAN (Entomol. Monthly Mag. iii. pp. 160–161) records the occurrence of *Halesus auricollis*, Pict., and *Tinodes schmidtii*, Kolen., in Britain.

Glyptotalius setysii, sp. n., M'Lach. Ann. Soc. Ent. Belg. xii. p. 103, Mingrelia.

Phryganea argus, sp. n., Harris, MS., Correspondence, p. 333 (Scudder), Maine. (A hitherto unpublished description, probably referring to a species of *Halesus*.)

NEUROPTERA PLANIPENNIA.

M'LACHLAN (Entomol. Monthly Mag. vi. p. 27) rectifies the synonymy of some species described by Walker in the Trans. Ent. Soc. Lond. n. s. v. pp. 182–186.

WORMALD (Entomol. Monthly Mag. vi. p. 139) notices the capture of several rare British species.

Sialidæ.

PACKARD (Guide) describes and figures the eggs, larva, pupa, and imago of *Corydalus cornuta*.

M'LACHLAN (Ann. & Mag. Nat. Hist. 4th ser. iv. pp. 35–46) analyzes the value of the genera *Corydalus*, *Hermes*, *Neuromus*, and *Chauliodes*. He sinks *Hermes*, the typical species of which (*H. maculipennis*) he considers to pertain to *Chauliodes*. A synonymic list is given of the known species of *Chauliodes* and *Neuromus*; and he describes the following new species:—*Chauliodes fraternus*, l. c. p. 37, North China; *C. tenuis*, l. c. p. 38, South Africa; *Neuromus infectus*, l. c. p. 41, Darjeeling; *N. montanus*, l. c. p. 42, Sikkim Himalaya; *N. fenestralis*, ibid., Darjeeling; *N. latratus*, l. c. p. 43, India; *N. intimus*, l. c. p. 44, India.

Mantispidæ.

BRÄUER describes the metamorphosis of *Mantispa styriaca* (Verh. zool.-bot. Gesell. in Wien, xix. pp. 831-840). The eggs are pedunculated as in *Chrysopa*. The young larvæ appear in early autumn, are elongate, with well-developed legs, and hibernate for a period of about eight months on bark &c. About April they disperse, and seek the nests of various species of spiders, especially *Lycosa*, into the egg-bags of which they penetrate, feeding upon the eggs, without interruption from the parent spider. After moulting they assume a totally different form, becoming short, thick, and nearly footless, and in June become pupæ, contained in a cocoon, appearing as perfect insects in about four weeks. Brauer draws a comparison between the habits of the larvæ of *Mantispa* and the so-called hypermetamorphosis of those of *Sitaris*, *Meloë*, *Cecidomyia destructor*, &c.

Osmylidæ.

According to M'LACHLAN (Entomol. Monthly Mag. vi. p. 26) the genus *Varnia*, Walker, = *Ithone*, Newm. *Osmylus punctipennis*, Walker, should form the type of another genus. *Chrysopa pubicosta*, Walker, should be referred to *Osmylus* as an aberrant form.

Climacia, g. n., M'Lach. l. c. p. 21. Allied to *Sisyr*; the subcostal area below one transverse basal veinlet; the series of gradate veinlets well defined.

Micromus areolaris, Hagen (wing figured).
belong *hornei*, sp. n., M'Lach. Ent. Monthly Mag. vi. p. 240 (apex of abdomen
 minued), N.W. India.

Hemerobiidæ.

According to M'LACHLAN (Ent. Monthly Mag. vi. p. 27), *Hemerobius setosulus*, Walker, is a *Megalomus*; *H. tasmanica*, Walker, is a *Micromus*.

PACKARD (Guide, pp. 611, 612) describes and figures the larva of *Hemerobius occidentalis*, Fitch.

Neuronema, g. n., M'Lach. l. c. p. 27. Allied to *Megalomus*; 13 sectors in anterior wing, of which six are emitted by the radius, and seven from a sector running parallel to the radius. Type *Hemerobius decusus*, Walk.

Drepanopteryx berothoides, sp. n., M'Lach. l. c. p. 22, Australia.

Hemerobius perparvus, sp. n., M'Lach. l. c. p. 22, Texas.

Chrysopidæ.

M'LACHLAN (Entomol. Monthly Mag. vi. p. 26) notes that *Chrysopa mos ambica*, Walker, is a *Nothochrysa*, and = *N. variegata*, Burm. (=also *C. rufostigma*, M'Lach.).

WORMALD (Entomol. Monthly Mag. v. p. 251) records the occurrence of *Chrysopa tenella*, Schnd., in England.

M'Lachlan (Ent. M. Mag. vi.) describes the following new species:—
Chrysopa exul, l. c. p. 23, St. Helena; *C. punctinervis*, l. c. p. 24, Texas; *C. nigra*, ibid., Cape-Verde Islands; *Nothochrysa evanescens*, l. c. p. 25, Sarawak; *N. ferruginea*, l. c. p. 26, Sarawak.

Chrysopa viridinervis, sp. n., Jakowleff, Hor. Soc. Ent. Ross. vi. p. 125, Volga district.

Ascalaphidæ.

Bubo dietrichiæ, sp. n., Brauer, Verh. zool.-bot. Gesell. Wien, xix. p. 15, Rockhampton.

Myrmeleonidæ.

PACKARD (Guide, p. 612) figures *Myrmeleon obsoletus*, Say.

Formicaleosubpunctulatus, sp. n., Brauer, Verh. zool.-bot. Gesell. Wien, xix. p. 15, Viti Islands.

Panorpidæ.

M'LACHLAN (Trans. Ent. Soc. Lond. 1869) describes and figures the known European species of this genus, including also those from Asia Minor and Mingrelia, and remarks on the importance of the characters found in the form of the terminal abdominal segments of the males, in contradistinction to those deduced from colour, markings, &c., which are very variable. He describes twelve species, two of which were insufficiently known to him; eleven of these are figured, with details of the characters (plate 4). He also (*l. c.* p. 70) makes some remarks on the general geographical distribution of the species of *Panorpa*, and avows his belief that the genus *Euphania* of Westwood = *Chorista* of Klug, and that *E. luteola* is identical with *C. australis*.

M'LACHLAN (Trans. Ent. Soc. Lond. 1869, pp. 399-401) remarks on characters of the two European species of *Boreus*, and states his reason for declining to admit *B. westwoodii* as a British species. He gives a woodcut of the ventral valve in the males of the two species.

KAWALL (Corresp. naturf. Ver. Riga) mentions having found a female *Boreus hyemalis* under a stone among ants, and a male on the window of his house.

SANBORN (Proc. Bost. Soc. Nat. Hist. xii. p. 409) records the capture of *Boreus brumalis*, Fitch, at Medford, Mass., in April.

PACKARD (Guide, p. 613) regards this family as affording a passage from the true *Neuroptera* to the *Thysanura*.

Bittacus hageni. VON ROEDER (Berlin. ent. Zeit. 1869, p. 446) records the occurrence at Hoym, in Anhalt, of twelve specimens of this insect. The most northerly limit of the allied *B. tipularius* is five leagues south of Hoym.

New species :—

Panorpa caucasica (De Selys, MS.), M'Lachlan, Trans. Ent. Soc. Lond. 1869, p. 63, pl. iv. f. 2, Mingrelia; *P. gibberosa*, M'Lach. *l. c.* p. 64, pl. iv. f. 5, Montenegro and Isle of Tinos; *P. connexa*, M'Lach. *l. c.* p. 65, pl. iv. f. 6, Mingrelia; *P. annexa* (De Selys, MS.), M'Lach., = *meridionalis*, Schnd., near Ramb., *l. c.* p. 66, pl. iv. f. 8, Italy and Sicily; *P. ghilianii*, M'Lach. *l. c.* p. 67, pl. iv. f. 9, Turin; *P. nematogaster*, M'Lach. *l. c.* p. 69, pl. iv. f. 12, Java. The Recorder would here observe that the species described and figured by him as *P. picta*, Hagen, *l. c.* p. 68, pl. iv. f. 11, is not the true species of that name, and should bear the appellation *nigrirostris* (Zeller, MS.).

Bittacus nigriceps, sp. n., Selys, Ann. Soc. Ent. Belg. xi. Compt.-rend. p. lxxvii, Port Denison.

PSEUDO-NEUROPTERA.

THYSANURA¹.

PACKARD (Guide, p. 622) considers that these minute wingless forms afford a passage from the true winged insects to the Myriopods, and remarks that in *Lepisma* the place of the abdominal legs is supplied by the rows of small stylets which prop up the abdomen.

Lepisma saccharina. CORNELIUS (Stettin. ent. Zeit. xxx. p. 409) mentions having found more than forty examples in a nest of *Hirundo rustica* in mid-winter.

Anura tuberculata. M'Lachlan records the occurrence of immense swarms of this species on the surface of a pond near Hungerford. Trans. Ent. Soc. Lond. 1869, Proc. p. xiii.

Iapyx gigas, sp. n., Brauer, Verhandl. zool.-bot. Gesell. in Wien, xix. p. 557, Cyprus.

MALLOPHAGA.

PACKARD (Guide, pp. 554, 555) considers the family to represent the most degraded forms of Hemiptera, and gives a short general account of its characters.

RUDOW (Zeits. gesammt. Naturw. 1869, pp. 387-407) describes the following new species², chiefly from exotic birds; according to him, they all belong to one family, *Lithoeidae*, which he characterizes:—*Colpocephalum minutum**, l. c. p. 389, on *Cygnus musicus*; *C. numenii**, ibid. on *Numenius linearis*; *C. scalariforme**, l. c. p. 390, on *Tantalus loculator*; *C. unicolor**, ibid., on *Carpophaga samoënsis*; *C. zonatum*, l. c. p. 391, on *Ardea ralloides*; *C. ocellatum*, l. c. p. 392, on *Numenius phaeopus*; *C. flavum**, ibid., on *Carduelis granadensis*; *C. dolium*, l. c. p. 393, on *Podiceps cristatus*; *C. longicorne*, ibid., on *Gallus furcatus*; *C. tuberculatum*, l. c. p. 394, on *Balearica pavonina*; *C. semicinctum**, ibid., on *Corvus scapularis*; *C. rapiforme*, l. c. p. 395, on *Buteo colurus*; *C. impressum**, l. c. p. 396, on *Aquila fulva*; *C. commune**, ibid., on *Haliaeetus brasiliensis*; *C. polybori*, l. c. p. 397, on *Polyborus tharus*; *C. furcatum**, ibid., on *Procellaria mollis*; *C. cinctum**, l. c. p. 398, on *Procellaria glacialis*; *C. longissimum*, l. c. on *Leptophilus crumenifer*; *C. hirtum**, l. c. p. 399, on *Buceros ruficollis*; *Menopon pellucidum*, l. c. p. 400, on *Phalacrocorax capensis*; *M. pileatum*, l. c. p. 401, on *Cassia's yuaracares*; *M. numenii*, l. c., on *Numenius linearis*; *M. lucidum*, l. c. p. 402, on *Falco rufipes*; *M. 5-guttatum*, ibid., on *Carpophaga samoënsis*; *M. lunarium*, ibid., on *Platypus nigra*; *M. giganteum*, l. c. p. 403, on *Sula fiber*; *M. fasciatum*, ibid., on *Sarcorhampus gryphus*; *Laemobothrium brasiliense*, l. c. p. 405, on *Haliaeetus brasiliensis*; *Trinoton biguttatum**, l. c. p. 406, on *Tinamus bananaquia*.

¹ The Recorder states his conviction that this group and the next do not come within his province, as embracing the orders *Neuroptera* and *Orthoptera*; but, as they have been included therein in previous volumes of the 'Record,' he has thought it best to let them remain, so as to avoid the possibility of their being omitted altogether.

² The species marked with an asterisk would seem to have been previously described by Rudow in the same journal, vol. xxvii. (see 'Record' for 1867, p. 448).

TERMITIDÆ.

M'LACHLAN notices the occurrence of a small species of this family in St. Helena, brought from that island by Mr. Melliss. He was inclined to refer it to *Termes tenuis*, Hag., a native of the West Indies and Brazil, and thought it had been introduced into St. Helena from tropical America. (Trans. Ent. Soc. Lond. 1869, Proc. p. xiii.)

PSOCIDÆ.

PACKARD (Guide, p. 589) figures an insect under the name of *Atropos pulsatorius*. This is evidently, from its rudimentary wings, the insect now known as *Clothilla pulsatoria*, which is distinct from the abundant species, the true *Atropos*, formerly regarded as *A. pulsatoria* of Linné.

In HARRIS'S 'Correspondence,' edited by Scudder, are printed (pp. 328-333) descriptions of various species of *Psocus* from Harris's original MSS. Of these, *P. lucidus*, Harris, l. c. p. 328, from Cambridge, Massachusetts, is not recognized as a described form. *P. gregarius*, Harris, l. c. p. 329, = *venosus*, Burm.; *P. frontalis*, l. c. p. 333, = *striatus*, Walker; *P. nubilus*, Harris, l. c. p. 331, = *lugens*, Hagen; *P. 4-fasciatus*, Harris, ibid., not recognized; *P. pusillus*, Harris, ibid., from Cambridge, not recognized; *P. infuscatus*, Harris, l. c. p. 332, = *sparsus*, Hagen; *P. gracilis*, Harris, ibid., = *signatus*, Hagen.

Cæcilius atricornis, sp. n., M'Lach. Entomol. Monthly Mag. v. p. 193, Isle of Wight.

PERLIDÆ.

Capnia pygmæa, Burm. BETHUNE (Canadian Entomologist, i. p. 81) alludes to the occurrence every spring of swarms of a small Perlide, which he refers to this species, on the river Credit, in Canada. They are frequently found on the surface of the snow.

Dictyopteryx infumata, sp. n., M'Lach. Ann. Soc. Ent. Belg. xii. p. 101, Mingrelia.

Stenoperla annulata, sp. n., Brauer, Verhandl. zool.-bot. Gesell. Wien, xix. p. 17, Chili.

EPHEMERIDÆ.

EATON (Entomol. Monthly Mag. v. p. 131) states that the family seems separable into three principal groups of genera:—(1) those with fossorial nymphs, with the mandibles produced externally into a porrect spine; (2) those with nymphs which crawl above the river-bed, and whose females, when adult, have a ventral lamina slightly produced out of the apex of the penultimate segment; (3) those whose nymphs can run nimbly about water-plants, and swim rapidly.

PACKARD (Guide, pp. 595, 596) figures the pupa of *Bætisca* and the imago of *Potamanthus marginatus* and *Lachania abnormis*.

Palingenia hecuba, Hag. M'LACHLAN records this gigantic species from Veragua (Trans. Ent. Soc. Lond. 1869, Proc. p. viii).

In a letter from Harris to Herrick, dated 1843, printed in the Harris 'Correspondence,' pp. 193, 194, the former calls attention to the moulting of *Ephemeriðæ*, and asks if there be any analogy between the double meta-

morphosis of those insects and the "flax-seed" stage in *Cecidomyia destructor*.

Lachlania, g. n., Hag. Proc. Bost. Nat. Hist. xi. p. 372. Allied to *Oligoneuria*, but with only two tails and only three transverse veinlets in the anterior wing. Sp. *L. abnormis*, n. sp., Hag. l. c. p. 373, figured, Cuba.

Centroptilum, g. n., Eaton, Entomol. Monthly Mag. vi. p. 132. Similar to *Cloeon*, but with four wings; hind wings very narrow, with a long costal process and two simple longitudinal veins. Type *C. luteolum*, Müller.

ODONATA.

PACKARD (Guide, pp. 597-605) gives a general outline of the classification and anatomy of this division, and figures several species.

SELYS-LONGCHAMPS (Ann. Soc. Ent. Belg. xii. pp. 95-99) enumerates the species collected by Dr. Perceval Wright in the Seychelles. Of nine species five are new. Four (*Libellula hemihyalina*, Desj., *L. wrightii*, n. sp., *Agrion senegalense*, Ramb., and *Brachybasis glabra*, Burm.) are African forms, and five (*Libellula trivialis*, Ramb., *Zygonyx luctifera*, n. sp., *Allolestes maclachlanii*, n. sp., *Trichocnemis cyanops*, n. sp., and *T. bivittata*, n. sp.) are Asiatic and Malayan forms.

SELYS-LONGCHAMPS (l. c. pp. 105-106) catalogues 10 species collected by T. Deyrolle in Mingrelia. All were European species.

AUSSERER (Neurotteri Tirolensi) describes 63 species as occurring in the Tyrol. Of these, 18 are *Libellulidæ*, 6 *Cordulidæ*, 6 *Gomphidæ*, 11 *Æschnidæ*, 2 *Calopterygidæ*, and 20 *Agrionidæ*,—a very large proportion of the European species for so small a district.

KAWALL (Correspond. naturf. Ver. Riga) enumerates 19 species from Kurland and Livland.

VON RÖDER (Zeits. gesamt. Naturw. 1863, pp. 15, 16) publishes a list of *Pseudo-Neuroptera*, chiefly *Odonata*, taken by him in the vicinity of Hoym, in Anhalt.

Libellulidæ.

Neurothemis. HAGEN, Stettin. entomol. Zeitung. xxx. pp. 94-106, describes the following known species of this genus:—*N. gigantea*, Brauer; *N. sophronia*, Drury (= *fulvia*, Drury, ♀); *N. manadensis*, Boisd.; *N. palliata*, Ramb.; *N. apicalis*, Ramb. (= *fluctuans*, Burm., = *vidua*, De Haan); and *N. fluctuans*, F.

New genera and species:—

Neophlebia, Selys, Pollen's Voyage, p. 18. Upperside of the discoidal triangle of superior wings formed by two broken lines, so that this triangle is in the form of an irregular lozenge; a single row of cellules, after the triangle, between the short sector and the superior sector of the triangle. Sp. *N. polleni*, l. c. p. 18, Nossi Bé; *N. leptoptera*, Selys, l. c. p. 19, Moluccas; *N. lorquini*, Selys, ibid., Moluccas.

Libellula selika, Selys, Pollen's Voyage, p. 16, Nossi Bé; *L. coronata*, Selys, l. c. p. 17, Nossi Bé; *L. croceipennis*, Selys, Ann. Soc. Ent. Belg. t. xi. Compt.-rend. p. lxxvii, Mexico and Guatemala; *L. merida*, Selys, ibid., Mexico and Venezuela; *L. (Dythemis) sallæi*, Selys, ibid., Mexico; *L. wrightii*, Selys,

Ann. Soc. Ent. Belg. xii. p. 96 (Ann. & Mag. Nat. Hist. 4th series, iii. p. 272), Seychelles.

Tramea iphigenia, Hag. Stett. ent. Zeit. 1869, p. 262, Bogotá.

Corduliidæ.

Zygonyx (?) *luctifera*, sp. n., Selys, Ann. Soc. Ent. Belg. xii. p. 96 (Ann. & Mag. Nat. Hist. 4th series, ii. p. 273), Seychelles.

Gomphidæ.

SELYS-LONGCHAMPS (Secondes Additions au Synop. des Gomph.) describes the species of this group discovered since 1859, and rectifies the synonymy. The total number is raised to about 170, 32 of which are new. The principal additions and corrections to the descriptions of previously known species are as follows:—*Macrogomphus annulatus*, Selys, male described; *Onychogomphus geometricus*, De Haan, male described; *O. bistrigatus*, Hagen, male described, formerly placed in *Gomphus*, in error; *Erpetogomphus cophias*, Selys, female described; *Gomphus melanops*, Selys, female described; *G. spicatus*, Hag., female described; *Hemigomphus gouldii*, Selys, female described; *Progomphus complicatus*, Selys, female described; *Gomphoides perfida*, Hag., = male of *suasa*, Selys; *Cordulegaster sieboldii*, Selys, male described (the discovery of this sex renders necessary the suppression of the subgenus *Anatogaster*); *Petalia punctata*, Hag., female described.

Agringomphus, g. n., Selys, Bull. Acad. Belg. 2^e série, t. xxviii. p. 189. Allied to *Epiomphus*; pterostigma with the internal nervule prolonged up to the principal sector; postcubital space in the anterior wings with only one row of cellules. Sp. *A. sylvicola* (Bates, MS.), Selys, l. c. p. 190, Upper Amazons.

New species are:—*Macrogomphus montanus*, Selys, Bull. Ac. Belg. p. 171, Silhet; *Gomphus postocularis*, Selys, l. c. p. 181, Japan; *G. melampus*, Selys, l. c. p. 182, Japan; *Hemigomphus ochraceus*, Selys, l. c. p. 187, Melbourne; *Epiomphus obtusus*, Selys, ibid., Upper Amazons; *Gomphoides* (?) *annectens*, Selys, l. c. p. 192, Brazil; *Cyclophylla ophis*, Selys, l. c. p. 193, Amazons; *C. andromeda*, Selys, l. c. p. 194, Amazons; *C. pegasus*, Selys, l. c. p. 195, Amazons; *Aphylla edentata* Selys, l. c. p. 196, Upper Amazons; *A. molossus* (Bates, MS.), Selys, ibid., Amazons; *Diaphlebia semilibera*, Selys, l. c. p. 197, Amazons; *Zonophora batesi*, Selys, l. c. p. 198, Upper Amazons; *Z. calippus* (Bates, MS.), Selys, l. c. p. 199, Amazons; *Hagenius* (?) *nanus*, Selys, l. c. p. 200, Japan; *Diastomma bicolor*, Selys, l. c. p. 201, Old Calabar; *Erpetogomphus viperinus*, Selys, Soc. Ann. Ent. Belg. vol. xi. Compt.-rend. p. lxviii, Mexico; *Cordulegaster diadema*, Selys, ibid., Mexico.

Æschnidæ.

Gynacantha mexicana, sp. n., Selys, Ann. Soc. Ent. Belg. xi. Compt.-rend. p. lxix, Mexico.

Calopterygidæ.

HAGEN (Stett. ent. Zeit. xxx. p. 257) describes what he considers to be the true *Thore picta*, Ramb., from Bogotá, and thinks it is scarcely separable from *T. gigantea*, Selys. *T. picta* of Selys should therefore be renamed.

SELYS-LONGCHAMPS (Secondes Add. au Syn. Calopt.) describes the species observed since 1859, with notes on sexes, races, &c. Thirty-two new species, or well-marked races, are indicated, bringing the total number to about 150. *Heterina scelerata*, Walsh, is considered a race of *basalis*, Hagen, which is itself probably only a race of *americana*; *H. pseudo-americana*, Walsh, is not separable from *americana*, F.; *Epallage fatime*, Charp., male described; *Dicterias atrosanguinea*, Selys, female described.

Calopteryx splendens, Harris. SELYS (Ann. Soc. Ent. Belg. xii. p. 106) indicates a peculiar form of this species from Mingrelia, which he thinks may constitute a "race," and calls it *mingrelia*. He thinks also that *exul*, Selys, and *syriaca*, Gén  , may be only forms of *splendens*.

New genus and species :—

Euthore, Selys, l. c. p. 675. Separated from *Thore* (sens. str.) by the wings being dilated in the middle instead of at the apex; two thickened antecubital nervules instead of one; branches of the sector of the triangle not undulated. Sp. *T. fasciata*, Hag., *T. fastigiata*, Selys, *T. hyalina*, Selys.

Cora marina, Selys, Ann. Soc. Ent. Belg. t. xi. Compt.-rend. p. lxix, Mexico.

Sapho orichalcea, McLach. Ent. Month. Mag. vol. vi. p. 27, West Africa.

Thore victoria, McLach. l. c. p. 28, Bolivia; *T. beata*, McLach. ibid., Upper Amazons.

Heterina duplex (Selys), Hag. Stett. ent. Zeit. 1869, p. 256, Bogotá.

Calopteryx japonica, Selys, Bull. Ac. Belg. 2^e sér. t. xxvii. p. 647 (race of *virgo* ?), Japan; *Neurobasis florida* (Hagen), Selys, l. c. p. 648 (race of *chinensis*), Borneo and N. India; *Sapho longistigma*, Selys, l. c. p. 650, Old Calabar; *Mnais costalis*, Selys, l. c. p. 651, Japan; *Lais smaragdina*, Selys, l. c. p. 662, Amazons; *L. hawwelli*, Selys, l. c. p. 654, Upper Amazons; *L. metallica*, Selys, ibid., Bahia or Guiana?; *Heterina perplex*, Selys, l. c. p. 655, Pará; *H. limbata*, Selys, l. c. p. 657, Illinois; *H. borchgravi*, Selys, l. c. p. 658, Rio Janeiro; *Euphœa formosa* (Hag.), Selys, l. c. p. 660, indicated, Formosa; *Dysphœa limbata*, Selys, ibid.; *Heliocharis libera*, Selys, l. c. p. 661, Santarem; *Rhinocypha terminata*, Selys, l. c. p. 662, Moluccas; *R. colorata* (Hag.), Selys, l. c. p. 664, Philippines and Batchian; *R. semitincta*, Selys, l. c. p. 665, indicated, Manilla; *Micromerus finalis* (Hag.), Selys, ibid., indicated, Ceylon; *M. sticticus*, Selys, ibid., Borneo; *M. xanthocyanus*, Selys, l. c. p. 666, Moluccas; *Thore procera*, Selys, l. c. p. 671 (race of *gigantea* ?), Bogotá; *T. vittata*, Selys, l. c. p. 673 (race of *picta* ?), Ega; *T. batesi*, Selys, l. c., Upper Amazons; *T. viræqualis*, Selys, l. c. p. 674 (race of *batesi* ?), Upper Amazons; *Cora brasiliensis* (Hag.), Selys, l. c. p. 678, indicated, Brazil; *C. incana* (Hag.), Selys, l. c. p. 679, Venezuela; *C. modesta*, Selys, l. c. p. 680, Bogotá.

Libellago ambigua, Gerstäck. Archiv für Naturgesch. xxxv. p. 222, Zan-zibar.

Agrionidæ.

New genera and species :—

Hemiphlebia, Selys, Ann. Soc. Ent. Belg. vol. xi. Compt.-rend. p. lxxii. Differs from all *Odonata* hitherto known by the suppression of the internal

side of the discoidal quadrilateral in the anterior wings. Sp. *H. mirabilis*, Selys, l. c. p. lxxiii, Port Denison.

Synlestes, Selys, l. c. p. lxxvi. Quadrilateral sloping towards the base, and touching the postcostal nervure at its inferior external angle; a sector interposed on each side of the sector nodalis; postcostal space with one row of cellules. Sp. *S. weyersi*, Selys, ibid., Port Denison.

Allolestes, Selys, Ann. Soc. Ent. Belg. xii. p. 97 (Ann. & Mag. Nat. Hist. 4th ser. iii. p. 274). Allied to *Argiolestes*; differs by the postcostal space having a single row of cellules and one supplementary sector less between each sector from the short sector up to the ultranodal. Sp. *A. macleachlanii*, Selys, l. c. p. 97 (l. c. p. 275), Seychelles.

Agrion heterodoxum, Selys, Ann. Soc. Ent. Belg. vol. xi. Compt.-rend. p. lxix, Mexico.

Telebasis boucardi, Selys, l. c. p. lxx, Mexico.

Trichocnemis cyanops, Selys, Ann. Soc. Ent. Belg. xii. p. 28 (Ann. & Mag. Nat. Hist. 4th ser. iii. p. 275), Seychelles.

T. bilineata, Selys, l. c. p. 99 (l. c. p. 276), Seychelles.

Mecistogaster jocaste, Hag. Stett. ent. Zeit. 1869, p. 260, Bogotá; *Philogenia helena*, Hag. l. c. p. 261, Bogotá; *P. mercenarium*, Hag. ibid., Bogotá.

Pericnemis annulata, Brauer, Verh. zool.-bot. Ges. in Wien, xix. p. 10, Samoa; *Agrion cingillum*, Brauer, l. c. p. 11, Rockhampton; *A. æruginosum*, Brauer, l. c. p. 13, Rockhampton; *A. (Ischnura) distigma*, Brauer, l. c. p. 14, Rockhampton.

Lestes icterica, Gerst. Archiv für Naturges. xxxv. p. 222, Zanzibar; *Agrion kersteni* and *A. deckeni*, l. c., Zanzibar.

ORTHOPTERA

By R. M'LEACHLAN, F.L.S.

* *Descriptive &c.*

DOHRN, H. Zwei neue Dermapteren aus Nordaustralien. Stettin. entomol. Zeitung, xxx. pp. 233, 234.

GERSTÄCKER, A. (See NEUROPTERA.)

GHILIANI, VITTORE. Sulla *Phaneroptera liliifolia*, Fabr. Bull. Soc. Ent. Ital. i. pp. 53-55.

——. Razza o specie nuova di Acridite. Bull. Soc. Ent. Ital. i. pp. 177-180.

KAWALL, J. H. (See NEUROPTERA.)

LUCAS, H. Remarques sur l'*Eugaster servillei*, Orthoptère sauteur de la famille des Locustides, et description d'une espèce nouvelle appartenant à cette coupe générique. Ann. Soc. Ent. France, 4^{me} série, ix. pp. 81-88.

——. Note sur l'*Ischnopoda reyi*, Orthoptère coureur de la famille des Phasmides. Ann. Soc. Ent. France, 4^{me} série, ix. p. 430.

SAUSSURE, H. DE. Mélanges orthoptérologiques, 2^{me} fasc. Mém. Soc. Phys. de Genève, xx. part 1, pp. 227-326, pls. 2, 3.

———. Essai d'un système des Mantides. Mitth. schweiz. Entomol. Gesells. 1869, pp. 49-73.

SCUDDER, S. H. Notes on *Orthoptera* collected by Prof. James Orton on either side of the Andes of Equatorial South America. Proc. Bost. Soc. Nat. Hist. xii. pp. 330-345.

———. A study of the gigantic lobe-crested Grasshoppers of South and Central America. Proc. Bost. Soc. Nat. Hist. xii. pp. 345-355.

———. Revision of the large, stylated Fossorial Crickets. Mem. Peabody Ac. Sci. i. pp. 1-28, pl. 1.

———. Descriptions of new species of Orthoptera in the collection of the American Entomological Society. Trans. Amer. Ent. Soc. ii. pp. 305-307.

SELYS-LONGCHAMPS, E. DE. Additions et corrections au Catalogue raisonné des Orthoptères de Belgique. Ann. Soc. Ent. Belg. xi. pp. 23-42.

SINGER, JACOB. Systematisches Verzeichniss der Familien, Gattungen und Arten der Regensburger Orthopteren. Jahresb. über das königl. Lyceum, &c. zu Regensburg, 1869.

The Recorder has not seen this paper; but, according to information received, it contains tabular descriptions of 47 known species from the locality indicated. It is favourably noticed by Zeller in the Stett. ent. Zeit. xxxi. p. 224.

SMITH, S. J. On the Orthoptera of the State of Maine. Proc. Portland Soc. Nat. Hist. i. part 2, pp. 143-151.

† *Anatomical and Physiological.*

GRABER, V. Zur näheren Kenntniss des Proventriculus und der Appendices ventriculares bei den Grillen und Laubheuschrecken. Sitzungsab. Akad. Wissensch. Wien, lix. pp. 29-46, Taf. i.-iii.

GRIMM, O. VON. Tracheenverschlussapparat der Schabe. Bull. Ac. Imp. Sci. St. Pétersbourg, xiv. pp. 52-54.

A dissertation on the apparatus that closes the stigmata in *Periplanetia orientalis*.

SAUSSURE, H. DE. Études sur l'aile des Orthoptères. Ann. Sci. Nat. x. pp. 161-200, pl. xi.

An explanation of the variations in the structure of the wings in various genera of *Blattidæ*.

PACKARD, in his 'Guide to the Study of Insects,' pp. 556, 557, gives a most careful elaboration of the characters of this order, and illustrates it by many admirably executed woodcuts. He places it immediately after the *Hemiptera*, and views it in the Linnean sense as containing the families *Gryllidæ*, *Locustariæ*, *Acrydiidæ*, *Phasmidæ*, *Mantidæ*, *Blattariæ*, and *Forficulariæ*.

SCUDDER (Proc. Bost. Soc. Nat. Hist. xii. pp. 228-235) criticises the various arrangements of the order as adopted by authors from the time of Linné. His own ideas coincide with those of Packard, as noticed above.

GERSTÄCKER (Archiv für Naturgesch. xxxv.) continues his catalogue of the insects collected at Zanzibar by Von der Decken and Kersten, enumerating the *Orthoptera*, and describing new genera and species, which will be noticed in their proper places.

SELYS-LONGCHAMPS (Ann. Soc. Ent. Belg. xi. pp. 23-42) enumerates the additions and corrections to the Belgian *Orthoptera* noticed since his Catalogue published in 1862; seven species are added, and three suppressed, leaving the total number at 43.

SINGER (Jahresb. königl. Lyceum Regensburg, 1869) describes 47 species as occurring in the neighbourhood of Regensburg.

FORFICULARIÆ.

PACKARD ('Guide,' p. 577) briefly points out the leading features of this family. They are stated to be rare insects in North America, though so abundant in Europe.

New species :—

Pygidicrana daemeli, H. Dohrn, Stett. ent. Zeit. 1869, p. 233, and *Echinotoma yorkense*, H. Dohrn, l. c. p. 234, Cape York.

Chelidura robusta, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 344, between Quito and Napo; *Psolidophora nigripennis*, Scudd. l. c., between Quito and Napo; *Labia bilineata*, Scudd. l. c. p. 345, between Quito and Napo.

Forficula (Apterygidia) gravidula, Gerst. Archiv für Naturgesch. xxxv. p. 221, Zanzibar.

BLATTIDÆ.

SAUSSURE (Mélanges Orthoptérologiques, 2^{me} fascicule) gives a revision of the species described by him in the first fascicule of his 'Mélanges' and in the 'Revue de Zoologie' for 1864, rendered necessary in consequence of these papers having been published almost simultaneously with Brunner von Wattenwyl's 'Nouveau système des Blattaires.' He adopts Brunner's arrangement of the family, with some further subdivision of genera, and describes many new species. The following is a summary of the paper :—

ECTOBIENS.

Ectobia (Westw.) is divided into three subgenera, founded chiefly on differences in the neuriation, viz. :—*Ectobia*, including *lapponica*, Linn., *ericetrum*

W., *livida*, Fab., &c.; *Theganopteryx*, Brunn., in which are included *sene-galensis*, Sauss., *jucunda*, n. sp., l. c. p. 232, Senegal, *fullax*, n. sp., l. c. p. 233, Mexico?; *Pseudectobia*, new subgenus, including *luneli*, Sauss., *litrifera*, Stål, f. 17, and *insularis*, n. sp., l. c. p. 237, Mauritius.

Anaplecta (Burm.): *otomia*, n. sp., l. c. p. 238, f. 18, Mexico.

Aphlebia (Brunn.): *madecassa*, n. sp., l. c. p. 238, f. 19 & 19a, Madagascar.

BLATTIENS.

Loboptera (Brunn.): *humbertiana*, Sauss.

Temnopteryx (Brunn.), including:—*truncata*, Sauss.; *indica*, Sauss.; *abbreviata*, Sauss.; *couloniana*, Sauss.; *phalerata*, Sauss., = *capensis*, Brunn.; *brevipennis*, Sauss.; and two new species, viz. *nana*, l. c. p. 241, Senegal, and *obscura*, ibid., India and Samoa.

Blatta. This genus is subdivided as follows:—*Blatta*, including only *germanica*, Fab.; *Phyllodromia* (Serv.), including *suppellectilium*, Serv. (= *cubensis* and *phalerata*, Sauss.), *mexicana*, Sauss., *bivittata*, Serv. And the following new or little-known species are described:—*capensis*, Sauss. l. c. p. 243, f. 20, 20a; *biteniata*, n. sp., ibid., Australia; *similis*, n. sp., l. c. p. 245, Australia?; *humbertiana*, Sauss. l. c. p. 246; *ceylonica*, Sauss. l. c. p. 247; *affinis*, n. sp. l. c. p. 248, Banda; and *anomala*, n. sp., ibid., Gaboon.

Pseudophyllodromia (Brunn.) includes three species already described by Saussure, viz. *venosa*, *heydeniana*, and *peruana*.

Apolyta (Brunn.): *australis*, Sauss., = *pellucida*, Brunn.; *reticulata*, Sauss., and *aurantia*, Sauss., = *vestita*, Brunn.

Ischnoptera (Burm.) includes:—*blattoides*, Sauss.; *fulva*, Sauss.; *termitina*, Sauss.; *flavicollis*, Sauss.; *ignobilis*, Sauss.; and three new species:—*triramosa*, l. c. p. 252, Australia; *capensis*, l. c. p. 253, Cape; and *ramosa*, l. c. p. 254, India.

Nyctobora (Burm.) includes *crassicornis*, Burm.; *terrestris*, Sauss.; and *obscura*, Sauss.

PERIPLANETIENS.

Polyzosteria (Burm.), divided into two subgenera, viz.:—*Polyzosteria*, Brunn., = *Chalcolampra*, Sauss., including *cuprea*, Sauss. (= *maculata*, Brunn.), and *limbata*, Burm.; and *Platzosteria*, Brunn., including *heydeniana*, Sauss., *bighumis*, Sauss., *biloba*, n. sp., l. c. p. 258, f. 20, Amboina, *melanaria*, Erichs. (= *analis*, Sauss.), *atrata*, Erichs. (= *consobrina*, Sauss.), and *bicolor*, Sauss. (= *ligata*, Brunn.).

Periplanetia (Burm.), divided into two subgenera:—*Stylopiga*, Fisch., including *orientalis*, Linn. (= *badia*, Sauss.), *rhombifolia*, Stoll (= *histro*, Sauss., = *decorata*, Brunn.), *occidentalis*, Sauss., and *ethiopica*, Sauss.; and *Periplanetia*, Burm., in which are placed *marginalis*, Sauss. (= *ligata*, Brunn.), *soror*, Sauss. (= *flavicincta*, Brunn.), *regina*, Sauss., *alaris*, Sauss., *pallipapis*, Serv., and a new species, *affinis*, l. c. p. 261, India.

Deropeltis (Brunn.) includes:—*meridionalis*, Sauss., = *bivittata*, Brunn.; *capensis*, Sauss., = *flavomarginata*, Brunn.; *erythrocephala*, Fabr., = *delalandi*, Sauss.; *junceae*, Sauss., = *atra*, Brunn.; and *similis*, Sauss., = *bivittata*?, Brunn.

Archiblatta (Snellen): *hoeveni*, Snell., = *aranea*, Sauss.; and *phalpagium*, Sauss.

EPILAMPRIENS.

Paratropia (Serv.): *æquatorialis*, Sauss.

Phoraspis (Serv.): *heydeniana*, Sauss.

Paraphoraspis (Brunn.) = *Phlebonotus* (Sauss.): *pallens*, Serv.; and *anomala*, Sauss.

Thorax (Sauss.): *porcelana*, Sauss., = *notata*, Brunn.

Epilampra (Burm.) includes:—*cribrata*, Sauss.; *bivittata*, Sauss.; *crocea*, Sauss., = ? *testacea*, Brunn.; *heydeniana*, Sauss.; *yersiniana*, Sauss., = *superba*, Brunn.; *fornicata*, Sauss., = *gracilis*, Brunn.; *inquinata*, Stål, = *nudiventris*, Sauss.; *heusseriana*, Sauss.; *verticalis*, Burm., = *bella*, Sauss.; and *cribrosa*, Burm., = *agathina*, Sauss.; and the following new species:—*melanosoma*, l. c. p. 266, India (= *proxima*, Brunn., var. ?); *olivacea*, l. c. p. 267, Cochin China; *manillensis*, l. c. p. 268, Manilla; *javanica*, l. c. p. 269, Java; *regina* (*Homalopteryx*), l. c. p. 270, Cochin China; and *pectinata* (*Homalopteryx* ?), l. c. p. 271, Australia.

Opisthoplatia (Brunn.): *orientalis*, Burm., = *pictetiana*, Sauss.

Paratemnopteryx, n. g., l. c. p. 273. Like *Temnopteryx*, but the tarsi without plantulæ. *P. australis*, n. sp., l. c. p. 273, f. 22, Melbourne.

CHORISONEURIENS.

Chorisoneura (Brunn.): *pellucida*, Sauss.; *translucida*, Sauss.

Cassidodes (Brunn.) = *Prosoplecta* (Sauss.): *coccinella*, Sauss.

Eleutheroda (Brunn.) = *Diploptera* (Sauss.): *dytiscoides*, Serv., = *silpha*, Sauss.

PANCHLORIENS.

Gyna (Brunn.): *æstuans*, Sauss.; *fervida*, Sauss.; and *africana*, Sauss., = *pomposa*, Brunn.

Panchlora (Burm.): *surinamensis*, Linn.; *peruana*, Sauss.; *laucadon*, Sauss.; *nivea*, Linn., = *luteola*, Sauss.

Nauphaeta (Burm.): *amæna*, Sauss.

Zetobora (Burm.): *castanea*, Sauss.; *verrucosa*, Sauss.

Oniscosoma (Brunn.): *granicollis*, Sauss., = *castanea*, Brunn.

PERISPHERIENS.

Perisphæria (Burm.): *cingulata*, Burm., = *lenticularis*, Sauss.; *discoidalis*, Brunn.; *madecassa*, n. sp., l. c. p. 277, Madagascar.

Parasphæria (Brunn.): *ovata*, Blanch., = *chilensis*, Sauss.

Derocalymna (Burm.): *glomeris*, Sauss.; *humbertiana*, Sauss., = *atra*, Brunn.; *flavipes*, Sauss.; *orientalis*, Sauss.; *sericea*, Sauss.; *emortualis*, Sauss.

Proscratea (Burm.): *dimidiata*, Sauss., = *marginata*, Brunn.

Hornetica (Burm.): *diabolus*, Sauss.

Gromphadorhina (Brunn.): *portentosa*, Schaum, = *coquerliana*, Sauss., = *portentosa*, Brunn.

CORYDIENS.

Corydia (Guérin): *nuptialis*, Gerst., = *gueriniana*, Sauss.; *ornata*, Sauss., = *westwoodii*, var. ?

Diaphana (Brunn.) = *Hypercompsa* (Sauss.): *fenestrina*, Sauss., = *fieberti*, Brunn.

POLYPHAGIENS.

Polyphaga (Brullé) = *Heterogamia* (Burm.): *syriaca*, Sauss., = *conspersa*, Brunn.

Homæogamia (Burm.): *sinensis*, n. sp., l. c. p. 282, North China.

BLABERIEIS.

Blabera (Serv.) includes the following species already described by Saussure:—*cubensis*, *brasiliæna*, *minor*, *deplanata*, and *claraziana* (= *ligata*, Brunn.).

PANESTHIENS.

Parahormetica (Brunn.): *bilobata*, Sauss.; and *bengalensis*, n. sp., l. c. p. 284, Bengal.

Dasyposoma (Brunn.): *castanea*, n. sp., l. c. p. 285, Australia.

Panesthia (Serv.) includes:—*morio*, Burm., = *regina*, Sauss.; *dilatata*, Sauss.; *japonica*, Serv.; *mandarinea*, Sauss. (described); and *forceps*, n. sp., l. c. p. 287, f. 24, Pondicherry.

Paranauphæta (Brunn.): *limbata*, n. sp., l. c. p. 288, India.

In the 'American Entomologist,' i. p. 166, the habits and egg-cases of *Platamodes unicolor* and *Ectobia germanica* are described; the latter species is said to have been taken in Illinois.

Blatta melanocephala. Westwood notes that this species is destructive in orchid-houses in England, feeding on the buds or young shoots of the plants. (Trans. Ent. Soc. Lond. 1869, Proc. p. x.)

SCUDDER (Proc. Bost. Soc. Nat. Hist. xii.) describes the following new species from the Napo or Marañon:—*Phyllodromia pallipes*, p. 342, *Blabera femorata*, ibid., and *B. armigera*, p. 343.

Ischnoptera hyalina, Scudd., Trans. Amer. Ent. Soc. ii. p. 307, Delaware.

GERSTÄCKER (Archiv für Naturgesch. xxxv.) describes a new genus and the following new species from Zanzibar and vicinity:—*Gynopeltis*, n. g., l. c. p. 208. Allied to *Heterogamia*: differs in the body being glabrous, the anterior femora spinous. Supraanal lamina of the female entire, transverse quadrate, the cerci shorter than the lamina, foliaceous, ovate-acuminate. *G. picta*, n. sp., l. c. p. 208.

Ceratinoptera dimidiata, l. c. p. 205; *Phyllodromia bimaculata*, l. c. p. 206; *Derocalymma porcellis*, l. c. p. 207; *D. lampyrina*, and *D. capucina*, ibid.

MANTIDÆ.

SAUSSURE (Essai d'un Syst. Mant.) gives an outline of a new arrangement of the family, in a tabular form, dividing it into three tribes as under:—

- a. Prothorax short, quadrate, length equal or nearly equal to the breadth, not dilated above the anterior coxæ..... EREMIAPHILII.
- aa. Prothorax more or less elongate, dilated above the coxæ, parallel or dilated into a membrane.
 - b. Eyes ovate or exceptionally slightly acuminate... MANTII.
 - bb. Eyes conoid or terminated in a spine..... ACANTHOPSI.

The EREMIAPHILII comprise the following genera :—

- a. Elytra and wings abbreviated, not covering the abdomen.
Eremiaphila, Lef.
- aa. Elytra and wings perfected.
 - b. Vertex cornute..... *Oxyphilus*, Serv.
 - bb. Vertex unarmed.
 - c. Body glabrous, shining, æneous..... *Mefalleutica*, Westw.
 - cc. Body and elytra pilose..... *Chætessa*, Burm.

The tribe MANTII is further subdivided into the following subtribes :—

- a. Head provided with spines or processes.
 - c. Cerci setiform, normal; abdomen stout; supraanal lamina short or moderate.
 - d. Front with a double spine-like horn, or with two small teeth.
THEOCLYTITES.
 - dd. Vertex produced into a cone..... EMPUSITES.
 - cc. Cerci very long, compressed; abdomen slender, cylindrical, much elongated; prothorax short; supraanal lamina elongate.
STENOPHYLLITES.
- aa. Head unarmed.
 - b. Margins of the prothorax parallel, or broader in front than behind; apex not coarctate anteriorly.
 - c. Head lenticular; occiput nude, produced; margins of the prothorax subparallel or parallel; margins of the abdomen entire.
ORTHODERITES.
 - cc. Head transverse; vertex not prominent; occiput not produced; prothorax dilated in the anterior half, anterior margin broad, transverse or arcuate; margins of the abdomen (♀) lobate.
GONATISTITES.
 - bb. Prothorax dilated above the coxæ, but again attenuate.
 - c. Veins of the elytra longitudinal or oblique; prothorax slender, or in part dilated.
 - d. Prothorax short or elongate; abdomen in ♀ more or less stout, dilated, or fusiform..... MANTITES.
 - dd. Prothorax slender, very elongate; body filiform; abdomen filiform and cylindrical in both sexes.... THESPITES.
 - cc. Discal veins pectinate, terminating in the sutural margin; prothorax dilated and membranaceous at each side... CHÆRADODITES.

Subtribe THEOCLYTITES.

- a. Antennæ of the males setiform, moniliform, or serrate.
 - b. Marginal area of the elytra in the female not dilated, the apex not excised; abdomen and femora lobate, perfoliate. *Zoolea*, Serv.
 - bb. Marginal field variable in the female; abdomen and femora not perfoliate..... *Pseudovates*, Sauss.
- aa. Antennæ of the males pectinate; femora more or less perfoliate.
 - b. Abdomen of the female slightly perfoliate; marginal area of the elytra of the female dilated, the apex excised.... *Theoclytes*, Serv.
 - bb. Abdomen not perfoliate; marginal area not dilated.
Vates, Burm.

Subtribe EMPUSITES.

- a. Facial scutellum planate, not carinate, not produced above into a tooth; vertical process very long, foliaceous; prothorax moderate, dilated, and membranaceous on each side. *Phyllocrania*, Burm.
- aa. Facial scutellum carinate, produced above into a tooth.
 - b. Prothorax short, the margins membranaceous for their whole length; horn of the vertex short and thick *Blepharis*, Serv.
 - bb. Prothorax elongate, longer than the meso- and metanotum together.
 - c. Prothorax and margins of the anterior coxæ broadly dilated into a membrane *Idolum*, Sauss.
 - cc. Prothorax very long; anterior coxæ not dilated, the apex terminating in a large tooth.
 - d. Prothorax in front with a rhomboidal leaf-like dilatation; femora and abdomen strongly perfoliate; elytra abbreviated in the female; base of the anterior margin much dilated; discoidal vein pectinate *Gongylus*, Burm.
 - dd. Prothorax not dilated; elytra elongate, narrow, principal vein longitudinal
 - e. Legs and abdomen slightly perfoliate. *Empusa*, Ill.
 - ee. Legs and abdomen not perfoliate *Idolomorpha*, Burm.

Subtribe STENOPHYLLITES.

Body: slender, phasmiform; head small, armed with a horn and two spines; prothorax short; abdomen very truncate, long, cylindrical; legs short, perfoliate; elytra narrow; discoidal vein of the wings not divided.

Stenophylla, Westw.

Subtribe ORTHODERITES.

- a. Prothorax carinate, roof-shaped, margins in front subdivergent; apex truncate; elytra opaque. *Orthodera*, Burm.
- aa. Prothorax not carinate, margins parallel, subundulate, rounded in front and behind; head lenticular, planate in front; occiput naked, more or less produced; eyes slightly prominent.
- b. Cerci very long, pilose; wings normal *Tarachodes*, Burm.
- bb. Cerci short; wings of the female abbreviated.
 - c. Wings of the female shorter than the abdomen, of the male normal; head moderate, vertex slightly acute *Chiropacha*, Charp.
 - cc. Wings of the female rudimentary (male?); head strongly lenticular, the vertex very acute, the occiput much produced; prothorax above spinous. *Chiropus*, Sauss.

Subtribe GONATISTITES.

- a. Prothorax moderate, slender, truncate in front, the angles not acute. *Gonatista*, Sauss.
- aa. Prothorax short, slightly broader in front, anterior margin arcuate, angles acute. *Humbertiella*, Sauss.

Subtribe MANTITES.

- a. Small species. Thorax short or moderate.
- b. Discoidal vein of the wings of both sexes undivided or furcate.
- c. Elytra and wings of the female squamiform. *Ameles*, Burm.
- cc. Elytra and wings of both sexes more or less elongate.

- d. Supraanal lamina elongate; elytra in both sexes opaque; wings broad, coloured in the female; abdomen of the female and anterior femora broad *Litourgousa*, Sauss.
- dd. Supraanal lamina short.
 - e. Wings coloured; elytra of the female not extensive, opaque, of the male partly membranaceous; abdomen of the female dilated *Acontista*, Burm.
 - ee. Elytra of the female elongate; abdomen of the female cylindrical or narrow *Iridopteryx*, Sauss.
- bb. Discoidal vein ramose in both sexes; elytra of the female elongate, membranaceous.
 - c. Elytra and wings of the female squamiform or abbreviated; discoidal vein of the wings straight *Gonypeta*, Sauss.
 - cc. Elytra and wings of the female —?; elytra of the male shorter, anterior area broad, discoidal vein very arcuate, convex in front; prothorax slender *Miopteryx*, Sauss.
- aa. Larger species. Prothorax elongate.
 - b. Elytra of the female abbreviated, not reaching the apex of the abdomen.
 - c. Wings present, sometimes squamiform.
 - d. Wings of the female more or less coloured.
 - e. Supraanal lamina elongate; elytra more or less opaque in both sexes; stigma of the elytra concolorous; head slightly broad. *Iris*, Sauss.
 - f. Prothorax smooth, scarcely carinate; legs moderate. Subgen. *Iris*, Sauss.
 - ff. Prothorax carinate, denticulate; posterior legs elongate. Subgen. *Fischeria*, Sauss.
 - ee. Supraanal lamina shorter; (prothorax of the female elongate, carinate; head broad); elytra of the male membranaceous; wings of the female banded with yellow.
 - f. Stigma of the female elytra coloured, of the male more or less conspicuous; elytra slightly shorter than the abdomen, parallel; marginal area narrow, short, or squamiform, of the male narrow, more or less coloured; discoidal vein undivided or simply branched in both sexes; supraanal lamina short *Stagmomantis*, Sauss.
 - ff. Stigma of the female elytra concolorous, absent in the male; elytra of the female dilated in front, hyaline in the male; discoidal vein of the female ramose; supraanal lamina subelongate, rounded triangular *Cardioptera*, Burm.
 - dd. Wings hyaline in both sexes.
 - e. Cerci cylindrical. (Australian species.).. *Pseudomantis*, Sauss.
 - ee. Cerci compressed, elongate *Archimantis*, Sauss.
- cc. Wings absent in the female; elytra of the female squamiform, of the male hyaline *Coptopteryx*, Sauss.
- bb. Elytra of the female not abbreviated, longer than, or equal to, the abdomen.
 - c. Wings of the female opaque, stigma coloured, sometimes ocellate; marginal area dilated, apex attenuate; elytra of the male partly opaque.

- d. Discoidal vein of the wings furcate or simple; eyes angulate.
Oxyops, Sauss.
- dd. Discoidal vein ramose; eyes round *Stagmatoptera*, Burm.
- cc. Wings hyaline in both sexes; discoidal vein 2-, 3-, or 4-branched; elytra of the female almost wholly, of the male partly, opaque, margins subparallel; stigma whitish or concolorous.
- d. Stigma of the elytra whitish, rarely green; marginal area of the female dilated, the apex excised, of the male only dilated at the base; discoidal vein 3- or 4-branched . . . *Hierodula*, Burm.
- dd. Stigma of the elytra concolorous or obsolete (rarely whitish); elytra similar in both sexes; anterior margin narrow, apex not excised; discoidal vein 2-branched.
- e. Body moderately elongate; elytra and wings rounded at the apex *Mantis*, Lin.
- f. Elytra banded with fuscous; stigma whitish.
 Subgen. *Polyspilota*, Burm.
- ff. Elytra green, stigma green. Subgen. *Mantis*, Lin.
- ee. Body elongate; elytra and anterior area of the wing very narrow, acuminate *Tenodera*, Burm.
- Subtribe THESPITES.
- a. Prothorax broad; anterior legs thickened; elytra and wings of the female rudimentary, elongate in the male; wings coloured; discoidal vein furcate in the male *Phasmomantis*, Sauss.
- aa. Body and anterior legs filiform; prothorax slightly angulated and dilated above the anterior coxæ.
- b. Anterior tibiæ half the length of the femora (vertex bidentate); wings coloured; elytra partly opaque; legs slightly perfoliate.
Danuria, Stål.
- bb. Anterior tibiæ one-third the length of the femora; wings hyaline; elytra membranaceous; legs simple.
- c. Cerci cylindrical or styliform; supraanal lamina elongate, lanceolate.
- d. Antennæ setiform, slender; wings moderate; elytra membranaceous, rounded at the apex.
- e. Anterior tibiæ normal, armed with two rows of spines.
Thespis, Serv.
- f. Head transverse, compressed; eyes lateral; discoidal vein of the wings furcate Subgen. *Thespis*.
- ff. Head thickened behind, produced in front; eyes ovate, conical, produced in front; occiput bidentate; discoidal vein simple Subgen. *Parathespis*, Sauss.
- ee. Anterior tibiæ three-fingered; vertex bidentate.
Oligonyx, Sauss.
- dd. Antennæ and cerci very thick, attenuate at the apex; elytra and wings squamiform *Brunneria*, Sauss.
- cc. Cerci of the female foliaceous; wings coloured; supraanal lamina short *Angela*, Serv.

Subtribe CHERADODITES.

- a. Prothorax dilated in all its length.

- b. Legs unarmed, not perfoliate ; body green ; wings hyaline.
Chæradodis, Serv.
- bb. Legs perfoliate ; body cadaverous ; elytra frequently spotted or ocellate beneath ; wings frequently coloured. (Asiatic.)
Deroplatys, Westw.
- aa. Posterior part of the prothorax free, dilated in front, denticulate.
Epaphrodita, Serv.

The tribe ACANTHOPSI is divided into the following subtribes:—

- a. Elytra narrow or ovate ; veins longitudinal or oblique.
- b. Body elongate, linear ; abdomen cylindrical, slender.
- c. Prothorax cylindrical, not, or scarcely, dilated above the coxæ, not coarctate in front ; head lenticular ; vertex drawn out in front ; occiput produced, nude SCHIZOCEPHALITES.
- cc. Prothorax carinate, slightly dilated above the coxæ, head trigonal ; vertex transverse ; occiput not produced ; cerci foliaceous.
 TOXODERITES.
- bb. Body normal ; prothorax dilated above the coxæ, again coarctate in front, apex parabolic ; head transverse ; occiput not produced.
 HARPACITES.
- aa. Elytra excised at the margin ; discoidal vein pectinate, ending in the sutural margin ACANTHOPSITES.

Subtribe SCHIZOCEPHALITES.

- a. Body filiform, very long ; prothorax thrice as long as the other thoracic divisions ; legs very long *Schizocephala*, Serv.
- aa. Body less elongate ; prothorax scarcely twice as long as the rest ; legs short *Oxyopthalma*, Sauss.

Subtribe TOXODERITES.

- a. Femora strongly perfoliate, terminating in four long spines.
Toxodera, Serv.
- aa. Femora slightly, or not, foliate ; apex without long spines.
Heterochæta, Westw.

Subtribe HARPACITES.

- a. Body slender, linear ; elytra narrow ; eyes spined or produced into teeth.
- b. Elytra and wings squamiform in both sexes *Yersinia*, Sauss.
- bb. Elytra and wings normal in the male (female ?) *Parameles*, Sauss.
- aa. Body less slender ; abdomen dilated ; eyes conoid ; elytra ovate-lanceolate.
- b. Margins of the prothorax and abdomen dilated and membranaceous ; front horned *Harpax*, Serv.
- bb. Margins of prothorax and abdomen entire ; front tuberculate.
Creobotra, Serv.

Subtribe ACANTHOPSITES.

- a. Vertex unarmed ; tibiæ simple *Acanthops*, Serv.
- aa. Vertex horned ; tibiæ dilated *Hymenopa*, Serv.

Mantis carolina. PACKARD (Guide, p. 574) figures imago and eggs of this species ; it is also figured and described in the 'American Entomologist,' i.

p. 184, and by RILEY in the 'First Report of Noxious Insects of Missouri,' pp. 169-171.

MANN (Student and Intell. Observ. No. xx. p. 133) gives a general account of the habits of some species of this family as observed by him in Natal.

SAUSSURE, *l. c.*, describes the following new species:—

Theoclytes surinamensis, *l. c.* p. 60, Surinam; *Iohm diabolicum*, *l. c.*, Equinoctial Africa; *Empusa humbertiana*, *l. c.*, Ceylon; *Idolomorpha spinifrons*, *l. c.* p. 61, Brazil; *Chiropacha capitata*, *l. c.*, Africa?; *Chiropus dives*, *l. c.*, Benguela; *Gonatista cubensis*, *l. c.*, Cuba; *Humbertiella perlouides*, *l. c.*, Senegal; *H. ceylonica*, *l. c.* p. 62, Ceylon; *H. indica*, *l. c.*, India; *Litourgousa cayennensis*, *l. c.*, Cayenne; *Acontista cordillerae*, *l. c.*, Mexico; *A. elegans*, *l. c.* p. 63, Guiana; *Iridopteryx iridipennis*, *l. c.*, Ceylon; *I. glauca*, *l. c.*, Ceylon; *Gonypeta humbertiana*, *l. c.*, Ceylon; *G. trincomalæ*, *l. c.*, Ceylon; *G. benguelæ*, *l. c.* p. 64, Western Africa; *Miopteryx perlouides*, *l. c.*, doubtful locality; *M. phryganea*, *l. c.*, doubtful locality; *Iris syriaca*, *l. c.* p. 65, Syria; *Stagmomantis nahua*, *l. c.*, Mexico; *Cardioptera cupido*, *l. c.* p. 66, Brazil; *C. translucida*, *l. c.*, Brazil? *Coptopteryx claraziana*, *l. c.*, Argentine Confederation; *Stagmatoptera biocellata*, *l. c.* p. 67, Brazil; *Hierodula coarctata*, *l. c.*, India or Africa; *H. tenuidentata*, *l. c.* p. 68, India; *H. 9-dentata*, *l. c.*, Syria; *H. bicarinata*, *l. c.*, India? *Mantis emortualis*, *l. c.*, doubtful locality; *M. japonica*, *l. c.* p. 69, Japan; *Tenodera capitata*, *l. c.*, doubtful locality; *T. angustipennis*, *l. c.*, Java?; *Phasmomantis grandis*, *l. c.*, doubtful locality; *Daniura bolanana*, *l. c.* p. 70, Zanzibar; *Thespis cubensis*, *l. c.*, Cuba; *T. surinama*, *l. c.*, Surinam; *T. pithisica*, *l. c.*, Brazil; *Parathespis humbertiana*, *l. c.* p. 71, Ceylon; *Oligonix bicornis*, *l. c.*, Mexico; *O. filiformis*, *l. c.*, Brazil; *Brunneria subaptera*, *l. c.*, Argentine Confederation; *Chærodalis squilla*, *l. c.* p. 72, Ceylon; *Parameles picteti*, *l. c.*, Spain; *Creobotra apicalis*, *l. c.* p. 73, Assam; *Hymenopus celebs*, Sauss., *l. c.*, doubtful locality.

Stagmatoptera binotata, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 341, Napo or Maranon.

GERSTACKER, Archiv für Naturgesch. xxxv., describes a new genus and the following new species from Zanzibar and vicinity:—

Pyrgomantis, n. g., *l. c.* p. 210. Head elongate, acuminate; antennæ short, setiform in both sexes; eyes oblong, not prominent; ocelli of the male very large, minute in the female; prothorax oblong, subparallel; elytra and wings hyaline; legs rather short, simple; abdomen linear. *P. singularis*, *l. c.* p. 211.

Tarachodes pantherina, *l. c.* p. 208; *T. modesta*, *l. c.* p. 209; *Mantis* (*Stagmatoptera?*) *kersteni*, *l. c.*; *M. (Photina) agrionina*, *l. c.*; *M. vincta*, *l. c.*; *M. (Danuria?) galeata*, *l. c.* p. 210.

PHASMIDÆ.

SAUSSURE (Mélanges Orthoptérologiques, 2^{me} fascicule) describes and figures many known species, adopting Westwood's classification of the family.

Bacillus (Latr.) he divides into three subgenera, as under:—

1. *Bacillus*. Antennæ very short and thick, composed of about twelve small joints, several of them being broader than long; abdomen variable. Species *B. rossii*, Fabr., &c.

2. *Ramulus*, Sauss. Antennæ slightly longer than the head, or equal thereto; head elongate, horizontal; abdomen of the ♀ somewhat fusiform, slightly swollen in the middle, attenuate at the apex, terminated by very long, compressed cerci, forming two foliaceous appendices. He describes and figures *carinulatus*, Sauss., *l. c.* p. 291, f. 1 (♀).

3. *Baculum*, Sauss. Head slightly elongate, ovoid; abdomen of the ♀ cylindrical and rather broad at the apex, which is truncate; ninth dorsal segment truncate, and transverse or compressed; cerci small, scarcely extending beyond the abdomen, longer than the head. He describes *cunicularis*, Westw., *l. c.* p. 292, f. 2 (♀), 2a, and *ramosus*, Sauss., *l. c.* p. 294.

Acanthoderus (G. R. Gray) *rhachis*, Sauss., described and figured, *l. c.* p. 295, f. 10.

Anophelepis (Westw.). He describes and figures *fulvescens*, Sauss., *l. c.* p. 297, f. 3 and 3a (♀), 4 and 4a (♂), and *ceylonica*, Sauss., *l. c.* p. 298, f. 5 (♀).

Lonchodes (G. R. Gray). He describes *pseudoporus*, Westw., *l. c.* p. 300, = *humberti*, Sauss.; *ceylonicus*, Sauss., *l. c.* p. 301, =? *grallator*, Bates; *praon*?, Westw., *l. c.* p. 302, f. 6 and 6a (♀ = *flavicornis*, Bates?), and *taprobanæ*?, Westw., *l. c.* p. 304, f. 7, 7a, b, = *auscultator*, Bates?

Bactridium (Sauss.). He describes and figures *coulonianum*, Sauss., *l. c.* p. 306, f. 8, 9.

Monandroptera (Westw.). He prescribes *undulata*, Westw., *l. c.* p. 308, = *gibbosa*, Westw., ♀.

Heteropteryx (Gray). He describes a variety of *grayi*, Westw., *l. c.* p. 310.

Lopaphus (Westw.). He describes and figures *spinus*, Sauss., *l. c.* p. 312, f. 15.

Necrosia (Westw.). He gives a tabular arrangement of the species, and describes *euryalus*, Westw., *l. c.* p. 314; *humbertiana*, Sauss., *l. c.* p. 315, f. 11; *ceylonica*, Sauss., *l. c.* p. 316; *rubescens*, Sauss., *l. c.* p. 317, f. 12; *malacca*, Sauss., *l. c.* p. 318, f. 13, and *panætius*, Westw., *l. c.* p. 319.

New species :—

Acanthoderus inmanis, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 340, Napo or Maranon.

Eurycantha calcarata, Lucas, Ann. Soc. Ent. Fr. 4^{me} série, t. ix. bulletin, p. xxv, and *E. insularis*, Lucas, *l. c.*, Solomon archipelago.

Ischnopoda reyi, Lucas, *l. c.* p. 430, Zambesi.

Bacillus leprosus, Gerst. Archiv für Naturgesch. xxxv. p. 211, Zanzibar.

GRYLLIDÆ.

SCUDDER (Mem. Peabody Acad. of Science, vol. i.) gives an elaborate essay on the species hitherto placed in *Gryllotalpa*, describing all known forms and some new ones, with a finely executed plate of details. He separates the species with but two dactyls on the fore tibiæ from those with four, applying the generic term *Scapteriscus* to the former, and retaining *Gryllotalpa* for the latter. In *Scapteriscus* he places :—*oxydactylus*, Scudder, n. sp., *l. c.* p. 7, Brazil; *tenuis*, Scudder, n. sp., *l. c.* p. 8, Brazil; *mexicanus*, Burm.; *didactylus*, Latreille; *vicinus*, Scudder, n. sp., *l. c.* p. 12, South and Central America; *agassizii*, Scudder, n. sp., *l. c.* p. 13, Switzerland (introduced?); *variegatus*, Burm.; and *abbreviatus*, Scudder, n. sp., *l. c.* p. 14, Pernambuco.

In *Gryllotalpa* he retains *australis*, Erichs.; *nitidula*, Serville; *cophta*, De Haan; *vulgaris*, Latr.; *hirsuta*, Burm.; *africana*, P. de Beauv.; *longipennis*, De Haan; *fossor*, Scudder, n. sp., l. c. p. 21, Western and Southern Africa; *oryctes*, Scudder, n. sp., l. c. p. 22, China; *cultriger*, Uhler; *chiliensis*, Sauss.; *minuta*, Burm.; *borealis*, Burm.; *columbia*, Scudd., = *longipennis*, Scudd., olim; and *hexadactyla*, Perty.

PACKARD (Guide, pp. 562-564) notes the general characters of the family and the mode of stridulation. He figures *Æcanthus niveus*, and states that it is injurious to raspberry- and plum-twigs, into which the female bores for the purpose of depositing her eggs. On this latter point see also the 'American Entomologist,' i. pp. 147 and 247, and RILEY, First Report of Nox. Ins. Missouri, pp. 138, 139.

SCUDDER (Proc. Bost. Soc. Nat. Hist. xii.) describes three new South-American species:—*Nemeobius ortonii*, l. c. p. 330, Napo or Maranon; *Platydictylus fasciatus*, l. c. p. 331, Napo or Maranon; *Trigonidium gracile*, l. c., Napo.

GERSTÄCKER (Archiv für Naturgesch. xxxv.) describes the following new species from Zanzibar and vicinity:—*Gryllotalpa debilis*, l. c. p. 211; *Gryllus physomerus*, l. c.; *G. pulchriceps*, l. c. p. 212; *G. xanthoneurus*, *G. scenicus*, and *G. laqueatus*, l. c.; *G. diadematus*, l. c. p. 213; *G. contaminatus*, l. c.

LOCUSTIDÆ.

LUCAS (Ann. Soc. Ent. France, 4^{me} série, t. ix. p. 83) describes and figures (pl. 3. f. 1-6) the two sexes of *Eugaster servillei*, Reiche and Fairm., and a new species, *E. maurelii*.

GHILIANI (Bull. Soc. Ent. Ital. i. pp. 53-55) describes a singular variety of *Phaneroptera liliifolia*, Fab., from the vicinity of Turin.

SCUDDER (Proc. Bost. Soc. Nat. Hist. xii. pp. 408, 409) gives a synopsis of the cave-frequenting genus *Hadenæcus*, and describes a new species from New Zealand, the genus having hitherto only occurred in Europe and North America.

In the 'American Entomologist,' vol. i., are described the eggs of *Platypylum concavum* (p. 100) and *Phylloptera oblongifolia* (p. 166, with figure).

New genera and species:—

Panoplosceles, Scudder, Proc. Bost. Soc. Nat. Hist. xii. p. 333. Head globose, the vertex produced in front as a compressed lamina, bidentate anteriorly; last joint of maxillary palpi a little longer than the preceding three joints taken together: pronotum large, produced posteriorly into a high, rounded, nearly vertical lamina; sterna bimucronate; tegmina very short, coarse, and stout, the male with greatly developed, coarse stridulating organs; wings nearly abortive; legs very long, stout, and spiny; femora with three stout spines near the apex. *P. armata*, Scudd., Napo or Maranon.

Disceratus, Scudd. l. c. p. 335. Front very declivent; vertex produced into a low, crater-like elevation; pronotum partially concealing the head, but scarcely covering the metanotum; tegmina minute, wings wanting; coxæ and sides of thoracic sterna produced into small blunt spines; ovipositor curved rather strongly, tapering rapidly, the tip pointed. *D. nubiger*, Scudd., Salto.

Acanthacara, Scudd. *l. c.* p. 335. Vertex prolonged into a long and curved thorn, front very declivent; pronotum produced backward a little over the mesonotum; meso- and metanotum resembling the abdominal segments; wings absent; thoracic sterna exteriorly, and the coxæ internally, with small, short, blunt spines; ovipositor curved pretty strongly. *A. acuta*, Scudd., between Quito and Napo.

Steirodon quadratum, Scudd. *l. c.* p. 331, Guayaquil; *Acanthodis? attenuatus*, Scudd. *l. c.* p. 332, Napo; *Meroncidium conspersum*, Scudd. *l. c.*, Napo or Marañon; *Copiophora gracilis*, Scudd. *l. c.* p. 333, Napo or Marañon; *Conocephalus brevicauda*, Scudd., *l. c.*, Napo; *C. tenuicauda*, Scudd. *l. c.*, Napo or Marañon; *Xiphidium attenuatum*, Scudd. Trans. Amer. Ent. Soc. ii. p. 305, Illinois.

Hadenæus edwardsii, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 408, New Zealand.

Eugaster maurelii, Lucas, Ann. Soc. Ent. Fr. 4^{me} série, t. ix. pp. 85-88, pl. 3. f. 7-14, Senegal and Soudan.

GERSTÄCKER describes the following new species from Zanzibar and vicinity:—*Eugaster loricatus*, Archiv für Naturgesch. xxxv. p. 213; *E. ephippiatus*, *l. c.*; *E. talpa*, *l. c.* p. 214; *Cymatomera paradoxa* and *Xiphidium hecticum*, *l. c.*; *Phaneroptera punctipennis*, *l. c.* p. 215; *P. tetrasticta*, *l. c.*

ACRYDIIDÆ.

SCUDDER (Proc. Bost. Soc. Nat. Hist. xii. pp. 345-355) divides the gigantic lobe-crested grasshoppers of South and Central America (forming a section of the old genus *Acridium*) into three groups of generic value, *Tropidacris*, *Titanacris*, and *Lophacris*, represented by the familiar species *A. dux*, Drury, *A. carinatum*, Stoll, and *A. olfersii*, Burin. He describes all the species, and remarks on the synonymy.

PACKARD (Guide, pp. 567-572) gives a very full general account of the family and their habits, and figures *Caloptenus femur-rubrum*, *C. spretus*, and *Ædipoda carolina*.

BYERS (American Entomologist, i. p. 94) and DEVINNY (*l. c.* p. 95) write respecting the habits of the "Colorado Grasshopper" (*Caloptenus spretus*), with especial regard to its breeding-places, which are often many hundred miles from the scene of their devastations. They fly with the wind, and on a sudden change in its direction drop and commence feeding.

BUTLER (Trans. Ent. Soc. Lond. 1869, Proc. pp. iii. & xi) remarks on a species of *Conocephalus* which he kept alive for some months, during which time it ate nothing. It was one of several which had reached this country on a ship from West Africa, and at one time a swarm of them had covered the deck.

Acridium peregrinum, Oliv. E. BROWN and BOND (Trans. Ent. Soc. Lond. 1869, Proc. pp. xxviii, xxix) record the capture, at Burton-on-Trent, Plymouth, &c. of several examples of this insect, which had not been previously recorded in any work on European *Orthoptera*, and which is a native of Asia and North Africa. In Newman's 'Entomologist,' vi., are also several records of the capture of locusts in various parts of the country; these are

referred to *Pachytylus migratorius*; but from information since received it would appear that all of these were probably *Acridium peregrinum*. It does not seem to have been noticed in other parts of Europe.

In Harris's 'Correspondence,' edited by Scudder, are descriptions, from the original MS., of fresh specimens of *Acrydium* (*Caloptenus*) *femur-rubrum*, De Geer (*l. c.* p. 325), and *Locusta* (*Chloëaltis*) *curtipennis*, Harris (*l. c.* p. 326).

New genera and species :—

Tropidacris, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 337. Head large, compressed; pronotum tapering moderately; interno-median vein of tegmina furcate; basal branch of externo-median vein simple, but united by distinct cross veins to the interno-median; area between the first and second branches of the anal vein of wings in the female not noticeably broad, broken by cross veins into spaces not more than half as long again as broad; in the male noticeably broader than the adjoining areas, broken into spaces twice as long as broad. Includes *T. dux*, Drury; *T. rex*, Scudd.; *T. latreillei*, Perty; *T. fabricii*, Scudd. (= *dux*, Fab. part?); and *T. cristata*, Linn.

Titanacris, Scudd. *l. c.* p. 337. Head small, compressed; pronotum tapering considerably; interno-median vein of tegmina furcate; basal branch of externo-median vein simple; area between first and second branches of the anal vein of wings of female not noticeably broad, broken by cross veins into spaces not more than half as long again as broad; in the male unusually broad, and broken into spaces three times as long as broad. Includes *T. carinata*, Stoll, and *T. albipes*, De Geer.

Lophacris, Scudd. *l. c.* p. 337. Head large, full; pronotum tapering but little; interno-median vein of tegmina simple; basal branch of externo-median vein furcate; area between first and second branches of anal vein of wings of both sexes noticeably broader than the adjoining areas, and divided into spaces twice as long as broad. Includes *L. olfersii*, Burm., *L. velasquezii*, Nieto, and *L. humboldtii*, Scudd.

Stenocroblytus, Gerstäck. (Archiv für Naturgesch. xxxv. p. 219). Eyes nearly contiguous above; vertex very narrow; median keel of pronotum obsolete, side keels absent; process of prosternum subcompressed, nearly bilobed at the apex; elytra linear; wings ample. *S. cervinus*, Gerst. *l. c.* p. 220, Zanzibar.

Ivalidium, Gerst. *l. c.* p. 220. Allied to *Caloptenus*, *Platyphymata*, and *Pezotettix*, but apterous. *I. hæmatoscelis*, Gerst. *l. c.*, Zanzibar.

Proscopia bulbosa, Scudd. *l. c.* p. 336, Napo or Maranon; *P. sajar*, Scudd. *l. c.*, Napo or Maranon; *Cephalocæma acuminata*, Scudd. *l. c.* p. 337, between Quito and Napo; *Xiphicera 8-maculata*, Scudd. *l. c.*, Napo or Maranon; *Lophacris humboldtii*, Scudd. *l. c.*, Napo or Maranon; *Tropidacris rex*, Scudd. *l. c.* p. 338, Guayaquil; *Acridium occidentale*, Scudd. *l. c.* p. 339, Napo or Maranon; *A. labratum*, Scudd. *l. c.*, Napo or Maranon; *Chrysochraon* (?) *abbreviatum*, Scudd. *l. c.*, between Quito and Napo; *Edipoda bivenosa*, Scudd. *l. c.*, Ecuador.

Opomala aptera, Scudd. Trans. Amer. Ent. Soc. ii. p. 305, Pennsylvania; *Gomphocerus simplex*, Scudd. *l. c.*, Delaware; *Edipoda carinata*, Scudd. *l. c.* p. 306, Iowa; *Tettix femorata*, Scudd. *l. c.*, Maryland.

Pezotettix manca, Smith, Proc. Portland Soc. Nat. Hist. i. pt. ii. p. 149, Maine.

GERSTÄCKER (Archiv für Naturgesch. xxxv.) describes the following new species from Zanzibar and vicinity :—

Tryxalis sulphuripennis, l. c. p. 215; *Opomala brachyptera*, l. c. p. 216; *Pæcilocera ægrota* and *P. atriceps*, l. c.; *Petasia hecate*, l. c. p. 217; *Sphenarium pulchripes* and *Chrysochaon dasyncnemis*, l. c.; *C. semicarinatus*, l. c. p. 218; *Chorætypus hippiscus* and *Pamphagus atrox*, l. c.; *Acridium deckeni*, l. c. p. 219; *Catantops decoratus*, l. c.; *Hymenotes humilis*, l. c. p. 220; *Tettix condylops*, l. c. p. 221.

RHYNCHOTA

By W. S. DALLAS, F.L.S.

A. *Work in progress.*

WALKER, FRANCIS. Catalogue of the specimens of Hemiptera Heteroptera in the collection of the British Museum. Part III. London, 1868.

In this third part of his catalogue, Walker gives the list of the described species of the subfamilies Edessidæ, Phyllocephalidæ, and Megymenidæ, with indications of the localities from which the British Museum possesses specimens. Many new species are described. Nearly half the volume consists of an appendix containing indications of recently described species, descriptions of new forms, and further information connected with the subfamilies treated of in the first two parts of the catalogue.

B. *Papers published in Journals &c.*

DERBES, —. Observations sur les Aphidiens qui font les Galles des Pistachiers. Annales Sci. Nat. sér. 5, tome xi. pp. 93–107, plates 3 & 4.

DOUGLAS, J. W., and SCOTT, J. British Hemiptera: additions and corrections. Ent. Monthly Mag. vol. v. pp. 259–268 & 293–297.

FIEBER, F. X. Synopse der europäischen Deltocephali. Verhandl. zool.-bot. Gesellsch. in Wien, Band xix. pp. 201–222, Taf. 5 & 6.

An analytical synopsis of the European species of the genera *Platymetopius* and *Deltocephalus*.

GARBIGLIETTI, ANTONIO. Catalogus methodicus et synonymicus Hemipterorum Eteropterorum (Rhyngotha, Fab.) Italiæ indigenorum. Accedit descriptio aliquot specierum vel minus vel nondum cognitarum. Bull. Soc. Ent. Ital. i. pp. 41–52, 105–124, 181–198, and 271–281.

GUÉRIN-MÉNEVILLE, F. E. Etudes sur les Insectes considérés comme la cause de la maladie des Canes à Sucre

- dans les îles Maurice et de la Réunion (1^{re} partie). Annales Soc. Entom. France, 4^{me} sér. tome ix. pp. 89-92.
- JAKOWLEFF, W. Materialien zur entomologischen Fauna der Wolga-Gegend. I. Supplement zum Verzeichniss der Hemipteren der Wolga. Horæ Soc. Ent. Ross. vol. vi. pp. 109-120.
- KITTEL, GEORG.^e Versuch einer Zusammenstellung der Wanzen, welche in Bayern vorkommen. Bericht naturh. Ver. in Augsburg, xx. pp. 61-80.
- MELLA, C. A. Di un nuovo genere e di una nuova specie di Fitocoride. Bull. Soc. Ent. Ital. i. pp. 202-204, pl. 4.
- MULSANT, E., & MAYET, V. Description d'une espèce nouvelle d'Hémiptère Hétéroptère constituant un nouveau genre dans la famille des Réduviens. Ann. Soc. Linn. Lyon, tome xvi. pp. 292-294 (1868).
- PIAGET, E. Description d'un Parasite de l'Eléphant. Tijdschr. voor Entom. 2^{de} ser. Deel iv. pp. 249-254, plate 11.
- PUTON, AUGUSTE. Description de trois Hémiptères nouveaux du Sahara Algérien, et remarques sur une variété. Annales Soc. Ent. France, 4^{me} sér. tome ix. pp. 139-144.
- RUDOW, FERD. Einige neue Pediculinen. Zeitschr. ges. Naturwiss. Band xxxiv. pp. 167-171.
- SCHELLER, H. J. Drie Membraciden uit Suriname. Tijdschr. voor Entom. 2^d ser. Deel iv. pp. 216-220, plates 8-10.
- SCHIÖPTE, J. C. On some new fundamental principles in the Morphology and Classification of Rhynchota. Naturhist. Tidsskrift, 3rd ser. vol. vi. Translated in Ann. Mag. Nat. Hist. 4th ser. vol. vi. pp. 225-249.
- SCOTT, JOHN. (See DOUGLAS.)
- SHIMER, HENRY. Notes on *Chermes pinicorticis* ("White-Pine Louse"). Trans. Amer. Entom. Soc. vol. ii. pp. 383-385 (November 1869).
- A summer's study of Hickory Galls, with descriptions of supposed new Insects bred therefrom. Ibid. pp. 386-398 (November 1869).
- SIGNORET, V. Quelques observations sur les Cochenilles connues sous le nom de Pou à poche blanche qui ravagent les plantations de Cannes à sucre à l'île Maurice et à l'île de la Réunion. Annales Soc. Entom. France, 4^{me} sér. tome ix. pp. 93-96.
- Essai sur les Cochenilles ou Gallinsectes. 3^e partie. Ibid. pp. 97-104, plate 4.

SIGNORET, V. Essai sur les Cochenilles ou Gallinsectes. 4^e partie. Ibid. pp. 109-138, plates 5 & 6.

Contains descriptions of the species of the subfamily Diaspidæ, with a description of the general characters of that group.

———. Essai sur les Cochenilles. 5^e partie. Ibid. pp. 431-452, plate 9.

———. *Phylloxera vastatrix*, Hémiptère-Homoptère de la famille des Aphidiens, cause prétendue de la maladie actuelle de la Vigne. Ibid. pp. 549-596, plate 10.

STÅL, C. Analecta hemipterologica. Berliner entom. Zeitschr. Band xiii. pp. 225-242

———. Hemiptera Fabriciana. Fabricianska Hemipterarter, efter de i Köpenhamn och Kiel förvarade Typexemplaren granskade och beskrifne. II. Kongl. Svenska Vetensk.-Akad. Handl. Band viii. pp. 1-130 (1869).

This is the second and concluding part of Stål's identifications of Fabrician Rhynchota from the type specimens. It includes the Homoptera.

———. Bidrag till Membracidernas kännedom. Öfvers. Kongl. Vet.-Akad. Förh. xxvi. pp. 231-300 (1869).

TARGIONI-TOZZETTI, A. Introduzione alla seconda memoria per gli studj sulle Cocciniglie, e catalogo dei generi e delle specie della famiglia dei Coccidi. Atti Soc. Ital. Sci. Nat. vol. xi. pp. 694-738.

———. Studj sulle Cocciniglie. Memorie Soc. Ital. Sci. Nat. tomo iii. no. 3, pp. 87, with 7 plates (1867).

This memoir, which the recorder has only seen this year, is devoted to the description of the general characters, anatomical structure, and physiology of the Coccidæ.

———. Sopra due generi di Cocciniglie (*Coccidæ*) e sui criteri della loro Definizione. Bull. Soc. Ent. Ital. i. pp. 257-267, plates 5 & 6.

VOLLENHOVEN, S. C. SNELLEN VAN. De Inlandsche Hemipteren beschreven en meerendeels afgebeeld. Eerste Stuk. Tijdschr. voor Entom. 2^{de} ser. Deel iii. pp. 129-175, plates 5 & 6 (1867?).

This is the first part of a systematic description of the Dutch Hemiptera. It includes the species of Scutata, preceded by a general classification.

———. De Inlandsche Hemipteren. Tweede Stuk. Tijdschr. voor Entom. 2^{de} ser. Deel iv. pp. 49-74, plates 1 & 2.

This part includes the descriptions of the Dutch Supericornia and Cæcigenia.

VOLLENHOVEN, S. C. SNELLEN VAN. Description de six espèces nouvelles d'Hémiptères Hétéroptères. Tijdschr. voor Entom. 2^{de} ser. Deel iv. pp. 255-260, plate 11.

WALKER, F. Catalogue of Homopterous Insects collected in the Indian Archipelago by Mr. A. R. Wallace, with descriptions of new species. Journ. Linn. Soc. vol. x. Zool. pp. 276-330.

Contains the Cicadellina, Psyllidæ, and Coccidæ.

C. *Anatomical and Physiological Papers.*

BALBIANI, —. Mémoire sur la génération des Aphides. Annales Sci. Nat. sér. 5, tome xi. pp. 1-89, plate 2.

BRANDT, ALEXANDER. Beiträge zur Entwicklungsgeschichte der Libelluliden und Hemipteren, mit besonderer Berücksichtigung der Embryonalhülle derselben. Mém. Acad. Imp. Sci. St. Pétersb. tome xiii. no. 1, pp. 33, with 3 plates.

Contains a description, with figures, of the embryogeny of *Corixa*, *Hydrometra*, *Aspidiotus*, *Lecanium*, and *Aphis*.

LANDOIS, L. Anatomie der Bettwanze (*Cimex lectularius*, L.) mit Berücksichtigung verwandter Hemipterengeschlechter. Zeitschr. für Wiss. Zool. Band xix. pp. 206-233, plates 18 & 19.

LEPORI, CESARE. Nuove Ricerche Anatomiche e Fisiologiche sopra l'organo sonoro delle cigale. Bull. Soc. Ent. Ital. i. pp. 221-238, pl. 5.

SCHIÖDTE (Naturhist. Tidsskrift, 3rd ser. vi.; Ann. Mag. Nat. Hist. ser. 4, vi. pp. 225-249) discusses certain points in the structure of the Rhynchota upon which, he considers, the classification of that order should to a great extent be founded. After referring to the neglect with which characters derived from the epimera have been treated, he indicates that the form and mode of articulation of the coxæ are of the highest importance in the æconomy of the animals, and therefore should have a corresponding value as classificational characters. He distinguishes two forms of coxæ as occurring in insects, namely:—*coxæ cardinatae*, which are either immovably connected with the body, or capable of slight motion from side to side or backwards, the diminution of mobility superinducing a reduction in the size of the epimera and sternum, whilst the coxa itself becomes enlarged; and *coxæ rotatoriae*, which can be turned round on their own axis, and the muscles attached to which, requiring space, cause a corresponding enlargement of the epimera and sternum. Both forms may occur in the same animal; and then it is usually the first, or first and second pairs of limbs that have rotatory coxæ. When the limbs which serve for progression have cardinate coxæ, the author proposes to name the animals *Pagiopoda*;

when progression depends on limbs with rotatory coxæ, he names the animals *Trochalopoda*.

The ordinary distinction between the *Heteroptera* and *Homoptera*, according to which in the former the rostrum springs from the front of the head (*Frontirostria*), and in the latter from the immediate neighbourhood of the prosternum (*Gule-rostria*), is shown by the author to be inadmissible, as the two forms graduate insensibly into each other. He indicates, as a broad line of demarcation between these two great natural groups, that in the

Homoptera the first pair of coxæ articulate with the cheeks, whilst in the

Heteroptera the cheeks and first pair of coxæ do not touch each other.

He finds a perfect concurrence between these peculiarities and the habits of the animals belonging to the respective groups. Thus all Homoptera are phytophagous; hence their general thickset form, the small amount of movement possessed by the head, and their *Pagiopodous* structure. Of the Heteroptera some are carnivorous, whilst others live on a mixed diet; and accordingly as the diet is more of a vegetable nature, so do the animals approximate to the Homopterous type of structure, and become Pagiopoda. Of the Trochalopodous Heteroptera some live on mixed food, and exhibit a characteristically expanded form of body; others are purely carnivorous, and are of a slenderer form. The parasitic Rhynchota, which possess a telescopic rostrum, are pagiopodous; the author regards them as forming a distinct section (*Siphunculata*) of equal value with Heteroptera and Homoptera.

After discussing the disputed question of the number and position of the spiracles in the Rhynchota, and the structure of the odoriferous glands and their orifices, the author gives the following sketch of a classification of the Rhynchota in accordance with the principles laid down in his memoir. Its most striking peculiarity is the removal of the *Nepæ* to a distance from the other Water-bugs. The author's arguments in favour of this change are too detailed to be given here.

Table of the Families of Rhynchota.

I. Genæ excavatæ, coxas primas excipientes.

[Coxæ posticæ cardinatæ, scrobiculis femoralibus instructæ.]

Subordo HOMOPTERA.

II. Genæ integræ, a coxis remotæ.

Subordo HETEROPTERA.

A. Coxæ posticæ acetabulatæ, rotatoriæ, scrobiculis femoralibus nullis: *Trochalopoda*.

- a. *Epimera metathoracica laminata*, segmentum primum ventrale abdominis obumbrantia.
 - 1. Antennæ basi obtectæ. Fam. 1. *Cimices*.
 - 2. Antennæ totæ detectæ.
 - * Antennæ præoculares. Fam. 2. *Corei*.
 - ** Antennæ infraoculares. Fam. 3. *Lygæi*.
- b. *Epimera metathoracica lamina ventrali carentes*.
 - 1. Unguiculi superpositi. Fam. 4. *Hydrometræ*.
 - 2. Unguiculi terminales.
 - * *Epimera metathoracica* maximam partem epimeris mesothoracicis obtecta. Spiracula abdominalia ultimi paris siphunculata. Fam. 5. *Nepæ*.
 - ** *Epimera metathoracica* tota detecta. Spiracula abdominalia æqualia. Fam. 6. *Reduvi*.
- B. Coxæ posticæ carinatæ, scrobiculis femoralibus instructæ; *Pagiopoda*.
 - a. Antennæ detectæ. Fam. 7. *Acanthiæ*.
 - b. Antennæ obtectæ.
 - 1. Corpus depressum, pronum.
 - a. Rostrum liberum.
 - † *Epimera metathoracica* detecta.
 - * Pedes cursorii. Fam. 8. *Pelegoni*.
 - ** Pedes natatorii. Fam. 9. *Naucorides*.
 - †† *Epimera metathoracica* maximam partem epimeris mesothoracicis obtecta. Fam. 10. *Belostomata*.
 - β. Rostrum obtectum. [*Epimera metathoracica* detecta, appendiculata.] Fam. 11. *Corixæ*.
 - 2. Corpus naviculare, supinatum. [*Epimera metathoracica* detecta. Rostrum liberum.] Fam. 12. *Notonectæ*.

HETEROPTERA.

SNELLEN VAN VOLLENHOVEN has commenced the publication of descriptions of the Dutch species of this group (*Tijdschr. voor Ent.* 2^de ser. iii. pp. 129-172). He divides the Geocores into the following families (pp. 136-137):—*Scutati*, *Coreodes*, *Lygæodes*, *Pyrrhocorides*, *Capsini*, *Tingidides*, *Hebroides*, *Corticicolæ*, *Anthocorides*, *Reduvini*, *Riparii*, and *Hydrodromici*—thus nearly following Burmeister's arrangement. With regard to the genera admitted under his family *Scutati*, he also reverts 1869. [VOL. VI.] 2 K

nearly to the state of things when Burmeister's 'Handbuch' was published, and entirely ignores the genera which have been established of late years by Fieber and others.

GARBIGLIETTI publishes (Bull. Soc. Ent. Ital. i. pp. 41, 105, 181, & 271) a synonymic catalogue of the Italian species of Heteroptera. Brief diagnoses of new species are scattered through it.

FREY-GESNER gives a general account of the results of his collecting in Switzerland in 1868 (Mittheil. schweiz. ent. Gesellsch. iii. pp. 18-22).

JAKOWLEFF publishes (Horæ Soc. Ent. Ross. vi. pp. 109-120) a supplemental list of species of this group from the region of the Wolga. Several new species are described.

KITTEL publishes (Ber. nat. Ver. Augsb. xx. pp. 61-80) a list of species of this group hitherto detected in Bavaria.

SCUTATA.

SNELLEN VAN VOLLENHOVEN has published (Tijdschr. voor Ent. 2^{de} ser. iii. pp. 129-172) a monographic revision of the Dutch species of this group. He describes and figures the following known species:—*Tetyra maura* (Linn.), pl. 5. fig. 1; *T. hottentotta* (Fab.), pl. 5. fig. 2; *Trigonosoma nigrolineata* (Rossi), pl. 5. fig. 3, *Podops inunctus* (Fab.), pl. 5. fig. 4; *Phimodera galgulina* (H.-Sch.), pl. 5. fig. 5; *Odontoscelis fuliginosa* (Linn.), pl. 5. fig. 6; *Coreomelas scarabæoides* (Linn.), pl. 5. fig. 7; *Asopus cæruleus* (Linn.), pl. 5. fig. 8; *A. dumosus* (Linn.), pl. 5. fig. 9; *A. luridus* (Fab.), pl. 5. fig. 10; *A. custos* (Fab.), *A. bidens* (Linn.), pl. 5. fig. 11; *Cydnius bicolor* (Linn.), pl. 6. fig. 1; *C. albomarginatus* (Fab.), pl. 6. fig. 3; *C. morio* (Linn.); *C. biguttatus* (Linn.), pl. 6. fig. 3; *C. flavicornis* (Fab.), pl. 6. fig. 4; *Sciocoris umbrinus* (Wolff), pl. 5. fig. 12; *Ælia acuminata* (Linn.), pl. 6. fig. 5; *Æ. klugii* (Hahn), pl. 6. fig. 6; *Æ. inflexa* (Wolff), pl. 6. fig. 7; *Cimex rufipes* (Linn.), pl. 6. fig. 8; *C. lituratus* (Klug), pl. 6. fig. 9; *C. prasinus* (Linn.), pl. 6. fig. 10; *C. baccarum* (Linn.), pl. 6. fig. 11; *C. oleraceus* (Linn.), pl. 6. fig. 12; *Acanthosoma hamorrhoidale* (Linn.), pl. 6. fig. 13; *A. hamatogaster* (Schr.), pl. 6. fig. 14; *A. clypeatum* (Burm.), ibid. iv. pl. 1. fig. 1; *A. griseum* (Linn.), pl. 6. fig. 15; and *A. ferrugator* (Fab.), pl. 6. fig. 16.

New genera :—

Garsauria, Walker, Cat. Hem. Brit. Mus. iii. p. 536. Allied to *Sehirus*. Sp. *G. aradoides*, sp. n., Walker, l. c. p. 536, Batchian and Kaisaa.

Mentisa, Walker, l. c. p. 537. Allied to *Sciocoris* (?). Sp. *M. smaragdina*, sp. n., Walk. l. c. p. 537, Brazil.

Blæna, Walker, l. c. p. 537. Allied to the preceding. Sp. *B. setosa*, sp. n., Walker, l. c. p. 538, habitat unknown.

Bryelica, Walker, l. c. p. 547. Allied to *Antiteuchus*. Sp. *B. ramosa*, sp. n., Walk. l. c. p. 547, Mexico.

Cesada, Walker, l. c. p. 548 (see errata). Allied to *Agæus*. Sp. *C. distincta*, sp. n., Walk. l. c. p. 548, Amazons.

Udana, Walker, l. c. p. 549. Allied to *Ectenus*. Sp. *U. smaragdina*, sp. n., Walk. l. c. p. 549, Formosa.

Salica, Walk. l. c. p. 469. Allied to *Mattiphus*. Sp. *S. excellens*, sp. n., Walk. l. c. p. 569, Archidona and Santarem.

Enada, Walker, *l. c.* p. 485. Allied to *Aplosterna*. Sp. *Enada rosea*, sp. n., Walk. *l. c.* p. 485, origin unknown.

Erga, Walker, *l. c.* p. 485. Allied to *Lynamorpha*. Sp. *E. roseoflua*, sp. n., Walk. *l. c.* p. 486, Australia.

Thalma, Walker, *l. c.* p. 503. Allied to *Megymenum*. Sp. *T. biguttata*, sp. n., Walk. *l. c.* p. 503, Amboyna.

Urusa, Walker, *l. c.* p. 504. Allied to *Megymenum*. Sp. *U. crassa*, sp. n., Walk. *l. c.* p. 504, Sarawak.

Muscanda, Walker, *l. c.* p. 576. Allied to *Piezosternum*. Sp. *M. testacea*, sp. n., Walk. *l. c.* p. 577, Darjeeling.

Bessida, Walker, *l. c.* p. 577. Allied to the preceding. Sp. *B. scutellaris*, p. n., Walk. *l. c.* p. 578, Birmah.

New species :—

WALKER (Cat. Hem. Brit. Mus. iii.) describes numerous new species belonging to this group and to the following genera :—(SCUTELLERIDES) *Sphaerocoris* 1, *Cantao* 2, *Scutellera* 1, *Tetrarthria* 1, *Libyssa* 1, *Callidea* 5, *Symphylus* 9, *Podops* 1; (PLATASPIDES) *Coptosoma* 9; (ASOPIDES) *Bodetria* 3, *Platynopus* 1, *Macrorhaphis* 2, *Arma* 2; (CYDNIDES) *Aethus* 2, *Acatlectus* 1; (SCIOCORIDES) *Sciocoris* 2, *Cephaloplatus* 1; (HALYDIDES) *Diniador* 1, *Chlorocoris* 3, *Pæcilometis* 2, *Agonoscelis* 2; (PENTATOMIDES) *Mormidea* 7, *Eysarcoris* 4, *Antestia* 5, *Pentatoma* 3, *Strachia* 3, *Cataulax* 5, *Rhaphigaster* 5, *Prionaca* 1, *Cuspicona* 6, *Arvelius* 2, *Acanthosoma* 3, *Sala* 1; (UROSTYLIDES) *Urolabida* 1; (EDESSIDES) *Edessa* 43, *Aceratodes* 3, *Brachystethus* 3, *Piezosternum* 4, *Pygoplatys* 2, *Tesseratoma* 7, *Amissus* 1, *Siphmus* 1, *Pycanum* 3, *Dalcantha* 1, *Lynamorpha* 1, *Cyclopelta* 3, *Aspongopus* 3; (PHYLOCEPHALIDES) *Phyllocephala* 5, *Tetroda* 1, *Diplorhinus* 1, *Schismatops* 1, *Marcrina*, 3, *Megarhynchus* 1, *Dichelorhinus* 1; (MEGYMENIDES) *Megymenum* 2. *Tetrarthria tenebrosa*, Snellen van Vollenhoven, Tijdschr. voor Ent. 2^{de} ser. iv. p. 255, pl. 11. fig. a, Amboyna.

Libyssa westwoodii, Snellen van Vollenhoven, *l. c.* p. 256, Zambesi.

Callidea. Snellen van Vollenhoven describes the following species of this genus :—*C. elongata*, *l. c.* p. 257, pl. 11. fig. b, Salwatty; *C. latifasciata*, ibid., pl. 11. fig. d, Salwatty; *C. celebensis*, *l. c.* p. 258, pl. 11. fig. c, Celebes; and *C. cræsus*, *l. c.* p. 259, pl. 11. fig. e, Gebeh, Salwatty, and Aru.

Coreomelas nigritarsis, Garbiglietti, Bull. Soc. Ent. Ital. i. p. 43, near Turin.

Odontotarsus nigricornis, Garbiglietti, *l. c.* p. 44, near Turin.

Cydnus cinnamomeus, Garbiglietti, *l. c.* p. 46, Sardinia.

Numilia subquadrata, Stål, Berl. ent. Zeitsch. xiii. p. 225, North Australia.

Odius pallido-limbatus, Stål, *l. c.* p. 226, Queensland.

Plexippus dorsalis, Stål, *l. c.* p. 226, India.

Alphenor cuspidatus, St 1, *l. c.* p. 227, Cape York.

Anchises sulcicornis, Stål, *l. c.* p. 228, Queensland.

Critheus lineatifrons, Stål, *l. c.* p. 229, Burmah.

Melpia sternalis, Stål, *l. c.* p. 222, La Plata.

Eusarcoris pseudoæneus, Jakowleff, Horæ Soc. Ent. Ross. vi. p. 117, Astrachan.

Lynamorpha vollenhovii, Stål, Tijdschr. voor Entom. 2^{de} ser. ii. p. 124 (1867), Morotai.

SUPERICORNIA.

VOLLENHOVEN publishes (Tijdschr. voor Ent. 2^{de} ser. iv. pp. 49-71) a revision of the Dutch species of this group, of which he describes and figures the following:—*Syromastes marginatus* (Linn.), pl. 1. fig. 2; *S. quadratus* (Fab.), pl. 1. fig. 3; *Coreus pilicornis* (Burm.), pl. 1. fig. 4; *Pseudophleus falenii* (Schill.), pl. 2. fig. 1; *Alydus calcaratus* (Linn.), pl. 1. fig. 6; *Berytus tipularis* (Linn.), pl. 1. fig. 7; *B. clavipes* (Fab.), pl. 1. fig. 8; *B. elegans* (Curt.), pl. 1. fig. 10; *Rhopalus schillingii* (Schill.), pl. 2. fig. 2; *Myrmus myriformis* (Fall.), pl. 2. fig. 3; *Corizus crassicornis* (Fab.), pl. 2. fig. 4; and *C. capitatus* (Fab.), pl. 2. fig. 5.

FREY-GESNER (Mittheil. schweiz. ent. Gesellsch. iii. pp. 19-21) notices the results of his hunting for species of *Berytus*, and mentions the occurrence of *Ceraleptus neglectus* (H.-Sch.) in Switzerland.

Coreus difficilis, sp. n., Vollenhoven, Tijdschr. voor Ent. 2^{de} ser. iv. p. 56, pl. 1. fig. 5, Holland.

Berytus driebergensis, sp. n., Vollenhoven, l. c. p. 64, pl. 1. fig. 9, Holland.

—*B. ferrarii*, sp. n., Garbiglietti, Bull. Soc. Ent. Ital. i. p. 110, Central and Northern Italy.

Corizus meridionalis, sp. n., Jakowleff, Horæ Soc. Ent. Ross. vi. p. 116, Astrachan.

LYGÆODEA.

C. TACCHETTI (Bull. Soc. Ent. Ital. i. pp. 165-166) notices the capture of *Lygæus civilis*, var. *surinamensis* (Wolff), in the Botanic Garden of Bologna. fig. 6;
pl. 5.
10;
1. 6.

New genera and species:—

Lygæodon, Puton, Ann. Soc. Ent. Fr. 4 sér. ix. p. 139. Allied to *Lygæus*. Anterior and intermediate femora with two small teeth on each side of inferior margin at the apex; tibiæ with 8-12 little teeth on their inner ridge. Sp. *L. marmottani*, sp. n., Puton, l. c. p. 139, Algerian Sahara. um-
jugii
ipes
n.).

Coptoneurus, Puton, l. c. p. 141. Allied to *Rhyparochromus*; anterior femora with obsolete teeth; sides of pronotum with a sharp keel; membrane with three waved longitudinal veins united by a transverse vein, inner vein bent. Sp. *C. lethierryi*, sp. n., Puton, l. c. p. 142, Biskra.

*Anepsius**, Puton, l. c. p. 142. Allied to *Scolopostethus*; pronotum with lateral margins straight, sharply keeled; anterior femora inflated, with three small acute teeth, and four or five minute denticles between the third of these and the apex. Sp. *A. encaustus*, sp. n., Puton, l. c. p. 143, Biskra.

Lygæus sexmaculatus, Garbiglietti, Bull. Soc. Ent. Ital. i. p. 112, Sardinia.

Peritrechus rufipes, Garbiglietti, l. c. p. 115, near Turin.

Scolopostethus obscurus and *S. rubefactus*, Garbiglietti, l. c. p. 117, near Turin.

Trapezonotus psammobius, Garbiglietti, l. c. p. 117, near Turin.

Rhyparochromus ghilianii, Garbiglietti, l. c. p. 118, Sardinia; *R. alpinus*, Garb. ibid., Piedmontese Alps.

Phygadicus graminis, Garbiglietti, l. c. p. 120, near Turin.

Nysius scotti, E. Saunders, Ent. M. Mag. vi. p. 1, Reigate.

Phlegyas annuliferus, Stål, Berl. ent. Zeitschr. xiii. p. 230, Texas, South Carolina, New Jersey.

* Name previously employed for a genus of Dolichopodidæ.

ANTHOCORIDÆ.

Anthocoris rubicundulus, sp. n., Garbiglietti, Bull. Soc. Ent. Ital. i. p. 122, and *A. neglectus*, sp. n., Garb. ibid., North Italy.

Triphleps fasciventris, sp. n., Garbiglietti, l. c. p. 123; *T. flavicans*, Garb. ibid., and *T. pellucidus*, spp. nn., Garb. ibid., near Turin.

Cordiastethus (sic) *currax*, sp. n., Garbiglietti, l. c. p. 123, near Turin.

CÆCIGENIA.

SNELLEN VAN VOLLENHOVEN (Tijdschr. voor Ent. 2^{de} ser. iv. pp. 72, 73, pl. 2. fig. 8) describes and figures *Pyrrhocoris apertus* (Linn.).

CAPSINA.

Acropelta, g. n., Mella, Bull. Soc. Ent. Ital. i. p. 202. Sp. *A. pyri*, sp. n., Mella, l. c. p. 203, pl. 4, Lombardy.

Teratocoris saundersi, sp. n., Douglas and Scott, Ent. M. Mag. v. p. 260, Deal and Aberdeen.

Phytocoris marmoratus, sp. n., Douglas and Scott, l. c. p. 261, Blackheath and Lewisham.

Psallus whitei, sp. n., Douglas & Scott, l. c. p. 263, Rannoch.

Calocoris. Garbiglietti (Bull. Soc. Ent. Ital. i.) describes the following midea, North-Italian species of this genus:—*C. tetraphlyctis*, *C. rubricosus*, *phigas*, *C. distinguendus*, p. 184; and *C. rubidus* and *C. aterrimus*, p. 185.

(*Urocapsus* *coruscus*, sp. n., Garbiglietti, l. c. p. 186, Sardinia.

stethobiceps infuscatus, sp. n., Garbiglietti, l. c. p. 190, near Turin.

Pyccothotylus pellucidus, sp. n., Garbiglietti, l. c. p. 190, near Turin.

LOCEphylus nigricollis, sp. n. Garbiglietti, l. c. p. 193, near Turin.

crina *Calacocoris albopunctatus*, sp. n., Garbiglietti, l. c. p. 194, near Turin.

Tei

MEMBRANACEA.

iv. j

Monanthia similis, sp. n., Douglas & Scott, Ent. M. Mag. v. p. 259 (England).

Monanthia. Garbiglietti describes the following new species of this genus (Bull. Soc. Ent. Ital. i.):—*M. pallida*, p. 273, *M. piligeru*, ibid., *M. lurida*, p. 274, and *M. oblonga*, ibid., North Italy; *M. unicolor*, ibid., Sardinia.

Dictyonota erythrocephala, sp. n., Garbiglietti, l. c. p. 275, North Italy.

Aradus geneonymus, sp. n., Garbiglietti, l. c. p. 276; and *A. pygmæus*, Garb. ibid., Sardinia.

REDUVIINA.

Spiniger. Stål (Berl. ent. Zeitschr. xiii. pp. 231–235) tabulates the species of this genus known to him.

Oreada, g. n., Mulsant and Mayet, Ann. Soc. Linn. Lyon, xvi. p. 292. Sp. *O. luctuosa*, sp. n., Muls. & May. l. c. p. 293, Pyrenees.

Nabis marginepunctatus, sp. n., Jakowleff, Horæ Soc. Ent. Ross. vi. p. 112, Astrachan.

Nabis canadensis, sp. n., Provancher, Naturaliste Canadien, August 1869.

Oncocephalus subapterus, sp. n., Garbiglietti, Bull. Soc. Ent. Ital. i. p. 196, near Turin.

Pirates coracinus, sp. n., Garbiglietti, l. c. p. 197, Sardinia.

SALDIDÆ.

Leptopus strobilii, sp. n., Garbiglietti, Bull. Soc. Ent. Ital. i. p. 198, Sardinia.

HYDROMETRIDÆ.

FREY-GESNER (Mittheil. schweiz. ent. Gesellsch. iii. pp. 20-22) remarks upon the occurrence of winged individuals of *Hydrometra aptera*.

A peculiar variety (*cinerea*) of *Hydrometra aptera* from Biskra is noticed by Puton, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 144.

NOTONECTIDÆ.

DOUGLAS & SCOTT (Ent. M. Mag. v.) describes the following new species:—*Corixa venusta*, p. 265, Bute and Carlisle; *C. decora*, ibid., Bute; *C. dubia* (Fieb.), p. 266, Bute; and *C. perplexa*, p. 267, Bute; *C. borealis*, p. 293, Shetland; *C. whitei*, p. 294, Rannoch; *C. sharpi*, p. 295 (Scotland?); *C. intricata*, ibid., Fifehire.

Corixa glauca, sp. n., Garbiglietti, Bull. Soc. Ent. Ital. i. p. 279, Sardinia.

Sigara poweri, sp. n., Douglas & Scott, l. c. p. 296, New Forest.

HOMOPTERA.

STRIDULANTIA.

STÅL (Kongl. Vet.-Akad. Handl. viii. pp. 1-10) identifies the following Fabrician species of this group:—*Tettigonia strumosa* is a *Platypleura*; *T. marmorata*=*C. ciliaris* (Lin.)=*ocellata* (De G.)=*varia* (Oliv.) is a *Platypleura*=*P. arcuata* (Walk.); *T. affinis* is a *Pæcilopsaltria*; *T. oblecta* is a *Cosmopsaltria*; *T. festiva* is a *Gæana*; *T. viridis*=*C. bimaculata* (Oliv.)=*atrovirens* (Guér.) is a *Cicada*, as is *T. tibicen* (Lin.)=*C. opercularis* (Oliv.); *T. pustulata*=*T. atrata* (Fab.)=*C. nigra* (Oliv.)=*C. atra* (Sign.) is a *Cryptotympana*: *T. saccata*=*Thopha saccata* (A. & S.); *T. mannifera* is a *Fidicina*; *T. grisea* is a *Proarna*; *T. cincta* is a *Tibicen*, as are *T. brunnea* and *T. picta*, the latter=*tomentosa* (Oliv.); *T. rufescens* is a *Carineta*; *T. fenestrata* belongs to *Calyria* (Stål); *T. æstuans*,=*algira* (Fab.)=*severa* (Stål), and *T. cantans* belong to *Melampsalta*.

FULGORIDÆ.

STÅL (Kongl. Vet.-Akad. Handl. viii. pp. 86-112) identifies the following Fabrician species of this group:—*Cerc. cincta*=*Homalocephala cincta* (Stål); *Lystra viridiceps* is an *Eddara* (Walk.)=*Glagovia* (Stål); *L. farinosa* and *L. atomaria* belong to *Aphana* (Burm.); *L. cornuta* belongs to *Euphria* (Stål); *L. stigma*=*Calypsopterus lystroides*+*C. elegans* (Spin.)=*Poicocera elegans* (Gerst.), and belongs to *Calypsopterus*; *L. obscura* is the type of a new genus, *Pelidnopepla*; *L. costata* is an *Ilypæpa*; *Flata diaphana* is the type of a new genus, *Hyalodepsa*; *F. planiceps* is a *Mnemosyne*; *Fulg. virescens* and *F. virtrata* belong to *Dictyophara*; *Flata lunata* and *F. villosa* belong to *Oliarus* (Stål); *Cic. parvula*, *Issus bicornis*, and *I. undatus* belong to *Bothriocera*; *Flata variegata* is a *Pintalia* (Stål); *Delphax opposita*=*Asiraca opposita* (Germ.) is the type of a new genus, *Paulia*; *D. cylindricornis* belongs to *Canyra* (Stål); *Flata bicarinata* belongs to *Seria* (Stål); *Flata collaris*=

Tettigometra? *bicolor* (Walk.) is a *Plectoderes* (Spin.); *Fulg. tania* belongs to *Numicia* (Stål); *Derbe* as restricted (= *Mysidia*, Westw.) includes *D. hæmorrhoidalis*, *D. squamigera*, *D. costata*, *D. punctum*, *D. testacea*, and *D. pallida*; *Flatta vittata* is a *Herpis* (Stål); *Cic. lineata* is a *Persis* (Stål); *Lystra tomentosa* and *L. bimaculata* belong to *Eurybrachys*; *Issus immaculatus*+*apterus* (Fab. S. R. 6)=*Mycterodus longiceps* (Stål) and belongs to *Mycterodus*; *I. grylloides* is a *Hysteropterum*; *Cerc. aptera* (S. R. 7) is a *Falcidius* (Stål); *I. pedestris* belongs to *Issus* (s. str.); *I. coriaceus* is a *Thionia* (Stål); *Flata rustica* is the type of a new genus, *Leptrophara*; *Issus cristatus* and *I. carinatus* belong to *Tylana* (Stål); *Ricania* includes *Flata fasciata*, *F. fuscata*=*Pochazia obscura* (Stål), *F. fenestrata* (S. R.)=*R. fabricii* (Stål); *F. striata* and *Cerc. fenestrata* (S. E.)=*Cic. hyalina* (Fab.)=*Flatoides orientis* (Walk.); *F. atrata*=*Flatoides humeralis* (Walk.) is a *Vutina* (Stål); *F. reticulata* is a *Nogodina* (Stål); *F. umbraculata* is an *Acanonia*; *F. vivida* is the type of a new genus, *Chlorochara*; *F. nigricornis* is a *Phromnia*=*P. pallida* (Oliv., Stål); *F. ocellata*=*Pæciloptera stellaris* (Walk.)=*P. argiolus* (Stål), and *F. ferrugata* belong to *Flata* (s. str.); *F. cruentata* and *F. sparsa* belong to *Atella* (Stål); *F. emortua* is a *Carthæa* (Stål); *F. planata*, *F. retusa*, *F. quadripunctata*, and *F. relictæ* belong to *Ormenis* (Stål); *F. marginata* (Brunn.) and *F. pygmæa* belong to *Petrusa* (Stål); and *F. grisea* is a *Dascalia* (Stål).

New genera:—

Pelidnopepla, g. n., Stål, l. c. p. 88. Allied to *Calyptoproctus* (Spin.); head narrower, equal in breadth to thorax, oculigerous portions scarcely turned backward, distant from thorax; forehead slightly narrowed towards apex. Sp. *Lystra obscura* (Fab.).

Hyalodepsa, g. n., Stål, l. c. p. 90. Allied to *Cladypha*; vertex narrow; anterior tibiæ compressed. Sp. *Flata diaphana* (Fab.).

Paulia, g. n., Stål, l. c. p. 94. Allied to *Brixia* (Stål); thorax truncate at base; scutellum unicarinate. Sp. *Delphax opposita* (Fab.).

Leptophara, g. n., Stål, l. c. p. 102. Allied to *Thionia* and *Colpoptera*; tegmina narrow, obtusely rounded at apex, clavus with two veins, inner (ulnar) vein furcate before the middle, outer and radial simple, united at or near base. Sp. *Flata rustica* (Fab.).

Chlorochara, g. n., Stål, l. c. p. 107. Allied to *Acanonia*; head much produced; disk of thorax flat; tegmina ample, decumbent, truncate at apex, corium with two veins. Sp. *Flata vivida* (Fab.).

Copidocephala, g. n., Stål, Berl. ent. Zeitschr. xiii. p. 235. Allied to *Enchophora*; head-process erect, nearly straight, acuminate; apical frontal carina strongly waved; thorax obtusely and slightly keeled; tegmina longer than in *Enchophora* and much more obliquely rounded at apex. Type *Ench. guttata* (White). *Copidocephala viridi-guttata*, sp. n., Stål, l. c. p. 236, Cuba? Columbia?

Compsoptera, g. n., Stål, l. c. p. 236. Allied to *Episcius* and *Aracyanthus*; head-process cylindrical; thorax and scutellum in the same plane; tegmina and wings without a sinus; anterior femora dilated. Sp. *C. cacica*, sp. n., Stål, l. c. p. 237, Mexico.

Coptopola, g. n., Stål, l. c. p. 239. Allied to *Pæocera*; joint 2 of antennæ cylindrical, straight, longer than broad; tegmina short, costal area enlarged;

anterior coxæ dilated on the outside above; posterior femora with an apical spine. Sp. *C. cincticus*, sp. n., Stål, l. c. p. 239, Minas Geraes.

New species:—

Acraphia carinata, Stål, Berl. ent. Zeitschr. xiii. p. 237, Uruguay.

Acomonia anceps, Stål, l. c. p. 238, Mexico.

Cyproptus nubeculosus, Stål, l. c. p. 240, Mexico; *C. ferruginosus*, Stål, ibid., Mexico; *C. belfragei*, Stål, ibid., Texas.

Aphana nicobarica, Stål, l. c. p. 241, Nicobars.

Desudabu aulica, Stål, l. c. p. 241, Queensland.

MEMBRACIDÆ.

STÅL (Kongl. Vet.-Akad. Handl. viii. pp. 18-57) identifies the following Fabrician species of this group:—*Darnis cinicoides* is a *Tragopa*=*melanostigma* (Perty)=*bifacies* (Walk.); *D. morio*, *annulata*, and *seminulum* belong to *Tragopa*, which genus also includes *D. vespertilio*=*auriculata* (Oliv.), *D. involuta*=*obliqua* (Germ.), and *D. nitidula*=*tripartita* (Fairm.); *D. picta*, *D. strigosa*, *D. glabrata*=*Trag. picta* (A. & S.), *D. arcuata*=*H. lineolata* (Fairm.), and *D. lineola* belong to *Horiola* (Fairm.); *Centrotus clavatus* and *claviger* belong to *Cyphonia*; *Membr. exaltata*=*Cer. chlorotica* (Fairm.) is a *Melusina* (Stål); (the genera allied to *Ceresa* are tabulated by Stål, l. c. pp. 23, 24 note:) *Centrotus bubalus*=*borealis* (Fairm.) and *vitulus* belong to *Ceresa*; *Membr. obtegens* is an *Anastris* (Stål); *Centrotus muticus* is a *Cyrtosia*; *Membr. cultrata* forms the type of a new genus, *Polyrhysa*; *Membr. obtecta* is the type of a new genus, *Hypselotropis*; *Darnis parvula* belongs to *Lucilla* (Stål); *D. maura*=*dorsata* (Fab.) is the type of a new genus, *Phormophora*; *Membr. sinuata*=*emargianta* (Fab.) is *Entylia sinuata* (Fairm.); *D. pubescens* forms the genus *Tynelia* (Stål); *D. dispar* and *D. reticulata*=*interrupta* (Fab.) belong to *Parmula*, the latter=*P. bistrigata* (Fairm.); the genus *Darnis* includes *D. lateralis*, *D. trifusciata*=*capistrata* (Burm.)=*bifasciata* (A. & S.), and *D. olivacea*; *Centr. pectoralis* and *inermis* belong to the new genus *Procyrtia* (Stål); *Membr. olivacea*=*obtusa* (Fab.) belongs to *Cymbomorpha* (Stål), the known species of which are tabulated by Stål (l. c. p. 34); *Membr. xiphias* belongs to *Aconophora*, the species of which are tabulated (l. c. p. 35); *Membr. inanis* is a *Combophora*; *Darnis pallescens* belongs to *Rhexia* (Stål) and =*Scaphula alutacea* (Fairm.); *Centr. horridus* is a *Heniconotus* (Stål); *Centr. vittatus*=*Hopl. humilis* (Walk.) forms the type of a new genus, *Platycotis*; *Centr. spinosus*=*armata* (Oliv.) is an *Umbonia*; *Membr. jaculus*=*Umb. indicator* (Fairm.) is a *Potnia* (Stål). The genus *Membracis* as restricted by Stål includes:—*M. foliata* (Fab. Mant., nec Linn.)=*flaveola* (Germ.); *M. lunata*=*foliata* (Linn.)=*foliata-fasciata* (De G.)=*c-album* (Fairm.); *M. carinata*; *M. atrata*=*foliata-fusca* (De G.)=*fusca* (Fairm.); *M. elevata*=*tectigera* (Oliv.); *M. compressa*=*nigra* (Oliv.); and *M. dorsata*. *M. fasciata*, *ensata*, and *lanceolata* belong to *Enchophyllum* (A. & S.); *M. gladius* and *M. hastata* belong to *Enchenopa* (A. & S.); *M. curvata* is also an *Enchenopa*, and =*latipes* (Say) and *antoniina*, *venosa*, *densa*, *frigida*, and *bimaculata* (Walk.); *M. militaris*=*galeata* (Oliv.), which is the type of a new genus, *Tritropidia*, to which *M. nimbat* also belongs; *Centr. tricarinatus*, =*gibbosa* (De G.)=*bicristata* (Fairm.), and *C. abbreviatus* belong to a

new genus, *Tropidoscyla*, the known species of which are tabulated (*l. c.* pp. 45, 46); *Centr. tuberculatus*, and *C. inæqualis* belong to *Bolbonotus*; *C. cruciatus* and *M. coronata* belong to *Pterygiu*; *Centr. tarandus* is an *Oxyrhachis*; *C. fasciatus*=*biguttatus* (Fab.) is a *Monobelus* (Stål); *C. capra* is an *Acanthophyes* (Stål); *C. taurus*=*rupicapra* (Fab.) is a *Leptocentrus* (Stål); *C. flexuosus* belongs to *Centrotypus* (Stål); *C. minutus* is the type of a new genus, *Coccosterphus*; *C. bipunctatus* belongs to *Sextius* (Stål); *C. globularis* = *Bocydium globulare* (auct.); *M. inflata* is an *Æda* distinct from the species so named by Fairmaire; *C. hippocampus* and *M. emarginata*=*flexuosa* (Fab.) belong to *Lycoderes*; *M. fronditia*=*Stegaspis fronditiu* (Linn.), and *M. bracteata* is a *Stegaspis*, as is also *M. abdominalis*, which = *melanopetala*+*folium* (Oliv.); *Tettig. muscaria*, = *cittata* (Oliv.), *T. pygmæa*, and *T. scutellata* form a new genus, *Lophyraspis*; *Centr. carinatus* is the type of a new genus, *Tropidaspis*; *C. exiguus* is the type of a new genus, *Scytodepsa*; and *Cis. fuscata* represents the new genus *Stictodepsu*.

STÅL (Öfvers. Kongl. Vet.-Akad. Förh. xxvi. pp. 231-300) publishes a contribution to the knowledge of the Membracidae, in which he indicates the genera and species of his subfamilies *Tragopida*, *Smiliida*, *Darnida*, *Hoplophorida*, *Membracida*, and *Centrotida*. In several cases the genera are tabulated; and many new species are described.

Tragopa (Lat.) is divided by Stål (Kongl. Vet.-Akad. Handl. viii. pp. 18-20) into the subgenera *Tragopa* (type *cimicoides*, Fab.) and *Tropidolomia* (type *auriculata*, Oliv.); and a section of the latter is distinguished under the name of *Stilbophora*.

The species of the genus *Amastris* (Stål) are tabulated by Stål (*l. c.* p. 25).

Darnis. This genus, as restricted by Stål, is divided by him into the following subgenera:—*Darnis*, *Ochrolomia*, *Hebetica*, *Stictopelta*, *Leptosticta*, *Cryptoptera*, and *Alobia*, which are tabulated by him (*l. c.* p. 32).

Cymbomorpha (Stål). The species of this genus are tabulated by Stål (*l. c.* p. 34). He adopts a subgenus *Aulacotropis*, having *C. prasina* (Germ.) as its type.

Aconophora (Fairm.). The species of this genus are also tabulated by Stål (*l. c.* pp. 34, 35).

Lycoderes (Germ.). The species of this genus are tabulated by Stål (*l. c.* pp. 53, 54). He adopts the subgenera *Corythophora* (*mitratus*, Germ., and *galeritus*, Less.), *Lycoderes* (*fuscus*, A. & S., *burmeisteri*, Fairm., *uncora*, Germ., and *hippocampus*, Fab.), *Lophucha* (*gladiator*, Germ., *lobatus*, Stål, *wahlbergii*, Stål, and *gaffa*, Fairm.), and *Rhyparoptera* (*emarginatus*, Fab., *luctans*, *truncatulus*, *prolixus*, and *corniger*, Stål).

Notes and drawings made by H. J. Scheller on three Membracidae observed by him in Surinam, are published in *Tijdschr. voor Ent.* 2^{de} ser. iv. pp. 216-220, plates 8-10. The species are *Membr. foliata* (Lin.), p. 217, pl. 8, *M. lunata* (Fab.), p. 218, pl. 9, and a supposed new species allied to *M. lanceolata* (Fairm.), p. 220, pl. 10. The larvæ and pupæ of these insects are figured.

STÅL (Öfvers. Kongl. Vet.-Akad. Förh. xxvi. pp. 232, 233) gives the following table of the genera allied to *Oxygonia*, forming part of his subfamily Smiliida:—

I. Thoracis parte antica sensim vel perpendiculariter declivi.

A. Thorace compresso-elevato, processu postico a latere viso dorso saltem

- a medio usque ad apicem sensim acuminato, apice minus acuto, rugis longitudinalibus nullis vel minus distinctis instructo.
1. Thorace antèrius angulum formante vel in cornu compressum producto 1. OXYGONIA (Fairm.).
 2. Thorace dorso antèrius a latere viso rotundato, ibidem carinis destituito 2. ADIPPE (Stål).
- B. Thoracis processu postico carinis vel rugis lævibus distinctis instructo, saltem pone medium a latere viso sensim acuminatò.
1. Angulis lateralibus thoracis distincte productis, rectis vel acutis.
 - a. Thorace dorso longitrosum rotundato, processibus dorsalibus destituito 3. HERANICE (Stål).
 - b. Thorace dorso processu vel processibus compressis instructo.
 - * Processu dorsali thoracis rotundato, vel sensim acuminato vel augustato 4. HILLE (Stål).
 - † Processu dorsali superne sinuato 5. ENNYA (Stål).
 2. Angulis lateralibus thoracis haud vel vix prominulis.
 - a. Thorace dorso compresso, elevato, processu postico tectiformi.
 6. MATURNA (Stål).
 - b. Thorace leviter elevato, processu postico lateribus convexiusculis.
 7. LUCILLA (Stål).
- II. Parte antica thoracis in cornu compressum porrectum producta.
8. POLYRHYSSE (Stål).

STÅL (Efvers. Kongl. Vet.-Akad. Förh. xxvi. p. 251) gives the following table of the genera of *Darnida*, allied to *Hemiptycha* (Germ.) :—

- I. Thorace supra angulos laterales impressione destituito, valde elevato, utrinque cornu longo armato, processu postico apicem clavi tegente.
 1. HEMIPTYCHA (Germ.).
- II. Processu postico thoracis apicem clavi haud tegente.
 - A. Ocellis ab oculis quam inter se distincte et sæpius multo longius remotis.
 2. PYRANTHE (Stål).
 - B. Ocellis inter se et ab oculis fere æque longe remotis.
 1. Thorace antèrius alte elevato et maxime declivi.
 - a. Processu postico thoracis usque ad apicem sensim acuminato.
 3. BUBALOPA, g. n.
 - b. Processu postico thoracis pone medium utrinque sinuato, pone sinum graciliore.
 - * Thorace supra angulos laterales profunde impresso.
 4. ALCMEONE (Stål).
 - † Thorace supra angulos laterales haud vel levissime impresso.
 5. HYPHINOË (Stål).
 2. Thorace leviter vel modice elevato, antèrius convexo et sensim declivi.
 6. TOMOGONIA, g. n.

STÅL (Kongl. Vet.-Akad. Handl. viii. pp. 23, 24, note) gives the following tabular analysis of the genera allied to *Ceresa* :—

- I. Hinder process of thorax convex, not compressed.
 - A. Anterior tumid part of thoracic process sinuated above.
 1. ANTONÆ (Stål).

- B. Anterior part of thoracic process not sinuated above.
 2. *ILITHUCIA* (Stål).
- II. Posterior process of thorax gradually acuminate, back usually acute or keeled.
- A. Thorax very convex on each side in front; posterior process usually convex, rarely tectiform.
1. Thorax convex in front, unarmed over lateral angles.
 3. *MELUSINA* (Stål).
 (*Ceresa nervosa*, Fairm.)
2. Thorax armed with an acuminate horn above each lateral angle.
 4. *CENTROGONIA* (Stål).
 (*Ceresa ciliata*, Fairm., and *C. nasuta* and *unguicularis*, Stål.)
- B. Thorax very obtuse in front, slightly convex or flat, posterior process usually compresso-acute, rarely convex.
1. Thorax much elevated in front, cornute above lateral angles, posterior process very acute throughout. 5. *CERESA* (A. & S.).
2. Thorax convex in front, unarmed, posterior process convex, at least as far as the middle 6. *STICTOCEPHALA* (Stål).
 (*Ceresa uniformis*, Fairm., *C. franciscana*, Stål, and *Thelia lutea*, Walk.)

STÅL (*l. c.* p. 37, note) tabulates the genera belonging to his subfamily *Hoplophorida* as follows:—

- I. Wings with three apical cells.
- A. Wings with anal cell distinct, sublobate, 1-nerved.
1. Head very broad and obtuse, equal in breadth to base of thoracic process, which is narrowed from the base.
 1. *PLATYCOTIS*, g. n.*
2. Head narrower than base of thoracic process.
 2. *HOPLOPHORA* (Germ.)†.
- B. Wings with anal cell very minute, not lobate.
 3. *UMBONIA* (Burm.).
- II. Wings with four apical cells.
- A. Thorax with the back more or less compressed and elevated, lateral angles produced. 4. *TRIQUETRA* (Fairm.).
- B. Thorax convex, with a porrect horn in front, lateral angles scarcely prominent 5. *POTNIA* (Stål).

STÅL (*l. c.* pp. 38, 39, note) tabulates the genera allied to *Membracis* as follows:—

- I. Thorax much compressed and elevated, very high.
 1. *MEMBRACIS* (Fab.).
- II. Thorax with keels on the back, or with an anterior horn, or the anterior part with a keel on each side.
- A. Posterior thoracic process not reaching apex of tegmina.

* Divided into the subgenera *Platycotis* (sp. *vittata*, Fab., *quadri-lineata*, Germ., and *sagittata*, Germ.), *Lophopelta* (sp. *tuberculata*, Fairm., and *histrionica*, Stål), and *Microschema* (sp. *straminicolor*, Stål).

† Subgenera *Hoplophora* and *Enchotypa* (Stål).

1. Thorax much compressed and elevated, very high, and usually produced into a horn in front 2. *ENCHOPHYLLUM* (A. & S.)¹.
2. Back of thorax at least tricarinate, middle keel sometimes elevated and foliaceous.
 - a. Back of thorax highly keeled in middle, armed with a compressed horn in front or projecting in a compressed angle.
 - * Thorax with some abbreviated keels on the part turned forwards. 3. *ENCHENOPIA* (A. & S.)².
 - † Thorax not keeled in front; head longer than its width between the eyes 4. *TRITROPIDIA*, g. n.
(*Membr. galeata*, Oliv., and *M. nimbata*, Fab.)
 - b. Back of thorax convex and unarmed, or projecting in an angle or process which is not compressed.
 5. *TROPIDOSCYTA*, g. n.³
- B. Body slender; thorax low, back acutely keeled in the middle, with a long, thick, subcompressed porrect process in front; posterior process long, passing apex of tegmina 6. *ÆCHMOPHORA*, g. n.
(*Membr. elephas*, Stål.)

STÅL (*l. c.* pp. 47-49) tabulates the genera of *Centrotida* represented in America as follows:—

- I. Thorax giving off a posterior process extending beyond scutellum.
 - A. Clavus not at all or slightly narrowed towards the apex, not gradually acuminate (*Centrotida vera*).
 1. Anterior margin of thorax straight or very broadly sinuate.
 - a. Wings with four apical cells; scutellum bidentate or emarginate at apex.
 - * Outer vein of clavus long, united with the commissure at a greater or less distance beyond middle of clavus; thoracic process long.
 - a. Outer discoidal cell of corium stylate or subtriangular, not truncated at base.
 - a. Head very broad 1. *MONOBELUS* (Stål).⁴
 - β. Head narrower than thorax between lateral angles.
 2. *BOOCERUS* (Stål).
 - b. Outer discoidal cell of corium truncate at base, sessile.
 - a. Thoracic process entirely slender, keeled above, curved anteriorly 3. *ACANTHOPHYES* (Stål.)
(*Centr. capra*, Fab.)

¹ Subgenera *Phyllotropis* (*Membr. fasciata*, Fab.), *Enchophyllum*, and *Tropidocera* (*Membr. ensata* and *lanceolata*, Fab.).

² Subgenera *Enchenopa* (*M. gladius* and *hastata*, Fab.) and *Campylenchia* (*M. curvata*, Fab.).

³ Species tabulated pp. 45, 46:—*C. gibbosa* (De G.), *M. pæcila* (Germ.), *T. pallidipennis* (Stål), *T. comatula* (Stål), *M. torva* (Germ.), *M. carbonaria* (Germ.), *M. abbreviata* (Fab.), and *T. gibbera* (Stål).

⁴ The species of this genus are tabulated by Stål (*l. c.* pp. 39, 50), and are *Centr. fasciatus* (Fab.), *nasutus* (Stål), *obtusiceps* (Stål), *flavidus* (Fairm.), and *lateralis* (Stål).

- β. Thoracic process nearly straight, broadish at base and covering the greater part of the scutellum.

4. ORTHOBELUS (Stål).

(*Centr. urus* and *havanensis*, Fairm.)

- † Outer vein of clavus very long, subpercurrent, attaining apex; thoracic process extending but little beyond middle of abdomen.

5. PLATYCENTRUS (Stål).

- b. Wings with three apical cells. 6. BRACHYBELUS (Stål).

2. Anterior margin of thorax projecting nearly in a right angle, thorax cornute 7. GONIOLOMUS (Stål).

B. Clavus gradually attenuated to apex.

1. Scutellum produced, emarginate at apex, or incomplete and very short, or wanting; anterior tibiae dilated.

- * Corium with five apical cells and one discoidal.

- a. Scutellum complete, produced.

- a. Thorax much elevated in front, back compressed or bilobed.

- a. Anterior elevated part of thorax not, or but slightly, compressed, ampliate or bilobed at apex.

8. LYCODERES (Germ.).

- β. Anterior elevated part of thorax compressed, with the back acute 9. STEGASPIS (Germ.).

- b. Thorax gibbous in front; head bituberculate at base.

10. LIRANIA (Stål).

- b. No complete scutellum; thorax forming a large compressed vesicle 11. ŒDA (A. & S.).

- † Corium with many apical cells 12. ANOMUS (Fairm.).

2. Scutellum complete, acuminate; corium with four apical cells; legs simple.

- * Anterior margin of thorax very slightly reflexed, unarmed.

13. BOCYDIUM (Lat.).

- † Anterior margin of thorax reflexed, produced, projecting anteriorly in two obtuse teeth 14. STYLOCENTRUS (Stål).

(*Boc. ancora*, Perty.)

II. Thorax with no posterior process.

- A. Thorax cornute above lateral angles. 15. TOLANIA (Stål).

B. Thorax convex, unarmed.

1. Scutellum truncate or rounded at apex. 16. NICOMIA (Stål).

2. Scutellum acuminate.

- a. Scutellum not keeled except at apex.

- * Sides of prostethium obtusely carinate, or destitute of carina.

17. ÆTHALION (Lat.).

- † Sides of prostethium explanate, or highly and acutely carinate.

18. SCHIZIA (Lap.).

- b. Scutellum cornute, crested, or with a percurrent keel.

- * Basal margin of head bicorniculate or carinato-elevated.

- a. Head bicorniculate at base 19. LAMPROPTERA (Germ.).

- b. Basal margin of head carinate, unarmed.

- a. Thorax but little broader in the middle than in front; ocelli somewhat remote from eyes. 20. LOPHYRASPIIS, g. n.

(*C. vittata*, Oliv., *Tett. scutellata*, Fab.)

β. Thorax about twice as broad in the middle as at apex
ocelli closely approximated to the eyes.

21. *TROPIDASPIS*, g. n.

(*Centr. carinatus*, Fab.)

† Basal margin of head neither keeled nor corniculate.

a. Head truncate, perpendicular at base.

22. *SCYTODEPSA*, g. n.

(*Centr. exiguus*, Fab.)

b. Head triangularly produced, sulcate above.

23. *STICTODEPSA*, g. n.

(*Cic. fuscata*, Fab.)

STÅL (Öfvers. Kongl. Vet.-Akad. Förh. xxvi. pp. 280-283) gives
the following table of the genera of Old-World *Centrotida* :—

I. Lateribus prostethii et mesostethii lobulo vel dente deorsum vergente
armatis.

A. Scutello nullo.

1. Alis areis apicalibus 3 instructis. 1. *OXYRHACHIS* (Germ.).

2. Alis areis apicalibus 4 instructis. 2. *XIPHISTES* (Stål).

B. Scutello completo.

1. Capite thoraceque denticulatis, thorace antierius utrimque supra an-
gulos laterales cornuto 3. *CENTROCHARIS* (Stål).

2. Thorace dorso antierius processu sursum vergente armato, cornibus
lateralibus destituto 4. *HYPSAUCHENIA* (Germ.).

II. Lateribus pectoris inermibus ; tibiis rarissime dilatis.

A. Thorace postice processu instructo.

1. Alis areis apicalibus 4 instructis.

a. Scutello longiore quam latiore, sensim acuminato vel apicem versus
valde angustato. 5. *LEPTOBELUS* (Stål).

b. Scutello transverso, vel fere æque longo ac lato, apice lato.

* Scutello processu gracili postico thoracis saltem duplo latiore.

a. Thorace modice convexo, supra angulos laterales cornu vel
tuberculo destituto 6. *UROXIPHUS* (A. & S.).

β. Thorace supra angulos laterales cornuto vel tuberculato.

a. Processu postico thoracis a scutello valde distante, valde
curvato vel prope basin geniculato, compresso.

7. *XIPHOPÆUS* (Stål).

b. Processu postico thoracis a scutello interdum distante, tunc
maximum ad partem recto, basin versus leviter curvato,
gracili, haud compresso.

** Thorace supra angulos laterales obtuse tuberculato.

8. *ACANTHOPHYTES* (Stål).

†† Thorace supra angulos laterales cornuto.

aa. Thoracis processu postico scutellum tangente.

9. *CENTRUCHUS* (Stål).

ββ. Thoracis processu postico a scutello valde distante.

10. *LEPTOCENTRUS* (Stål).

† Scutello basi processus postici thoracis haud vel paullo, raro vix
duplo latiore.

a. Fronte basi utrimque lobo destituta ; processu postico thoracis

- scutellum totum vel fere totum tegente, dorso distincte carinato 11. *CENTROTYPUS* (Stål).
- β. Fronte basi utrimque subito ampliata vel lobo sæpissime distinctissimo prædita.
- a. Fronte tota in eodum plano jacente.
- ** Thorace convexo, supra angulos laterales inermi.
12. *TERENTIUS* (Stål).
- †† Thorace supra angulos laterales cornuto.
- aa. Cornibus lateralibus thoracis sensim acuminatis vel ubique æque latis.
- Oculis ultra latera thoracis valde prominulis.
13. *SARANTUS* (Stål).
- = Oculis levissime prominulis.
- o. Thorace dorso ante processum posticum inermi.
14. *SERTORIUS* (Stål).
- oo. Thorace dorso ante processum posticum processu erecto et compresso armato, vel carina acuta instructo 15. *ACANTHUCHUS* (Stål).
- ββ. Cornibus lateralibus thoracis valde sursum vergentibus, basin versus compressis, apicem versus ab antico visis sensim ampliatis et truncatis.
16. *DAUNUS* (Stål).
- b. Fronte infra juga subito maxime inflexa; tibiis dilatatis.
17. *SEXTIUS* (Stål).
2. Alis areis apicalibus 3 instructis.
- a. Processu postico thoracis a scutello distante, hujus apicem interdum tangente.
- * Cornibus lateralibus thoracis sensim acuminatis.
18. *CENTROTUS* (Fab.).
- † Cornibus lateralibus thoracis longis, prope apicem ampliatis.
19. *PLATYBELUS* (Stål).
- b. Processu postico thoracis recto, a scutello haud distante.
- * Corpore late obtriangulari; thorace a supero viso cum processu postico æque lato ac longo .. 20. *SIPYLUS* (Stål).
- † Corpore obovato vel oblongo-obovato; thorace cum processu postico longiore quam latiore.
- a. Thorace supra angulos laterales cornuto; trochanteribus posticis intus spinulis armatis.. 21. *TRICENTRUS* (Stål).
- β. Thorace convexo, supra angulos laterales inermi; trochanteribus posticis inermibus.. 22. *GARGARA* (A. & S.).
- B. Thorace processu postico destituto . . . 23. *COLOBORRHIS* (Germ.).

New genera :—

(See also the preceding tables.)

Polyrhysa, g. n., Stål, Kongl. Vet.-Akad. Handl. viii. p. 26. Allied to *Heranice* (Stål); thorax produced in front into a compressed, porrect horn, lateral angles not prominent; inner basal and apical cells of corium occupying half its width. Sp. *Membr. cultrata* (Fab.).

Hypselotropis, g. n., Stål, l. c. p. 26. Allied to *Oxygonia* (Fairm.); radial vein furcate towards base; two discoidal cells; space between ulnar and radial veins and the costa less densely punctate. Sp. *Membr. oblecta* (Fab.).

Phormophora, g. n., Stål, l. c. p. 28. Allied to *Lucilla* (Stål); corium with two closely approximated veins emitted from the base, and two or three discoidal cells. Sp. *Darnis maura* (Fab.)=*dorsata* (Fab.).

Tynelia, g. n., Stål, l. c. p. 29. Allied to *Farmila* (Fairm.); head scarcely shorter than its width between the eyes, obliquely produced forwards; anterior tibiæ very slightly dilated above. Sp. *Darnis pubescens* (Fab.).

Procyrtia, g. n., Stål, l. c. p. 32. Allied to *Darnis*; resembling *Gargara* in appearance; posterior process short, slender, gradually acuminate; discoidal cell between the ulnar veins. Sp. *Centr. pectoralis* and *inermis* (Fab.).

Coccosterphus, g. n., Stål, l. c. p. 51. Allied to *Gargara*; thorax passing gradually into posterior process behind lateral angles, with no basal sinus on each side; mesonotum with two very distant apical spines. Sp. *Centr. minutus* (Fab.).

Bubalopa, g. n., Stål, Æfvers. Kongl. Vet.-Akad. Förh. xxvi. p. 255. (See table, p. 486.) Type *Hemiptycha furcata* (Fairm.); *Bubalopa obscuricornis*, sp. n., Stål, l. c. p. 256, Bogotá.

Tomogonia, g. n., Stål, l. c. p. 258. (See table, p. 486.) Type *Smilia vittatipennis* (Fairm.); *Tomogonia pectoralis*, sp. n., Stål, l. c. p. 259, Bogotá.

Ochropepla, g. n., Stål, l. c. p. 268. Allied to *Potnia* (Stål); thorax convex in front, destitute of an anterior horn. Sp. *Hoplophora corrosa* and *H. punctum* (Fairm.); *O. pallens*, sp. n., Stål, l. c. p. 268, Mexico.

Campylocentrus, g. n., Stål, l. c. p. 289. Allied to *Orthobelus*; posterior process narrower towards base, distant from scutellum, widened or lobate in the middle beneath; corium with no transverse veins between the branches of the ulnar vein before the middle. Sp. *Centrotus hamifer* (Fairm.)=*niveiplaga* (Walk.), *C. costalis* (Walk.), *C. curvidens* (Fairm.), *C. subspinosus* (Fairm.); *Campylocentrus obscuripennis*, sp. n., Stål, l. c. p. 289, Mexico.

Callicentrus, g. n., Stål, l. c. p. 290. Allied to *Orthobelus*; jugæ less dilated at apex; posterior process wider at base, concealing the whole scutellum, gradually narrowed; corium with no transverse veins between the branches of the ulnar vein before the middle. Sp. *Centrotus ignipes* and *C. flavivitta* (Walk.).

Ischnocentrus, g. n., Stål, l. c. p. 292. Allied to *Brachybelus*; wings with four apical cells; thorax with a distinct obtuse keel, posterior process distant from scutellum. Sp. *I. niger* and *I. ferruginosus*, spp. nn., Stål, l. c. p. 293, Bogotá.

Abelus, g. n., Stål, l. c. p. 293. Allied to preceding; thorax without a posterior process. Sp. *A. luctuosus*, sp. n., Stål, l. c. p. 294, Bogotá.

Microcentrus, g. n., Stål, l. c. p. 295. Allied to *Ethalion*; thorax with a very short posterior process. Sp. *Uroxiphus caryæ* (Fitch).

New species :—

Tragopa lata, Stål, Æfvers. Kongl. Vet.-Akad. Förh. xxvi. p. 231, Guiana; *T. maculata*, Stål, ibid., Bogotá; and *T. (Ceratopola) corniculata*, Stål, l. c. p. 232, Cayenne.

Adippe quadrivittata, Stål, l. c. p. 234, origin unknown.

Hille notata, Stål, l. c. p. 235, *H. conspersa*, Stål, l. c. p. 236, and *H. nutans*, Stål, ibid., Bogotá.

Ennya bicristata, Stål, l. c. p. 238, Bogotá.

- Lucilla subcristata*, Stål, l. c. p. 238, Bogotá; *L. mixta*, Stål, l. c. p. 239, Columbia; and *L. cornigera*, Stål, ibid., Bogotá.
- Erosne bracteata*, Stål, l. c. p. 240, Surinam.
- Cyphonia flavo-vittata*, Stål, l. c. p. 242, Bogotá.
- Antonaë inflata*, Stål, l. c. p. 243, *A. picina*, Stål, ibid., and *A. conspersa*, Stål, l. c. p. 244, Bogotá.
- Stictocephala rotundata*, Stål, l. c. p. 246, Cuba.
- Phacusa pallescens*, Stål, l. c. p. 247, Mexico; *P. (Euritea) personata*, Stål, ibid., Bogotá; and *P. (E.) nigripes*, Stål, l. c. p. 248, Mexico.
- Thelia uhleri*, Stål, l. c. p. 248, Wisconsin.
- Telamona mexicana*, Stål, l. c. p. 249, Mexico.
- Archasia belfragei*, Stål, l. c. p. 250, Illinois.
- Hemiptycha sarcinata*, Stål, l. c. p. 251, Bahia.
- Pyranthe laticornis*, Stål, l. c. p. 253, Brazil; and *P. auriculata*, Stål, l. c. p. 254, San Paolo.
- Alcmeone curvicornis*, Stål, l. c. p. 256, Cayenne.
- Hyphinoë morio*, Stål, l. c. p. 257, Bogotá.
- Smilorhachis ootilinea*, Stål, l. c. p. 260, Bolivia.
- Darnoides impressus*, Stål, l. c. p. 262, Bogotá; *D. punctellus*, Stål, l. c. p. 263, Bogotá.
- Platycotis acutangula*, Stål, l. c. p. 263, Mexico.
- Urbonia rectispina*, Stål, l. c. p. 265, Bogotá.
- Triquetra recurva*, Stål, l. c. p. 266, Bogotá.
- Membracis trifasciata*, Stål, l. c. p. 269, and *M. trisignata*, Stål, ibid., Bogotá.
- Enchophyllum (Tropidocera) tripustulatum*, Stål, l. c. p. 270, and *E. (T.) imbellis*, Stål, l. c. p. 271, Brazil.
- Enchenopa vittifera*, Stål, l. c. p. 272, Bogotá.
- Sphongophorus apicalis*, Stål, l. c. p. 273, Bogotá; *S. (Cladonota) latifrons*, Stål, l. c. p. 274, Mexico; *S. (Lobocladisca) rigidus*, Stål, l. c. p. 275, and *S. (L.) lobulatus*, Stål, l. c. p. 276, Bogotá.
- Pterygia (Hypsoprora) cylindricornis*, Stål, l. c. p. 277, and *P. (H.) tuberosa*, Stål, ibid., Bogotá; *P. (H.) trituberculata*, Stål, l. c. p. 278, Mexico; *P. (Æchmophora) recticornis*, Stål, l. c. p. 279, and *P. (Æ.) curvicornis*, Stål, ibid., Bogotá.
- Oxyrhachis inermis*, Stål, l. c. p. 283, Ceylon.
- Hypsauchenia uncinata*, Stål, l. c. p. 283, India.
- Leptobelus curvispinus*, Stål, l. c. p. 284, Ceylon; *L. pallipes*, Stål, ibid., India; *L. auriculatus*, Stål, l. c. p. 285, Ceylon.
- Centrotypus amplicornis*, Stål, l. c. p. 285, Cambodia.
- Terentius convexus*, Stål, l. c. p. 286, Queensland; *T. punctatissimus*, Stål, ibid., New Guinea.
- Sertorius curvicornis*, Stål, l. c. p. 287, Adelaide.
- Acanthuchus gracilispinus*, Stål, l. c. p. 287, North Australia; *A. conspurcatus*, Stål, l. c. p. 288, West Australia; *A. bispinus*, Stål, ibid., Australia.
- Platycentrus acuticornis*, Stål, l. c. p. 291, and *P. obtusicornis*, Stål, ibid., Mexico.
- Brachybelus cruralis*, Stål, l. c. p. 292, Mexico.
- Nessorhinus gibberulus*, Stål, l. c. p. 294, Portorico.
- Goniolomus tricorniger*, Stål, l. c. p. 294, Cuba.

Æthalion vitticollis, Stål, l. c. p. 297, Bogotá; *Æ. variabilis*, Stål, ibid. Bogotá.

Darnis (Alobia) alutacea, Stål, Kongl. Vet.-Akad. Handl. viii. p. 32, note, Surinam.

Membracis ampelopsidis, Harris, Entom. Corresp. p. 334, on *Cissus quinquefolia*.

CICADELLINA.

STÅL (Kongl. Vet.-Akad. Handl. viii. pp. 11-18, and 58-86) identifies the following Fabrician species of this group:—*Cercopis heros*=*abdominalis* (Walk.) and *C. nigripennis* belong to *Cosmoscarta* (Stål)=*Cercopis* (Stål, Hem. Afr.); *C. versicolor* is a *Callitettix*; *C. obscura* is a *Locris*; *C. lineola*, *varia*, *tristis*, and *pubescens* belong to *Tomaspis*; *C. flavescens*=*olivacea* (Fab.)=*livida* (Fab.) belongs to *Ptyelus*; *C. gibba*+*unifasciata*+*angulata*=*Lepyronia coleoptrata* (Lin.); *C. marginella*+*leucocephala*+*leucophthalma*+*lineata*+*vittata*+*lateralis*+*2-guttata*+*fasciata*+*populi*=*Philænus spumarius* (Lin.); *C. abbreviata*=*Philænus lineatus* (Lin.); and *C. albipennis* is a *Philænus*; *C. nebulosa*, *flavipes*, and *fenestrata* belong to *Clovina* (Stål); *C. gigas*=*Ptyelus vittiger* (Walk.) is the type of a new genus, *Sphodroscarta*; *C. rustica*=*Aphrophora salicis* (De G.); *C. spumaria*=*Aphr. alni* (Fall.); *Cerc. reticulata*=*Ulopa obtecta* (Fall.); *Ledra serrulata* and *L. mutica*,= *fornicata*+*carinata* (Walk.), belong to *Ledra* as restricted; *L. planata* belongs to *Piturgia* (Stål) and =*Petaloccephala expansa* (Stål); *Cerc. viridis*=*Xerophlæa virescens* (Stål); *Cic. marmorata*=*cristata* (Fab.), is a *Germaria*; *C. albipennis* is a *Diestostemma* (A. & S.); *Fulg. adscendens*,= *Tettig. phosphorea* (Sign.), and *F. fasciata*,= *Tettig. fabricii* (Sign.), belong to *Rhaphidorhynchus* (Lap.); *Cic. orbona*,= *Tettig. undata* (Sign.), and *C. obtusa* belong to *Oncometopia* (Stål)=*Proconia* (A. & S., nec Lep. & S.); *Cic. aurea* is the type of the new genus *Dichrophleps*; *Cic. triquetra*,= *Tettig. ritripennis* (Germ.), and *C. triangularis* represent the new genus *Homalodisca*; *C. irrorata* is an *Aulacizes* (A. & S.); *C. adpersa*,= *Tettig. atomaria* (Sign.), is the type of the new genus *Celopola*, which includes *C. canaliculata*; *Fulg. pallipes*,= *Cic. rutilans* (Fab.), is the type of the new genus *Acrocampsia*; *Cic. lateralis* and *Fulg. plana* (= *Cic. punctata*, Fab., = *C. pustulata*, Fab.), *Cic. bicolor*, and *Cic. flaveola* form the new genus *Acrogonia*; *Cic. respiformis*,= *C. micans* (Fab.), is the type of the new genus *Lissoscarta*; *Tettigonia* (divided into several subgenera) includes the following Fabrician species:—*C. exaltata*, *C. demissa*, *C. discoidea*, *C. modesta*, *C. pulchra*, *C. bifasciata*, *C. aurulenta*, *C. unifasciata*, *C. rufipes*, *C. contaminata*, *C. fastuosa*, *C. cardinalis*, *C. cruenta*, *C. quadriguttata*, *C. marginella*, *C. lata*=*seaguttata* (Fab., Sign.), *C. pudica*=*T. dilutipes* (Stål), *C. quadrifasciata* (Lin.)= *T. fasciata* (Sign.), *C. mæsta*, *C. lyncea*=*myopa* (Fab.)= *cyanescens* (Sign.), *C. histrio*=*T. robusta* (Sign.), *C. tristis*, *C. suturalis*, *C. pauperata*=*T. lurida* (Sign.), *C. farinosa*=*T. farinosa*+*albigena* (Sign.), *C. virginea*=*T. variegata* (Sign.), and *C. sanguinolenta*; *C. acuminata*=*interincta* (Fall.) is a *Euacanthus*; *Jassus* (= *Cælidia*, Germ., = *Daridna*, Walk.), includes *J. nervosus* (= *C. pæcila*, Germ.), *J. nigripes*, *J. ferrugineus*, *J. atratus*, *Cerc. aurata*, *Cic. longipes*, and *Cic. circularis*; *Cic. depressa* belongs to *Eupelix*; *Cerc. striata*,= *transversa* (Fab.)= *Acoc. rusticus* (Flor), is an *Acocephalus*; *Cerc. grisea*,= *Selenocephalus obsoletus* (Burm.)= *S. punctatoneruosus* (Stål) is a *Selenocephalus*; *Cic. bipunctata* is a *Thamno-*

tettix; *Cic. decora* is the type of a new genus, *Calliscarta*; *J. reticulatus* is an *Athysanus*; *Gypona* includes *Cerc. thoracica*, *C. glauca*, *J. ignitus*, *C. equestris*, *C. aurulenta*, and *C. marginata* = *Sigara lineata* (Fab.); *C. ruficollis* + *hæmorrhœa* + *sanguinicollis* = *Penthimia atra* (Fab.). *Aphrophora siccifolia* (Walk.), = *A. occidentis* (Walk.) = *A. diminuta* (Walk.) = *Pt. variolosus* (Walk.), is distinct from *Cerc. gigas* (Fab.) and belongs to *Cephisus* (Stål, l. c. p. 18).

Jassus sexnotatus. Cohn notices the injury done to the Silesian cornfields by this species (Abhandl. der schles. Gesellsch. vaterl. Cultur, 1868-69, pp. 184-186. See also Stett. ent. Zeit. 1869, pp. 290-293 and 368-371).

FREBER (Verh. zool.-bot. Ges. in Wien, xix. pp. 201-222) publishes a synopsis of a subordinate group (Deltocephali) in which he includes the two genera *Platymetopius* and *Deltocephalus* (Burm.). Details of the head and other parts of all the species are given in numerous outline figures on two plates. The known species thus figured are as follows:—Under *PLATYMETOPIUS*:—*cornutus* (Fieb.) = *Proceps acicularis* (Muls.), pl. 6. fig. 61; *rostratus* (H.-Sch.), fig. 62; and *undatus* (De G.) = *vittata* (Fab.), fig. 64: under *DELTOCEPHALUS*:—*bipunctipennis* (Boh.), pl. 5. fig. 1; *phragmitis* (Boh.), fig. 2; *formosus* (Boh.), fig. 3; *costalis* (Fall.) = *punctum* (Flor), fig. 4; *calceolatus* (Boh.), fig. 6; *socialis* (Flor), fig. 8; *ocellaris* (auct.), fig. 9; *bohemanni* (Zett.), fig. 10; *multinotatus* (Boh.), fig. 14; *argus* (Marsh.), fig. 17; *distinctus* (Flor) fig. 21; *pulicarius* (Fall.), fig. 27; *areatus* (Stål), fig. 28; *vicicola* (Curt.), fig. 29; *striatus* (Lin.), fig. 32; *frigidus* (Boh.), fig. 33; *vidus* (Flor), pl. 6. fig. 38; *panzeri* (Flor), fig. 39; *abdominalis* (Fab.), than; *collinus* (Boh.), fig. 42; *assimilis* (Fall.), fig. 41; *pascuellus* (Fall.), Sp. u; *maculiceps* (Boh.), fig. 53; *luteus* (Muls.), fig. 56; *metrius* (Flor), No; *limbatellus* (Zett.), fig. 59; *penthopitta* (Amyot), fig. 60.

broad
anteAL (l. c. pp. 59-61, note) tabulates the genera of his sub-
sp. ny *Proconiida* as follows:—

S Jugæ porrect, straight, or slightly deflexed at apex, projecting beyond
cor sides of head; anterior tibiæ above sulcate or flat.

A. Thorax distinctly hexagonal, lateral angles distinct.

t 1. Thorax crested 1. GERMARIA (Lap.).

v 2. Thorax not crested.

N a. Antennæ very long, multiarticulate.

2. CICCUS (Lat.).

t b. Antennæ moderate; ocelli close to the eyes.

3. DIESTOSTEMMA (A. & S.).

B. Thorax quadrangular, or less distinctly hexagonal, lateral angles very obtuse, rounded.

1. Head triangular, with a filiform process at apex.

a. Head not gradually passing into the apical process, which is slender, and has no superior furrow; anterior tibiæ dilated.

4. RHAPHIDORHINUS (Lap.).

b. Head long, rather gradually passing into the apical process, which is somewhat recurved and longitudinally excavated above and below; anterior tibiæ slender, simple.

5. ACROBELUS (Stål).

(*Tett. reflexa*, Sign.)

l 2. Head rounded at apex, or triangular, but without the apical process.

a. Anterior tibiæ flat or sulcate above.

* Thorax with parallel sides or narrowed behind

a. Forehead obtusely prominent, its upper part with no longitudinal impression.

a. Body not very slender; clavus with 2 veins.

6. ONCOMETOPIA (Stål).

β. Body slender; clavus with 1 vein furcate at apex.

7. DICHROPHLEPS, g. n.

(Cic. aurea, Fab.)

b. Head above longitudinally impressed throughout, or at least in the upper part of the forehead.

a. Head depressed, longer than or equal to thorax.

** Head triangular, its narrow apex rounded.

8. PHERA (Stål).

(P. tiarata and wallengreni, Stål,
Tett. centro-lineata, Sign.)

†† Head broader at apex. 9. HOMALODISCA, g. n.

(Cic. triquetra and triangularis, Fab.)

β. Head shorter than thorax. 10. CYRTODISCA (Stål).

(Tett. major, Sign.)

r Thorax usually distinctly narrowed in front.

a. Anterior tibiæ simple.

a. Clypeus much elevated, gibbous, angulate when seen the side.

** Thorax and scutellum of equal length, or nearly

aa. Sides of thorax parallel.

11. CÆLOPOLA, g. n.

(Cic. adspersa and canaliculata,

ββ. Thorax narrowed in front.

12. AMBLYDISCA, g. n.

(Aulacizes rubriventris, Sign., coriacea,
tiguttata, and nitidipennis, Stål.)

†† Thorax about twice as long as scutellum.

13. STICTOSCARTA, g. n.

(Tett. sulcicollis, Germ., and pruinosa, Sig

β. Clypeus, seen from the side, convex, not angulate-gibbo

14. AULACIZES (A. & S.).

b. Anterior tibiæ dilated above.

a. Tegmina rounded at apex. 15. PROCONIA (Lep. & S.).

β. Tegmina broadly truncate at apex.

16. ACROCAMPSA, g. n.

(Cic. pallipes, Fab.)

b. Tibiæ cylindrical, with no furrow.

* Head triangular, gradually narrowed.

17. ACROGONIA, g. n.

(Cic. lateralis, plana, bicolor, and flaveola, Fab

† Head much longer than thorax, depressed.

18. OCHROSTACTA, g. n.

(Tett. diadema, Burm., and physocephala, Sign

II. Jugæ suddenly deflexed and gradually curved from the base, apex ve

rarely projecting beyond the sides of the head; anterior tibiæ generally cylindrical.

A. Head with no longitudinal keel above.

1. Anterior tibiæ thickened, compressed; abdomen much compressed at base 19. LISSOSCARTA, g. n.

(*Cic. vespiformis*, Fab.)

2. Anterior tibiæ slender, cylindrical; abdomen scarcely, if at all, compressed at base 20. TETTIGONIA (Geoff.)

B. Head with a longitudinal keel. 21. EUACANTHUS (Lep. & S.).

New genera :—

(See also preceding Table.)

Ischnorhina, g. d., Stål, Kongl. Vet.-Akad. Handl. viii. p. 14 Allied to *Tomaspis*; forehead much compressed, projecting in an acute angle, and furnished with an obliquely transverse wrinkle on each side near the apex. Sp. *Cerc. sanguinea* (Fab.) and *C. ephippium* (Fab.).

Sphodroscarta, g. n., Stål, l. c. p. 17. Allied to *Clovina* (Stål); basal margin of head obtusely angulate-sinuate; thorax rather convex, anterior margin obtusely angulate. Sp. *Cercopis gigas* (Fab.) = *Ptyelus vittiger* (Walk.), and *Aphrophora ornata* (Guér.) = *Ptyelus trivirgatus* (A. & S.) = *P. speculigutta* (Walk.).

Calliscarta, g. n., Stål, l. c. p. 82. Allied to *Thamnotettix*; head broader than thorax, very obtuse; tegmina narrowed towards apex; facies of *Idiocerus*. Sp. *Cic. decora* (Fab.).

Norsia, g. n., Walker, Journ. Linn. Soc. x. Zool. p. 326. Slender; head as broad as thorax, vertex arched, transverse, forehead flat, nearly horizontal; antennal seta rather shorter than body. Sp. *N. flavidorsum* and *N. fulvescens*, sp. n., Walker, l. c. p. 326, Mysol.

Sophonia, g. n., Walker, l. c. p. 327. Very slender; head flat, elongate conical. Sp. *S. rufitulum*, sp. n., Walker, l. c. p. 327, Mysol.

Nisitra, g. n., Walker, l. c. p. 327. Slender; head lanceolate, much longer than thorax, vertex subcarinate, forehead nearly horizontal; hind legs long, with spinous tibiæ. Sp. *N. telifera* and *N. varipes*, sp. n., Walker, l. c. p. 328, Mysol.

Interocrea, g. n., Walker, l. c. p. 328. Allied to *Selenocephalus*; costa of tegmina much rounded. Sp. *I. nigripes*, sp. n., Walker, l. c. p. 328, New Guinea.

New species :—

Cercopis. Of this genus Walker (Journ. Linn. Soc. x. Zool.) describes the following new species from the Indian Archipelago :—*C. undulifera*, l. c. p. 276, New Guinea; *C. tetraspila*, l. c. p. 277, Batchian, Gilolo; *C. rufimargo*, ibid., Celebes; *C. intermedia*, ibid., Batchian; *C. unifascia*, l. c. p. 278, New Guinea; *C. decisa*, ibid., Morty; *C. convexa*, ibid., New Guinea; *C. maculifascia*, l. c. p. 279, Morty; *C. divisa*, ibid., New Guinea; *C. inexacta*, l. c. p. 280, Tondano, Celebes; *C. basistriga*, ibid., Morty; *C. biangulata*, ibid., and *C. sulcata*, l. c. p. 281, Tondano, Celebes; *C. impressa*, ibid., Flores; *C. nevaea*, ibid., Flores; *C. brevistriga*, l. c. p. 282, Tondano, Celebes; *C. semilurida*, ibid., Batchian, Gilolo, Kaisaa, Morty, Ternate; *C. rubrifera*, l. c. p. 283, Aru; *C. dorsalis*, ibid., Sumatra; *C. nasalis*, ibid., Aru; *C. tomentosa*, l. c. p. 284, Sumatra; *C. varia*, ibid., Celebes, Tondano; *C. tetragona*, ibid.,

Aru, New Guinea, Waigiou; *C. lateralis*, l. c. p. 285, Morty; *C. sequens*, ibid., New Guinea; *C. semicincta*, ibid., Celebes; *C. laticincta*, ibid., Batchian; *C. angulifera*, l. c. p. 286, Batchian; *C. flexifascia*, ibid., Sumatra; *C. concisa*, ibid., Tondano, Celebes; *C. subapicalis*, l. c. p. 287, Sumatra; *C. liturata*, ibid., Flores; *C. lacerata*, ibid., Timor; *C. obtusa*, ibid., Timor; *C. punctifascia*, l. c. p. 288, Batchian.

Tricephora antica, Walker, l. c. p. 289, Mysol; *T. rufa*, Walker, ibid., New Guinea.

Aufidus. Of this genus Walker, l. c., describes the following new species from the Indian archipelago:—*A. bipars*, l. c. p. 290, Tondano, Celebes; *A. partitus*, ibid., Menado, Celebes; *A. tripars*, ibid., Morty, New Guinea; *A. tricolor*, l. c. p. 291, Aru; *A. hilaris*, ibid., New Guinea; *A. crassivena*, ibid., Gilolo; *A. alboater*, l. c. p. 292, Mysol, New Guinea.

Ptyelus. Of this genus Walker describes the following new species from the Indian archipelago:—*P. vicarius*, l. c. p. 292, *P. pectoralis*, ibid., *P. sexpunctatus*, l. c. p. 293, *P. plenipennis*, ibid., and *P. frontalis*, ibid., New Guinea; *P. monostigma*, l. c. p. 293, Morty; *P. impressus*, l. c. p. 294, New Guinea.

Perinoia. Of this genus Walker describes the following new species from the Indian archipelago:—*P. ornata*, l. c. p. 294, Dorei; *P. separata*, ibid., New Guinea; *P. deflexa*, l. c. p. 295, Mysol; *P. disjuncta*, ibid., Dorei; *P. subjuncta*, ibid., New Guinea; *P. placens*, l. c. p. 296, Aru, Mysol; *P. lituriplena*, ibid., Mysol; *P. furcata*, l. c. p. 297, Sula; *P. furcifera*, ibid., Ceram; *P. subfurcata*, l. c. p. 298, Gilolo, Ternate; *P. plena*, ibid., Sula; *P. transversa*, l. c. p. 299, Mysol; *P. pustuliceps*, ibid., New Guinea; *P. badia*, ibid., Aru; *P. varipes*, l. c. p. 300, Batchian; *P. indicatrix*, l. c. p. 301, Mysol; *P. fusiformis*, ibid., New Guinea.

Tettigonia. Of this genus Walker describes the following new species from the Indian archipelago:—*T. guttivitta*, l. c. p. 301, Celebes; *T. maculicollis*, l. c. p. 302, Mysol, New Guinea, Waigiou; *T. vittifrons*, ibid., New Guinea; *T. ruficosta*, ibid., Batchian; *T. inconspicua*, l. c. p. 303, New Guinea, Waigiou; *T. tripunctata*, ibid., Ceram; *T. scutellaris*, ibid., Batchian; *T. igniceps*, l. c. p. 304, Flores; *T. leucopasa*, ibid., Mysol, New Guinea; *T. testacea*, ibid., Sula; *T. albidula*, l. c. p. 305, New Guinea.

Tettigonia (Jassus) roseæ, Harris, Entom. Corresp. p. 334 (United States).

Penthimia. Of this genus Walker describes the following new species from the Indian archipelago:—*P. raniformis*, l. c. p. 305, Celebes; *P. variolosa*, ibid., Waigiou; *P. caliginosa*, l. c. p. 306, Sula; *P. retifera*, ibid., New Guinea; *P. lurida*, ibid., Mysol; *P. atomaria*, l. c. p. 307, Mysol.

Petaloecephala. Of this genus Walker describes the following new species:—*P. specularia*, l. c. p. 307, New Guinea; *P. bispecularis*, ibid., Mysol; *P. subacta*, l. c. p. 308, Mysol; *P. porrigens*, ibid., Gilolo; *P. declivis*, ibid., New Guinea.

Cælidia. Of this genus Walker describes the following new species from the Indian archipelago:—*C. diversa*, l. c. p. 309, Mysol, New Guinea, Waigiou; *C. picea*, ibid., Mysol; *C. subnotata*, ibid., Mysol; *C. verticalis*, l. c. p. 310, Sula, New Guinea; *C. marginifrons*, ibid., Mysol; *C. canifascia*, l. c. p. 311, Morty; *C. inscripta*, ibid., Aru, New Guinea; *C. luteifascia*, ibid., Mysol; *C. rufivena*, l. c. p. 312, Gilolo, Sula; *C. albipes*, ibid., New Guinea; *C. subapicalis*, ibid., Mysol; *C. unifasciata*, l. c. p. 313, Mysol; *C. leucomelana*, l. c. p. 313, Mysol; *C. guttata*, ibid., Mysol; *C. terminalis*, l. c. p. 314, New

Guinea, Mysol; *C. sexguttata*, ibid., New Guinea; *C. dorsimacula*, ibid., New Guinea; *C. roseifascia*, l. c. p. 315, Morty, Mysol; *C. selecta*, ibid., Sula, Mysol; *C. maculiceps*, ibid., Batchian; *C. testacea*, ibid., Mysol; *C. aurulenta*, l. c. p. 316, Morty.

Bythoscopus. Of this genus Walker describes the following new species from the Indian archipelago:—*B. antecessens*, l. c. p. 316, Morty; *B. polygrammus*, l. c. p. 317, New Guinea, Morty; *B. bistriga*, ibid., Mysol, New Guinea; *B. concolor*, ibid., Mysol; *B. equalis*, l. c. p. 318, New Guinea, Mysol; *B. basivitta*, ibid., Waigiou, Mysol; *B. bimarginatus*, ibid., Batchian, Celebes, Ceram, Gilolo, Morty, Sula; *B. dimidiatus*, l. c. p. 319, Dorei; *B. luteatus*, ibid., Sula; *B. colligatus*, ibid., New Guinea; *B. unicolor*, l. c. p. 320, Celebes; *B. politus*, ibid., Morty; *B. flavibasis*, ibid., Aru; *B. diphanus*, l. c. p. 321, New Guinea; *B. cupreipennis*, ibid., New Guinea; *B. scabrifrons*, ibid., New Guinea; *B. badius*, ibid., New Guinea; *B. semivenosus*, l. c. p. 322, Tondano, Celebes; *B. impressus*, ibid., Batchian.

Jassus. Of this genus Walker describes the following new species:—*J. nitidulus*, l. c. p. 322, Mysol; *J. laticeps*, l. c. p. 323, Celebes; *J. lituriceps*, ibid., Sula; *J. costalis*, ibid., Morty; *J. lucidicosta*, ibid., New Guinea; *J. coriaceus*, l. c. p. 324, Mysol; *J. puncticosta*, ibid., Morty; *J. latifrons*, ibid., Morty; *J. ? angulifer*, l. c. p. 325, Mysol.

Selenocephalus marmoreus, Walker, l. c. p. 325, Morty, New Guinea, Sula; *S. notulus*, Walk. l. c. p. 326, Mysol.

Platymetopius guttatus, Fieber, Verh. zool.-bot. Ges. in Wien, xix. p. 202, pl. 6. fig. 63, Germany; *P. notatus*, Fieber, ibid., pl. 6. fig. 65, Spain.

Deltocephalus. The following new European species are described by Fieber (l. c.):—*D. propinquus*, p. 204, pl. 5. fig. 5, Spain; *D. tiaratus*, ibid., pl. 5. fig. 7, Germany; *D. frauenfeldi*, p. 206, pl. 5. fig. 11, Austria; *D. volgensis*, ibid., pl. 5. fig. 12, Sarepta; *D. kolenatyi*, ibid., pl. 5. fig. 13, Karabach; *D. thoracicus*, p. 207, pl. 5. fig. 15, France; *D. mayri*, ibid., pl. 5. fig. 16, Austria; *D. ignoscus*, p. 208, pl. 5. fig. 18, Livonia; *D. flebilis*, ibid., pl. 5. fig. 19, Germany; *D. repletus*, ibid., pl. 5. fig. 20, South Germany; *D. parallelus* (Mink), p. 209, pl. 5. fig. 22, Germany and France; *D. picturatus*, ibid., pl. 5. fig. 23, Germany, Austria; *D. falleni*, p. 210, pl. 5. fig. 24, Livonia and Germany; *D. flori*, ibid., pl. 5. fig. 25, Livonia and Germany; *D. fasciatus*, p. 211, pl. 5. fig. 26, Austria; *D. hyalinus*, p. 212, pl. 5. fig. 30, South Europe; *D. rhombifer*, p. 213, pl. 5. fig. 31, Germany; *D. flavidus*, ibid., pl. 6. fig. 34, Italy; *D. linnei*, p. 214, pl. 6. fig. 35, Austria and Switzerland; *D. cognatus*, ibid., pl. 6. fig. 36, Carinthia; *D. interstinctus*, ibid., pl. 6. fig. 37, Hungary and Switzerland; *D. hypochlorus*, p. 215, pl. 6. fig. 43, Austria; *D. mulsanti*, p. 216, pl. 6. fig. 44, South of France, Carniola; *D. minki*, p. 217, pl. 6. fig. 45, Germany, Bohemia, Switzerland; *D. apotelius*, ibid., pl. 6. fig. 47, Tyrol; *D. pauxillus*, ibid., pl. 6. fig. 48, Austria; *D. auran-tiacus*, p. 218, pl. 6. fig. 49, Tyrol; *D. asemus*, ibid., pl. 6. fig. 50, Bohemia; *D. xanthus*, p. 219, pl. 6. fig. 51, Germany; *D. xanthoneurus*, ibid., pl. 6. fig. 52, Bohemia; *D. flavus*, ibid., pl. 6. fig. 54, Galicia; *D. brachynotus*, ibid., pl. 6. fig. 55, North of Europe; *D. obliteratus*, p. 220, pl. 6. fig. 57, South of Europe.

PSYLLIDÆ.

Carsidara, g. n., Walker, Journ. Linn. Soc. x. Zool. p. 329. Robust; head narrower than thorax, excavated above; antennæ very slender, shorter than body, joints 1 and 2 incrassate; anterior wings long, longitudinal vein emitting 4 branches. Sp. *C. marginalis*, sp. n., Walker, l. c. p. 329, Celebes.

Tyora, g. n., Walker, l. c. p. 330. Slender; antennæ slender, much longer than thorax; anterior wings narrow, with three longitudinal veins united at base. Sp. *T. congrua*, sp. n., Walker, l. c. p. 330, Mysol.

Micromystes, g. n., Stål, Kongl. Vet.-Akad. Handl. viii. p. 113. Head convex; eyes large, sinuate in front and behind; ocelli 2; last joint of rostrum elongate; joint 1 of antennæ very short, 2 oval; tegmina nearly twice as long as broad, apex widened, rounded, veins 2, united at base; legs long, joint 1 of tarsi nearly half as long again as 2. Sp. *Derbe nivea* (Fab.).

APHIDIDÆ.

SIGNORET (Ann. Soc. Ent. Fr. 4^e sér. ix. pp. 549-596) publishes an elaborate memoir upon *Phylloxera vastatrix* (Planch.), in which, after analyzing the various papers which have appeared on the insects infesting the vine, thus giving a general history of the subject, he proceeds to characterize the species which have of late years been regarded by the vine-growers of the south of France as one of their chief enemies. The family Aphididæ is divisible, according to Signoret, into the following tribes (l. c. p. 577) :—

- | | |
|---|-----------------|
| I. Antennæ of 7 joints | 1. APHIDITES. |
| II. Antennæ of 6 joints in the winged form. | |
| A. Winged form unknown | 4. RHIZOBIITES. |
| B. Winged form known. | |
| 1. Cubital vein twice bifurcate | 2. LACHNITES. |
| 2. Cubital vein bifurcate or simple | 3. PEMPHIGITES. |
| III. Antennæ of 3 or 5 joints. | |
| A. Winged form unknown | 5. TYCHEITES. |
| B. Winged form known | 6. CHERMESITES. |

It is to this sixth tribe (Chermesites) that *Phylloxera* belongs, as indicated in the following table :—

- | | |
|--|--------------------------------|
| I. Antennæ of 5 joints. | |
| A. Anterior wings with 4 oblique veins; cubital bifurcate. | 1. <i>Vacuna</i> (Heyd.). |
| B. Anterior wings with 3 oblique veins, all simple. | 2. <i>Chermes</i> (Linn.). |
| II. Antennæ of 3 joints | 3. <i>Phylloxera</i> (Fonsc.). |

Of *Phylloxera quercus* (Fonsc.), the type of the genus, Signoret figures a tarsus and antennæ (pl. 10. figs. A, B). The different states and forms of *Ph. vastatrix* are described by him in detail, and figured (pl. 10. figs. 1, 2, 3). The galls formed by the insects on the leaves of the vine are also represented (l. c. figs. 4, 4a). The male is still unknown.

LICHTENSTEIN communicates notes on *Phylloxera vastatrix* (Bull. Soc. Ent. Fr. 1869, pp. xxvii, xliii, xlvi).

Phylloxera vastatrix. According to Frauenfeld, this insect does not attack the vines in Austria and Hungary (Verh. zool.-bot. Ges. in Wien, xix. p. 943).

DERBÈS (Ann. Sci. Nat. sér. 5, xi. pp. 93-107, pls. 3 & 4) describes the galls formed upon the Pistachio trees by species of this family, and describes and figures the insects in question. He notices the following known species:—*Pemphigus cornicularius* (Passerini), p. 104, pl. 3. figs. 1-3; *P. utricularius* (Pass.), pl. 3. figs. 4-6; *P. semilunarius* (Pass.), p. 105, pl. 3. figs. 7-9; and *Tetraneura leutisci* (Pass.), p. 106, pl. 4. figs. 20-21. He also figures the head and antennæ of a *Pemphigus* found in great numbers on the branches of *Pistacia terebinthus* (pl. 4. fig. 16), and an Aphidian found on the buds of the same tree (fig. 17); also a kind of cyst, found in clefts of the bark of *P. terebinthus* and *P. vera* (fig. 18), and on *P. lentiscus* (fig. 22), and eggs found with the cysts (figs. 19 & 23).

SHIMER (Trans. Amer. Ent. Soc. ii. pp. 386-398) gives an account of the galls formed upon different parts of the Hickory and Bitter-nut trees (*Carya alba* and *amara*) by plant-lice referred by him to his genus *Dactylosphæra*, which he regards as intermediate between this family and the Coccidæ. Most of the species are described as new (*vide infra*).

Coccus pinicorticis (Fitch). The habits of this species are described by Shimer (Trans. Amer. Ent. Soc. ii. pp. 383-385). He regards it as identical with *Chermes pinifolice* (Fitch), but refers it with doubt to the genus *Chermes*, stating that it belongs to his family *Dactylosphæridæ* (see 'Record,' 1867, p. 482), and will probably form the type of a new genus, for which he proposes the name of *Pineus*, with the following characters:—"Front wing with three simple oblique veins; hind wing with subcostal or rib-vein forked; wings roofed in repose; antennæ 4-5-jointed; tarsi 1-jointed; claws 2, with 2 digituli; honey-tubes none. The ♀ secretes a mass of woolly down in which she lays her eggs." The winged imago is described by Shimer (l. c. p. 384), who also notices the insects which prey upon this species.

CORÊT (Bull. Soc. Ent. Fr. 1869, p. xiv) confirms his assertion that *Aphis rosæ* feeds in winter on potatoes.

Capsus hyalinatus (Fab.) is a *Lachnus*, according to Stål (Kongl. Vet.-Akad. Handl. viii. p. 113).

New species :—

Aphis caryæ, Harris, Entom. Corresp. p. 335, on *Carya porcina*; *A. saliceti*, Harris, *ibid.*, on willow.

Pemphigus pallidus, Derbès, Ann. Sci. Nat. sér. 5, xi. p. 105, pl. 4. figs. 10-12, and *P. minus*, Derbès, l. c. p. 106, pl. 4. figs. 13-15, in galls on *Pistaciæ*.

Dactylosphæra hemisphericum (sic), Shimer, Trans. Amer. Ent. Soc. ii. p. 387, *D. caryæ-septum*, Shimer, l. c. p. 389, *D. subellipticum*, Shimer, *ibid.*, *D. depressum*, Shimer, l. c. p. 390, *D. conicum*, Shimer, *ibid.*, *D. caryæ-magnum*, Shimer, l. c. p. 391, *D. minimum*, Shimer, *ibid.*, *D. caryæ-semen*, Shimer, l. c. p. 392, *D. foreatum*, Shimer, l. c. p. 393, *D. coniferum*, Shimer,

l. c. p. 397, and *D. spinosum*, Shimer, *ibid.*, all from galls on *Carya alba* and *C. amara*.

COCCIDÆ.

TARGIONI-TOZZETTI (*Atti Soc. Ital. Sci. Nat.* xi. pp. 694-738) describes the general structure and natural history of the insects of this family, and gives a synonymic catalogue of the genera and species admitted by him. He divides them into four tribes, namely:—

1. *Orthezites*: Abdomine cauda floccosa penicillata terminali, oculi granosi.

2. *Coccites*: Abdomine stylo brevi, setisque 2 terminato.

3. *Lecanites*: Fœmina hexapoda infixa paramorphosi gallæformis antennata, hexapoda, raro apoda, exantennata.

4. *Diaspites*: Fœmina metamorphosi inchoata apoda pupæformis.

Several new genera and species are indicated, but not described in the catalogue.

TARGIONI-TOZZETTI has published (*Mem. Soc. Ital. Sci. Nat.* iii. No. 3) a most important memoir on the anatomy and physiology of the insects of this family. It is accompanied by seven plates, for the most part representing anatomical structures; but numerous species are figured in various stages of growth.

TARGIONI-TOZZETTI, in describing a new genus of this family, establishes a new tribe for its reception and that of his genus *Pollinia*, and gives the following table of the tribes into which he now divides the *Coccidæ* (*Bull. Soc. Ent. Ital.* i. p. 260):—

I. Metamorphosi nulla	{ 1. <i>Orthezites</i> .
	{ 2. <i>Coccites</i> .
II. Metamorphosi paramorphotica	3. <i>Lecanites</i> .
III. Metamorphosi { paramorphosi complicata	4. <i>Lecanodiaspites</i> .
{ simpliciter incompleta	5. <i>Diaspites</i> .

SIGNORET (*Ann. Soc. Ent. Fr.* 4^e sér. ix. pp. 97-104) publishes the third part of his "Essai sur les Cochenilles." It contains a general indication of the genera into which he divides these insects, with very brief characters, but illustrated by figures on the accompanying plate (pl. 4). These figures are as follows,—*Aspidiotus*, figs. A, B; *Diaspis*, fig. D; *Fiorinia**, figs. 2 & C; *Parlatoria**, fig. 3; *Mytilaspis*, fig. 1; *Leucodiaspis* (*Leucaspis**, Targ.), fig. 4; *Asterolecanium**, figs. 5 & 6; *Philippia* (*Filippia**, Targ.), fig. 7; *Ericerus*, fig. 8; *Coccus*, fig. 9; *Callipappus*, fig. 10; *Margarodes*, fig. 12; *Porphyrophora*, fig. 13.

Aspidiotus. Signoret (*Ann. Soc. Ent. Fr.* 4^e sér. ix.) describes and sometimes figures the following known species of this genus:—*A. affinis*, (Targ.), p. 114; *A. aloes* (Boisd.), p. 114, pl. 5. fig. 1; *A. betulæ* (Bärenspr.), p. 115; *A. caldesii* (Targ.), p. 116; *A. camelliæ* (Boisd.), p. 117, pl. 5. fig. 9; *A. cycadicola* (Boisd.), p. 119; *A. denticulatus* (Targ.), p. 120; *A. epidendri* (Bouché), p. 121, pl. 6. fig. 1; *A. ericæ* (Boisd.), p. 121; *A. genistæ* (Westw.), p. 122; *A. hederæ* (Vallot), p. 122, pl. 6. figs. C, E, F; *A. kennedyæ* (Boisd.).

* The genera thus marked are new genera indicated by Targioni-Tozzetti in his catalogue of *Coccidæ*, and here briefly characterized by Signoret, from Targioni's notes to him.

p. 124; *A. nerii* (Bouché) = *bouchei* (Targ.), p. 126, pl. 5. figs. 4, 5, & A, and pl. 6. figs. I, J; *A. villosus* (Targ.), p. 133, pl. 6. fig. 6; *A. ? visci* (Schr.), p. 134; and *A. zonatus* (Frau.), p. 135.

Signoret also describes (*l. c.*) *Diaspis bromeliæ* (Kerner), p. 434; *D. calyptroides* (Costa), p. 434; *D. carueli* (Targ.), p. 436; *D. cymbidii* (Bouché), p. 436; *D. juniperi* (Bouché), p. 437; *D. minima* (Targ.), p. 438; *D. ostreæformis* (Curt.), p. 439, pl. 9. fig. 4; *D. rosæ* (Sandberg), p. 441, pl. 9. fig. 3; *Fiorinia pellucida* (Targ.), p. 449, pl. 4. fig. 2; *Parlatoria proteus* (Curt.), p. 450, pl. 9. fig. 5; *P. zizyphi* (Luc.), p. 451, pl. 9. fig. 9.

GUÉRIN-MÉNEVILLE (Ann. Soc. Ent. Fr. 4^e sér. ix. pp. 89-92) notices the species living on the sugar-cane in the Mauritius, and confounded by the colonists under the name of "Pou à poche blanche." These are *Coccus sacchari* (Guér.), *Lecanium iceryi* (Guér.), *L. guerinii* (Sign.), and *Aleurodes bergi* (Sign.).

SIGNORET (*l. c.* pp. 93-96) also notices and describes these species.

Aspidiotus hippocastani. Signoret states that in the commencement of 1868 he obtained abundance of this species, but all females; in February 1869 all he collected were males. (Bull. Soc. Ent. Fr. 1869, p. xvii.)

SIGNORET also communicates a letter from Vinson, relating to some Coccidae of the Isle of Réunion (*l. c.* pp. xviii, xix).

HARRIS refers to a species, probably belonging to this family, found by him upon the Scotch larch (Entom. Correspondence, p. 263).

Chionaspis, g. n., Signoret, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 442. Allied to *Mytilaspis*. Known sp.: *C. myrthi* (Bouché), *C. populi* (Barensp.), *C. salicis* (Linn.), and *C. vaccinii* (Bouché), pl. 10. fig. 7. New sp.: *C. aceris*, Sign. *l. c.* p. 442, on the maple; *C. alni*, Sign. *l. c.* p. 443, on the alder; *C. aspidistra*, Sign. *l. c.* p. 443, pl. 9. fig. 11, on *Aspidistra*; *C. brasiliensis*, Sign. *l. c.* p. 444, Brazil; *C. frazini*, Sign. *l. c.* p. 445, on the ash; *C. planchonii*, Sign. *l. c.* p. 446, on *Quercus ilex*.

Targionia, g. n., Signoret, *l. c.* p. 99. Sp. *T. nigra*, sp. n., *ibid.*

Lecanodiaspis (g. n.) *sardou*, sp. n., Targioni-Tozzetti, Bull. Soc. Ent. Ital. i. p. 262, pl. 5.

New species:—

Pollinia costæ (*Coccus pollini*, Costa), Targioni-Tozzetti, *l. c.* p. 263, pl. 6.

Aspidiotus. Signoret (Ann. Soc. Ent. Fr. 4^e sér. ix.) describes the following new species of this genus:—*A. budleia*, *l. c.* p. 115, pl. 5. fig. 2 (♂ pupa), and pl. 6. figs. A, B, D (details), on the leaves of *Buddleia salicina*; *A. ceratoniae*, *l. c.* p. 118, pl. 6. fig. 2, on *Ceratonia* at Nice; *A. chamæropsis*, *ibid.*, pl. 5. fig. 6, on *Chamærops australis*; *A. cyanophylli*, *l. c.* p. 119, pl. 5. fig. 11, on *Cyanophyllum magnificum*; *A. destructor*, *l. c.* p. 120, pl. 5. fig. 8, on palms in Réunion; *A. gnidii*, *l. c.* p. 122, on *Daphne gnidium*; *A. ilicis*, *l. c.* p. 123, pl. 6. fig. 3, on *Quercus ilex*; *A. latania*, *l. c.* p. 124, pl. 5. figs. 12 & B, on *Latania*: *A. limonii*, *l. c.* p. 125, on the citron of Provence; *A. myricina*, *ibid.*, pl. 5. fig. 10, on *Myricina retusa*; *A. niger*, *l. c.* p. 130, pl. 6. fig. 4, on the willow; *A. phormii* (De Brême), *l. c.* p. 130, on *Phormium tenax*; *A. quercus*, p. 132, on the oak; *A. ulicis*, *ibid.*, on furze; *A. vriescia*, *l. c.* p. 134, on *Vriescia splendens*; *A. hippocastani*, *l. c.* p. 136, on the horse-chestnut; *A. oxyacanthæ*, *l. c.* p. 137, on the hawthorn; *A. tiliæ*, *ibid.*, and *A. spurcatus*, *l. c.* p. 138, pl. 6. fig. 8, on the poplar.

Diaspis boisduvallii, Signoret, *l. c.* p. 432, pl. 9. figs. 1, 2, on Orchideæ in hot-houses; *D. leperii*, Signoret, *l. c.* p. 437, on the peach.

Lecanium guerinii, Signoret, Ann. Soc. Ent. Fr. 4^e sér. ix. p. 96, Mauritius.

ANOPLURA.

Hæmatomyzus, g. n., Piaget, Tijdschr. voor Ent. 2^{de} ser. iv. p. 254. Tibiæ destitute of the clasping process; proboscis very long. Sp. *H. elephantis*, sp. n., Piaget, *l. c.* p. 254, pl. 11, figs. 1-14.

Pediculus punctatus, sp. n., Rudow, Zeitschr. ges. Naturw. xxxiv. p. 167, on *Bos grunniens*.

Hæmatopinus. Rudow describes the following as new species of this genus:—*H. albidus*, *l. c.* p. 168, on *Inuus silvanus*; *H. forficulus*, *l. c.* p. 169, on *Capra ibex*; *H. obtusus*, *ibid.*, on *Trachypithecus maurus*; *H. oviformis*, *l. c.* p. 170, on *Hircus manificus*; and *H. rupicaprae*, *ibid.*, on *Antelope rupicapra*.

Hæmatopinus trichechi, sp. n., Boheman, Cefvers. Kongl. Vet.-Akad. Förh. xxii. (1865), p. 577, pl. 35. fig. ii., on the Walrus.

MOLLUSCA

BY

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REVIEW OF PUBLICATIONS.

A. *Works in progress.*

BERCHON, DE FOLIN, and PÉRIER. *Les Fonds de la Mer.* Paris, 8vo, with plates. Livraisons vi. & vii. 1868, pp. 97-112; livr. viii.-xi. 1869, pp. 113-176, pls. 11-19.

Contains chiefly descriptions of new species of *Cæcidæ* and other small shells found in mud at various localities.

BINNEY, W. G., and BLAND, T. *Land- and Freshwater Shells of North America.* Part i. *Pulmonata Geophila.* (Smithsonian Miscellaneous Contributions, 194.) Washington, 1869, 8vo, 316 pp., with 544 woodcuts.

Part II. appeared in 1865 (see 'Zool. Record,' iv. p. 486).—

G. Tryon has published some critical notes on his work in *Am. Journ. Conch.* v. pp. 173-175.

JEFFREYS, J. GWYN. *British Conchology.* Vol. V. 1869, pp. 258, with 102 plates.

This volume concludes the whole work; it contains the history of the naked marine Gastropoda (*Aplysia*, *Pleurobranchus*, &c., and *Nudibranchiata*), the submarine Pulmonata (*Oncidium*, *Assimineæ*, *Melampus*, *Otina*), the Pteropoda, and Cephalopoda. A "Supplement" contains very numerous and valuable additions to the four preceding volumes, a table of geographical distribution for all species, hints for collectors, and an alphabetical list of the conchological works quoted. Coloured figures of all species of British shells are given.

KÜSTER, H. C. *Grosses Conchylienwerk von Martini und Chemnitz.* Neue reich vermehrte Ausgabe. (See 'Zoolog. Record,' v. p. 419.)

Section 56 contains the first part of *Veneraceæ*, pp. 56, with 18 plates, by L. PFEIFFER; section 57 contains *Cardiaceæ*, pp. 124, with 14 plates, by ED. RÖMER; section 58 contains the second part of the genus *Murex*, pp. 37-110, pls. 16-33. The 56th 1869. [VOL. VI.]

section is not a new monograph of the family of *Veneridæ*, but only a series of new descriptions to the old plates. On the other hand, Dr. Römer treats of the genus *Cardium* in an original manner. Küster scarcely adds any thing to our knowledge of *Murex* which is not already contained in Reeves's monograph.

LEA, ISAAC. Observations on the genus *Unio* &c. Vol. xii. Philadelphia, 1869, 4to, with 23 plates.

——. Index to the same, and Supplementary Index to vols. i.-xi. Philadelphia, 1869, 4to, pp. 23.

PFEIFFER, L., and DUNKER, W. Novitates Conchologicæ. Cassel, 4to. Sect. I. Land-Conchylien, by L. PFEIFFER, pp. 431-510, pls. 97-108 (*Cylindrella*, *Cyclophorus*, *Pterocyclas*, *Cyclotus*, *Craspedopoma*, *Alycæus*, *Helix*, *Achatina*, *Bulimus*, *Unio* from Chile, *Anodonta* from Peru, *Cyclas*). Section II. Meeres-Conchylien, by W. DUNKER, part 14, containing pp. 121-126, pls. 40-42 (*Arca*, *Murex*).

REEVE, L. Conchologia Iconica. London, 4to.

The sixteenth volume, containing *Unio*, *Mycetopus*, *Iridina*, *Galatea*, the *Bullidæ*, and *Dolabella*, was concluded at the end of the year 1868; in 1869 parts of the seventeenth volume have been published, containing species of *Anodon*, *Tellina*, and *Atys*; and the genera *Aphysia*, *Pleurobranchus*, *Cucullæa*, *Hyria*, and *Castalia*.

RÖMER, ED. Monographie der Molluskengattung *Venus*. Cassel, 4to, parts 16-18, pp. 173-220, pls. 37-59, concluding the first volume.

SCHMELTZ, J. D. E. Museum Godeffroy, Catalog IV. Hamburg, 1869, 8vo, pp. 141.

TROSCHEL, FR. H. Das Gebiss der Schnecken. Vol. ii. part 2. Berlin, 1869, 4to, pp. 97-132, pls. 9-12.

Contains the families *Columbellacea*, *Strigatellacea*, *Harpacea*, *Olivacea*, *Muricea*, and *Purpuracea*.

B. Conchological Journals.

The French 'Journal de Conchyliologie,' edited by CROSSE and FISCHER; the German 'Malakozoologische Blätter,' edited by L. PFEIFFER; the Italian 'Buletino Malacologico,' edited by GENTILUOMO; and the 'American Journal of Conchology,' edited by G. W. TRYON, were continued during the year 1869*.

The number of Malacological journals has been increased by the following:—

* The Recorder has not seen the 'Annales de la Société Malacologique de Belgique,' edited by J. COLBEAU.

- 'Nachrichtsblatt der deutschen malakozoologischen Gesellschaft.' Erster Jahrgang, herausgegeben von W. KOBELT. Frankfurt, 1869, 8vo, pp. 224, with a plate.

C. Separate Publications.

- BIELZ, E. A. Fauna der Land- und Süsswasser-Mollusken Siebenbürgens. Zweite Auflage. Hermannstadt, 1867, 8vo, pp. 216.

- . Verzeichniss der Mollusken- und Conchylien-Sammlung. (Fifth edition.) Hermannstadt, 1869, 8vo, pp. 47.

- DUBRUEIL, E. Catalogue des Mollusques terrestres et fluviatiles de l'Hérault. Deuxième édition. Paris, 1869, 8vo, pp. 107.

- ERCO, RICHARD V. Notizen über Austern-Cultur. Triest, 1869, 8vo, pp. 57, with 6 maps.

- ISSEL, ARTH. Malacologia del Mare rosso, ricerche zoologiche e paleontologiche. Pisa, 1869, 8vo, pp. 388, with 5 plates.

- LISCHKE, C. E. Japanische Meeres-Conchylien. Ein Beitrag zur Kenntniss der Mollusken Japans, mit besonderer Rücksicht auf die geographische Verbreitung derselben. Cassel, 1869, 4to, pp. 192, with 14 coloured plates.

- MARTENS, ED. V. Mollusken, in *C. von der Decken's* 'Reisen in Ost-Afrika,' vol. iii. 1869, gr. 8vo, pp. 55-66, with 3 plates, and pp. 148-151.

- PETIT DE LA SAUSSACE. Catalogue des Mollusques Testacés des mers d'Europe. Paris, 1869, 8vo, pp. 312.

- SCHRAMM. Catalogue des Coquilles et des Crustacées de la Guadeloupe envoyées à l'exposition universelle de 1867 par l'administration de la Colonie. Deuxième édition. Basse-terre, 1869.

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- SERVAIN, G. Malacologie des Environs d'Ems et de la Vallée de la Lahn. Paris, 1869.

Not seen by the Recorder.

- SPINELLI, GEO. BATT. Catalogo dei Molluschi terrestri e fluviatili viventi in Venezia e nel suo estuario non che nella terra ferma confinante colle due provincie di Padova e di Treviso. Venezia, 1869, 8vo, pp. 43.

D. Papers published in Journals.

- ADAMS, A. On the species of Veneridæ found in Japan. *Ann. & Mag. Nat. Hist.* 1869, iii. pp. 229-236.

- ADAMS, H. Descriptions of a new genus and fourteen new species of Marine Shells. Proc. Zool. Soc. 1869, pp. 272-275, pl. 19.
- ALLERY DE MONTEROSATO, P. Description d'espèces nouvelles de la Méditerranée. Journ. Conch. xvii. pp. 274-277.
- ANGAS, G. Fr. Descriptions of twelve new species of Land and Marine Shells from Australia and the Solomon Islands. Proc. Zool. Soc. 1869, pp. 45-49, pl. 2.
- . Descriptions of eight new species of *Helicidæ* from the Western Pacific Islands. Ibid. pp. 624-626, pl. 48.
- APPELIUS, F. L. Le conchiglie del Mar Tirreno. Bullett. Malac. Ital. ii. pp. 2-14, 36-42, 73-79, 124-141, 177-206.
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- Not seen by the Recorder.
- BAUDELOT, —. Sur la structure intime du système nerveux des mollusques acéphales. Bullett. des sciences naturelles de Strasbourg, Decemb. 1869.
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- BAUMHAUER, E. H. VON. Sur les moyens de préserver le bois des attaques du Taret. Archives Néerlandaises des Sci. exactes et naturelles, iv. 1869, pp. 160-166.
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- . Anatomische Untersuchung der *Pleurophyllidia formosa*. Verhandl. zool.-bot. Gesellsch. Wien, vol. xix. 1869, pp. 225-244, with 3 plates.
- BINNEY, W. G. On Lingual Dentition, studied by the microscope and photography. Am. Journ. Conch. v. pp. 37-38.
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- . Descriptions of new Land and Freshwater Molluscan Species, collected by Dr. John Anderson in Upper Burmah and Yunnan. Proc. Zool. Soc. 1869, pp. 444-450.
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We have not seen this paper; but there is an abstract in Journ. Conchyl. xvii. pp. 299-301, from which it would appear that its contents are nearly the same as those of the author's paper in Compt. Rend. 1868, Novembre, p. 1004. [See 'Zool. Record,' v. p. 442.]

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Arten. Nachrichtsbl. mal. Gesellsch. i. pp. 132–135.
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204.
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- . *Limax variegatus* (Drap.) = *L. bicolor* (Selenka). Ibid. pp. 148, 149.
- . *Helix rufescens* (Penn.) Stuttgart. Ibid. pp. 195-198, with a woodcut, representing the sexual organs.
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THE GENERAL SUBJECT. °

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PANCERI has published his observations on the secretion of sulphuric acid by a part of the salivary glands in some mollusks. Att. Acc. Napol. iv. No. 10 [see Zool. Record, v. pp. 452-469].

C. A. WHITE has ascertained that certain species of *Unio* are sensitive to light. The anal and branchial openings contract whenever light is suddenly withdrawn from the animal.—Is. LEA made experiments regarding the same subject several years ago, and found that some species gave no indication as to sensitiveness to light, whilst others were particularly sensitive—for instance, *Unio radiatus*,—also that visual organs were placed on the fringes of the siphonal openings. Afterwards the sensitiveness has been ascertained in many other species—for example, *U. rubiginosus* (Lea), *cyllindricus* (Say), *subrotundus* (Lea), *pyramidatus* (Lea), *obscurus* (Lea), *pustulosus* (Lea), *acropus* (Green), and *Anodonta imbecillis* (Sars). The females were more sensitive than the males. Silliman's Am. Journ. of Science and Arts, 2nd series, vol. xvii. pp. 280 and 430; Ann. & Mag. Nat. Hist. iii. pp. 399 and 467.

Monstrosities.

Scalaroid specimens of *Helix candidula* (Stud.) are noticed by DUFFT, Nachrichtsbl. mal. Gesellsch. i. p. 102, of *Planorbis contortus* (Müll.) by WALSER, *ibid.* pp. 184, 185.

* In the last volume of this Record, v. p. 431, Wiedemann is a misprint for Wiechmann.

Abnormally depressed and umbilicated specimens of *Helix pomatia* (L.) by GERVAIS, Journ. Conch. xvii. p. 181, pl. 6. figs. 1 and 2.

Abnormally perforated and conical specimen of *Achatina fulica* (Fér.), the abnormality evidently caused by a fracture at an early age of the animal, by MARTENS in Decken's Reisen in Ost-Afrika, vol. iii. p. 58, Mollusc. pl. 2. figs. 1 b, 1 c.

Abnormity of [*Hyalina*] *Helix nitidula* (Drap.), GREDLER, Correspondenzblatt d. zool.-mineral. Vereins in Regensburg, 1869, p. 36.

Abnormal specimens of *Planorbis corneus* (L.), dwarfed, flat, distorted, and eroded, by KOBELT, Nachrichtsbl. mal. Gesellsch. i. p. 203.

Sinistral specimen of *Marginella miliacea* (L.) by APPELIUS, Bullett. malac. Ital. ii. p. 127, pl. 4. fig. 2.

CONTRIBUTIONS TO FAUNÆ.

a. Land- and Freshwater Mollusca.

1. Central Europe.

Germany. E. von MARTENS has arranged the literature bearing on the local distribution of the German land- and freshwater mollusca, geographically and chronologically. Nachrichtsbl. mal. Gesellsch. i. pp. 65-78, 113-118, 123-132, 144-149, 160-165. The part published in 1869 treats only of the system of the Rhine, including the non-German parts. Some additions are made by Heynemann, *ibid.* pp. 198-201.

Norðerney. Some land- and freshwater mollusks, found on the island Norðerney, on the northern coast of Germany, are enumerated by Dr. O. Reinhardt and W. Kobelt, Nachrichtsbl. mal. Gesellsch. i. p. 217.

Hamburg, Holstein, and Sleswig. Many species of land- and freshwater shells have been observed by E. Friedel at Blankenese, near Hamburg, Kiel, Entin, Plön, and on the island of Sylt. Among the more remarkable are *Cyclas solida* (Normand), found in the Elbe, and *Acme polita* (Hartm.). The author remarks that all specimens hitherto found in Northern Germany belong to this species, and not to *lineata* (Drap.). The presumed occurrence of *Unio littoralis* (Drap.) in Holstein is contradicted. Some particulars concerning *Cyclostoma elegans*, which has been found dead and also alive on the Danish island Seeland, are given. Mal. Blatt. xvi. pp. 24-32, 66-72.

Mark Brandenburg. The Recorder states that as early as 1767 Martini knew and distinguished the three species of *Unio* which are at present known to live in the province of Brandenburg, viz. *Unio pictorum* (L.), *tumidus* (Retz.), and *crassus* (Retz.). This is a reply to a remark made some years ago by Dr. Mörch, Mal. Blatt. xvi. pp. 81-83.

Ems. The mollusks of the environs of Ems, province of Nassau, are the subject of a treatise by G. Servain. They have been already carefully collected by the German conchologists Thomæ, Sandberger, and Koch in the 'Jahrbücher des Vereins für Naturkunde in Nassau,' vol. iv. (1849), vii. and viii. (1851); and the new additions to their list (Nachrichtsbl. mal. Gesellsch. 1870, p. 119) consist of six species of rather doubtful character, most of them being established by Bourguignat.

Württemberg. On the occurrence of some species of land-snails hitherto not or but little known, E. v. Martens, Jahreshfte des Vereins f. Naturkunde in

Württ. xxv. pp. 223, 224. They are *Clausilia filograna* (Ziegl.), *Helix cobsiana* (Alten), *Limax brunneus* (Drap.), *Balea perversa* (L.), and *Hyalinu radiatula* (Alder).

Bohemia. The malacological fauna of this province, which hitherto has been very little and only locally known (see the list of stray notes in *Nachrichtsblatt d. deutschen malakol. Gesellsch.* 1860, p. 52), has been treated by A. SLAVIK in a journal for natural-history researches in Bohemia. It contains 107 species, 66 terrestrial and 41 of fresh water; among the more remarkable are *Zonites verticillus* (Fér.), *Helix carpatica* (Friv.), *faustina* (Ziegl.), *holosericea* (Stud.), *austriaca* (Mhlfd.), *Clausilia ornata* (Ziegl.), and the fresh-water pearl-mussel. In the introduction, the author characterizes nine districts from peculiar geognostical and malacological features. A more detailed account of this paper is given in *Malak. Blätt.* xvi. pp. 229-234, and in *Nachrichtsbl. mal. Gesellsch.* ii. pp. 77-79.

Carpathian Mountains. A report on some land- and freshwater shells, collected in the Carpathian Mountains by Dr. Dybowsky and Dr. Jachno, by E. v. Martens, with some remarks on *Helix faustina* (Ziegl.), *H. cingulella* (Rossm.), and *Pupa gularis*, var. *spoliata* (Rossm.), *Nachrichtsbl. mal. Gesellsch.* i. pp. 118-121. Others, and partly the same, from the Tatra Mountains, and also from Podolia, are noticed by Prof. M. Nowicki in *Nachrichtsbl.* pp. 137 and 216.

Transylvania. E. A. BIELZ has published a second edition of his very valuable book on the mollusks of that province; the differences of this new edition from the first are chiefly in the systematic arrangement of the *Helicidae*, and in a revision of the species of *Limacidae*, some of which were omitted in the first edition, viz. *Amalia marginata* (Drap.), *Limax cinereoniger* (Wolf) and *transilvanicus* (Heynemann); *L. variegatus* (Drap.) and *L. silvaticus* (Drap.) do not belong to the Transylvanian fauna. Among the shells, *Helix schmidtii* (Zeigl.) is new to that province. The introductory remarks containing condensed instructions for collecting and studying mollusks, the accurate descriptions of each species, the geographical remarks, and general conclusions are essentially the same in both editions. The number of recorded localities for the species has of course been increased in the second.

Tyrol. V. Gredler adds to the fauna of the Mollusca of Tyrol, published by him in 1856-59, the following species:—*Helix gobanzii* (Frauenf.), Val Vestina; *Pupa tirolensis*, sp. n.; *Clausilia rossmässleri* (Pfr.), var. *lorine* (Gobanz); *Cl. strobili* (Torro); *Bythinia proxima* (Frauenf.); *Hydrobia schmidtii* (Charp.) and *lacheineri* (Charp.). The author adds a great number of new localities for species already known as inhabitants of Tyrol.

Switzerland. Sixty species of land-shells (two of which are new) and 20 of freshwater-shells have been collected by Fr. Roffiaen. *Ann. Soc. malacol. Belg.* iii. p. 65.

One species of *Limnæa*, one of *Valvata*, and one of *Pisidium* have been found at the depth of 75 metres, about 250 feet, in the lake of Geneva, by Dr. Forel. *Bulletin de la Soc. Vaudoise des Sci. Nat.* x. 1869, p. 221.

Western France. Letourneux (*Rev. et Mag. Zool.* 1869, p. 49) has given an account of the mollusks of La Vendée; the list contains most of the common land-snails of Middle Europe, and nearly all its freshwater species. Some peculiar to Western Europe are added; and the southern group *Xerophila* is common on the seashore. The author, who follows Bourguignat in

the minute distinction of species, enumerates 74 species of land-shells, 44 from fresh water, and one submarine (*Alexia myosotis*).

2. Southern Europe and Algeria.

Southern France. DUBRUIEL has published a second edition of his 'Catalogues des Moll. terr. et fluv. du département de l'Hérault,' in which he enumerates 9 *Limacidae*, 92 land-shells (among which only 1 *Vitrina* and 6 *Clausilia*, but 17 *Pupa* and *Vertigo*) and 58 freshwater shells.

Pyreneans. L. Morlet increases the number of known land- and freshwater shells found in the valley of Barèges by 20 species. Journ. Conch. xvii. p. 399.

Some little-known species of *Helix* from Spain and South-western France described by Rambur, Journ. Conch. xvii. pp. 252-269.

Liguria. The land- and freshwater shells of Spezzia are enumerated by Ces. Tapparone-Canefri, Att. Soc. Ital. Sc. Nat. xii. pp. 315, 316,—*Paludina fasciata* (Müll.), *Bithynia tentaculata* (L.) and *boissieri* (Charp.), *Valvata piscinalis* and *cristata* (Müll.); pp. 341-354—forty-eight inoperculated land-shells, among which *Cæcilanella aciculoides* (Jan), *Succinea elegans* (Risso) = *pfeifferi* (Rossm.) (the only one of that genus), *Zonites leopoldianus* (Charp.), *Pupa amicta* (Tarr.) at Porto Venere, only three species of *Clausilia*, viz. *papillaris* (Müll.), *solida* (Drap.), and *laminata* (Mont.), *Helix obvoluta* (Müll.), *umbilicaris* (Brumati), var. *β. italica* of Stabile, ? *signata* (Fér.) [more probably *lactea* (Müll.) only found dead on the shore], *lucorum* (Fér.), *rupestris* (Drap.), and *terverii* (Mich.); pp. 354-359—three Auriculidæ referred wrongly to the genus *Conovulus*, viz. *firminii* (Payr.), *bivonæ* (Phil.), *myosotis* (Drap.), 13 species of Linnæidæ, among which *Physa pisana* (Issel), the rest widely distributed species; pp. 359, 360—four Cyclostomidæ, *Truncatella truncatula* (Drap.), and *Paludinella littorina* (Chiaje), the last two living together beneath stones and weed near high-water mark: pp. 379, 380—*Cyclas cornea* (L.), *Pisidium casertanum* (Poli), and *annicum* (Müll.): p. 389—*Unio pictorum* (L., Drap.), *requienii* (Mich.), and one *Anodonta*.

Upper Italy. Twelve species of land-shells collected by A. Villa and G. B. Spinelli on the Berian Hills (Colli Berici, near Vicenza) are enumerated in Bull. Malac. Ital. ii. p. 6.

Venice. Spinelli's list of the land- and freshwater mollusca living at and near Venice contains 44 terrestrial species, 50 freshwater, and 5 submarine.

Abruzzi. The Recorder's paper on the mollusks of this country (see 'Zool. Record,' v. p. 436) has been followed by a more complete account written by a native of that province, Dr. N. TIBERI, in the Bullet. Malacol. Ital. ii. pp. 33-36, 65-73, 113-123. The author treats with special care of the species of *Helix* which are very characteristic, as *H. orsinii* (Porro), *bathyomphala* (Charp.), *spadæ* (Calcara), *ligata* (Müll.).

Corsica. Descriptions of two *Helix* said to be new by Crosse and Debeaux. Journ. Conch. xvii. p. 51.

Pyrenean Peninsula. The part of L. da Silva's paper on the mollusks of Portugal (see above, p. 518), which has reached the Recorder, contains only introductory remarks.

Nineteen species of land- and freshwater shells are enumerated by L. von Heyden, Nachrichtsbl. mal. Gesellsch. i. p. 136.—Two new species of *Helix* from Spain described by Hidalgo, Journ. Conch. xvii. p. 19.

Algiers. A rather extensive paper on 105 land and 30 freshwater species living in the vicinity of Algiers by Ch. Lallemand, Ann. Soc. Malacol. Belg. iii. p. 15. No new species.

3. Africa.

Nile. The mollusks mentioned in the voyage of G. Brocchi in Egypt (1822-1826) are mentioned, and as far as possible determined, by E. v. Martens, Mal. Blatt. xvi. pp. 84-86.

Cape-Verd Islands. H. Dohrn enumerates 22 land- and 7 freshwater shells found by himself in the Cape-Verd Islands, and gives valuable critical remarks on most of them. The genera and subgenera are nearly the same as in Madeira and the Canary Islands, only *Isidora* and *Melania* are continental African types represented in the Cape-Verd Islands, but not in the Canaries or Madeira. The species are nearly all peculiar; also *H. advena* (Webb) lives not in the Canaries, but only in the Cape-Verd Islands. Mal. Blatt. xvi. pp. 1-23.

Western Africa. Three species of *Limicolaria* and two of *Spatha* brought home from the Yoriba River by G. Rohlf, determined by E. v. Martens, Mal. Blatt. xvi. pp. 72-75.

Abyssinia. Some notes by W. Blanford, in which the land-shell fauna of Abyssinia is stated to be very poor, are inserted in the Journ. Conch. xxii. p. 109. A more ample account is given by the same author in his 'Observations on the Geology and Zoology of Abyssinia,' published in 1870.

Eastern Africa. A list of the land- and freshwater shells hitherto known from Eastern Africa, between Cape Guardafui and Port Natal, with additional lists of those from Abyssinia, from Socotra, and from the Seychelle Islands, is given by the Recorder in V. D. DECKEN'S Reisen in Ost-Afrika, vol. iii. pp. 148-151.

Fourteen terrestrial and six freshwater shells, which were found with some marine species among seeds of *Sesame* imported from Zanzibar, are enumerated and partly described by E. v. Martens, Nachrichtsb. mal. Gesellsch. i. pp. 149-156.

Seychelle Islands. Twenty-one species of land-shells, from the Seychelle Islands, together with four living in fresh and six living in brackish water, described by G. Neville, Proc. Zool. Soc. 1869, pp. 61-66. He states that they have more affinity with the Indian than with the Malagash or African fauna. Seven species out of twenty-one land-shells are supposed to have been introduced.

4. India.

Himalaya. A new species of *Nanina* is described; and the shells figured in Jacquemont's 'Voyage dans l'Inde' (1828-32) are determined by E. v. Martens, Mal. Blatt. xvi. pp. 75-77.

Nine land- and six freshwater shells from *Ava* and *Funan* (the latter the first known from that inland province of China) described by Blanford, Proc. Zool. Soc. 1869, pp. 444-450.

Andaman Islands. *Helix achatina* (Gray), *Scarabus trigonus* (Troschely), *Helicina nicobarica* (Phil.), and five species of land-shells said to be new, and which will be mentioned in the special part, have been brought from those islands to G. W. Tryon. Am. Journ. Conch. v. pp. 108-111, pl. 10.ⁱⁿ

Four others, from the same islands, described by other authors, are mentioned in a footnote.

Nicobar Islands. G. v. Frauenfeld observes that on these islands the operculated land-shells are represented by several beautiful species; the *Helicidae* are very poor. Verhandl. zool.-bot. Gesellsch. 1869, p. 900.

Philippine Islands. The Recorder gives an account of the state of the knowledge of this molluscan fauna before the explorations of Cuming. Mal. Blätt. xvi. pp. 225-228.

5. Polynesia.

A. Mousson has determined a great number of Polynesian land- and freshwater shells for Schmeltz's Fourth Catalogue of the Museum Godeffroy. The same catalogue contains also geographical notes on many of the little-known islands visited by Dr. Gräffe, Hr. Godeffroy's collector.

Samoa Islands. A. Mousson has determined 76 species found by Dr. Gräffe, and described several new species and varieties. Journ. Conch. xvi. pp. 323-390.

Sandwich Islands. W. H. Pease states that no other genus of operculated land-shell but *Helicina* lives on these islands. Journ. Conch. xvii. p. 161. He describes several new species of *Achatinella*. Ibid. pp. 167-176.

Solomon Islands. New species of land-shells by Angas, Proc. Zool. 1869, pp. 46-48, and 624-626, pls. 2 and 48. On the occurrence of *Bulinus multiochilus* (Rv.), Brazier, *ibid.* p. 162.

New Caledonia. Several land-shells found on the small island Nou are enumerated, and the locality of *Helix raynali* (Gassies) is stated to be Wagrap, on the east coast of New Caledonia, by E. Marie, Journ. Conch. xvii. pp. 84 and 86. Some other species described and figured by H. Crosse, *ibid.* pp. 24-28, 179, 180, 413-416; by Gassies, *ibid.* pp. 71-78; by Crosse and Souverbie, *ibid.* pp. 270-272; by Souverbie, *ibid.* pp. 273, 274, 416-421.

6. Central and South America.

Some information on the travels made in 1862 by P. M. Paz, during which many new species of shells described by L. Pfeiffer, H. Crosse, and G. Hidalgo were collected, is to be found in Journ. Conch. xvii. pp. 204-206.

Mexico and Central America. Several new land-shells, described by Crosse and Fischer, Journ. Conch. xvii. pp. 28-36, 113-116, 190-192, 250, 251.—From *Nicaragua*, by R. Tate, Am. Journ. Conch. v. pp. 151-162.—Some species of *Unio* from the Lake of Nicaragua, by Lea, Journ. Acad. Philad. vol. vi. pp. 293-296, or Observat. gen. *Unio*, vol. xii. figs. 103-107.—New *Bulinus*, from *Ecuador*, by G. Hidalgo, *ibid.* pp. 50 and 188.

The fauna of *Nicaragua* contains Mexican, Columbian, and even Cuban types; but as the most characteristic Mexican forms are wanting, it should be regarded as belonging to the Columbian region. Tate, Am. Journ. Conch. v. p. 161.

Some land- and freshwater shells found by G. Wallis near or in the rivers *Amazon* and *Magdalena*, in *New Granada* (several of them new), are enumerated and described by Mousson, Mal. Blätt. xvi. pp. 170-189.

Brazil. Land-shells are scarce in the interior; freshwater species abundant. A. D. Brown, Journ. Conch. xvii. p. 110.—On the occurrence of some species at Rio Janeiro. *Id. ibid.* pp. 123-126.

Peru, Chile. Philippi describes several new land- and freshwater-shells, from Peru, and reviews our knowledge of the species of *Unio* living in Chile, adding several new ones; he remarks that in Chile many *Unios* and no *Anodonta*, in Peru no *Unio* and several *Anodontas* have been found hitherto. Mal. Blatt. xvi. pp. 32-49.

Some land- and freshwater species from Puerto Mont, in Southern Chile, are described by the Recorder, Mal. Blatt. xvi. pp. 215-218.

7. North America.

The inoperculated land-shells of North America have been worked out by BINNEY and BLAND in their work, 'Land and Freshwater Shells of North America,' Part I. The descriptions are chiefly copied from Binney's larger work on the same subject, published some years ago; but the more recently discovered species are also included, "the whole subject being brought down to January 1868." Each species is figured by a woodcut; very often also the jaw or lingual dentition. For classification, the second edition of Albers has been followed; the doubtful species, and those falsely quoted as North American, are carefully indicated.

The *West-Coast* land-shells are once more the subject of a paper published by F. G. COOPER, Am. Journ. Conch. v. pp. 199-215. It contains, besides the discussion of various questions of nomenclature and classification, also many valuable statements concerning the geographical distribution of some species; the author points out that the neighbourhood of South-east Bay is very rich in species, northern and southern forms meeting here in larger number than elsewhere. Some European species occur in Unalascika, where they were found by Mr. Harford, viz. *Vitrina pellucida*?, *Conulus fulvus*?, *Patula ruderata*?, and *Zua subcylindrica* [lubrica, Müll.], pp. 200, 202, 215.

Connecticut. G. H. Perkins enumerates 46 land- and freshwater Gastropods, and 14 freshwater bivalves observed at Newhaven. Proc. Bost. Soc. Nat. Hist., Nov. and Dec. 1869.

Michigan. 171 species of mollusks observed in this State, especially the county Kent, are enumerated by Currier in a separate pamphlet (Grand Rapids, 1868).

Alabama. Shells of the Coosa River, J. Lewis, Am. Journ. Conch. v. pp. 166-169.

A large number of *American Melaniidae* and *Unionidae*, described and figured by Is. Lea, will be found in the special part.

b. Fauna of Brackish Water.

The occurrence of several marine and freshwater mollusks, and their diminutive size, in the *Baltic*, are mentioned by N. SAENGER in the Russian Journal mentioned above (p. 517). At Revel *Mytilus edulis* and *Tellina* [probably *baltica*, L.] occurs to the depth of 100 feet and more. Comparative measurements of specimens of several shells from the German Ocean and Baltic are given.

In the salt marshes of *Northumberland* and *Durham* have been found

Rissoa ulvæ (Penn.), *Alderia modestæ* (Lovén), *Limapontia depressa*. In pools further removed from the saline influence, but in company with Crustacea indicating a somewhat mixed saline character, have been found *Limnæa peregra* (Müll.) and *Pisidium pulchellum* (Jenyns). G. S. Brady, Nat. Hist. Transact. of Northumb. and Durham, iii. 1, p. 121.

The sea-shells mentioned by G. Brocchi as being found in the brackish lake Mareotis, near Alexandria, are mentioned by E. v. Martens, Mal. Blätt. xvi. p. 85.

c. Marine Fauna.

MANZONI treats of the occurrence of marine species under various physical and chemical conditions. Bull. Malac. Ital. ii. pp. 81-104.

1. Coasts of Europe.

PETIT's Catalogue of European Shells is a systematic list of all the species with their synonyms; their geographical distribution through the Polar, Boreal, British, Celtic, Lusitanian, Mediterranean, and Algerian zones is shown in a table. A list of pseudo-European species and instructions for collecting shells are added.

Spitzbergen. The mollusks of this island have been examined by Dr. MÖRCH. He enumerates 80 species of sea-shells, and points out that the Gastropods are found to have a thinner shell, porce of larger size, and to want the ribs, when compared with to bimens from Greenland, and that the bivalves are generally specnaller size. Peculiar to that island are *Trichotropis krøyeri* of sil.), *Tritonium* [*Buccinum*] *angulosum* (Donovan) and *tenu* (Phay), *Fusus deformis* (Reeve), *Nuculana* (*Portlandia*) *frigida* (Gr. *abyssicola* (Thorell). Ann. Soc. Malacol. Belg. iv.

Norway. Four species of Brachiopods, 29 of Bivalves, and of Gastropods, living at a depth of from 200 to 300 fathoms, 56e enumerated by M. Sars, Vidensk. Selsk. Forhandl. p. 246, ann. & Mag. Nat. Hist. iii. p. 429. At 450 fathoms occur the following only:—*Pecten mammillatus*, sp. n., *Limopsis minuta* (Phil.), *Nucula pumila*, Asbjørnsen, MS., *Kelliella abyssicola* (Sars), *Axinus flexuosus* (Montagu) and *A. pusillus* (Sars), *Lyonsiella abyssicola* (Sars), *Næra obesa* (Lovén), *Siphonodentalium quinquangulare* (Forbes) and *subfusiforme* (Sars), and *Cyclostrema nitens* (Phil.).

Great Britain. The total number of British Mollusca described in the now finished 'British Conchology' by JEFFREYS is 685, viz. 124 land and freshwater species (Conchifera 15, Gastropoda 109) and 562 marine species, among which Brachiopoda 6, Conchifera 171, Solenoconchia 5, Gastropoda 366, Pteropoda 2, and Cephalopoda 12; a few others are doubtful. The author thinks the subject to be far from being exhausted.

German Ocean. A list of 65 species found at the island of Sylt is given

by E. Friedel, Mal. Blatt. xvi. pp. 58-62. The rarest of them is *Panopæa norvegica* (Spengl.).

Normandy. 48 species of marine mollusks found on the coast of Normandy, at Vaast-la-Houge, most of them between tide-marks, are enumerated by Ed. Grube, in Verhandl. schlesischen Gesellschaft für vaterländische Kultur, 1869.

Western France. Taslé gives a list of 397 species of mollusks inhabiting the west coast of France, viz. 153 Cephalopods and Gastropods, and 244 Bivalves. Act. Acad. Rochelle (Journ. Conch. xvii. p. 302). 170 species of marine mollusks living on the coast of the Gironde are enumerated by Lafont, Note Faune Gironde, Bordeaux, 1868.

P. FISCHER, in a Supplement to his Conchological Fauna of the Gironde, treats of the currents of that coast. He mentions a large bank of *Avicula* near Arcachon, and brings the total number of marine mollusks observed in South-western France to 347 species. Act. Soc. Linn. Bord. xxvii.

Six naked Gastropods (two of which are new) and two Cephalopods are added to the known fauna of Western France by P. Fischer and A. Lafont. Journ. Conch. xvii. pp. 1-14.

Mediterranean. Tiberi states that a number of species, hitherto considered to be extinct, or known only from other parts, have recently been found living in the Mediterranean. The more remarkable are the following:—*Trophon barvicensis muricatus*, *carinatus*; *Buccinum humphreysianum*; *Nassa semistriata*; *Neverita catena*; *Pleurotoma undatiruga*, *teres*, *crispata*; *Bemörchii* and *torquata*; *Scalaria muricata*; *Turritella subangulata*. Bulla Mal. Ital. ii. pp. 252-271. p. 11.

C. TAPPARONE-CANEFFRI has given a list of the shells found in the of Spezia, containing several species additional to those published by Gulf pellini in 1860. The more important are:—*Tritonium cutaceum* (L.), *Cap-pura hæmastoma* (L.), *Trivia pulex* (Sol.), *Scalaria turtonis* (Turt.), *IantPur-fragilis* (Blainv.), *Dentalium rubescens* (Desh.), *Akera bullatu* (Mull.), *Sina surella nubecula* (L.), *Tellina nitidu* (Poli), and *Skenea nitidissima* (Je. Fis-Fr.). Atti Soc. Ital. xii. pp. 261-406.

The sea-shells of the coasts of Tuscany are enumerated by T. L. APPELLI. Bullet. Mal. Ital. ii. 15.

A list of shells dredged on the coast of Elba are mentioned by A. Manzoni, Journ. Conch. xvii. pp. 117-120. They are not numerous, the sea being deep and the bottom granite.

Some new species of shells from Southern Europe and the Canary Islands are described and figured by H. ADAMS, Proc. Zool. Soc. 1869, pp. 274, 275, pl. 19.

Some new minute shells from the Adriatic are described by BRUSINA, Journ. Conch. xvii. pp. 230-249.

A new *Dolium* from Palermo and some other new shells from the Medi-terranean are described by ALLERY DE MONTEROSATO, ibid. pp. 223, 274-276.

2. Exotic Seas.

A list of the shells collected during the expedition of the Austrian Frigate 'Novara' at Gibraltar, Madeira, Rio Janeiro, Cape, St. Paul, Ceylon, Madras, Nicobar Islands, Singapore, Java, Manilla, Hongkong, Shanghai, Punipet, and Stuart Islands, Sydney, Auckland, Tahiti, and Chile is published by G.

v. Frauenfeld, Verhandl. zool.-bot. Gesellsch. Wien, 1869, pp. 853-900. No *Patellidæ*, *Tecturidæ*, or *Fissurellidæ* have been found at Tahiti.

Several species are added by FOLIN to his former list of shells found on pearl-oysters, *Meleagrina*. Fonds de la Mer, pp. 173, 174.

East Coast of North America. The marine mollusca of Massachusetts are reviewed by W. Dall, Proc. Bost. Soc. Nat. Hist. xii. 1870, pp. 240-257.

Three new species of *Fusus* from Greenland, described by Mörch, Journ. Conch. xvii. p. 397.

G. H. PERKINS, in his Molluscan Fauna of New Haven, Proc. Bost. Soc. Nat. Hist., Nov. and Dec. 1869, enumerates 51 marine Gastropods and 40 marine Lamellibranchs; out of these 91 species, 50 are said to occur north of Cape Cod, 13 in Labrador, 8 in Greenland, 8 in Europe; 51 extend to South Carolina and some still further south.—Some errors in the quotation of authorities are corrected by Verrill in Am. Journ. of Sc. and Arts, vol. xlix. March 1870.

Some new species of sea-shells from Florida are described by T. A. Conrad, Am. Journ. Conch. v. pp. 104-108, pls. 10, 12, and 13.

Red Sea. A. ISSEL's 'Malacology of the Red Sea' is founded on several collections of recent and fossil species made at Akaba and Suez by Arconati, the author, and others. After having given a review of the literature bearing on the subject, and an account of his own personal observations, the author proceeds to expose his views on this fauna. There is not one species found on both sides of the isthmus of Suez, although not less than 30 Mediterranean forms are so closely allied to Red Sea species that one may well hesitate to designate them as varieties or species. From the Red Sea 573 recent species are known, which are enumerated, with synonymy, locality, &c. A great number are described as new; and the species figured in the 'Description de l'Égypte' carefully examined. Of fossil shells 232 species are described. The fossil pliocene fauna of Europe is more similar to the recent one of the Red Sea than to the recent Mediterranean fauna.

East Africa. A list of 149 marine shells collected on the shores of Eastern Africa by the companions of the late Von der Decken, chiefly at Zanzibar, is given by the Recorder in Von der Decken's Reisen in Ost-Afrika, vol. iii. pp. 61-66.

Mauritius. Some shells, observed on a newly formed little island at the port of Mauritius, by V. de Robillard, Transact. R. Soc. of Arts and Sciences of Mauritius, iii. pp. 104-106; and E. Brewster, ibid. p. 111. Some new species from the same island described and figured by H. Adams, Proc. Zool. Soc. 1869, pp. 272, 273, pl. 19.

Japan. The mollusks of the Japanese Seas have been carefully worked out by C. E. LISCHKE from collections made at Nankasaki, Yedo, and Hakodade. The number of species (which are more or less fully described) is reduced to 198, one-fifth of which are most beautifully figured, the plates being produced by

Theodore Fischer of Cassel. The author gives a detailed historical account of our knowledge of this fauna. Nine out of the 198 species have been found in the north only, at Hakodade; the remainder are generally tropical forms; 52 are peculiar to Japan; 21 have also been found in Korea, Mantschuria, or Sachalin, 26 in China, 76 in the Philippines, 75 in other parts of the Indian or Polynesian region.

Japan. A. Adams gives a list of 68 Japanese species of Veneridæ, Ann. & Mag. Nat. Hist. iii. pp. 229-236.—Lischke describes several new shells from Japan, Mal. Blätt. xvi. pp. 105-109.

Polynesia. A number of new species from the Polynesian Islands are described, and the synonymy of others is corrected, by Wm. Harper Pease, Am. Journ. Conch. v. pp. 64-87. To conchologists it may be of interest to learn that there are three islands called in honour of Lord Hood, and that Cuming has collected shells on two of them, one being in the Galapagos, the other in the Paumotu group. This has caused some confusion concerning the geographical distribution.

A large number of Polynesian sea-shells, with their localities, are enumerated in Schmeltz's Fourth Catalogue of the Museum Godeffroy at Hamburg.

Australia. Several new Australian sea-shells described by Angas, Proc. Zool. Soc. 1869, pp. 45 and 48, pl. 2; Cox, *ibid.* p. 49. The correct localities for three Volutes are given by Brazier, *ibid.* p. 560. Cones of Port Jackson enumerated by the same, *ibid.* p. 561.

New Caledonia. A list of the species of *Cypræa*, and descriptions of several new species of this and other genera from New Caledonia, by Crosse in Journ. Conch. xvii. pp. 36-50, 16, 177, 178; by Souverbie, *ibid.* pp. 418-421.

Chile. Some sea-shells from Puerto Montt in Southern Chile and from Caldeira in Northern Chile, collected by Mr. Fonck, are enumerated by the Recorder, Mal. Blätt. xvi. pp. 218-222; common to both localities were only two species out of 23, *Purpura lepas* (Gmel.) and *P. cassidiformis* (Blainv.); among those from Puerto Montt are some hitherto only known from the Magellan Straits, as *Voluta ancilla* (Solander) and *magellanica* (Chemn.), *Trophon laciniatus* (Martyn), and *Patella magellanica* (Gmel.).

d. Immigration and Acclimatization.

E. FRIEDEL considers it probable that *Helix pomatia*, *adpersa*, *nemoralis*, and *Cyclostoma elegans* have been introduced and acclimatized in the northern parts of Europe, especially in Northern Germany. The last-named species was brought to Denmark, by the agency of man, in prehistoric and historical time. Zeitschrift f. Ethnologie, i. pp. 301-313.

Helix hortensis, *nemoralis*, *adpersa*, and *Stenogyra decollata* introduced into North America. Binney & Bland, Land and Freshwater Shells of N. America, i. pp. 181-183, 228-230. A European species of Snail, probably *Helix adpersa* (Müll.), has been introduced by a French gentleman into the gardens at Cape Town, where their number increased considerably. Noble, 'The Cape and its People,' London, 1869, p. 230.

Helix similis (Fér.) is stated by A. D. Brown to occur only on the coast of Brazil, not in the interior. Journ. Conch. xvii. p. 124. [This agrees with

the opinion of the Recorder, viz. that this species was originally East-Indian, and transported by the agency of man to America. Preuss. Exped. Ost-As. ii. p. 271.]

Dreissena polymorpha (Pall.) mentioned in Hungary as early as 1794 by Gressinger, Martens, Mal. Blätt. xvi. p. 84; found in Silesia, in the Lake of Brandschütz, Fiedler, 42nd Bericht d. schlesischen Gesellsch. f. vaterländ. Cultur, p. 52; has appeared in great numbers in the river Neckar at Eberbach, Seibert, Nachrichtsbl. mal. Gesellsch. i. p. 101.

Dreissena polymorpha (Pall.) kept alive for ten weeks in an aquarium. Fiedler, 42nd Jahresbericht der schles. Gesellsch. f. vaterländische Cultur, p. 52.

Gryphæa angulata (Lam.) transported from Cadiz to Arcachon. P. Fischer, Act. Soc. Linn. Bord. xxvii., and Journ. Conch. xvii. p. 300.

Prof. STABILE has published his experiences on snails kept in confinement, especially on *Helix nautiliformis*, Bull. Mal. Ital. ii. pp. 105-108.—G. STERR has published notes on the same subject, Nachrichtsbl. mal. Gesellsch. i. pp. 34-36.

HEYNEMANN gives instructions for transporting living specimens of *Limax* in moss. Nachrichtsbl. mal. Gesellsch. i. pp. 168-169.

A few observations on breeding some Algerian land-shells, especially *Helix punctata* (Müll.) and *H. hieroglyphicula* (Mich.), are published by Prof. TROSCHEL in Verhandl. d. naturhist. Vereins d. Preuss. Rheinlande, Bonn, xxvi. 1869, "Sitzungsberichte," pp. 211-213.

Clausilia olivieri (Roth) breeding in confinement. A. Sporleder, Nachrichtsbl. mal. Gesellsch. i. p. 182.

J. B. GASSIES, in his pamphlet, 'Faits biologiques de l'Aquarium d'eau douce de l'Exposition Universelle de 1867,' Bordeaux, 1868, 8vo, 17 pp., treats also of the life of some Mollusca in confinement.

e. Palæontology of Recent Species.

Several of the more common European freshwater shells have been found in the plastic clay, called "töck," of the island of Heligoland. Lasard, Zeitschr. d. deutschen geolog. Gesellsch. 1869, xxi. p. 581.

Helix fætens [which, at present, is found in a living state in the Alps only] has been found in subfossil specimens near Rudolstadt, in Thuringia, by Dyak, Nachrichtsbl. mal. Ges. i. p. 49. The differences between living and fossil specimens pointed out by Kobelt, *ibid.* pp. 181-183.

Several land- and sea-shells found in caves and breccias of the Apuan hills (near Carrara), which have been used by primeval men as food or ornaments, are alluded to by Dr. C. Regnoli, Bullett. Malacol. Ital. ii. p. 31.

Neritina fluviatilis (L.), var. *areolata*, in upper tertiary deposits of Central Italy. C. d'Ancona, Bullett. Mal. Ital. ii. p. 44.

The occurrence of several North-American land-shells in the postpliocene of the Mississippi valley is mentioned by Binney & Bland in their work on the land-shells of North America, mentioned above.

On marine shells in stratified drift near Macclesfield, see R. D. Darbshire, Mem. of the Literary and Philos. Society at Manchester, 3rd series, vol. iii. 1868.

Some subfossil shells found in the "Kjökkenmøddinger," on the west coast of Schleswig, enumerated by E. Friedel, Mal. Blätt. xvi. pp. 68, 69.

Some of the most common shells of the North Sea found subfossil near Hamburg. Wessel, *Nachrichtsbl. mal. Gesellsch. i.* p. 169.

GERVAIS figures a *Parmacella* found in an old grave at Baillargues, Dépt. Hérault, nearly allied to, if not identical with, the living *P. gervaisii* (Moq. Tand.). *Journ. Conch. xvii.* p. 182, pl. 6. fig. 3.

The occurrence of recent species of sea-shells, in a fossil condition, in Tuscany, is carefully noticed by F. L. APPELIUS in his paper on the shells of the Tyrrhenian Sea; and by N. TIBERI, in his *Gleanings in Mediterranean Conchology*. *Bull. Mal. Ital. vol. ii.* (see above, pp. 503, 519).

The fossil shells from the vicinity of the shores of the Red Sea have been examined by A. ISSEL. He enumerates 232 species, describes and figures several as new, and states that, although many of them are the same as those which live at present in the Red Sea, there are some differences, 105 species not being found living in the Red Sea; 10 are identical with recent Mediterranean shells. *Malac. Mar. Ross. pp.* 21 and 245-303.

Subfossil shells, identical with those living in the Red Sea, and partly still coloured, have been observed by Dr. Zenker on the more elevated parts of the Isthmus of Suez. *Sitzungsberichte d. Gesellsch. naturforschender Freunde in Berlin, Dec. 1868. p.* 32; and *Nachrichtsbl. mal. Gesellsch.* from p. 101.

USE OF MOLLUSKS BY MAN.

L. SCHMARDA, 'Die Cultur des Meeres in Frankreich,' Wien, 18⁶⁵, *L. c.* [The cultivation of the sea in France], may be mentioned here.

Helix cambojiensis (Reeve) used as food by the Mois. Daniel, former *Conch. xvii.* p. 127.

The shell of *Tridacna* is used by the natives of the island Oualan for ¹ some axes, by those of New Ireland and New Caledonia for bracelets. The ² *Tridacna* of Port Dorey use for the latter purpose pieces of the shell of *Tridacna niloticus*. The inhabitants of Timor use pieces of *Nautilus pompilius* for spoons. [The Recorder may add that, throughout the Dutch possessions, the Indian archipelago, a kind of large spoons, made from the shell of *Costa* *bium*, are in frequent use.] L. Vaillant, *Ann. Sci. Nat. ix.* pp. 379 & 582.

The different shells employed as money in various parts of the world are enumerated by E. C. Stearns, *Am. Naturalist*, iii. They are a species of *Dentalium* in the fur-countries of North-west America, *Saxidomus gracilis* in California, the strings of Wampum [*Venus mercenaria*?] by the savages in Eastern North America, *Litorina obesa* and *Nerita polita* in some Polynesian islands, *Cypræa annulus* and *moneta* in several parts of Eastern Asia. Crosse, *Journ. Conch. xviii.* p. 287, adds to this list *Achatina monetaria* in Angola.

Haliotis, its use as an article of trade, ornament, and food treated of by E. C. Stearns, *American Naturalist*, vol. iii. [*Haliotis gigantea* (Chemn.) is a very common article of food with the Japanese at Yokohama, and there called "awabi."]

Meretrix lusoria (Chemn.) is an article of food, and object of a simple game, in Japan. A. Adams, *Ann. & Mag. Nat. Hist. iii.* p. 229.

CLASSIFICATION.

Prof. HUXLEY adopts, in his 'Introduction to the Classification of Animals,' 1869, 8vo, pp. 33-40 and 82, the following classes of molluscous animals:—*Lamellibranchiata*, *Branchiogastropoda*, *Pulmogastropoda*, *Pteropoda*, and *Cephalopoda*, and gives a condensed account of their chief anatomical and morphological features. The *Ascidioidea*, *Brachiopoda*, and *Polyzoa* are regarded as distinct classes, forming another chief division of the animal kingdom, the *Molluscoidea*, as was proposed many years ago by Milne-Edwards.

Systematical Nomenclature.

A committee of three North-American conchologists, Tryon, Gabb, and Beadle, has examined the question, whether priority can be asserted (as is done by Dr. Is. Lea) from the date of reading a paper before a learned society, or from the time of actual publication of the printed part or volume containing the paper; and the committee recommends to acknowledge the former claim and priority for papers of past times, in which the publications of the learned societies were not so rapid and regular as they are now. *Am. Journ. Conch.* v. pp. 3, 4.

The names given by Helbling, 1779, and Da Costa, 1778, of other number of shells, are reviewed by the RECORDER, who comes to the conclusion that those of Helbling ought to be retained, being regularly binominal, and accompanied by guish descriptions and recognizable figures. As to those of Da Costa, pp. 206 objections can be raised, chiefly because he arbitrarily changed the Linnean names of genera as well as of species; v. But the great majority of his names in the 'British Conchology' are quite in accordance with zoological rules, and the many names of those species to which no older name is applicable may be maintained. This number, however, is not large, as O. Fr. Müller's 'Historia Vermium' and 'Prodromus zoologiæ Danicæ' are older; and Born's 'Index,' published in the same year as the 'British Conchology,' contains almost all the names and descriptions which are to be found in the larger and more generally known work of the same author, 'Testacea musei Cæsarei.' *Martens, Mal. Blätt.* xvi. pp. 234-253.

Collections.

Some historical notes concerning Lamarck's collection of shells are given by GRAY, *Ann. & Mag. Nat. Hist.* iii. pp. 519-521. It is now transferred to Geneva, *Journ. Conch.* xvii. p. 208.

CEPHALOPODA.

The Cephalopods of the Mediterranean Sea are the subject of a rather extensive paper by TARGIONI-TOZZETTI. He treats chiefly on their classification and synonymy, and figures the radula of most species. Bull. Malac. ii. pp. 141-162, pls. 6 & 7.

Argonauta argo (L.). Observations on the structure of its shell by Targioni-Tozzetti, Bull. Mal. Ital. ii. p. 148, pl. 6. figs. 1, 2.—A young female, 3 inches in length, with eggs in its shell. Garner, Rep. Brit. Assoc. for 1868, Notes and Abstracts, p. 97.

Tremoctopus, sp. A male described by R. Garner, *l. c.*

Parasira (Steenstrup, 1861 ?). This genus was adopted by Targioni-Tozzetti for *Octopus catenulatus* (Fér.) and *O. tuberculatus* (Risso) = *carenae* (Vérany), and kept distinct from *Tremoctopus* (Chiaje) = *Philoneis* (Fér.), the type of which is *T. violaceus* (Chiaje). Bull. Mal. Ital. ii. pp. 149-154. The author has not characterized these genera.

Octopus vulgaris (Lam.). Jeffreys, Brit. Conchol. v. pp. 143-145, pl. 7. fig. 1, and frontispiece.

Octopus troscheli and *incertus*, spp. nn., Targioni-Tozzetti, Bull. Mal. Ital. ii. pp. 157 & 160. The latter, pl. 7. fig. 10, from the Indian seas, the first from the Adriatic.

Eledone cirrosa (Lam.), Jeffreys, *l. c.* v. pp. 145-147, pl. 7. fig. 2.

Ommastrephes todarus (Delle Chiaje) and *O. sagittatus* (Lam.), Jeffreys, *l. c.* pp. 128, 129; the latter pl. 5. fig. 1.

Loligo vulgaris (Lam.) and *media* (L.), Jeffreys, *l. c.* pp. 130-132; the former pl. 5. fig. 2.

Loligo pulchra (Blainv.), from Western France, distinguished, with some doubt, from *L. vulgaris* (Lam.) by Fischer, Journ. Conch. xvii. p. 12. The same author distinguishes three other European species of this genus, viz. *L. forbesi* (Steenstrup), *L. bertheloti* (Vérany), and a hitherto unnamed species from Western France, figured in Férussac's monograph of the Cephalopoda, pl. 8. Ibid. pp. 128-130.

Loligo mediterranea. Targioni-Tozzetti gives this new name to the most common species of the Mediterranean, distinguishing from it not only *L. forbesi* (Steenstrup), which is the *vulgaris* of former British authors, but also a third species, to which he leaves the name *L. vulgaris* (Lam.), and which is said to be exclusively oceanic. For the Mediterranean and British species the differences are given in a Latin diagnosis and illustrated by figures; but as to the third, no reliable character is given. Bull. Mal. Ital. ii. pp. 218-224, pl. 7. figs. 5, 9, & 10.

Sepiola rondeleti, Jeffreys, Brit. Conchol. v. p. 136, pl. 6. fig. 2.

Sepiola major, sp. n., Targioni-Tozzetti, Bull. Mal. Ital. ii. p. 230, Tuscany. Besides this, *S. vulgaris* (Grant) and *S. rondeletii* (Gervais) are acknowledged as distinct species, both inhabiting the Mediterranean.—*S. atlantica* (Orb.), from Sardinia. R. Garner, Rep. Brit. Assoc. for 1868, Notices and Abstracts, p. 97.

Rossia macrosoma (Delle Chiaje) and *R. papillifera*, sp. n.: the latter from

the north of Shetland, from 60-100 fathoms. Jeffreys, Brit. Conch. v. pp. 133-135; the former figured on pl. 6. fig. 1.—*R. panceri*, sp. n., Targioni-Tozzetti, Bull. Mal. Ital. ii. p. 231, pl. 7. fig. 7, Mediterranean.

Sepia officinalis (L.), *elegans* (Blainv.), and *biserialis* (Montf.), Jeffr. Brit. Conch. v. pp. 138-141, pl. 6. fig. 3.

Sepia officinalis (L.), *orbignyana* (Fér.), *biserialis* (Montf.)=*elegans* (Orb.), and *hierredda* (Rang) stated to occur in the Mediterranean. Targioni-Tozzetti, Bull. Mal. Ital. ii. pp. 241-248.

Sepia filliouxii, sp. n., indicated by Lafont in the 'Bulletin de l'Association Scientifique de France,' 1868, n. 81, and now more fully described and compared with *S. officinalis* (L.), in Journ. Conch. xvii. pp. 11-14. Gulf of Gascony and Boulogne.

Sepia gibbosa (Ehrenberg). The complete animal described from a female specimen found at Suez, by Issel, Malac. mar. ross. p. 238, pl. 2. figs. 14, 15

PTEROPODA.

Capt. G. E. FRYER has given an interesting account of his observations on pelagic Mollusca, chiefly Pteropods. Out of 31 species, 17 are common both to the Atlantic and the Indo-Pacific Ocean, 4 peculiar to the Atlantic, 8 to the Indo-Pacific, 2 to the Southern Ocean, viz. *Balanthium recurvum* (Bens.) and *Balanthium australe* (Orb.), in latitude 38°-42° S.; 12 species prove to be strictly nocturnal, the best time for catching them being the middle watch; 7 are crepuscular and nocturnal; 12 others indifferent to solar influence. Journ. Asiat. Soc. Bengal, vol. xxxviii. pp. 259-264, with a table and map.

Hyalæa tridentata (Lam.), *tæniobranchia* (Péron), and *affinis* (Orb.) distinguished as separate species, and described and figured by G. E. Fryer, l. c. pp. 264-266, pl. 21.

[*Cleodora*] *Clio pyramidata* (Browne), Shetland. Jeffreys, Brit. Conch. v. pp. 118-120, pl. 4. fig. 5, and pl. 98. fig. 6.

Creseis, sp., allied to *striata* (Rang), from Suez, shortly described by Issel, Malac. mar. ross. p. 236.

Spiralis retroversa (Fleming), with var. 1. *macandreae* (Forbes & Hanley), var. 2. *jeffreysi* (Forbes & Hanley), everywhere along the British coasts. Jeffreys, Brit. Conch. v. pp. 114-117, pl. 4. fig. 4, and pl. 98. figs. 4, 5.

[*Chione*] *Clio borealis* (Pall.) has been found at Portland, Maine, from the beginning of April until May 7, 1868. Its appearance is ascribed to the unusual severity of the season. There is no record of its occurrence in those waters previously to 1833, when it was observed in the vicinity of New York. Proc. Portl. Soc. Nat. Hist. i. part 2, 1869, and Am. Journ. Conch. v. p. 112.

GASTROPODA.

PECTINIBRANCHIATA.

The systematic results of the researches into the structure of the radula, made by various authors in recent years, are

compiled by E. v. MARTENS, Nachrichtsbl. mal. Gesellsch. i. pp. 185-191 and 193.

PROBOSCIDIFERA RHACHIGLOSSA.

MACDONALD gives a condensed account of his observations on the dentition of this division of Gastropoda, preferring for them the term *Orthodonta* as being more expressive. Ann. & Mag. Nat. Hist. iii. p. 113.

MURICIDÆ.

Prof. TROSCHEL characterizes this family, his "Muricea," by the median plate of the radula having three large teeth and two smaller between them (the lateral plates being provided with a single hook). In the genus *Murex*, including the subgenera *Haustellaria*, *Chicoreus*, and *Phyllonotus*, the three teeth of the median plate are nearly equal, and the lateral angles of this plate are not produced. In *Muricidea*, *Ocinebra*, and *Trophon*, which must be acknowledged as separate genera, the median tooth is placed out of the line of the others, and the lateral angles of the plate are produced into tooth-like processes. In *Ocinebra* several accessory teeth are to be found outside of the five normal ones. *Eupleura* (Adams) has nearly the same radula as *Ocinebra*. *Chorus xanthostoma* (Brod.) in its radula agrees nearly with *Trophon*. *Urosalpinx* (Stimps.) resembles *Ocinebra*; but the median tooth is more produced. The author describes and figures the radula of the following species:—

Murex rarispina (Lam.), *brevispina* (Lam.), *tribulus* (L.), *brandaris* (L.), *cornutus* (L.), *ramosus* (L.), *calceitrapa* (Lam.), *senegalensis* (Gmel.), *oculatus* (Reeve), *pomiformis* (Martini), and *trunculus* (L.), *Muricidea blainvilliei* (Payr.), *Ocinebra erinaceus* (L.), *alveata* (Kien.), *corallina* (Scacchi), *Trophon geverianus* (Pall.), *craticulatus* (Fabr.), *clathratus* (L.), *gunneri* (Lovén), *Eupleura caudata* (Say), *Chorus xanthostoma* (Brod.), and *Urosalpinx cinereus* (Say). Gebiss der Schnecken, ii. pp. 112-123, pl. 10. figs. 19-21, and pl. 11. figs. 1-20. The buccal membrane, or lateral jaw, of *Murex rarispina* (Lam.) is described and figured, *ibid.* pl. 10. fig. 17.

Murex. The monograph of this genus is continued by Küster in his new edition of Martini and Chemnitz, section 58, species nos. 30-113, pp. 37-110, pls. 16-33. It contains a large number of good figures; but as there is no new species in this monograph, this notice will be sufficient.

Murex brandaris. The variety with three rows of spines, figured by Chemnitz, but very rare, has been found by G. v. Frauenfeld at Gibraltar. He is inclined to regard it as a distinct species, *Rhinacantha trifariospinosa* (Chemn.). Verh. zool.-bot. Gesellsch. 1869, p. 889. [As specimens often occur with only one instead of two rows, and the third is often indicated

by small knots instead of by spines, this form is better regarded as merely a variety.]

Murex clavus (Kien.) found at Mauritius. Brewster, Transact. R. Soc. of Arts and Sciences of Mauritius, vol. iii. p. 111.

Murex crispus (Brod.), Dunker, Novitat. Conchol. p. 125, pl. 42. figs. 1, 2. — *M. aduncospinosus*, sp. n., Dunker, ibid. p. 126, pl. 42. figs. 3, 4. Locality unknown; very near to *M. trunculus* (L.).

Murex hidalgoi, sp. n., Crosse, Journ. Conch. xvii. p. 408, West Indies. — *Murex pazi*, sp. n., Crosse, l. c. p. 183, West Indies.

Murex troscheli (Lischke), from Nangasaki, Lischke, Moll. Jap. p. 46, pl. 1. figs. 1, 2; *M. sinensis* (Reeve), from Japan, larger than usual, Lischke, ibid. p. 43.

Murex foveolatus, sp. n., Pease, Am. Journ. Conch. v. p. 83, pl. 8. fig. 3, La Paz, Gulf of California.

Typhis tetrapterus (Bronn) found gregarious on seaweed in the Gulf of Spezia. It appears to change its locality according to the season of the year, retiring in the cold season to deeper places. Caramagna, Bull. Mal. Ital. ii. pp. 168–170.

Trophon muricatus (Mont.) = *Fusus cancellatus*, Bivona, = *Murex echinatus* (Phil.), and *T. carinatus* (Bivona) = *vaginatus* (Jan) = *calcar* (Scacchi), both in the Mediterranean. Tiberi, Bull. Mal. Ital. ii. p. 253.

Urosalpinx floridana, sp. n., Conrad, Am. Journ. Conch. v. p. 106, pl. 12. fig. 4, Tampa Bay.

[*E. pleura*] *Ranella* (subgenus *Eupleura*) *tampaensis* (Conrad, as *Murex*, 1846), figured by the author. Am. Journ. Conch. v. p. 106, pl. 12. f. 6. [It has been proved by the radula that *Eupleura* does not belong to *Ranella* but to the *Muricidæ*; therefore Conrad's first view was the most correct.]

PURPURIDÆ.

According to the researches of Prof. TROSCHEL, the radula of this family is very similar to that of the *Muricidæ*. In the restricted genus *Purpura* the median plate is longer than broad, five-toothed, the median tooth hollow. *Iopas* has a similar radula, but the median tooth has a longitudinal fissure. In *Stramonita* the median plate is broader than long, and the median tooth projects more than the others; the number of teeth is variable, but only three are large. *Thais* and *Tribulus* are, with regard to the radula, not essentially different from *Stramonita*. In *Polytropa*, including *Trochia* (Swains.) and *Cronia* (Ad.), the median plate is also broader than long, and has five larger teeth. *Purpura haustum* (Martyn) belongs, as far as its radula is concerned, to *Polytropa*, *P. chokolatum* (Duclos) to *Stramonita*, *Chorus xanthostoma* (Brod.) to the *Muricidæ*. The author describes and figures the radula of the following species:—

Purpura patula (L.), *Iopas sertum* (Lam.), *Stramonita chokolatum* (Duclos), *floridana* (Conrad), *bicostalis* (Lam.), *undata* (Lam.), *hæmastoma* (L.), *rustica* (Lam.), *blainvillii* (Desh.), *consul* (Chemn.), *Thais nodosa* (L.), *Tribulus*
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deltoides (Lam.), *hippocastanum* (Lam.), *pica* (Blainv.), *mancinella* (L.), *bitubercularis* (Lam.), *Polytropa lapillus* (L.), *dubia* (Krauss), and *haustrium* (Martyn). Gebiss der Schnecken, ii. pp. 124-132, pl. 12. figs. 1-20.

Purpura cassidiformis (Blainv.) = *xanthostoma* (Brod.), and perhaps = *Pyrrula ochroleuca* (Menke, Philippi), from southern and northern Chile. Martens, Mal. Blätt. xvi. pp. 219 and 221.—*P. barcinonensis* (Hildago) is a variety of *hæmastoma* (L.). Petit, Catal. Moll. Eur. p. 273.

Purpura bonni (Dunker), Lischke, Moll. Jap. p. 53, pl. 5. fig. 17; *P. clavigera* (Küster), Lischke, ibid. p. 54, pl. 5. figs. 12-14; *P. tumulosa* (Reeve), ibid. p. 56, pl. 5. figs. 15, 16.

Ricinus arachnoides, Lam., var., *R. albolabris* (Blainv.), from Japan. Lischke, ibid. p. 57.

Concholepas. Its dentition, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. f. 18.

Purpura lepas (Gmel.) = *Concholepas peruviana* (Lam.). There are two varieties: α , Kiener, fig. 65 = *Purpura pileopsis* (Blainv. 1832) = *C. oblonga* (Reeve), from the Magellan Straits and Chile; and β , *imbricata* (Küster) = *peruviana* of Reeve, from Peru, Bolivia, and perhaps the west coast of Mexico. Martens, Mal. Blätt. xvi. p. 219.

Rapana bezoar (L.), with its varieties *Purpura venosa* (Val.) and *R. thomasi* (Crosse), from Japan. Lischke, Moll. Jap. p. 51.

Coralliophila coronata, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 272, pl. 19. fig. 4, Mauritius.

Magilus antiquus (Montf.). No radula could be found by Heynemann. Nachrichtsb. mal. Gesellsch. i. p. 82.

BUCCINIDÆ.

Buccinum fusiforme (Kien.) found at Martigues in Southern France. Petit, Catal. Moll. Eur. p. 278.

Buccinum, sp. indetermin. [probably *undatum*]. Its dentition, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. fig. 9.

[*Neptunea*] *Fusus propinquus* (Alder). Its occurrence on the coast of France denied by Talsé, Act. Acad. Rochelle, 1868 (Journ. Conch. xvii. p. 302).

Fusus (*Siphonorbis*) *lachesis*, *ebur*, and *togatus*, spp. nn., Mörch, Journ. Conch. xvii. pp. 397-399; and in Petit, Catal. Moll. Eur. pp. 274, 275, from Greenland; the last allied to *F. propinquus*.

Fusus bernicensis (King). Only dead and much injured shells have been found on the west coast of France; *F. fornicatus* (Fabr.) is figured in Reeve's monograph as var. *b* of *despectus*, and has been found at Spitzbergen and Iceland; *F. holböllii* (Möller) is perhaps a large variety of *propinquus* (Alder); *F. krøyeri* (Möller) = *arcticus* (Philippi) from Spitzbergen; *F. spitzbergiensis* (Reeve, Voy. of Sutherland) allied to *F. lividus* (Mörch), from Newfoundland. Petit, Catal. Moll. Eur. pp. 275-278.

Fusus nodosoplicatus, var., and *F. inconstans* (Lischke) described by Lischke, Moll. Jap. pp. 33-35; the latter figured, pl. 2. figs. 1-6.

Siphonalia kelletii (Forbes) and *cassidariæformis* (Reeve, as *Buccinum*), from Japan. Lischke, l. c. pp. 33, 39, pl. 3. figs. 3, 4, and pl. 4. figs. 1-10.

Euthria viridula (Dunker), Lischke, l. c. p. 39, pl. 5. figs. 5, 6, Japan.

Polia leucozona (Phil. as *Buccinum*) figured by Appellius, Bull. Mal. Ital. ii. pl. 4. fig. 3.

Phos senticosum, var. *elata*, Issel, Malacol. mar. ross. p. 127, Gulf of Akaba.

Engina nodulosa, sp. n., Pease, Am. Journ. Conch. v. p. 71, pl. 8. fig. 11, Ebon isl., Polynesia.—*E. lineata* (Reeve), var. *maculata*, Pease, ibid. p. 76, pl. 8. fig. 12, Apaian isl., Polynesia.

Cyrtulus (Hinds). Its dentition figured; type of a new family, *Cyrtulidæ*, which will include also certain species of *Fusus*, for example, *F. raphanus* (Lam.). Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. fig. 5.

Busycon eliceans (Montfort) = *B. gibbosum* (Conrad) = *Pyrula aruana* (Reeve). Conrad, Am. Journ. Conch. v. pp. 104 and 106.

Fulgar carica and *Sycotypus canaliculatus*. The ovicapsulæ are described at length by Perkins. Proc. Bost. Soc. Nat. Hist. 1869, Oct. [Known for a long time through Lister, Ellis, &c.]

NASSIDÆ.

Nassa limata (Chemnitz) living in the Mediterranean; a smaller variety described. Petit, Catal. Moll. Eur. p. 280.

Nassa semistriata (Brocchi) = *tinei* (Maravigna) = *gussonii* (Calcare) = *trifasciata* (Adams). Tiberi, Bull. Mal. Ital. ii. p. 255. Mediterranean.

Nassa encaustica, sp. n., Brusina, Journ. Conch. xvii. p. 233, Adriatic.

Nassa fretensis, sp. n., Perkins, Proc. Bost. Soc. Nat. Hist. Nov. 1869, Newhaven, allied to *N. vibex* (Say).

Nassa japonica (Lischke). The name is changed by the author to *N. balteata*. Mal. Blätt. xvi. p. 107, and Moll. Jap. p. 61, pl. 5. figs. 10, 11.

Nassa nucæ and *balteata*, spp. nn., Pease, Am. Journ. Conch. v. pp. 70, 71, pl. 8. figs. 5 and 7, Polynesia.—*N. tiarula* (Kien.) is a variety of *N. tegula* (Reeve), and comes from the west coast of Mexico. Pease, ibid. p. 83.

Nassa (Cyclonassa) italica, sp. n., Issel, Bullett. Malac. Ital. ii. p. 29, pl. 4. figs. 4–11, Taranto and Genoa.

Nassa (Desmoulea) tryoni, sp. n., Crosse, Journ. Conch. xvii. p. 409, locality unknown.

OLIVIDÆ.

According to the researches of Prof. Troschel, the *Olividæ* (or, as he calls them, "*Olivaceæ*"), excluding the genus *Harpa*, have a broad median plate of the radula, with three or more teeth on the posterior margin, and triangular lateral plates with a single hook. In *Agaronia* (Gray) and *Dactylus* (Klein) [= *Oliva* proper] the median plate is three-toothed, the median tooth smaller than the others. In *Olivella* (Swains.) the median plate is falciform and many-toothed, the lateral plates rather narrow. In *Ancillaria* (Lam.) the median plate has three larger teeth, and between them smaller ones; the lateral plates are sinuous. The author describes and figures the radula of the following species:—*Agaronia megalostoma*, *Dactylus undatus*, *peruvianus*, *maurus*, *funeralis*, *irisans*, *mustelina*, *emicator* = *guttatus*, *leucophæus*, *ispidulus*, *reticularis*, *Olivella gracilis*, *mutica*, *Ancilla*

caffra, *albisulcata*, and *ampla* = *candida*. Gebiss der Schnecken, ii. pp. 106–112, pl. 10. figs. 2–17.—Dentition of *Oliva*, sp. indetermin., and *Olivella*, sp. indetermin., Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. figs. 12 & 13.

Harpa. The radula of *Harpa conoidalis* (Lam.) is described and figured by Prof. Troschel. It is very small, the median plate not broader than long and terminating with a median tooth. Lateral plates could not be found; but, as Dr. Macdonald describes them (Ann. & Mag. Nat. Hist. xix. 1857), Troschel thinks that they must exist, and may be lost with age. These peculiarities lead him to establish a separate family, *Harpacea*, for the genus *Harpa*. Gebiss der Schnecken, ii. pp. 104, 105, pl. 10. fig. 1.—Dentition of *Harpa* figured by Macdonald, Ann. & Mag. Nat. Hist. 4th series, iii. p. 115, pl. 13. fig. 14.

FASCIOLARIIDÆ.

Fasciolaria. The *Turbinellæ* with faint oblique folds on the columella, forming the so-called genera *Lathirus* and *Peristernia*, are proposed to be united with the genus *Fasciolaria*, on account of the similarity in the radula and coloration. E. v. Martens, Nachrichtsbl. mal. Gesellsch. i. p. 190.

Dentition of *Fasciolaria*, spec. indetermin. Macdonald, Ann. & Mag. Nat. Hist. iii. p. 116, pl. 13. fig. 6.

Fasciolaria trapezium. Specimens intermediate between this species and *F. audouinii* (Jonas) from Zanzibar. Martens, in v. d. Decken's Reisen in Ost-Africa, iii. p. 62.

TURBINELLIDÆ (VASIDÆ).

Cynodonta (Swains.) [*Turbinella*], spec. indetermin. Dentition, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. fig. 8.

Turbinella scabra, sp. n., Souverbie, Journ. Conch. xvii. p. 419, Art Island, New Caledonia.

Turbinella mariei, sp. n., Crosse, Journ. Conch. xvii. pp. 177 & 279, pl. 8. fig. 2, New Caledonia. [The author says that the only known species which approaches this new form is *T. incarnata* (Desh.); this belongs to *Peristernia*, (see *Fasciolariidæ*); but as Crosse neither describes nor figures any plait on the columella of his new species, its systematic position appears somewhat doubtful.]

VOLUTIDÆ.

Melo. Dentition, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. fig. 45.

Voluta harfordi and *sclateri*, spp. nn., Cox, Proc. Zool. Soc. 1869, p. 358, pl. 26. figs. 2 & 3, Wreck Reef, near Lady Elliot's Island, and Banks's Straits.

Aulica rueckeri (Crosse) occurs in New Georgia, Solomon Islands, not in West Australia. Brazier, Proc. Zool. Soc. 1869, p. 360.

Voluta (Amoria) canaliculata, sp. n., M'Coy, Ann. & Mag. Nat. Hist. iv. pp. 34 & 140, Port Denison, Australia.

Volutella tissotiana (Crosse) is from North Australia. Brazier, l. c. p. 561.

Alcihoë thatcheri (M'Coy) comes from the Bampton Reef, near the north-west coast of New Caledonia. Brazier, *l. c.* p. 561; its spire described by M'Coy, *Ann. & Mag. Nat. Hist.* iv. p. 140.

[*Fulgoraria*] *Voluta hamillei*, sp. n., Crosse, *Journ. Conch.* xvii. p. 278, Solomon Islands. Allied to *V. rupestris* (Gmel.).

[*Cymbiola*] *Voluta ancilla* (Solander). Variations in the number of the pillar-plaits. Martens, *Mal. Blätt.* xvi. p. 220.

MITRIDÆ.

Prof. TROSCHEL establishes a distinct family, *Strigatellacea*, for a number of shells placed formerly in the genus *Mitra*, on account of the median plate of the radula being broad and pectinated, and the lateral plates being provided with a single hook. He admits two genera, *Strigatella* (Swains.) and *Turricula* (Swains.), to this family, and describes and figures the radula of the following species:—*Strigatella woldemarii*, *solidula*, *Turricula corrugata*, *melongena*, *plicaria*, and *exasperata*. Gebiss der Schnecken, pp. 102–104, pl. 9. figs. 11–16.

The dentitions of a true *Mitra* and of a *Costellaria* are figured by MacDonald, *Ann. & Mag. Nat. Hist.* iii. p. 116, pl. 13. figs. 7 & 17.

Mitra barklyana, sp. n., Robillard, *Trans. R. Soc. Sc. & Arts Maurit.* iii. p. 103, with plate. Appears to be a variety of *M. fulva*.

Mitra desetangii (Kien.), nearly allied to *variegata* (Reeve); the colour of the fresh shell described. Kiener's specimens were not fresh. Liénard, *Journ. Conch.* xvii. p. 226.

Mitra newcombi, sp. n., Pease, *Am. Journ. Conch.* v. p. 69, Oahu; *M. ericea* (Pease) = *turgida* (Reeve), Pease, *ibid.* p. 85; *M. glabra* (Pease), the name changed to *lubrica* by Pease, the former name being preoccupied, *ibid.*—*Mitra williamsii*, sp. n., Newcomb, *Am. Journ. Conch.* v. p. 163, pl. 17. f. 1, from the Philippine Islands (?).

[*Costellaria*] *Mitra pharaonis*, sp. n., described by Issel, *Malac. mar. ross.* p. 149, pl. 3. fig. 9, Red Sea.

[*Costellaria*] *Mitra plicatula* (Brocchi, as fossil), perhaps identical with a recent shell from Tunis. Petit, *Catal. Moll. Eur.* p. 281.

Mauritia, gen. nov. Columellar folds numerous, but less distinct than in *Mitra*; general appearance of *Dibaphus*. *M. barclayi*, sp. n., H. Adams, *Proc. Zool. Soc.* 1869, p. 273, pl. 19. fig. 5, Mauritius.

COLUMBELLIDÆ.

Prof. TROSCHEL characterizes the family of "*Columbellacea*" by the median plate of the radula being narrow and not denticulated, and the lateral plates being provided with two hooks, which are placed on the margin of the plate. These lateral plates are only fixed on one of their sides. He describes and figures the radula of the following subgenera and species:—*Columbella mercatoria*, *rustica*, *punctata*, *Nitidella nitida*, *Alia unicolor*, *Pyrene semipunctata*, *Mitrella scripta*, *Astyrus rosacea*, *Anachis rugosa*, and *Strombina gibberula*, and thinks that they

may be classified into two genera—*Colymbella*, including *Nitidella* and *Alia*, and *Pyrene*, including the rest of the above-named subgenera. *Enzina* and *Amycla* are to be excluded from this family. Gebiss der Schnecken, ii. pp. 97–102, pl. 9. figs. 1–10.

The dentition of the *Columbellidæ* is also regarded as quite peculiar, and that of an undetermined species figured by Macdonald. Ann. & Mag. Nat. Hist. iii. p. 114, pl. 13. fig. 11.

MARGINELLIDÆ.

Dentition of an undetermined species of *Marginella* figured by Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. fig. 16, "from memory."

Marginella (*Glabella*) *mirabilis*, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 273, pl. 19. fig. 6, locality unknown.

Marginella savignyi, *sueziensis*, and *pygmæa*, spp. nn., figured in Savigny's Descript. de l'Égypte, pl. 6. figs. 18, 17, and 26, described by Issel, Malac. mar. ross. pp. 115, 116.

Marginella vittata (Reeve) comes from East Africa; *prunum* (Gmel.) from the West Indies; *carnea* (Storer) distinct from *oblonga* (Swains.); *angustata* (Sow.) is from Ceylon; *similis* (Sow.) = *obesa* (Redfield), which name has priority; *obesa* (Sow.) = *pyrulata* (Redf.) may be a variety of *labiata* (Val.); *phrygia* (Sow.) = *guttata* (Swains., not Dillwyn) = *swainsoniana* (Petit); *muralis* (Hinds) = *maculosa* (Kien.); *fluctuata* (C. B. Adams) = *sagittata* (Hinds); *catenata*, fig. 73 in Reeve's Conch. Ic., is = *pulcherrima* (Gaskoin); *lactea* of Reeve is not that of Kiener, but = *subtriplicata* (Orb.); *beyerleana* (Petit) is a variety of *avena* (Val.); *tæniata* (Sow.) comes from the Bahamas; *sauleyana* (Petit) = *storeria* (Couthouy) = *crassilabrum* of Reeve, but not of Sowerby; *sauleyana* of Reeve = *cincta* (Kien.); *vexillum* (Redfield), published 1852, is now figured pl. 8. fig. 2; *bibalteata* (Reeve) = *gracilis* (C. B. Adams), from Jamaica; *navicella* (Reeve) = *rubella* (C. B. Adams), from Jamaica; *alabaster* (Reeve) is from the West Indies, and perhaps a variety of *fauna* (Sow.); *candida* (Sow.) probably = *margarita* (Kien.). Redfield, Am. Journ. Conch. v. pp. 88–95.

PROBOSCIDIFERA TENIOGLOSSA.

CASSIDIDÆ and RANELLIDÆ.

Cassis pila (Reeve) from Nangasaki. Lischke, Moll. Jap. p. 63.

Cassidaria tyrrhena found on the west coast of France. Petit, Catal. Moll. Eur. p. 279.

Dolium crosseanum, sp. n., Allery de Monterosato, Journ. Conch. xvii. p. 228, pl. 12. fig. 1, Palermo.

Dolium luteostomum (Küster) = *japonicum* (Dunker); the young is Schrenck's *variegatum* (not Lam.), from Japan. Lischke, Moll. Jap. p. 65.

Triton variegatum. It is possible that this species occurs in the Mediterranean, but this requires further confirmation. Petit, Catal. Moll. Eur. p. 279.

Triton. Lischke (Moll. Jap.) refers to the following species:—*T. tritonis* = *variegatum* (Lam.), p. 44; *T. saulici*, p. 46; *T. olearium* (L.) = *succinctum* (Lam.), p. 48; *T. dunkeri* (Lischke), p. 49, pl. 3. figs. 1, 2.

Triton intermedius, sp. n., Pease, Am. Journ. Conch. v. p. 74, Oahu.—

Triton bassi, sp. n., Angas, Proc. Zool. Soc. 1869, p. 45, pl. 2. fig. 2, Bass's Straits.—*T. (Epidromus) brazieri*, sp. n., Angas, l. c. p. 46, pl. 2. fig. 3, New South Wales.

CYPRÆIDÆ.

S. R. ROBERTS has published a catalogue of this family (*Porcellanidæ*, as an appendix to Am. Journ. Conch. v. part 3, in which he enumerates 8 genera with 197 species.

Cypræa. A. Sporleder has compared the species of this genus in his collection with Kiener's 'Iconography,' and remarks on the differences of his specimens from those figured by Kiener. Mal. Blätt. xvi. pp. 94–105. These notes are not capable of being abstracted.

Forty-five species of this genus occurring in New Caledonia are enumerated by H. Crosse, and distributed into five sections:—

I. *cylindraceæ* = *Cypræa* proper of H. and A. Adams.

II. *patulæ* = *Aricia* (Gray).

III. *globosæ* = *Luponia* (Gray) = *Cyprædia* (Swains.).

IV. *pustulosæ* = *Pustularia* (Swains.).

V. *coccinelliformes* = *Trivia* (Gray).

Some of the New-Caledonian specimens of known species show a remarkable tendency to melanism; other species, peculiar to this island, have both ends of the shell strongly produced, like the Australian *C. scotti* (Brod.).

Mar. Conch. xvii. pp. 36–50.

Hamipræa thatcheri, sp. n., Cox, Proc. Zool. Soc. 1869, p. 358, pl. 26. fig. 1, whooper's Archipelago, west coast of Australia.

d. natpræa aubryana, sp. n., Jousseume, Rev. et Mag. Zool. 1869, p. 348, p. 48. . figs. 1–3, Guadeloupe. Allied to *C. pyrum* (Gmel.).

præa crossei, sp. n., allied to *stolida* (L.) and *C. noumeensis*, sp. n., too

Thy allied to *annulif* (L.), both from New Caledonia. Marie, Journ.

enur. Th. xvii. pp. 16–19, pl. 1. fig. 3, and pl. 2. fig. 6.—*C. caledonica*, sp. n.,

Th. *C. bregeriana* (Crosse), both from New Caledonia, Crosse, ibid. pp. 41

Th. 46, pl. 1. figs. 1 and 2.

Cypræa caput-serpentis, var. *caput-anguis* (Phil.), Pease, Am. Journ. Conch.

pl. p. 87.

Cypræa moneta excluded from the European fauna by Petit, Catal. Moll.

a. Eur. p. 283.

Gaskoinia, g. n., for *Cypræa edentula*. Roberts, Am. Journ. Conch. v.

p. 201.

NATICIDÆ.

Natica. Tiberi applies the name *Neverita* (Risso) to all European species with corneous opercle, and identifies some species insufficiently described by Risso with known Mediterranean forms. In applying the name *intricata* (Donovan) to a species with corneous opercle, he differs from Philippi and other authors, who identify it with *Natica valenciennesii* (Payr.). Bull. Mal. Ital. ii. pp. 256–258.

Natica rizzæ (Phil.) supposed to be exotic by Petit, Catal. Moll. Eur.

p. 267.

B *Natica marmorata*, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 274, pl. 19.

fig. 8, Canary Islands.

Natica lamarckiana (Récluz), a variety of it=*robusta* (Dunker); and *N. janthostoma* (Desh.)=*clausa*, var., of Middendorff and Schrenck, its distinctness from *clausa* (Brod.) doubtful. Both from Japan. Lischke, Moll. Jap. p. 81.

Natica granifera, sp. n., Pease, Am. Journ. Conch. v. p. 78, pl. 8. fig. 13, Jarvis Isl., Polynesia. [It is granulated, and therefore its systematic position appears to be somewhat doubtful.]

Sigaretus haliotideus (Philippi, not Lam.) is really Mediterranean. Petit, Catal. Moll. Eur. p. 268.

CERITHIOPSIDÆ.

Alaba martensi, sp. n., Issel, Malac. mar. ross. p. 206, figured in Descr. de l'Egypte, pl. 3. fig. 26, Red Sea.

PROBOSCIDIFERA PTENOGLOSSA.

Scalaria kuzmici, sp. n., Brusina, Journ. Conch. xvii. p. 246, Adriatic.

Scalaria ferussaci and *jomardi* (Audouin) described by Issel, Malac. mar. ross. pp. 185, 186, Red Sea.

Scalaria umbilicata, sp. n., Pease, Am. Journ. Conch. v. p. 76, Oahu.

Scala delicatula, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 274, pl. 19. fig. 9, Lancerote (Canary Islands).

Torinia sulcifera, sp. n., Pease, Am. Journ. Conch. v. p. 79, Kauai Island, Polynesia.

Torinia perspectiviuncula. Under this name three distinct species have been confounded by conchologists, the Indian *T. variegata* (Gmel.), the Havane *T. areola* (Chemn.), and a third species, from the west coast of America, the name of which "remains to be determined by those more particularly interested in that fauna." The differences are pointed out by Pease, l. c. pp. 82.—*T. conica* (Pease) differs from *trochoides* (Desh.). Pease, ibid. p. 82.

PROBOSCIDIFERA GYMNOGLOSSA.

Odostomia warreni (Thomps.) described by Jeffreys, Brit. Conchol. p. 212, pl. 102. fig. 2, Shetlands, 50–80 fathoms.

Odostomia intermedia, sp. n., Brusina, Journ. Conch. xvii. p. 237, Adriatic. Allied to *O. craticulata* (Renier)=*dissimilis* (Tiberi), *humboldti* (Risso), and *excavata* (Phil.).—*O. turbonilloides*, *monozona*, *nardoi*, and *erjaveciana*, spp. nn., Brusina, ibid. pp. 240–242, Adriatic.

Odostomia citrina, sp. n., Folin, Fonds de la Mer, p. 145, pl. 22. fig. 7, St. Vincent, Cape-Verde Islands.

Odontostomia clysmatica and *craticulata*, spp. nn., figured in the Descript. de l'Egypte, pl. 3. figs. 36 & 39, named and described by Issel; *O. sueziana*, sp. n., Issel, Malac. mar. ross. pp. 177–180, pl. 2. fig. 1; *O. solidula* (Philippi) figured, ibid. pl. 2. fig. 2.

Chrysallida rissoiformis and *lævis*, spp. nn., Issel, l. c. p. 181, pl. 2. figs. 3 & 4, Suez.

Turbonilla speciosa, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 274, pl. 19. fig. 11, Vigo (Galicia).—*Turbonilla pointeli*, sp. n., Folin, Fonds de la Mer, livr. 6 & 7, 1868, p. 100, pl. 11. fig. 4, Grecian archipelago, Road of Syra.

Turbonilla venusta, sp. n., figured in Savigny's Descript. de l'Egypte, pl. 3.—

fig. 34; *T. tenuicosta*, *solidula*, *crystallinula*, and *nitidissima*, spp. nn., Issel, Malac. mar. ross. pp. 174-177, pl. 1. figs. 16, 17, 18, and 19, Red Sea.

Syrnola minuta, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 274, pl. 19. fig. 10, Orotava (Canary Islands).

Eulimella folini, sp. n., Fischer, Fonds de la Mer, p. 149, pl. 22. fig. 8, Gulf of Gascony.

Eulimella cingulata and *gentilomiana*, spp. nn., figured in the Descript. de l'Egypte, pl. 3. figs. 25 & 32, named and described by Issel; *E. arabich*, sp. n., Issel, Malac. mar. ross. pp. 182, 183, pl. 2. fig. 5.

Aclis angulata, sp. n., Fischer, l. c. p. 150, pl. 23. fig. 1, Gulf of Gascony.

Eulina bulimus (Phil., as fossil) found recent by Doria in the Gulf of Spezzia. Tapparone, Att. Soc. Ital. Sc. Nat. xii. p. 405.

Eulina stalioli, *petitiana*, and *microstoma*, spp. nn., Brusina, Journ. Conch. xvii. pp. 242-245, Adriatic.

Eulina, species undetermined, on the dorsal side of an *Asterias* in New Caledonia. E. Marie, Journ. Conch. xvii. p. 15.

Eulina manzoniana, sp. n., Issel, Malac. mar. ross. p. 184, pl. 2. fig. 6, Suez.

Leiostraca jeffreysiana, sp. n., Brusina, l. c. p. 245, Adriatic.

Stylifer, species undetermined, found on the sides of the arms of an *Asterias* and near to the anal opening of two Echinidæ (*Echinometra* and *Mespilia*) in New Caledonia, by E. Marie, l. c. p. 15.

TOXOGLOSSA.

MACDONALD'S opinion that the *Toxoglossa* should be reunited with the *Hami glossa*, Ann. & Mag. Nat. Hist. iii. p. 114, is opposed by Prof. TROSCHEL, who maintains that no intermediate forms are hitherto known. Verhandl. d. naturhist. Vereins d. preuss. Rheinlande, xxvi. 1869, "Sitzungsberichte," p. 48.

CONIDÆ.

The *Conidæ* of the collection of the Zoological Society of Amsterdam are enumerated by OLTMAANS, Bijdrag tot de Dierkunde, part ix. pp. 13-22. There are very few original indications of localities contained in this list.

Conus, sp. Dentition by Macdonald, Ann. & Mag. Nat. Hist. iii. p. 114, pl. 13. fig. 1.

Conus maculatus (Sow.), *jukesii* (Reeve), *grayi* (Reeve), *apulstre* (Reeve), and *rutilus* (Menke) occur at Port Jackson. Brazier, Proc. Zool. Soc. 1869, p. 560. Some other Australian localities are here also indicated—*C. fulgetrum* (Sow.) = *scaber* (Kiener), from Japan, described by Lischke, Moll. Jap. p. 32.

Asprella. Schaufuss, in Pætel's Systeme und Cataloge, p. 7, substitutes this name for *Cylindrella*, Swains.

Conus (Coronaxis) cernicus, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 272, pl. 19. fig. 1, Mauritius.

Conus stearnsi, sp. n., Conrad, Am. Journ. Conch. v. p. 104, pl. 10. fig. 1, Pine Key, Florida.

Conus geographus. Curious prolongations of the epidermis noticed by Martens in V. d. Decken's Reisen in Ost-Afrika, vol. iii. p. 61, pl. 3. fig. 1.

Conus, sp. Allied to *bullatus* (L.), perhaps new, found at Mauritius. Brewster, Transact. R. Soc. of Arts and Sciences at Mauritius, vol. iii. p. 111.

PLEUROTOMIDÆ.

Pleurotoma. Jeffreys, Brit. Conchol. v., describes and figures *Pl. carinata*, p. 221, pl. 102. fig. 7; *Pl. nivalis*, p. 220; and *Pl. galerita*, p. 221, fig. 6.—On the dentition of this genus, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 114, pl. 13. fig. 10.

Pleurotoma curculio and *Pl. lemniscata*, spp. nn., G. & H. Nevill, Ceylon Asiat. Soc. Proc. May 1868, Ceylon.—*Pl. mariei*, sp. n., Crosse, Journ. Conch. xvii. p. 178, New Caledonia.—*Pl. dentatum* [-a], sp. n., Souverbie, Journ. Conch. xvii. p. 418, Art Island, New Caledonia.—*Pl. lirata* and *monilifera*, spp. nn., Pease, Am. Journ. Conch. v. p. 68, Oahu.—*Pl. gemmatum* [a], sp. n., Folin, Fonds de la Mer, p. 134, pl. 20. fig. 7, Bay of Panama.

Pleurotoma polytropa (Helbling, 1779, as *Murex*) = *deshayesii* (Doumet), Martens, Mal. Blätt. xvi. p. 235.

Drillia japonica, sp. n., Lischke, Mal. Blätt. xvi. p. 105, and Moll. Jap. p. 32, Nagasaki.—*D. barkliensis*, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 272, pl. 19. fig. 3, Mauritius.

Clavatula diadema (Kien.). Beside the perforated needle-shaped tooth on each side, the radula has also a narrow unicuspidate median tooth. This is the first instance of a median tooth in the Toxoglossa. Macdonald's representation of the radula of *Clavatula* is very different. Troschel, Verhandl. naturhist. Vereins d. preuss. Rheinlande, 1869, "Sitzungsberichte," p. 48.

Clavatula, sp. indetermin. [rather *Defrancia* ?]. Dentition, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 115, pl. 13. fig. 4.

Defrancia histrix (Jan) = *reticulata*, var. *spinosa* (Forbes), reestablished as a distinct species by Tiberi, Bull. Mal. Ital. ii. p. 261, Mediterranean.

[*Defrancia*] *Pleurotoma teres* (Forbes, not Reeve) = *borealis* (Lovén), found living in various localities of the Mediterranean. Petit, Catal. Moll. Eur. p. 271.

Clathurella robillardii, sp. n., Adams, Proc. Zool. Soc. 1869, p. 272, pl. 19. fig. 2, Mauritius.

Bela mörchii (Malm) = *demersa* (Tiberi, 1868), Tiberi, Bull. Mal. Ital. ii. p. 261, Mediterranean.

Bela, sp. indetermin. Dentition, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 114, pl. 13. fig. 3.

Mangelia stosiciana, sp. n., Brusina, Journ. Conch. xvii. p. 235, Adriatic. Nearly allied to *rugulosa* (Phil.), with which it had been formerly confounded by the author.

Mangelia cærulans (Phil.), var. ?, figured by Appelius, Bull. Mall. Ital. ii. pl. 4. fig. 1.

Pleurotoma (*Mangelia*) *boakei*, sp. n., G. & H. Nevill, Ceylon Asiat. Soc. Proc. May 1869, Ceylon.

Citharu richardi and *delacouriana*, spp. nn., Crosse, Journ. Conch. xvii. pp. 177, 178, New Caledonia. The first allied to *C. citharella* (Lam.), the second to *Mangelia stromboides* (Reeve).

Pleurotoma brunnea. Perkins proposes this new name for *Pl. plicata*, Proc. Bost. Soc. Nat. Hist. 1869, November. [The name had already been changed into *plicosa* by Jay, Catalogue (1850).]

TEREBRIDÆ.

Terebra swainsoni, var. nov. *inflexa*, *sculptilis*, *suffusa*, *rosacea*, *provinqua*, *ros-*

tellifera, lauta, sulcata, assimilis, spp. nn., Pease, Am. Journ. Conch. v. pp. 64-67, Sandwich Islands.—*T. peasei* (Desh.) = *puncticulata* (Desh.), Pease, ibid. p. 86.

Terebra, sp. indetermin. Dentition, Macdonald, Ann. & Mag. Nat. Hist. iii. p. 114, pl. 13. fig. 2.

CANCELLARIIDÆ.

Cancellaria pusilla, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 274, pl. 19. fig. 12, Canary Islands.

ROSTRIFERA (*Tænioglossa*).

MACDONALD gives a condensed account of the dentition of the Gastropoda, and prefers the term *Campylodonta* for this division, as more expressive of the chief peculiarity, viz. the recurrence of the dental plates. Ann. & Mag. Nat. Hist. iii. p. 113.

STROMBIDÆ.

Strombus japonicus (Reeve) = *vittatus*, var. (Dunker), from Japan. Lischke, Moll. Jap. p. 30, pl. 5. fig. 7.

Pterocera (Lam.). Th. Gill (Am. Journ. Conch. v. pp. 120-139) has given a very elaborate account of the species of this genus, paying particular attention to the homologies of the spines and digitations; he admits two genera, viz. *Pterocera* (s. str.) and *Harpago* (Ad.). The descriptions and synonymy are carefully worked out.

OVULIDÆ.

S. R. ROBERTS has published a catalogue of the species of this family (*Amphiperasidæ*) as an appendix to the Am. Journ. Conch. vol. v. part 3, in which he enumerates 4 genera with 72 species.

CERITHIIDÆ.

Cerithium. Tiberi arranges the recent Mediterranean species of small size in the following manner:—

Cerithium peloritani (Cantr.) = *brongniartii* (Maravigna) = *pirajni* (Benoit) = *lævigatum* (Phil.).

Subgenus *Cerithiolum* (new name for *Bittium* of Leach): *Cerithiolum reticulatum* (Da Costa) = *scabrum* (Oliv.) = *lima* (Costa, Phil., non Brug.); *C. spina* (Pertsch) = *lima*, var. *minor* (Phil.); *C. schwartzii* (Hörnes) = *Turritella pusilla* (Jeffr.).

Subgenus *Cerithiopsis* (F. H.): *metula* (Lovén), *trilineata* (Phil.), *elegans* (Blainv.) = *lacteum* (Phil.), *pulchella* (Jeffr.), *tubercularis* (Mont.) = *metaxa* (Chiaje) = *pygmæum* (Phil.), *barleei* (Jeffr.), *crosseana* (Tiberi) = *subcylindrica* (Brus.), *angustissima* (Forb.) = *metaxa* (Jeffr.) and *benoitiana* (Allery).

Subgenus *Triphoris* (Desh.): *perversus* (L.).

Cerithium benoitianum, sp. n., Allery de Monterosato, Journ. Conch. xvii. p. 275, pl. 13. fig. 2, Palermo.

Cerithium rüppellii (Philippi, 1848) = *erythræonense*, var. (Vaillant) = *savignyi* (Fischer) = ? *articulatum* (Reeve), figured in the Descript. de l'Égypte, pl. 4. fig. 8. Issel, Malac. mar. ross. p. 146.

Cerithium scabrum (Oliv.), var. *sueziensis*, Issel, ibid. p. 149, Suez.

Cerithium tuberculiferum, new name for *C. adansonii* of Reeve, not of

Bruguère, *C. sculptum* and *cylindraceum*, spp. nn., Pease, Ann. Journ. Conch. v. pp. 76, 77, & 85, *sculptum*, pl. 8. fig. 8, Polynesia; *C. alveolus* (Jacquinot) = *piperitum* (Sow.), *C. nassoides* (Sow.) = *maculosum* (Mighels), Pease, ibid. p. 85.

Cerithium variegatum, sp. n., Folin, Fonds de la Mer, p. 135, pl. 20. fig. 8, Bay of Panama.

Cerithium (*Cerithiopsis*) *pulvis* and *bacillum*, spp. nn., figured in Descript. de l'Egypte, pl. 4. figs. 5 & 28, named and described by Issel, Malac. marr. ross. p. 151. [As it is somewhat doubtful whether these shells really belong to *Cerithiopsis*, which differs from *Cerithium* by the proboscis, the Recorder refers them for the present to the *Cerithiidae*.]

Triphoris perlatus, sp. n., figured in the Descript. de l'Egypte, pl. 4. fig. 4, Issel, l. c. p. 152, Red Sea.

Lampania multiformis, sp. n., *zonalis* (Lam.), and *cumingi* (Crosse), from Japan. Lischke, Mal. Blätt. xvi. p. 106, and Moll. Jap. pp. 73-76, pl. 6. figs. 1-10, 15, 16, 11-14.

MELANIIDÆ.

Anculosa downiei (Lea), Georgia and Alabama. Lea, Journ. Acad. Nat. Sciences, Philadelphia, vi. p. 342, pl. 54. fig. 28.

Lithusia purpurea, *curta*, *wheatleyi*, and *cylindrica*, from Alabama, formerly indicated, now more fully described and figured by Lea, l. c. pp. 340, 341, pl. 54. figs. 23-26.

Schizostoma wheatleyi (Lea), Alabama. Lea, ibid. p. 342, pl. 54. fig. 27.

Goniobasis wheatleyi, *sulcata*, *gesnerii*, *bifasciata*, *clathrata*, *gouldiana* (new name for *pulchella*, which is preoccupied), *clavula*, *cochlearis*, and *venusta*, from Alabama, and *similis*, *arata*, *whitfieldensis* (new name for *tenebrosa*), *luteocella*, *connesaugaensis*, *contigua*, *murrayensis*, *granatoides*, and *ornata*, from Georgia, all formerly indicated, now more fully described and figured by Lea, l. c. pp. 328-337, pl. 54. figs. 1-18.

Trypanostoma nuciformis (Lea), Georgia, *castaneum*, *wheatleyi*, and *terebrale* (Lea), Alabama, ibid. pp. 337-339, pl. 54. figs. 19-22.

Melania transversa (Reeve), from the Amazon river, Mousson, Mal. Blätt. xvi. p. 184.

Melania tamsi (Dunker), Cape-Verd Islands, allied to, but distinct from, *M. tuberculata* (Müll.). Brot & Dohrn, Mal. Blätt. xvi. p. 19.

Melania iravadica, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 445, Upper Iravadi.

Melania lutosa (Gould), vars. *levis*, *sulcata*, *crassiuscula*, *graffei*, and *interposita*; *M. bifasciata*, sp. n., with var. *picta*; *M. samoensis* (Reeve), with var. *inserta* and var. *languida*; *M. laxa*, sp. n., *M. peregrina*, sp. n.; *M. acute-spira*, sp. n.: all from the Samoa Islands. Mousson, Journ. Conch. xvii. pp. 362-370; the new species figured on pl. 15.—*Melania lamberti*, sp. n., Crosse, Journ. Conch. xvii. p. 415, New Caledonia.

Melanopsis dufourii (Fér.) found in Tuscany, and in quaternary calcareous tufa near Caldana. Appellius, Bull. Mal. Ital. ii. p. 278.

Melanopsis mariei and *dumbeensis*, spp. nn., Crosse, Journ. Conch. xvii. pp. 69, 70, and 280, 281, pl. 8. figs. 3 & 4, New Caledonia.—*M. elegans* and *livata*, spp. nn., Gassies, ibid. pp. 76, 77, New Caledonia.

LITTORINIDÆ.

Tectaria armata, sp. n., Issel, Malac. mar. ross. p. 192, pl. 2. fig. 7, Suez.

Littorina. The species of this genus are described, and a new subgeneric name for *L. obtusata* (L.), *Neritrema*, is proposed by Récluz, Act. Soc. Linn. Bordeaux, xxvii. [H. & A. Adams have employed the name *Neritoides* (Brown) for the same subgenus, Gen. Moll. i. p. 314.]

Littorina cinerea, sp. n., Pease, Am. Journ. Conch. v. p. 78, pl. 8. fig. 14, Marquesas.

Littorina sitchana (Philippi) comprises as varieties:—*L. kurila* (Middendorff), *subtenebrosa* (Middendorff), *cineta* (Gould), *castanea* (Adams & Reeve), *rudis* (Cooper, not Montagu), and *tenebrosa*, var. (Schrenck), common in Japan. Lischke, Moll. Jap. p. 78.

Littorina obtusata, var. *æstuarii*, Jeffreys, Brit. Conchol. v. p. 205, pl. 101. fig. 8, abundant between tidemarks on the banks of the river Deben, near Sutton.

Lacuna tenella, sp. n., north of Hebrides, in 189 and 650 fathoms. Jeffreys, l. c. fig. 7.

Cremnoconchus, new name for *Cremnobates* (see 'Zool. Record' for 1867, p. 540), which is preoccupied. Adult shell described. Occurs from 30 to 50 miles from the sea. Blanford, Ann. & Mag. Nat. Hist. iii. p. 343.

Risella isseli and *infracostata*, spp. nn., figured in the Descript. de l'Egypte, pl. 5. figs. 35 a, b, and 40, described by Issel, Malac. mar. ross. p. 195, Suez.

Modulus floridanus, sp. n., Conrad, Am. Journ. Conch. v. p. 107, pl. 12. fig. 6, Florida.

PLANAXIDÆ.

Planaxis, sp., from the Gulf of Akaba, shortly described by Issel, Malac. mar. ross. p. 196.

Planaxis atra, sp. n., Pease, Am. Journ. Conch. v. p. 72, pl. 8. fig. 4, Marquesas Islands.

Litiopa savignyi, sp. n., figured in the Descript. de l'Egypte, pl. 3. fig. 19, named and described by Issel, l. c. p. 197, Suez.

RISSEOELLIDÆ.

Fairbankia? (an *Bithymia*?) *turrita*, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 446, Kyoukpong, in flumine Iravadi?, "looks like an estuary shell."

RISSOIDÆ.

Rissoina sequenziana, sp. n., figured in the Descript. de l'Egypte, pl. 4. fig. 3, named and described by Issel, Malac. mar. ross. p. 409, Suez.

Rissoina balteata, sp. n., Pease, Am. Journ. Conch. v. p. 72, Sandwich Islands.

Rissoa gemmula, sp. n., Fischer, in Berchon, Fonds de la Mer, p. 151, pl. 23. fig. 3, Gulf of Gascony, somewhat allied to *dolium* (Nyst).—*Rissoa milleri*, sp. n., Folin, ibid. p. 143, pl. 22. fig. 5, St. Vincent, Cape-Verd Islands.

Rissoa freminvillei, *desmarestii*, and *d'orbignyi* (Audouin), *R. sismondiana*, sp. n., described and named by Issel, l. c. pp. 202–205, Red Sea.

Rissoa polychroma and *R. anguliferens*, spp. nn., Folin, Fonds de la Mer, pp. 133, 134, pl. 15. figs. 5, and 6, Bay of Panama.

Setia ochroleuca, sp. n., Brusina, Journ. Conch. xvii. p. 247, Adriatic.

Scaliola elata, sp. n., Issel, l. c. p. 198, Suez and Zanzibar.

Cingula villa and *tiberiana*, spp. nn., figured in the Descript. de l'Egypte, pl. 3. figs. 17 and 16; *C. madreporica*, *psammitica*, and *waabitica*, spp. nn., Issel, l. c. pp. 198-202, pl. 2. figs. 8, 9, & 10, Suez.

Hydrobia paladilhi, sp. n., Dubrueil, Catal. Moll. de l'Hérault, p. 69, River Lamalou, Southern France. Allied to *H. brevis* (Drap.).

Hydrobia paludestrinoides, sp. n., Bigorre, in a ferruginous spring; *H. peracuta*, sp. n., Lyon and Nyons, near Genave. Paladilhe, Revue et Mag. Zool. 1869, pp. 319-321, pl. 20. figs. 11-14.

Paludestrina procerula, sp. n., Vendrelle in Catalonia, and Salces, Dép. Pyrénées Orientales; *P. pachygastra*, sp. n., Sicily. Paladilhe, l. c. pp. 322-325, pl. 19. figs. 24-27.

Paludinella turgidula, sp. n., Dep. Côte d'Or and Aube; *P. canaliculata*, sp. n., Guran, Dép. Haute-Garonne; *P. pupoides* sp. n., Toisy, Dép. Ain; *P. turriculata*, sp. n., Asnières, Dép. Sarthe. Paladilhe, l. c. pp. 275-281, pl. 20. figs. 1-10.

Annicola maceana, sp. n., Antunez, near Barcelona; *A. lanceolata*, sp. n., St. Jean de Luz, Dép. Basses-Pyrénées; *A. emiliana*, sp. n., Balarac, Dép. Hérault, also Salces in the Pyrenees, Vendrelle in Catalonia, and S. Giuliano, near Geneva; it is the *A. confusa* of Moitessier, but not of Frauenfeld; *A. spirata*, sp. n., Banolas in Catalonia, and Salces, Dep. Pyrénées Orientales; *A. sarakæ*, sp. n., Indre et Loire, near Nantes; *A. compacta*, sp. n., Alicante in Spain; *A. melitensis*, sp. n., Malta; it is the *A. similis* of Issel, Moll. di Malta; *A. balearica*, sp. n., Port Mahon, Minorca; *A. mammillata*, sp. n., Spezzia. Paladilhe, l. c. pp. 227-237 and 273, pl. 19. figs. 6-23.

Annicola confusa (Frauenfeld) is a salt-water shell according to Dubrueil, Catal. Moll. de l'Hérault, p. 104.

Bugesia (Paladilhe). Dubrueil thinks that this genus is established for the embryonic state of some other shell, l. c. p. 105.

Belyrandia. This genus had been established by Bourguignat in the preceding year for a diluvial species found near Paris ('Record' for 1868, p. 462); its chief character is the gibbosity of the shell (Catalogue des Mollusques terrestres et fluviatiles recueillis à l'état fossile dans les parties inférieures du diluvium des environs de Paris, 1868). Paladilhe assigns to this genus the recent species *Cyclostoma gibbum* (Drap.), *Hydrobia moitessieri* (Bourg.), *H. lusitanica* (Paladilhe), *Paludina varica* (Paget), and *B. cylindracea*, sp. n., from Amances, Dép. Aube. Revue et Mag. Zool. 1869, pp. 282-284, pl. 19. figs. 15-17; further, *B. bigorriensis*, sp. n., Bigorre, Dép. Hautes-Pyrénées, in a ferruginous spring, and *B. gibberula*, sp. n., Dép. Hérault. Ibid. pp. 316-318, pl. 20. figs. 18-23.

Pyrgula scalariformis, sp. n., and *Linnea tazewelliana*, sp. n., postpleiocene, Illinois. Wolf, Am. Journ. Conch. v. p. 198, pl. 17. figs. 3 & 2.

Pyrgidium, a new genus for a pleiocene French shell (Tournouer, Journ. Conch. xvii. pp. 86-91, pl. 3. fig. 2), may be noticed here on account of its very great resemblance to *Pyrgula* (Jan).

Lartetia. This genus, very similar to *Paladilhia* in the form of the aperture, but having an obtuse notch instead of a narrow slit on the upper part of the outer margin, was created by Bourguignat (1868) in the work quoted for some diluvial shells found near Paris. Paladilhe now describes the two

following recent species belonging to the same genus: *L. bourguignati* and *moussoniana*, spp. nn., both from the springs of Ain, Dép. Jura. *Revue et Mag. Zool.* 1869, pp. 380-383, pl. 20. figs. 24-30.

PALUDINIDÆ.

Paludina bengalensis, var. *digona* (vel *P. digona*), and *P. dissimilis*, var. *decussatula* (vel *P. decussatula*) [sic]. *Blanford, Proc. Zool. Soc.* 1869, p. 445, Ava.

Paludina. A. Morelet points out that Reeve has misapplied several names given by Lea, and that *P. ingallsiana* of Reeve (not Lea) must take the new name *P. frauenfeldi* (Morelet) [the Recorder long ago named it *cingulata*, *Proc. Zool. Soc.* 1860], and *P. umbilicata* of Reeve (not Lea) the name of *trochoides* (Martens). Further, he describes more fully *P. cochinchinensis* (Morelet, 1866) and *eyriesii* (Morelet, 1865), and suggests that *sumatrensis* (Dunker) and *polygramma* (Martens) may be regarded as varieties, perhaps of *P. bengalensis* (Lam.). *Journ. Conch.* xvii. pp. 192-202.

Morelet (ibid. pp. 403-408) objects to a statement of E. v. Martens (*Zool. Record*, 1865, p. 258), viz. that *Paludina angularis* (Müll.) is identical with *P. quadrata* (Bens.), and not with *P. costata* (Q. & G.). [We must refer the author to the fact that O. F. Muller gives Canton as the habitat, and also to the figure of Muller's specimen in *Chemnitz, Conchylien-Kabin.* ix. fig. 1222.]

Paludina turbinata (Morelet) = *polyzonata* (Frauenf.). [Morelet, *l. c.* p. 408.

Paludina spillmannii (Lea), Alabama. *Lea, Journ. Acad. Nat. Sciences Philad.* vi. p. 343, pl. 54. fig. 29.

Melantho. J. Lewis has published his observations made chiefly on specimens in the collection of Mr. Wheatley. *Am. Journ. Conch.* v. pp. 33-36: he compares examples from various localities; and it appears as if numerous so-called species distinguished by North-American authors proved to be untenable, although this is not admitted by the author.

Bythinia proxima (Frauenf.), var. *radiata*, striped like *Bulimus radiatus*, from Innsbruck. *Gredler, Verh. zool.-bot. Gesellsch.* 1869, p. 916.

Bythinia bourguignati, sp. n., Paladilhe, *Revue et Mag. Zool.* 1869, p. 224, pl. 19. figs. 1-3, Jardin Picos, in the neighbourhood of Perpignan, Pyrénées Orientales.

Bythinia iravadica, sp. n., *Blanford, Proc. Zool. Soc.* 1869, p. 446, Ava.

VALVATIDÆ.

Valvata bourguignati, sp. n., Letourneux, *Rev. et Mag. Zool.* 1869, p. 197, only one millimetre large, intermediate between *V. globulina* (Fér.) and *minuta* (Drap.), Vendée.—*V. colbeaui*, sp. n., Roffiaen, *Ann. Soc. Malacol. Belg.* iii. p. 81, Switzerland.

AMPULLARIIDÆ.

Ampullaria rotula, sp. n., Mousson, *Mal. Blätt.* xvi. p. 183, group *Ceratodes*, river Magdalena. The same author gives some notes on *Amp. quercina* (Spix), *phæostoma* (Phil.), and *reflexa* (Swains.), found in the same river. *Ibid.* p. 181.

Pomus pyrum. Egg-capsules described by Tate, Am. Journ. Conch. v. p. 152.

TURRITELLIDÆ.

Proto cornelliana, sp. n., Tryon, Am. Journ. Conch. v. p. 164, pl. 17. f. 3, Honolulu. The author states that this genus, hitherto known from fossils only, has greater affinity to *Turbonilla* than to *Turritella*.

CÆCIDÆ.

E. DE FOLIN has examined the value of slight differences in the septum of these shells for specific distinction; he rejects Dr. Carpenter's hypothesis of "translation;" *Brochina* is not distinct from *Cæcum*; and *Strebloceras* and *Phlebotoceras* prove to be founded on accidental instances of the persistence of the shell of the primary stage upon that of the second, and even the third. Journ. Linn. Soc. Zool. x. pp. 254-264, pl. 8.

Cæcum orientale, sp. n., Folin, Fonds de la Mer, livr. vi. & vii. p. 107, pl. 11. figs. 5, 6, Rhodus; *C. syriacum*, sp. n., Folin, ibid. livr. viii. 1869, p. 114, pl. 11. figs. 7, 8, Tripoli, in Syria; *C. variegatum*, with a var. *minima*, and *C. inflatum*, spp. nn., Folin, ibid. pp. 120, 121, pl. 15. figs. 3, 4, and 5, 6, Hong-kong; *C. formosulum*, with two varieties, *decussatum* and *marmoratum*, spp. nn., Folin, ibid. pp. 124-126, pl. 11. figs. 9, 10, 11, 12, and pl. 15. figs. 1, 2, New Providence, Bahama Islands; *C. læve*, var. *subornatum*, *C. undatum*, var. *contraria*, *C. suave*, and *C. mutabile*, spp. nn., described and figured, with remarks on *C. teniatum* and *impartitum*, Folin, ibid. pp. 130-133, pl. 20. figs. 1, 2, and 3, 4, Bay of Panama; *C. inclinatum* and *marginatum*, spp. nn., Folin, ibid. pp. 142, 143, pl. 22. figs. 1, 2, and 3, 4, and var. *subornata* of *C. vitreum* (Folin), p. 142, from St. Vincent, Cape-Verd Islands; *C. armoricum*, sp. n., Folin, ibid. p. 148, pl. 23. figs. 4, 5. Gulf of Gascony; *C. formulosum*, var. *sulcata*, and several varieties of *C. trachea* (Mont.) from New Providence, Bahamas, Folin, ibid. p. 164.—On some doubtful species allied to *C. corrugulatum* (Carpenter), Folin, ibid. p. 170.

Cæcum formulosum and *C. decussatum*, spp. nn., Folin, l. c. p. 258, pl. 8. figs. 4 & 5, Bahama Islands; *C. infimum*, Aspinwall, *binamillatum*, La Guayra, *carmenense*, Carmen, *orientale*, Messina, *auriculatum*, Palermo [Palermo?], *strigosum*, Rio Janeiro, *vestitum*, Vera Cruz, *circumvolutum*, Aspinwall, *torquatum*, Guadaloupe, *cuccina*, Vera Cruz, *veracruzianum*, Vera Cruz. These species, previously published by L. de Folin in 'Les Fonds de la Mer,' are now described in the Journal of the Linn. Soc. Zool. vol. x. pp. 260-263, pl. 8.

Brochina chieraghiniana, sp. n., Brusina, Journ. Conch. xvii. p. 248, Adriatic.

Brochina glabra. Remarks on specimens from St. Vincent, Folin, Fonds de la Mer, p. 142; and on its varieties generally, ibid. p. 170.

Meioceras (Carpenter) is distinguished from *Cæcum* by the structure of the apex, indicating a different mode of growing. All species hitherto known are from the Atlantic coasts of Tropical America. The following species are described and figured:—*carpenteri* (Beau), *cornu-copice* (Carp.), *cornu-bovis* (Carp.), *tumidissimum*, *carpenteri*, *bitumidum*, *moreleti*, *deshayesi*, *undulosum*, *cozi*, and *tenerum*, spp. nn., Folin, Ann. Soc. Linn. Maine-et-Loire, xi. pp. 7-14, with 1 plate.

Meioceras subinflexum, sp. n., Folin, Fonds de la Mer, p. 165, pl. 23. fig. 8, New Providence, Bahamas; several varieties of *M. cornu-copieæ* and *M. cornu-bovis* from the same locality, described by the same author. Ibid. p. 164.

Moreletia, gen. nov., "testa tubularis, elongata, basin versus inflata, haud decollata, apice subnucleoso." *M. cornu-copieæ*, sp. n., Folin, Fonds de la Mer, livr. viii. pp. 120-122, pl. 15. f. 7-9, Hongkong. The generic name being preoccupied, has been changed to *Parastrophia* by the author. Ibid. p. 174.

VERMETIDÆ.

Vermetus nodosorugosus, sp. n., Lischke, Mal. Blätt. xvi. p. 106, and Moll. Jap. p. 84, pl. 5. figs. 1-4, Ohosaka, Japan.—*V. imbricatus* (Dunker) = *adamsii* (Mörch), also from Japan. Lischke, Moll. Jap. p. 83.

CALYPTRÆIDÆ.

Crepidula unguiformis and *fornicata*. Ovicapsulæ described by Perkins, Proc. Bost. Soc. Nat. Hist. Oct. 1869 (Am. Journ. Conch. v. p. 220).

Crepidula walshi (Herrmannsen) = *plana* (Adams and Reeve); a variety = *scabies* (Reeve) from Japan. Lischke, Moll. Jap. p. 82.

CAPULIDÆ.

[*Capulus*] *Pileopsis hungarica*. A compressed variety from the Adriatic. Petit, Catal. Moll. Eur. p. 262.

Capulus shreerei, sp. n., Conrad, Am. Journ. Conch. v. p. 105, pl. 10. fig. 5. of C

[2] following three new genera are so insufficiently described that their systematic position cannot be ascertained:—

p. 2 *insonia*, gen. nov. "Testa naticoides, impervia; anfr. paucis, descendens rapideque grandescens; spira elevata; apertura lata; columella tici, subcrassata; labro callo tenui adjuncto." *R. ceylanica* and *R.*

pl *lla*, spp. nn., G. & H. Nevill, Ceylon Asiat. Soc. Proc. May 1869, Ceylon.

G *ambertia*, gen. nov. "Testa pupæformis, alba, lævis, nitida; spira cylindro-ovata, apice mamillato, anfractibus paucis, rapide accrescentibus; apertura semilunaris, labro continuo, margine dextro acuto, recto, sinistrali apso, inferne subreflexo, columella subtorta. Operculum?" *L. montrouzieri*, n., Souverbie, Journ. Conch. xvii. p. 420, Art Island, New Caledonia. 10 millimetres long.

Caledoniella, gen. nov. "Testa non umbilicata, heliciformis, ovato-orbiculata, tenuis, epidermide tenuissima labrum superante induta; spira perpressa, sublateralis; anfr. pauci, rapidissime accrescentes; apertura obliqua, subampla, marginibus callo lato subexpanso junctis, labro recto, acuto. Operculum?" *C. montrouzieri*, sp. n., Souverbie, Journ. Conch. xvi. p. 421, Art Island, New Caledonia. Diameter major 7 millimetres.

SCUTIBRANCHIATA.

PODOPHTHALMA.

NERITIDÆ.

Nerita pica (Gould) = *japonica* (Dunker) = *Neritina melaleuca* (Martens), Japan. Lischke, Moll. Jap. p. 87, pl. 5. figs. 8, 9.

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Neritina (Lam.). The operculum of this genus exhibits two processes which may be called rib (apophysis costalis) and peg (apophysis cardinalis). They are somewhat different in the various sections of the genus :—

1. *Theodoxus* (Montf.) = *N. ovals* (Menke) = *N. edentula* (Récluz) = *Vitta* (Mörch & Adams), the European freshwater species. Peg rudimentary.

2. *Mitrule* (Menke, 1830) = *N. crepidiformes* (Récluz) = *Dostia* (Gray), preferring brackish water.

3. *N. hemisphaerica* (Menke) = *Clypeolum* (Récl.) = *Neritella* (Mörch & Ad.), in freshwater streams.

4. *N. picta* (Menke) = *N. serrata* (Récl., 1845) = *Clithon* (Récl., 1850) = *Neritea* (Roth, 1855) = *Puperita* (Gray, 1857) = *Neritina* (Mörch & Ad.), preferring brackish water.

In these three sections peg and rib are well developed, and quite separated from each other.

5. *N. spinosa* (Menke) = *Coronu* (Récl.) = *Clithon* (Montf., Mörch, & Ad.), inhabitants of fresh water. Peg and rib connected in half their length.

6. *Neritodryas*, new subgenus. Rib deeply furrowed, multilobate at the tip, and deeply excavated beneath. *N. cornea* (L.) = *amphibia* (Less.) and *N. dubia* (Chemn.) = *philippinarum* (Sow.), both living on damp foliage above the water.

7. *Neritona*, new subgenus. Peg depressed, almost flat, lobate at its tip. *N. labiosa* (Sow.) in fresh water. This species has also been observed by the author in the northern part of Celebes.

Still more depressed is the peg in the operculum of the genus *Nerita*, nn., is also generally distinguished by a peculiar sculpture of the outer surface of the operculum; and in that of *Navicella*, Lam. (*Catillus*, Montf.), vest the two processes can be traced, not as elevations, but as flat prolong into the edge of the operculum. Martens, Sitzungsberichte Ges. naturf. Fr. Berlin, 1869, pp. 21-23.

Neritina knorri (Récluz) = *beckii* (in Sowerby's Thesaur. and Reeve's chol. Icon., but not of Récluz) = *canalis* (Gassies, Moll. Nouv. Calé., 8. of Sow.) comes from Eastern Africa. Martens, Nachrichtenbl. mal. Gesellsch. i. p. 154.

Theodoxus godeffroyanus, sp. n., Mousson, Journ. Conch. xvii. p. 371, pl. fig. 7, Upolu, Samoa Islands.

Clithon chrysocolla (Gould) distinguished from *Cl. roissyi* (Récluz), and *C. propinquus*, sp. n., from Upolu, Mousson, Journ. Conch. xvii. pp. 372, 373; the latter figured on pl. 15. fig. 8.

Clypeolum petiti (Récluz), var. *samoensis*, and *Cl. planissimum*, sp. n., from Upolu, Mousson, ibid., pp. 377, 378; the latter figured on pl. 15. fig. 9.

Smaragdia is a new genus proposed by Issel for *Nerita viridis* (L.), the eyes being sessile and not stalked; *S. feuilleti* (Audouin as *Neritina*), Descript. de l'Egypte, pl. 5. fig. 11, described by Issel, Malac. mar. ross. p. 212. [It is identical with *Neritina rangiana* (Récluz).]

Navicella haustum (Reeve), var. *fissa*, *N. scarabeus*, var. *decapitata*, and *N. magnifica* (Reeve), var. *truncata*, from Upolu. Mousson, Journ. Conch. xvii. pp. 383-386.

TROCHIDÆ.

Phasianella brongnartii (Audouin) described by Issel, Malac. mar. ross. p. 216.

Alcyona lineata and *striata*, spp. nn., Pease, Am. Journ. Conch. v. pp. 69, 70, Sandwich Islands.

[*Collonia*] *Turbo pustulatus* (Brocchi) figured in Savigny's Descript. de l'Egypte, pl. 5. fig. 26; *T. eroopolitanus* and *arsinoënsis*, spp. nn., figured in the same work, pl. 5. figs. 27 & 28, described by Issel, l. c. pp. 219, 220.

[*Calcar*] *Turbo rugosus* (L.) found on the northern coast of Spain. Petit, Catal. Moll. Eur. p. 269.

Pachypoma virescens, sp. n., Pease, Am. Journ. Conch. v. p. 73, pl. 8. fig. 10, Tarawa Island, Polynesia.

Leptothyra costata, sp. n., Pease, l. c. p. 70, Maui, Sandwich Islands.

Liotia atomus, sp. n., Issel, Malac. mar. ross. p. 217, pl. 3. fig. 11, Suez.

Cyclostrema philippii, sp. n., figured in the Descript. de l'Egypte, pl. 5. fig. 32, named and described by Issel, and *C. cingulatum* (Philippi, as *Delphinula*), both from the Red Sea. Issel, l. c. pp. 189, 190.

Cyclostrema (Tubiola) subdisjuncta, H. Ad. (1868) = *Delphinula tubulosa* (Nevill, 1868), Nevill, Journ. As. Soc. xxxviii. 2. p. 69, pl. 13. fig. 1, Ceylon.

Adeorbis striatella, sp. n., Souverbie, Journ. Conch. xvii. p. 419, Art Island, New Caledonia.

Homalogyra fischeriana, sp. n., Allery de Monterosato, Journ. Conch. xvii. p. 274, pl. 13. fig. 1, Catania, Sicily.

Trochus byronianus (Wood) different from the Hawaiian *Polydonta sandwichensis* (Eyd. & Soul.). Pease, Am. Journ. Conch. v. p. 82.

Omphalius turbinatus, sp. n., Pease, l. c. p. 84, pl. 8. fig. 15, La Paz, Gulf of California.

[*Zizyphinus*] *Trochus papillosus* (Da Costa, 1778). This name is not prior to *granulatus* (Born, Index, 1778; Testac. 1780), Martens, Mal. Blätt. xvi. p. 242.

Trochus hemprichii, sp. n., figured in the Descript. de l'Egypte, pl. 3. fig. 6; *T. bellardii* and *sismondæ*, spp. nn., Issel, Malac. mar. ross. pp. 223-225, pl. 2. figs. 12 & 13, Suez. [These species may be placed in the subgenus *Gibbula*.]

Trochus spengleri (Chemn.), *T. rota* (Dunker), *chloromphalus* (A. Adams), *argyrostomus* (Gmel.), *nigerrimus* (Gmel.), *carpenteri* (Dunker), and *nigricolor* (Dunker), all from Japan, described and figured by Lischke, Moll. Jap. p. 100, pl. 6. figs. 17-21, and pl. 7.

Cantharidium, Schaufuss in Pâtel's System and Catalog, pp. 11 & 61, is a name substituted for *Cantharis*, which is preoccupied. [Montfort himself writes *Cantharidus*.]

Minolia pulcherrima and *bellula*, spp. nn., Angas, Proc. Zool. Soc. 1869, p. 48, pl. 2. figs. 10 & 11, New South Wales.

[*Margarita*] *Trochus glaucus* (Möller as *Margarita*), dredged at Skye. Jeffreys, Brit. Conchol. v. p. 202, pl. 101. fig. 6.

Stomatia. Only the specific name *phymotis*, but not the generic name *Stomatia*, can be ascribed to Helbling. Martens, Mal. Blätt. xvi. p. 236.

Broderipia eximia, sp. n., G. & H. Nevill, Journ. Asiat. Soc. xxxviii. 2, p. 69, pl. 13. fig. 7, Ceylon.

Scissurella doriae, sp. n., figured in the Description de l'Egypte, pl. 5. fig. 8, named and described by Issel, Malac. mar. ross. p. 228, Suez.

Trochotoma crossei, sp. n., Folin, Fonds de la Mer, p. 144, pl. 22. fig. 6, St. Vincent, Cape-Verd Islands.

Haliotis gigantea (Chemn.)=*tubifera* (Lam.). A variety of it is *H. discus* (Reeve), and the young *H. kamtschatkana* (Jonas); fully described by Lischke, Moll. Jap. pp. 101-105.—*H. gruneri* (Phil.), also from Japan, ibid. p. 105.

Haliotis hargravesi, sp. n., Cox, Proc. Zool. Soc. 1869, p. 49, pl. 26. fig. 4, New South Wales.

Haliotis (*Padollus*) *brazieri*, sp. n., Angas, Proc. Zool. Soc. 1869, p. 45, pl. 2. fig. 1, New South Wales.

EDRIOPHTHALMA.

Fissurella galeata (Helbling, 1779, as *Patella*)=*pileopsides* (Reeve). Martens, Mal. Blätt. xvi. p. 235.

Emarginula. A new subgenus is *Siphonella*, presenting, instead of the slit, a groove similar to that of *Siphonaria*. *E. (Siphonella) arconatii*, sp. n., Issel, Malac. mar. ross. p. 232, Gulf of Acaba. [This subgenus seems to be identical with *Subemarginula* (Blainv.).]

CYCLOBRANCHIATA.

TECTURIDÆ.

[*Tectura*] *Acmaea testudinalis* (Müll.), *conulus* (Dunker), and *schrenckii* (Lischke), from Japan, described by Lischke, Moll. Jap. pp. 105-109; the last figured on pl. 8. figs. 1-4.

LEPETIDÆ.

The characters of this family are, according to W. H. DALL, Am. Journ. Conch. v. pp. 140-150:—Branchiæ none; eyes none; rostrum provided with labial tentacles; dental formula $\frac{1}{2 \times 2}$; rhachidian tooth rhomboidal, cuspidate, laterals slender, cuspidate: shell patelliform. The genera are the following:—

Lepeta, Gray, 1847, = *Cryptobranchia*, Middendorff, pars, = *Propilidium*, Gray, not Forbes & Hanley, = *Pilidium*, Stimps., not Forbes & Hanl., or Middend.

Subgenus *Lepeta*, Dall ex Gray. Apex erect; rhachidian tooth tricuspid, the middle "cusp" much larger; lateral teeth simply cuspidate. *L. cæca* (Müll., as *Patella*) = *candida* (Couthouy, also as *Patella*), Norway, Finmark, Greenland, Nova Scotia, and Grand Menan, pl. 15. fig. 1 (dentition, young and adult shell).

Subgenus *Cryptobranchia*, Dall ex Middend. Apex inclined anteriorly; rhachidian tooth with three nearly equal denticles; uncini broadly hooked. *Cr. concentrica* (Midd., as variety of *P. cæca*) = *L. cæcoides* (Cooper), Ochotsk Sea, Behring Sea, Unalashka, Puget Sound, California, pl. 15. fig. 2 (dentition and animal); *Cr. alba*, sp. n., pl. 15. fig. 3, Seniavine Strait and Plover Bay, East Siberia; *Cr. ? instabilis*, sp. n., pl. 15. fig. 6, Sitka, shell only known.

Pilidium (Forbes, 1849, not Middend.) = *Iothia* (Gray). *P. fulvum* (Müll.), pl. 15. fig. 4 (dentition and shell); *Patella rubella* (O. Fabr.) appears to be a coarser and paler variety.

Tectura (M.-Edw.) and *Acmaea* (Eschsch.) are identical; *Lottia* (Sow.) =

Scurria (Orb.), differs from the *Lepetidae*; *Sc. mitra* (Eschsch.), pl. 15. fig. 6 (dentition, shell, and soft parts).

PATELLIDÆ.

Patella toreuma (Reeve), *amussitata* (Reeve), and *nigrolineata* (Reeve), *saccharina* (L.), with a variety = *lanx* (Reeve), and *P. pentagona* (Borné, Reeve), all from Japan, described by Lischke, Moll. Jap. pp. 109-114; the first and third are figured on pl. 8. figs. 12-15, and figs. 5-11.

Patella articulata, its variations, Martens in v. d. Decken's Reisen in Ost-Afrika, iii. p. 65.

Patella mytilina (Helbling, 1779) = *cymbularia* (Lam.), Martens, Mal. Blätt. xvi. p. 235.

Cellana is a new subgenus of *Nacella*, conical, with the apex subcentral, *N. (C.) cernica*, sp. n., Adams, Proc. Zool. Soc. 1869, p. 273, pl. 19. fig. 7. Mauritius. [The distinctness from a true *Patella* is not apparent.]

CHITONIDÆ.

W. MARSHALL describes the macroscopical and microscopical structure of the valves, particularly a system of channels within the second principal or tegment stratum. He observes that the liver of the Chitons has the same structure as that of Crustacea; but comes to the conclusion that they belong really to the Mollusca, forming a separate division of the same value as the Nudibranchs, Cyclobranchs, &c., being even more nearly allied to the first than to the second of these divisions. Archives Néerlandaises des Sciences Exactes et Naturelles, vol. iv. pp. 328-341, pl. 5.

Chiton affinis, sp. n., figured in the Descript. de l'Egypte, pl. 3. figs. 8 & 9, named and described by Issel, Malac. mar. ross. p. 234, Suez. Allied to *Ch. siculus* (Gray).

TECTIBRANCHIATA.

BULLIDÆ.

Cylichna villiersi and *monyii* described by Issel, Malac. mar. ross. p. 170, Red Sea.—*Cylichna*, sp. n.?, Tapparone, Atti Soc. Ital. iii. p. 405, Spezzia.

[*Cylichna*] *Bulla robagliana*, sp. n., Fischer in Berchon, Fonds de la Mer, p. 150, pl. 23. fig. 2, Gulf of Gascony.

Tornatina olivæformis, sp. n., figured in Descript. de l'Egypte, pl. 6. fig. 25, and *T. pusilla*, sp. n., both from the Red Sea. Issel, l. c. pp. 170-172; the latter figured on pl. 1. fig. 15.

Utricularius globosus (Lovén, as *Amphisphyra*), from Magnus Bay, in 60-80 fathoms, Jeffreys, Brit. Conchol. v. p. 223, pl. 102. fig. 8.

Atys. The monograph of this genus is continued by Sowerby in Reeve's Conchologia Iconica, from plate 2, species 5, to plate 5, species 30. New are:—*guldinii* [*guldinü*], pl. 5. fig. 23, St. Vincent, and *attenuata* [-us], pl. 5. fig. 20, locality unknown.

Bulla (Atys) cylindrica. This name was first given by Helbling. Martens, Mal. Blätt. xvi. p. 236.

Atys costulosa, sp. n., Pease, Am. Journ. Conch. v. p. 73, Oahu.

Aplustrum gouldii (Couthouy), Massachusetts, *thalassarchi* (Martini) = *Bulla aplustre* (L.), Mauritius, and *debile* (Gould), United States, figured by Sowerby in Reeve's Conchologia Iconica, vol. xvi. *Apl.* pl. 1.

Akera subangulata (Möller), Greenland, *tumida* (A. Adams), New Zealand, *hanleyi* (A. Ad.), Zetland, *soluta* (Chemn.), Zanzibar and Philippines, *bicincta* (Quoy & Gaimard), New Holland, *bullata* (Müll.), Denmark, and *tenuis* (A. Ad.), Torres Straits, figured in Reeve's Conchol. Icon. vol. xvi. *Akera*, pl. 1.

Bulla conspersa, sp. n., Pease, Am. Journ. Conch. v. p. 72, pl. 8. fig. 9, Marquesas Islands [near *media* (Philippi)].

Haminea subpellucida, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 275, pl. 19. fig. 13, Lisbon.

[*Haminea*] *Bulla dilatata* (Leach) and *B. elegans* (Leach) = *folliculus* (Menke), both distinct from *B. hydatidis* (L.), and European. Petit, Catal. Moll. Eur. p. 267.

Philine vaillanti is a new name for *Bullæ angasi* of Vaillant, in Journ. Conch. 1865, which is distinct from the true *angasi* (Crosse & Fischer). Issel, Malac. mar. rocs. p. 166.

LOPHOCERCIDÆ.

Orynoë delicatula sp. n., G. & H. Nevill, Journ. As. Soc. xxxviii. 2. p. 67, pl. 13. fig. 5, Ceylon. *Orynoë* (Raf.) = *Icarus* (Forbes) = *Lophocercus* (Kiehn); the other known species of this genus are mentioned, p. 66.

Lobiger viridis, sp. n., G. & H. Nevill, l. c. p. 68, pl. 13. fig. 6, Ceylon.

Volvatella cineta, sp. n., G. & H. Nevill, l. c. p. 67, pl. 13. fig. 4, Ceylon. Also the colours of the living animal are shortly described.

Cylindrobulla sculpta and *pusilla*, spp. nn., G. & H. Nevill, l. c. p. 68, pl. 13. figs. 2 & 3, Ceylon.

APLYSIIDÆ.

Dolabella gigas (Rang), *elongata*, sp. n., Seychelles, *rumphii* (Cuv.), *ecavata* (Rang), *teremidi* (Rang), and *guayaquilensis* (Petit?). The shells are figured by Sowerby in Reeve's Conchologia Iconica, vol. xi. *Dolab.* pls. 1, 2.

Dolabrifera vitrea, sp. n., Fiji Islands, *sowerbyi* (Guilding), *pacifica* (Pease), *cuvieri* (H. & A. Adams), *marmorea* (Pease), *ascifera* (Rang), and *olivacea* (Pease). The shells are figured by Sowerby in Reeve's Conchologia Iconica, vol. xvi. gen. *Dolabrifera* (1868).

Aplysia (L.). Sowerby's monograph in Reeve's Conchologia Iconica, vol. xvii. contains on 10 plates the shells of the following 48 species:—*gigantea*, sp. n., pl. 1. fig. 1, Swan River; *kerandreni* (Rang), *camelus* (Cuv.), *peterseni* (Sow.), *tigrina* (Rang), *depilans* (L.), *dactylomela* (Rang), *excavata*, sp. n., pl. 3. fig. 8, Port Jackson; *protea* (Rang), *ocellata* (Orb.), *trigona*, sp. n., pl. 4. fig. 11; *fimbriata* (Adams & Reeve), *hyalina*, sp. n., pl. 3. fig. 13, Port Jackson; *sandwicensis*, sp. n., pl. 3. fig. 14, Sandwich Islands; *nigra* (Orb.), *japonica*, sp. n., pl. 4. fig. 16, Japan; *fasciata* (Poiret), *orientalis*, sp. n., pl. 5. fig. 18, Chinese seas; *guadaloupensis*, sp. n., pl. 5. fig. 19, Guadaloup; *juliana* (Quoy), *marmorata* (Blainv.), *anguilla* (Cuming, MS.), pl. 6. fig. 22, locality unknown; *rosea* (Rathke) [the locality, "West Indies," is perhaps an error; Rathke observed his species on the coast of Norway], *conca* (Sow.), *maculata* (Rang), *lurida* (Orb.) *incus* [inca] (Orb.), *sinensis*, sp. n., pl. 7. fig. 29,

Chinese seas; *brasiliانا* (Rang), *sydneyensis*, sp. n., pl. 7. fig. 31, Sydney; *lessoni* (Rang), *ferussaci* (Rang), *grandis* (Pease), *angasi*, sp. n., pl. 8. fig. 35, Port Jackson; *sorex* (Rang), *quadrata* (Sow.), from Algiers; *similis*, sp. n., pl. 9. fig. 38, locality unknown; *subquadrata* (Gould)*, *cornigera*, sp. n., pl. 9. fig. 40, Philippines; *punctata* (Cuv.), *norfolkensis*, sp. n., pl. 10. fig. 42, Norfolk Island; *rangiana* (Orb.), *vulgaris* (Blainv.), *marginata* (Blainv.), *longicornis* (Rang), *unguifera* (Rang), and *petalifera* (Rang).

Aplysia punctatâ, British, and *A. depilans*, at Guernsey, Jeffreys, Brit. Conch. v. pp. 2-8; the first figured on pl. 1. fig. 1.

PLEUROBRANCHIDÆ.

Pleurobranchus. Sowerby figures in Reeve's Conchologia Iconica, vol. xvii., the shells of the following few species:—*plumula* (Montagu), *peronii* (Cuv.), *aurantiacus* (Risso), *membranaceus* (Montagu), *perforatus* (Philippi), *patagonicus* (Orb.), *citrinus* (Rüppell), and *brevifrons* (Philippi).

Pleurobranchus membranaceus and *plumula* fully described by Jeffreys, Brit. Conch. v. pp. 9-14; the latter figured on pl. 1. fig. 2.

Pleurobranchus oblongus (Audouin) described only from the figure in the Descript. de l'Egypte, pl. 3. fig. 1, by Issel, Malac. mar. ross. p. 163.

RUNCINIDÆ.

Runcina hancocki (Forbes), Jeffreys, Brit. Conch. v. p. 15, pl. 1. fig. 3.

NUDIBRANCHIATA.

In Jeffreys's 'British Conchology' this order has been worked out by the late J. ALDER, one of the authors of the well-known Monograph of the British Nudibranchiata; it contains not only a condensed abstract from that larger work, but also numerous additions. We shall mention here only those species which are not described in the "Monograph."

Pleurophyllidia loveni (Bergh), the only British species. Jeffreys, Brit. Conch. v. p. 17, pl. 1. fig. 4.

Pleurophyllidia formosa (Kelaart, as *Diphyllidia*) from Ceylon, externally and anatomically fully described by R. BERGH, Verh. zool.-bot. Gesellsch. 1869, pp. 225-244, pls. 1-3.

RUD. BERGH has published a very elaborate and valuable monograph of this family. He describes first the anatomical and morphological characters, chiefly from *Phyllidia varicosa* (Lam.), and comes to the conclusion that this family is, in shape of body as well as in the majority of the anatomical peculiarities, allied to the *Dorididæ*, and amongst them especially to the genus *Doridopsis* (Ald. and Hanc.). The family is, as far as we now know, restricted to the western part of the Pacific and the great Indian Ocean to the Red Sea. The genera and species are the following:—

* Dr. Gould never published this species. It is not distinct from *A. punctata* (Cuv.). Note by G. Tryon, Am. Journ. Conch. v. p. 222.

Phyllidia (Cuv.). Dorsal tubercles elongate and confluent; vent dorsal; pharynx symmetrical. *Ph. varicosa* (Lam.) = *trilineata* (Cuv.), Indian Seas and Western Pacific, observed from Mauritius to New Ireland, pp. 499-504, pl. 14-18A; *Ph. arabica* (Ehrenberg), Red Sea, pp. 504-506; *Ph. elegans*, sp. n., Philippines, p. 506, pl. 18B, 19; *Ph. ocellata* (Cuv.), Timor, p. 508. *Ph. annulata* (Gray), Lord Hood's Island, and *Ph. ceylonica* (Kelaart), Ceylon, could not be examined by the author, p. 509.

Phyllidiella, gen. nov. Dorsal tubercles rounded and disposed in quincunx; vent dorsal; pharynx asymmetrical. *Ph. pustulosa* (Cuv.), Philippines, Amboyna, Timor, pp. 510-512, pl. 20-24 A; *Ph. albonigra* (Quoy and Gaimard), island of Tonga, p. 512; *Ph. nobilis*, sp. n., Philippines, pp. 512-514, pl. 24 B.

Fryeria (Gray). Dorsal tubercles as in *Phyllidiella*; vent between back and foot at the hinder end of the median line. *F. rüppelli* = *Phyllidia pustulosa* of Rüppell, but not of Cuvier = *Fr. pustulosa* (Gray), Red Sea, p. 514.

Crimora papillata (Alder and Hancock), Guernsey. Jeffreys, Brit. Conch. v. p. 74.

Hero formosa (Lovén), Northumberland and Frith of Clyde. Jeffreys, Brit. Conch. v. p. 63.

Lomantus portlandicus (Thomps.), Weymouth. Jeffreys, ibid. p. 65.

Doto cuspidata (Alder and Hancock), Jeffreys, Brit. Conch. v. p. 61, Shetland, in 75-80 fathoms.

Eolis grossularia and *E. conspersa*, spp. nn., Fischer, Journ. Conch. xv pp. 6 & 7, Bassin d'Arcachon, South-western France.

Eolis adeluidæ (Thomps.), Weymouth, Jeffreys, l. c. p. 55.

Embletonia minuta (Forbes and Goodsir), Jeffreys, l. c. p. 36.

Embletonia grayi, sp. n., Kent, Proc. Zool. Soc. 1869, p. 109, pl. 8, Vicarage Docks, London, in half-salt water, feeding upon *Cordylophora*.—It is allied to *E. pallida* (Alder and Hancock), which lives in the Baltic, Möb. Ann. & Mag. Nat. Hist. iii. p. 247.

Elysia viridis, Jeffreys, Brit. Conch. v. p. 31, pl. 1. fig. 6.

Limapontia nigra (Johnst.), Jeffreys, Brit. Conch. p. 28, pl. 1. fig. (copied from Meyer and Möbius); *L. depressa* (Alder and Hancock), Sunderland and Swansea. Ibid. p. 29.

Actæonia corrugata and *A. cocksii* (Alder and Hancock), Jeffreys, l. c. p. 30.

PULMONATA INOPERCULATA.

GEOPHILA.

The changes in the classification rendered necessary by the recent researches of various authors into the structure of the radula of several genera are pointed out by E. v. MARTENS, Nachrichtsb. mal. Gesellsch. i. pp. 194-198, 209-216.

DUBRUEIL has published observations on the internal organs of *Arion rufus*, *Testacella haliotoidea*, *Zonites lucidus* (Drap.) [= *Hyalina droparnaldi*, Beck], and *Z. algirus*, *Helix splendida*, *vermiculata*, *galloprovincialis*, *cespitum*, *Bulimus decollatus*, and *Zua folliculus*. They are chiefly measurements of the generative organs. Catal. Moll. de l'Hérault, pp. 83-97.

ONCHIDIIDÆ.

Onchidium. The typical species, *O. typhæ* (Buch.), has been re-examined by F. Stoliczka; he proves by anatomical investigation that it generically agrees throughout with *O. peronii* (Cuvier), and therefore that the genera *Peronia* (Blainv.) and *Onchidella* (Gray) are to be cancelled. The sexes are united in the same individual; but the generative glands are distinct from each other, not coalesced; the vas deferens opens as does the oviduct in the hinder end of the animal; but a lateral furrow leads the sperma [somewhat as in *Aplysia*] to the penis, which is situated near the right tentacle. The tentacles are really retractile. The animal lives on muddy ground, near and also within brackish water, like the genus *Scarabus*; one species, *O. tenerum* (Stol.), burrows in mud, sometimes several inches deep. Stoliczka, Journ. As. Soc. Bengal, xxxviii. pp. 86-111, pls. 14, 15.

Onchidium pallidum, *trigrinum*, and *tenerum*, spp. nn., Lower Bengal. Stoliczka, l. c. pp. 103, 105, 107, pl. 15. figs. 1-3.

Oncidium cellticum, Jeffreys, Brit. Conchol. v. p. 95, pl. 3. fig. 5. [*Oncidium* is a grammatical correction of *Onchidium*.]

Onchidium carpenteri (Binn.), Cape St. Lucas, California. Binney & Afand, Land- and Freshwater Shells of N. Am. i. p. 307.

fig.

VAGINULIDÆ.

[*Peronicella floridana* (Binn.). Binney and Bland, l. c. p. 363.

cou

p.

AGNATHA.

p *Rhytida* (Alb.). *Helix inæqualis* (Pfr.) has no jaw; teeth of the radula as in *Glandina*. Semper, Zeitschr. wiss. Zool. xix. p. 625, with a woodcut; Nachrichtsbl. mal. Gesellsch. i. p. 170, pl. 1. fig. 2, and Ann. & Mag. Nat. Hist. v. p. 42. This species is viviparous. Semper, Nachrichtsbl. mal. Gesellsch. i. p. 204.

[*Rhytida*?] *Zonites strangei* (Pfr.). var. *maxima*. Mousson, Journ. Conch. xvii. p. 56.

Helix (*Rhytida*) *boydi*, sp. n., Angas, Proc. Zool. Soc. 1869, p. 626, pl. 48. fig. 8, Recherche Island, Solomon group.

Glandina algira. Semper corrects some anatomical observations made by Raymond. Mal. Nachrichtsbl. i. p. 80.

Glandina truncata (Gmel.), *vanuxemensis* (Lea), *parallela* (Binney), *decussata* (Desh.), *turris* (Pfr.), *bullata* (Gould), and *texasiana* (Pfr.), from the Southern States of North America, and *albersi* (Pfr.) from California, described and figured in woodcuts by Binney and Bland, Land- and Freshwater Shells of N. Am. i. pp. 13-20.

Glandina guttata, sp. n., Crosse and Fischer, Journ. Conch. xvii. p. 250, Puebla, Mexico.—*Glandina nympha*, *bellula*, and *difficilis*, spp. nn., Crosse and Fischer, l. c. pp. 425, 426, Mexico.

Streptostyla. Crosse & Fischer, l. c. p. 28, state that the buccal lobes and radula are as in *Glandina*, but without a median row of teeth. They describe

the following new species from Central America, pp. 28-35:—*binneyana*, *edwardsiana*, *sallaei*, *cingulata*, *blandiana*, *boyeriana*, *fulvida*, *sololensis*, *cornea*, *bocourti*, and *glandiformis*. Separate copies of this paper, which was published in 1869, appear to have been distributed in 1868.—*Streptostyla botteri-ana*, sp. n., Crosse & Fischer, *l. c.* p. 191, Orizaba.

*Petenia**, g. n., Crosse & Fischer, *l. c.* p. 35. Distinguished by the presence of a muciparous pore at the end of the foot; tentacles and buccal lobes as in *Glandina*. Type *Gl. ligulata* (Morelet).

Streptaxis canarica, sp. n., Blanford, Journ. As. Soc. xxxviii. p. 142, pl. 16. fig. 11, South Canara.

Streptostele fastigiata (Morelet). Radula like that of *Testacella*. Heynemann, Nachrichtsbl. mal. Gesellsch. i. pp. 20 & 177, fig. 5.

Ennea sculpta, sp. n., Blanford, *l. c.* p. 141, pl. 16. fig. 10, Pulney Hills, Southern India.

Ennea bicolor (Hutt.) and *crystallum* (Pfr.). Radula like that of *Testacella*. Heynemann, *l. c.* pp. 20 & 177, pl. 1. figs. 3 & 4.

Gibbulina modiolus (Fér.) has a similar radula. Semper, *ibid.* p. 218.

Gonospira palanga (Desh.) [= *fusus* (Müll.)] has no jaw; teeth of the radula in oblique rows, slender and pointed as in *Daudebardia* and *Glandina*; median tooth present. Crosse & Fischer, Journ. Conch. xvii. pp. 213-217, pl. 11. figs. 6-8; and Binney, Am. Journ. Conch. v. p. 37, pl. 2. fig. 1 (photograph).

OXYGNATHA (LIMACEA and VITRINEA).

Tebennophorus carolinensis (Bosc) and *dorsalis* (Binn.), United States; *Pallifera*, Morse, which has been distinguished on account of its jaw, requires confirmation, as errors by incorrectly labelling extracted jaws are not impossible. Binn. & Bland, Land- and Freshwater Shells of N. Am. i. pp. 294-302.

Tebennophorus sallaei, sp. n., Crosse & Fischer, Journ. Conch. xvii. p. 190, Playa Vicente, Mexico.—*Tebennophorus auratus*, sp. n., Tate, Am. Journ. Conch. v. p. 153, Nicaragua.

Limax gagates (Drap.), shield described; it is infested by a mite, *Philodromus limacum*. Jeffreys, Brit. Conchol. v. p. 155.—*L. levis* (Müll.) and *L. tenellus* (Müll.), British. Jeffreys, *ibid.* p. 156.

Limax flavus (L.) = *variegatus* (Drap.) and *agrestis* (L.), introduced in North America, *campestris* (Binney), New England, Middle and Western States. Binney & Bland, *l. c.* pp. 59-66.

Limax bicolor (Selenka) is not identical with *Limacus breckworthianus* (Lehmann), but a second nearly allied species of the same genus *Limacus*, which is distinguished from *Limax* by a strongly developed flexure and channel-like appendix in the under part of the intestine. Lehmann, Mal. Blatt. xvi. pp. 50-53.

Heynemann maintains that the European *Limax variegatus* (Drap.) is identical with the Australian *L. breckworthianus* (Lehmann); he supposes that the latter has been introduced into Australia, and states the existence of a caecal appendix at the intestine also in the European species. Mal. Blatt. xvi. pp. 143-147. At the same time Lehmann convinced himself of

* Preoccupied for a genus of fishes.

the specific identity of both, but maintains the distinctness of the genus *Limacus*, supposing that the European *variegatus* (Dr.) has been introduced from Australia [! ?]. Mal. Blatt. xvi. p. 148.

Amalia (Moq.-Tand.) = *Milax* (Gray). Its generic distinctness from *Limax* is denied by Lehmann, Mal. Blätt. xvi. pp. 53-55, and maintained by Heyne-mann, *ibid.* p. 147.

Amalia marginata (Drap.) found on the Upper Lahn by W. Kobelt, Nachrichtsbl. mal. Gesellsch. i. p. 51. Found in Rhenish Prussia by Goldfuss, and more recently by Dr. Lischke. *Ibid.* p. 82.

Krynckia americana, sp. n., Tate, Am. Journ. Conch. v. p. 154, pl. 16. fig. 1, Nicaragua.

Othelosoma sysmondsii, g. et sp. n., Gray, Ann. & Mag. Nat. Hist. iii. p. 241, from the Gaboon; insufficiently described, resembling more the leech of Ceylon than a slug; no exact generic characters are given.

Vitrina pellucida (Müll.) ? from Unalaschka. Cooper, Am. Journ. Conch. v. p. 200.

Vitrina limpida (Gould), New England, *angelicae* (Beck), Greenland, and *pfeifferi* (Newcomb), California. Binney & Bland, Land- and Freshwater Moll. N. Amer. pp. 26-28.

Vitrina mamillata, sp. n., Martens, Mal. Blätt. xvi. p. 208, Ailat, Abyssinia.

Helicaron aureofuscus, sp. n., Martens in v. d. Decken's Reisen in Ost-Afrika, vol. iii. p. 55, pl. 1. fig. 1, Mombas, Eastern Africa.

Microcystis perpolita, sp. n., Mousson, Journ. Conch. xvii. p. 326, pl. 14. fig. 1, Upolu, Samoa Islands.

[*Nanina*] *Helix cambogiensis* (Reeve) is stated to have been found in the country of the Mois, 60 leagues north of Saigon. Daniel, Journ. Conch. xvii. p. 127.

Nanina intumescens (Blanf.) from Mahabaleshwar, Pfeiffer, Novitat. iii. p. 494, pl. 106. figs. 11, 12.

Nanina jacquemontii, sp. n., Martens, Mal. Blätt. xvi. p. 75, Himalaya, belongs to the group *Orobis* (Pfr.).

Orobis (*Helix*) *andamanensis*, sp. n., Tryon, Am. Journ. Conch. v. p. 110, pl. 10. fig. 4, Andaman Islands.

Rhyssota (*Helix*) *chambertinii*, sp. n., Tryon, *l. c.* p. 109, pl. 10. fig. 2, Andaman Islands.

Guppya is a new name for *Stenopus* (Guilting), which is preoccupied; only the lateral teeth are like those of *Testacella*. *Helix gundlachi* (Pfr.) and *Conulus vacans* (Guppy) belong to this genus. Tate, Am. Journ. Conch. v. p. 155.

Trochonanina, gen. nov., proposed by M. Mousson for several species hitherto comprised under *Trochomorpha*, but sculptured on the upper surface of the shell, and having the columella thickened, as *conus* (Phil.), *conicoidea* (Metcalf), *mozambicensis* (Pfr.), *lychnia* (Bens.), and *schmeltziana* (Mouss.). Journ. Conch. xvii. p. 330. [In *T. mozambicensis* the presence of a muciparous pore has been pointed out by the Recorder, Preuss. Expedit. Ostas. ii. p. 255; it is absent in the true *Trochomorpha ternatana* (Guillon), *planorbis* (Less.), and *tricolor* (Martens).]

The following species appear to be referable to this new genus, *Trochonanina*:—*Nanina pyramidea*, sp. n., Martens in v. d. Decken's Reisen in Ost-

Afrika, vol. iii. p. 55, pl. 1. fig. 2, Mombas, Eastern Africa.—*N. mossambicensis* (Pfr.), var. *albopicta*, Martens, ibid. p. 56, pl. 1. fig. 3, Eastern Africa. Several varieties of the same species are figured by Pfeiffer, Novitat. iii. p. 499, pl. 108. figs. 1-6.

Nanina plicatula, sp. n., Martens, Nachrichtsbl. mal. Gesellsch. i. p. 149, Zanzibar; it is allied to *N. jenynsi* and *mossambicensis*.

Nanina (*Rotula*) *arata*, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 448, Ava, a smaller variety in Yunan; allied to *N. climacterica* (Bens.).

Trochomorpha tuber, sp. n., Mousson, Journ. Conch. xvii. p. 334, Upolu, Samoa Islands.—*T. subtrochiformis*, sp. n., = *trochiformis* of Gould, not Ferrussac. Mousson, ibid. p. 335, pl. 14. fig. 6, Samoa Islands.

Helix (*Trochomorpha*) *deiopia* and *eudora*, spp. nn., Angas, Proc. Zool. Soc. 1869, pp. 46, 47, pl. 2. figs. 4 & 8, Solomon Islands and New Georgia.—*H. (T.) fessonia*, sp. n., Angas, ibid. p. 626, pl. 48. fig. 7, Kantava, Fiji Islands.

Helix (*Sivella*) *percompressa*, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 448, Ava.

[*Zonites*] *Helix crypta* (Parr.). Pfeiffer, Novitat. iii. p. 450, pl. 99. figs. 1-3, Dalmatia.

Zonites (subgenus *Ægopsis*) *newberryana* (Binney) and *cultellata* (Thomson), California. Binney & Bland, l. c. pp. 282, 283.

Zonites (subgenus *Omphalina*) *kopnodes* [*capnodes*] (Binn.), *fuliginosa* (Griff.), *caduca* (Pfr.), *friabilis* (Binn.), *laevigata* (Pfr.), *subplana* (Binn.), *inornata* (Say), *sculptilis* (Bland), and *elliotti* (Redfield). Binney & Bland, l. c. pp. 284-291.

Hyalina draparnaldii. On its occurrence in several places in North Germany, its differences from *cellaria* (Müll.), and its synonymy, see O. Reinhardt, the Nachrichtsbl. mal. Gesellsch. i. pp. 49, 50, 78-80. The same species found at Hamburg by C. Wessel, ibid. p. 185; and at Augsburg, identified with Alten's *H. nitens*, by Clessin, ibid. ii. 1870, p. 105.—Observations on the same species by Dubrueil, Cat. Moll. Héroult, 2nd ed. p. 87.

[*Hyalina*] *Zonites herculeus* (Rambur) described and figured by Rambur, Journ. Conch. xvii. p. 262, pl. 9. fig. 7, Monaco.

Hyalina cerinoides (Anthony), *cellaria* (Müll.), *nitida* (Müll.), *ichitneyi* (Newcomb), *arborea* (Say), *viridula* (Menke), *indentata* (Say), *limatula* (Ward), *duranti* (Newcomb), *minuscule* (Binney), *millum* (Morse), *binneyana* (Morse), *ferrea* (Morse), *conspecta* (Bland), *exigua* (Stimpson), *breweri* (Newcomb), and *chersinella* (Dall) are described and figured (many from authentic specimens), by Binney and Bland, l. c. pp. 26-43. Several of the so-called genera which have been proposed by Morse are here reunited with *Hyalina*.

[*Hyalina*] *Helix cuzcana*, sp. n., Philippi, Mal. Blätt. xvi. p. 37, and Pfeiffer, Novitat. iii. p. 476, pl. 102. figs. 23, 24, Cuzco, in Peru.

Hyalina (subgenus *Mesomphix*) *intertexta* (Binn.), *ligera* (Say), *demissa* (Binney), and *capsella* (Gould). Binney & Bland, Land- and Freshwater Moll. N. Amer. pp. 43-46.

Gastrodonta ensifera, sp. n., Mousson, Journ. Conch. xvii. p. 328, pl. 14. fig. 2, Samoa Islands.

Hyalina (subgenus *Gastrodonta*) *lusmodon* (Phillips), *interna* (Say), *multidentata* (Binney), *significans* (Bland), and ? *lineata* (Say). Binney & Bland, l. c. pp. 49-53.

Hyalina (subgenus *Ventridens*) *gularis* (Say) and *suppressa* (Say) throughout the United States. Binney & Bland, *l. c.* pp. 292-294.

Hyalina (subgenus *Conulus*) *fulva* (Drap.) = *chersina* (Say) from Great Slave Lake to Texas and Florida, *fabricii* (Beck), Greenland, and *gundlachi* (Pfr.), Florida. Binney & Bland, *l. c.* pp. 46-48.—With regard to *H. gundlachi*, see above under *Guppya*.

Conulus samoensis (Mouss.) and *ceroconus* (Mouss.) transferred from the genus *Nanina* to *Conulus* by Mousson, Journ. Conch. xvii. p. 331.

[*Sagda*] *Helix alveare* (Pfr.), Pfeiffer, Novitat. iii. p. 506, pl. 108. figs. 32, 33, Jamaica.

Macrocyclus concava (Say), Canada to Georgia, *vancouverensis* (Lea), *sporetella* (Gould), and *voyana* (Newcomb), West coast of N. America. Binney & Bland, pp. 53-58.

ODONTOGNATHA (including AULACOGNATHA).

Arion (subgenus *Lochea*) *foliolatus* (Gould), Puget Sound. Binney & Bland, *l. c.* p. 277.

Arion (subgenus *Prolepis*) *fuscus* (Müll.) introduced. Binney & Bland, *l. c.* p. 275.

Arion flavus (Müll.), British. Jeffreys, Brit. Conch. v. p. 153.

Ariolimax columbianus (Gould), Oregon and California. Binney & Bland, *l. c.* pp. 278-280.

Geomalacus (Allm.). A review of the known species and a description of the radula and jaw, which resemble those of *Arion* and of the true *Helix*, first given by Heynemann, Nachrichtsbl. mal. Gesellsch. i. pp. 165-168, pl. 1. II. 1.

Geomalacus maculosus (Allman) described by Jeffreys, *l. c.* p. 154.

Geomalacus vendeanus, sp. n., Letourneux, Revue et Mag. Zool. 1869, p. 53, Fontenay-le-Comte, Vendée.

Binneya notabilis (J. G. Cooper), California, Binney & Bland, *l. c.* p. 67.

Helix. a. European species :—

[*Caracollina*] *Helix boscae*, sp. n., Hidalgo, Journ. Conch. xvii. p. 20, pl. 2. fig. 1, Valencia, Spain.

[*Fruticicola*] *Helix rufescens* (Penn.). Its anatomy given from specimens from Stuttgart by Lehmann, Mal. Blätt. xvi. pp. 195-198, with a woodcut.

[*Fruticicola*] *Helix becasis* (Rambur) described and figured by Rambur, Journ. Conch. xvii. p. 261, pl. 9. fig. 3, Southern France.—*H. glabella* (Drap.) = *telonensis* (Mittre) = *lavandulae* (Bourg.), found at Briançon and Digne and described by Rambur, *ibid.* pp. 265-269.

Helix galloprovincialis (Dupuy) is acknowledged to be a species distinct from *H. cantiana* on account of rather slight anatomical differences. Dubrueil, Catal. Moll. de l'Hérault, p. 90.

Helix orsinii (Porro) redescribed with its varieties, and figured by N. Tiberi in his notes on the shells of the Abruzzi, Bullett. mal. Ital. ii. pp. 66-68, pl. 3. figs. 9-11.

Helix martensiana, sp. n., Tiberi, *l. c.* p. 68, pl. 3. figs. 3-5, Abruzzi. Said to be allied to *H. fruticum* (Müll.).

Helix vendéana, sp. n., Letourneux, Revue et Mag. Zool. 1869, p. 60, Fon-

tenay-le-Comte, Vendée. "Intermédiaire entre les *Helix hispida* et *concinna*."

[*Xerophila*] *Helix ebusitana*, sp. n., Hidalgo, Journ. Conch. xvii. p. 19, Ivica.

Helix iberica is a new name for *mirandæ* (Rambur, not Lowe), given by Rambur, Journ. Conch. xvii. p. 254, pl. 9. fig. 5, allied to *intersecta* (Mich.) [and *variabilis* (Drap.)]; *H. madritensis* (Rambur) and *diniensis* (Rambur), both allied to *caperata* (Montagu), and *H. terveri* (Mich.), described and figured by Rambur, l. c. pp. 256-260, and 263, pl. 9. figs. 2, 4, & 6; *H. vestita* (Rambur) described, ibid. p. 259.

Helix rugosiuscula (Mich.) distinguished as species from *H. paladilhi* (Bourg.) by Dubrueil, Catal. Moll. de l'Hérault, p. 91.

Helix variabilis (Drup.). On its variability, Dubrueil, ibid. p. 93.

Helix bathyomphala (Charp.) described and figured by Tiberi, Bullett. mal. Ital. p. 70, pl. 3. figs. 5 & 6, Abruzzi.

Helix spadae (Calcare, 1843) = *candida* (Costa) = *destituta* (Charp.) = *ocellus* (Villa). Tiberi, ibid. p. 71, Abruzzi.

Helix dragovichii (Pfr.), Pfeiffer, Novitat. iii. p. 505, pl. 108. figs. 25-27, Asia Minor.

[*Xerophila*?] *Helix zelebori* (Pfr.), Pfeiffer, Novitat. iii. p. 504, pl. 108. figs. 19-24, Servia.

[*Campylea*] *Helix insularis*, sp. n., Crosse & Debeaux, Journ. Conch. xvii. p. 51, Corsica, 1200 metres above the sea, looking as if it were a pale-coloured variety of *H. raspailii* (Payr.); but the authors say that the animal is different.

Helix faustina and *cingulella* (Ziegl.) from the Carpathian Mountains; on the variations of the first, including nearly *H. rossmässleri* (Pfr.), and on the affinity of the second to *H. preslii* (Schmidt), see Martens, Nachrichtsbl. mal. Gesellsch. i. pp. 118-120.

Helix cingulata (Stud.), var. *carrarensis* (Porro), and var. *philippi-maræ* (Stabile), at Carrara. Bull. malac. Ital. ii. p. 31.

Helix gobanzi (Frauenfeld), Pfeiffer, Novitat. iii. p. 450, pl. 99. figs. 4-9, Southern Tyrol.—*Helix chameleon* (Parr.), Pfeiffer, ibid. p. 451, pl. 99. figs. 10-13, Carinthia.—*Helix subzonata* (Mousson), Pfeiffer, ibid. p. 497, pl. 107. figs. 10, 11, Cephallonia.

[*Macularia*] *Helix monacensis* (Rambur) fully described and figured by Rambur, Journ. Conch. xvii. p. 252, pl. 9. fig. 1, allied to *punica* (Morelet), found in shell-sand at Monaco, Liguria, with other recent species of land-snails.

[*Iberus*] *Helix cenestinensis*, sp. n., Crosse & Debeaux, Journ. Conch. xvii. p. 53, pl. 5. fig. 7, Corsica; [too nearly] allied to *serpentina* (Fér.).

[*Tachea*] *Helix nemoralis* and *hortensis*. Some remarks on their distribution in Northern Germany, the former prevailing in gardens, the latter in woods. E. Friedel, Mal. Blätt. xvi. pp. 29 & 71.

Variations in the number of ridges in the jaw of *Helix nemoralis* from 2 to 9, in *H. hortensis* and *silvatica* from 2 to 6 and 5, observed by W. Kobelt, Nachrichtsbl. mal. Gesellsch. i. pp. 132-135.

[*Pomatia*] *Helix ligata* (Müll.) = *gussoneana* (Shuttl.), and two new species very nearly allied to it, *H. prætutia*, from the Abruzzi, and *H. campana*, from the Subapennine Hills in Campania, described by N. Tiberi, Bullett. mal. Ital. ii. pp. 116-122; the last two figured on pl. 3. figs. 12, 13, & 1, 2.

b. Species from Northern Asia :—

Helix maacki (Gerstfeldt), var., Pfeiffer, Novitat. iii. p. 495, pl. 107. figs. 3 & 4.

c. African species :—

Helix hypocrita, sp. n., *H. bertholdiana* (Pfr.), *H. gorgonarum*, sp. n., these three belonging to *Patula*; *leptostyla*, sp. n., belonging to *Leptaxis*; *H. visgeriana*, sp. n., and *fogoensis*, sp. n., both belonging to *Hemicycla*, described, with notes on the colours and varieties of *H. adrena* (Webb) and *serta* (Albers), by H. Dohrn, Mal. Blätt. xvi. pp. 1-8. These species are from the Cape-Verd Islands.

Helix pilifera, sp. n., from Abyssinia, described by E. v. Martens, Mal. Blätt. xvi. p. 209.

Helix unidentata (Chemn.). Several varieties collected at the Seychelles described by E. v. Martens in v. der Decken's Reisen in Ost-Afrika, vol. iii. pp. 56-58, pl. 1. figs. 4 a-e.

[*Ampelita*] *Helix subsepulcralis* (Crosse, 1868), Crosse, Journ. Conch. xvii. p. 391, pl. 12. fig. 3, Madagascar.

Helix votiva, sp. n., Crosse, Journ. Conch. xvii. p. 422, Madagascar.

d. East-Indian species :—

Helix (Arionta) elatior (Martens) and *H. (Corilla) pettos* (Martens), Pfeiffer, Novitat. iii. pp. 461, 462, pl. 101. figs. 4-6 and 7-9.

[*Plectopylis*] *Helix perarcta* (Blanf.), from Ava, and *karenorum* (Blanf.), from Pegu, Pfeiffer, Novitat. iii. pp. 502, 503, pl. 108. figs. 13-15 and 16-18.—
H. (Plectopylis) andersoni, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 448, Ava and Yunnan.

[*Trachia*] *Helix propinqua* (Pfr.), from Poona, Pfeiffer, Novitat. iii. p. 498, pl. 107. figs. 15-17.

Helix catostoma, sp. n., Blanford, l. c. p. 447, Ponsee in Yunnan.

Ampelita (Helix) bigsbyi, sp. n., Tryon, Am. Journ. Conch. v. p. 110, pl. 10. fig. 3, Andaman Islands; allied to *unicolor* (Pfr.).

[*Obba*] *Helix marginata* (Müll.) and *sororcula* (Martens), and an intermediate form, are mentioned by E. v. Martens, Mal. Blätt. xvi. p. 87.

e. Australian species :—

Patula biretracta, sp. n., Mousson, Journ. Conch. xvii. p. 57, pl. 4. fig. 1, Sydney; allied to *sericatulula* (Pfr.).

Helix (Plectotropis?) howardi, sp. n., Angas, Proc. Zool. Soc. 1869, p. 48, pl. 2. fig. 9, South Australia, 450 miles north of Adelaide.

Helix bipartita (Fér.). Varieties figured by Pfeiffer, Novitat. iii. pl. 107. figs. 1, 2.

Helix informis, sp. n., Mousson, Journ. Conch. xvii. p. 59, pl. 4. fig. 3, Port Mackay, Australia. Near *H. fraseri* (Gray).

Helix cunninghami, var. *minor*, Rockhampton, and var. *compressa*, from "Australia," Mousson, ibid. p. 60.

Helix pachystyla (Pfr.), with var. nov. *dæmelii*, *H. pomum* (Pfr.), *nigrilabris*, sp. n., and *janellei* (Guillou)=*pachystyloides* (Cox), are described by Martens; they form a remarkable Australian group of *Helix*. Mal. Blatt.

xvi. pp. 77-81. [*H. nigrilabris* = *H. edwardsii*, Cox, which latter name has priority.]

f. Polynesian species :—

[*Patula*] *Helix fabrefacta* (Pease), Polynesia, Pfeiffer, Novitat. iii. p. 505, pl. 108. figs. 29-31.

Helix ferrieziana (Crosse) fully described by Crosse, Journ. Conch. xvii. p. 27, pl. 1. fig. 4, New Caledonia.

Helix cyrene and *cymodoce*, spp. nn., Crosse, *l. c.* pp. 183, 184, "Oceania;" the first allied to *H. eva* (Pfr.).

Helix inæqualis. See above among "Agnatha."

Endodonta graeffei, sp. n., Mousson, Journ. Conch. xvii. p. 332, pl. 1. fig. 3, Upolu, Samoa Islands.

Helix lalannei, sp. n., Gassies, Journ. Conch. xvii. p. 71, New Caledonia.

Helix calliope, *alleriana*, and *peroquiniana*, spp. nn., Crosse, Journ. Conch. xvii. pp. 413, 414, New Caledonia.—*Helix ouveana*, sp. n., Soubervie, *ibid.* p. 416, New Caledonia.

Helix pelewana, sp. n., Mousson, Journ. Conch. xvii. p. 58, pl. 4. fig. 2, Pelew Islands. The author refers it to the group *Chloreæ* (Albers), but states that it is obliquely rugulose, like some species of *Nanina*.

Helix (*Corasia*) *rossiteri*, sp. n., Angas, Proc. Zool. Soc. 1869, p. 46, pl. 2. fig. 5, Ysabel Island, Solomon group.—*H. (C.) psyche*, sp. n., Angas, *ibid.* p. 624, pl. 48. fig. 1, New Georgia, Solomon group.

Helix (*Geotrochus*) *dampieri* and *donna-isabellæ*, sp. n., Angas, *l. c.* p. 47, pl. 2. figs. 6 & 7, Louisiade and Solomon group.—*H. (G.) adonis*, *cærulescens*, [= *lienaraiana*, Cox], *deidamia* [= *meta*, Pfr.], *hargreavesi*, and *hermione*, spp. nn., Angas, *ibid.* pp. 624, 625, pl. 48. figs. 4, 6, 3, 2, and 5, Solomon group.

g. South-American species :—

Helix cuyana (Strobel). Note on its habitat, Pfeiffer, Mal. Blatt. xvi. p. 91. [See Zool. Record, v. p. 481.]

[*Ophiogyra*] *Helix decagyra*, sp. n., Philippi, Mal. Blatt. xvi. p. 499, and Pfeiffer, Novitat. iii. p. 499, pl. 107. fig. 18-20, Peru.

[*Ophiogyra*] *Helix wallisiana*, sp. n., Mousson, Mal. Blatt. xvi. p. 171, northern part of South America.

Helix subelliptica, sp. n., group *Isomeria* (Alb.), from Bugua, Amazon River, 4000 feet above the level of the sea. Mousson, Mal. Blatt. xvi. p. 170.

Helix triplicata (Martens), Pfeiffer, Novitat. iii. p. 460, pl. 101. figs. 1-3, group *Labyrinthus*.

[*Solaropsis*] *Helix incarum*, sp. n., Philippi, Mal. Blatt. xvi. p. 36, and Pfeiffer, Novitat. iii. p. 475, pl. 102. figs. 19-21, Cuzco in Peru.

Helix quadrivittata, Ecuador, *martinezi*, Bahia, *amancaezensis*, Peru, and *bæzensis*, Ecuador, spp. nn., G. Hidalgo, Journ. Conch. xvii. pp. 410-412.

h. North-American species :—

Helix (subgenus *Microphysa*) *vortex* (Pfr.), Florida, *incrustedata* (Poey), Texas. Binney & Bland, Land- and Freshwater Shells of N. Am. p. 70; embryo of the former figured.

Helix (subgenus *Patula*) *solitaria* (Say), *ayersiana* (Newcomb), *strigosa* (Gould), *alternata* (Say), as far north as Labrador, *cumberlandiana* (Lea), *tenuistriata* (Binn.), *cooperi* (Binn.), *idahoensis* (Newcomb), *perspectiva* (Say), *striatella* (Anthony), *hornii* (Gabb), *mazatlanica* (Pfr.), and *asteriscus* (Morse). Binney & Bland, *l. c.* pp. 77-83.—*H. mazatlanica* (Pfr.), found also at San Francisco. Cooper, *Am. Journ. Conch.* v. p. 201.

Helix haydenii, sp. n., Gabb, *Am. Journ. Conch.* v. p. 24, pl. 8. fig. 1, Utah. [This is a strange form, with strong spiral ribs, otherwise somewhat allied to *H. cooperi*.]—*Helix hemphillii*, sp. n., Newcomb, *ibid.* p. 167, pl. 17. fig. 4, White-Pine Mining-district, at an altitude of 8000 feet.

Helix rudrata (Stud.) ?, from Unalaschka, Cooper, *l. c.* p. 202.

Ammonitella yatesii has been figured as sinistral by oversight. Cooper, *l. c.* [see *Zool. Record*, v. p. 482].

Helix cæcoides and *H. blakeana*, spp. nn., Tate, *Am. Journ. Conch.* v. p. 155, pl. 16. figs. 2, 3, Nicaragua.

Helix (subgenus *Strobila*) *labyrinthica* (Say), Eastern North America, *hubbardi* (Brown), Indiana. Binney & Bland, *l. c.* pp. 83-86; the internal plaits of the first figured on p. 85.

Helix (subgenus *Polygyra*) *auriculata* (Say), *uvulifera* (Shuttl.), *auriformis* (Bland), *postelliana* (Bland), *espiloca* (Ravenel), *avara* (Say), *ventrosula* (Pfr.), *hindsii* (Pfr.), *triodontoides* (Bland), *mooreana* (Binn.), *tholus* (Binn.), *hippocrepis* (Pfr.), *fastigans* (Say), *jacksonii* (Bland), *troostiana* (Lea), *hazardii* (Bland), *opulata* (Moricand), only from Yucatan, *dorfeuilliana* (Lea), *acucrocentata* (Binn.), *septemvolva* (Say), *cereolus* (Mühlfeld), *carpenteriana* (Binn.), *febigeri* (Bland), *pustula* (Fér.), *pustuloides* (Bland), and *leporina* (Gould), from the Southern United States. Binney & Bland, *l. c.* pp. 86-95.

Polygyrella is a new subgenus of *Helix*, discoidal, ribbed above; two rows of three teeth within the last whorl; peristome thickened, simple, margins produced by a pliciform elevated triangular plait. Only one species, *H. polygyrelliella* (Bland), Cœur d'Alène Mountains, United States. Bland in Binney & Bland, *l. c.* p. 112.

Dædalochila harfordiana, sp. n., Cooper, *Am. Journ. Conch.* v. p. 196, Fresno County, California, 6500 feet above the sea. In form, size, and umbilicus closely resembling *Helix polygyrella* (Bland), thus curiously connecting that anomalous species with *Dædalochila*. Cooper, *ibid.* p. 214.

Helix (subgenus *Stenotrema*) *spinosa* (Lea), *labrosa* (Bland), *edgariana* (Lea), *edwardsii* (Bland), *barbigera* (Redfield), *stenotrema* (Fér.), *hirsuta* (Say), *maxillata* (Gould), *germana* (Gould), *monodon* (Rackett), with var. *fraterna* (Say) and var. *leaii* (Ward). Binney & Bland, *l. c.* pp. 113-122.

Helix (subgenus *Mesodon*) *major* (Binn.), *albolabris* (Say), *divesta* (Gould), *multilineata* (Say), *pennsylvanica* (Green), *mitchelliana* (Lea), *elevata* (Say), *clarkii* (Lea), *christyi* (Bland), *exoleta* (Binney), *wheatleyi* (Bland), *dentifera* (Binney), *rameri* (Pfr.), *thyroides* (Say), *bucculenta* (Gould), *clausa* (Say), *columbiana* (Lea), *downieana* (Lea), *jejuna* (Say), *devia* (Gould), *profunda* (Say), and *sayii* (Binney, not Wood, who gave no description). Binney & Bland, *l. c.* pp. 135-154.

Aplodon columbiana (Lea). Jaw with eight broad ribs. Cooper, *Am. Journ. Conch.* v. p. 214.

Helix (subgenus *Triodopsis*) *palliat*a (Say), *obstricta* (Say), *appressa* (Say), 1869. [VOL. VI.]

inflecta (Say), *rugeli* (Shuttl.), *tridentata* (Say), *mullani* (Bland), *fallax* (Say), *introferens* (Bland), *hopetonensis* (Shuttl.), *vultuosa* (Gould), and *loricata* (Gould). Binney & Bland, *l. c.* pp. 123-134.

Odotropis (Rafinesque). This name is preferred to *Mesodon* (Raf.) by Cooper, Am. Journ. Conch. v. p. 212. [*Odotropis* does not mean "toothed whorl," as the author says, but "toothed keel," and therefore can only be meant for a keeled species. It will be better not to disturb the names which are now adopted by a considerable number of conchologists, by introducing mysterious productions of Rafinesque.]

Aplodon (Rafinesque), believed to be *Helix monodon*, var. *leaii*, of recent authors, and proposed to be used for *H. columbiana* (Lea). Cooper, *ibid.* p. 213.

Helix (subgenus *Acanthinula*)? *harpa* (Say), New England and British America. Binney & Bland, *l. c.* p. 156.

Helix (subgenus *Vallonia*) *pulchella* (Müll.), from Canada to Nebraska and Florida. Binney & Bland, *l. c.* p. 157.

Helix (subgenus *Fruticicola*) *hispida* (L.) and *rufescens* (Penn.), both introduced, *berlandieriana* (Moricand) and *griseola* (Pfr.), Texas. Binney & Bland, *l. c.* pp. 158-160.

Helix (subgenus *Aglaiia* [better *Lysinoë*, A. et H. Adams, the former name being preoccupied]) *fidelis* (Gray), *infumata* (Gould), *hillebrandi* (Newcomb), Binney & Bland, *l. c.* pp. 161-163.

Helix (subgenus *Arionta*) *arrosa* (Gould), *townsendiana* (Lea), *tudiculata* (Binney), *nickliniana* (Lea), *redimita* (Binn.), *intercisa* (Binn.), *exarata* (Pfr.), *reticulata* (Pfr.), *ramentosa* (Gould), *californiensis* (Lea), *carpenteri* (Newcomb), *mormonum* (Pfr.), *sequoiicola* (J. G. Cooper), *traskii* (Newcomb), *petitthouarsi* (Desh.), *rufocincta* (Newcomb), *gabbi* (Newc.), *facta* (Newc.), *kelletti* (Forbes), and *stearnsiana* (Gabb). Binney & Bland, *l. c.* pp. 163-177.

—*Helix anachoreta* (Binney) distinct from *arrosa* (Gould). Cooper, Am. Journ. Conch. v. p. 213.

Helix (subgenus *Euparypha*) *areolata* (Sow.), *tryoni* (Newcomb), *pandora* (Forbes), and *levis* (Pfr.). Binney & Bland, *l. c.* pp. 117-180.

Arionta (Leach) and *Lysinoë* (A. & H. Adams). J. G. Cooper places a great number of Californian species in these two divisions, which are regarded by him as genera, viz. *fidelis* (Gray), *dupetitthouarsii* (Desh.), *ayresiana* (Newc.), *rufocincta* (Newc.), *remondii* (Tryon), *infumata* (Gould), *mormonum* (Pfr.), and *rowellii* (Newc.) in *Lysinoë*; and *arrosa* (Gould), *exarata* (Pfr.), *nickliniana* (Lea), *tudiculata* (Binney), *californiensis* (Lea), *kelletti* (Forbes), *carpenteri* and *tryoni* (Newc.) in the genus *Arionta*; he states that in *Arionta* he has found four to six ribs on the jaw, in *Lysinoë mormonum* and *facta* (Newc.), eight. Notes on several other peculiarities of these species are added. Am. Journ. Conch. v. pp. 204, 211, and 218.

Helix (subgenus *Polymita*) *varians* (Menke), islands of Florida, and *H. depicta* (Grateloup), New Orleans, are doubtful species. Binney & Bland, pp. 184 and 187.

Helix (subgenus *Ampelita* [?]) *rowellii* (Newcomb), California. Binney & Bland, *l. c.* p. 185.—Cooper is right in objecting to this species being placed in the Madecassian group *Ampelita*. Am. Journ. Conch. v. p. 211.

Localities of some North-American species are corrected by Cooper, Am. Journ. Conch. v. p. 217.

i. Species of *Helix* from unknown localities :—

Helix collaris (Pfr.), figured by Pfeiffer, Novitat. iii. p. 496, pl. 107. figs. 5-9.

Helix plethorica (Crosse, 1868), Crosse, Journ. Conch. xvii. p. 392, pl. 12. fig. 2, locality unknown [seems allied to *H. tourannensis*].

[*Cochlostyla*] *Helix roissiana*, var., Pfeiffer, Novitat. iii. p. 497, pl. 107.

Anostoma globulosum. Its anatomy has been examined by P. Fischer, Journ. Conch. xvii. pp. 209-213, pl. 11. figs. 1-5. Jaw smooth; the radula could not be examined; sexual organs very simple. The author thinks that its real affinities are with some groups of *Bulinus* with toothed aperture, as *Odontostomus* (Sow.) and *Tomigerus* (Spix).

Anostoma carinatum (Pfr.), found in the territory of the river Magdalena, New Granada. Mousson, Mal. Blätt. xvi. p. 172.

[*Odontostomus*] *Bulinus grayanus* (Pfr.), var. from Sta. Catarina, Southern Brazil. Pfeiffer, Novitat. iii. p. 473, pl. 102. figs. 16, 17.

Bulinus oblongus (Müll.), 105 millimetres long, from Peru, 2000 feet above the sea. Mousson, l. c. p. 174.

Orphnicus. Schaufuss in Pâtel's Systeme und Cataloge, p. 14, substitutes this subgeneric name for *Orphnus* (Albers), which is preoccupied.

Bulinus (*Orphnus*) *bifasciatus* (Phil.), var. *unicolor*, Philippi, Mal. Blatt. xvi. p. 36, Peru.

Bulinus souvillei (Morelet), var. *kanalensis*, from Kanalu, New Caledonia, Crosse, Journ. Conch. xvii. p. 69.—*B. senilis*, New Caledonia, *questieri* and *laméberti*, Ouvea or Loyalty Island, spp. nn., Gassies, Journ. Conch. xxii. pp. 71-73.—*B. alexander* (Crosse), var. *ouagapensis*, *scarabus* (Albers), var. *tanouensis* and *nucleolus* (Morelet), var. *xanthochila*, Crosse, ibid. pp. 179, 180.—*B. bonoleensis*, sp. n., Crosse and Souverbie, ibid. p. 270, pl. 8. fig. 1, New Caledonia.—*B. submariei*, sp. n., and *mariei* (Crosse), var. *curta*, Souverbie, ibid. pp. 273, 274, New Caledonia.—*B. annibal* and *bouvarensis*, spp. nn., Souverbie, ibid. p. 416, 417, New Caledonia.

Bulinus ouveanus, sp. n., Ouvea Island, and *B. palmarum*, sp. n., St. Christoval, New Hebrides. Mousson, Journ. Conch. xvii. pp. 60-62, pl. 4. figs. 4 & 5. II. Crosse remarks that the first is "terriblement" near to small varieties of *B. fibratus* (Martyn). A variety, *lifouana*, of the former described by Crosse, ibid. p. 180.

Bulinus seemanni (Dohrn), Fidji Islands. Pfeiffer, Novitat. iii. p. 474, pl. 102. fig. 18.

Bulinus miltocheilus (Reeve) occurs on several islands of the Solomon group, and is used in the manufacture of necklaces by the natives at Port Achard. Brazier, Proc. Zool. Soc. 1869, p. 162.

For South-American species of *Bulinus*, see also among *Goniognatha*.

Achatina tincta (Reeve), several varieties from Angola, described and figured by L. Pfeiffer, Mal. Blätt. xvi. pp. 253-256, pls. 1 & 2.

Achatina patersi (Martens), Tette in Mozambique, Pfeiffer, Novitat. iii. p. 452, pl. 99. figs. 13-15.—*Achatina varicosa* (Pfr.), from Enon, South Africa, Pfeiffer, Novitat. iii. p. 490, pl. 106. figs. 1, 2.

Achatina fulica. A normal and an abnormally umbilicated specimen figured by Martens in V. d. Decken's Reisen in Ost-Africa, vol. iii. p. 58, pl. 2. figs. 1a-1c.

Achatina (*Limicolaria*) *adansoni* (Fér.), *flammea* (Müll.), var. ?, and *rubicunda* (Shuttl.), brought from the Yoriba river, Western Africa, by G. Rohlf, Martens, Mal. Blätt. xvi. pp. 72-74.

AULACOGNATHA.

Buliminus (*Rhachis*) *rhodotænia*, sp. n., Martens in V. d. Decken's Reisen nach Ost-Afrika, vol. iii. p. 59, pl. 2. fig. 2, Eastern Africa.

Buliminus (*Rhachis*) *braunsii*, sp. n., Martens, Nachrichtsbl. mal. Gesellsch. i. p. 150, Zanzibar, allied to *pulcher* (Gray) and *venustus* (Morelet). Some remarks on other species of the same group received from Zanzibar, *ibid*.

Buliminus (*Pachnodus*) *conulinus*, sp. n., Martens, *ibid*. p. 153, Zanzibar : allied to *conulus* (Reeve).

Buliminus abyssinicus (Rüppell), var. *ventrosa*, from Ailat, Martens, Mal. Blätt. xvi. p. 210.

[*Cæcilianella*] *Cionella acicula*. Notes on the localities by Lehmann, Mörch, Heynemann, Ullepitsch, Reinhardt, and Wiechmann, Nachrichtsbl. mal. Gesellsch. i. pp. 16-19, 33-34, and 156.—The same species occurring in New Jersey and Florida, Binney & Bland, Land- and Freshwater Moll. of N. Am. i. p. 227.

Cæcilianella amænitatum, sp. n., Dohrn, Mal. Blätt. xvi. p. 10, Antao, Cape-Verde Islands.

Partula abbreviata, sp. n., Mousson, Journ. Conch. xvii. p. 339, pl. 14. fig. 77, Tutulla, Samoa Islands.

Achatinella. Harper Pease proposes for this genus a separate subfamily, which he calls *Helicterinae*, distinguishing the following thirteen genera:—*Helicter* (Fér.), *Achatinellastrum* (Pfr.), *Bulinella* (Pfr.), *Eburnella* (Pfr.), *Helicina* (Pfr.), *Laminella* (Pfr.), *Frickella* (Pfr.), *Perdicella* (Pfr.), *Newcombia* (Pfr.), *Auriculella* (Pfr.), *Amastra* (H. & A. Adams), *Leptachatina* (Gould), and *Labiella* (Pfr.). Notes on the specific distinctness, synonymy, and localities of some species are added; 222 species, from the Sandwich Islands, are admitted; 388 have been described, whereof 166 are synonyms. With the exception of some species of *Leptachatina*, not one species is common to two of the islands of the Sandwich group. Pease, Proc. Zool. Soc. 1869, pp. 644-652.

[*Achatinella*] *Leptachatina cylindrata*, *brevicula*, *tenuicostata*, *simplex*, *Labiella pachystoma*, *compacta*, *Amastra porphyrostoma*, *solida*, *Laminella erecta*, and *Partulina compta*, spp. nn., Pease, Journ. Conch. xvii. pp. 168-175, all from the Sandwich Islands. The author removes the Australian *Achatinella jacksonensis* (Cox) from this genus, placing it in *Tornatellina*, *ibid*. p. 176. Crosse supposes that *A. wakefieldiæ* (Cox) is congeneric with it, *ibid*, footnote.

Tornatellina conica, sp. n., Mousson, Journ. Conch. xvii. p. 342, pl. 14. fig. 8. Samoa Islands.—*Tornatellina striata*, sp. n., Tate, Am. Journ. Conch. v. p. 157, pl. 16. f. 5, Nicaragua.

Achatina (*Glossula*) *obtusa* and *subfusiformis*, spp. nn., Blanford, Proc. Zool. Soc. 1869, p. 449, Ava and Yunnan.

Zua folliculus (Gronov.). Its differences from *Z. vescoi* (Bourg.) pointed out by Dubrueil, Catal. Moll. de l'Hérault, p. 97.

Cionella (subgen. *Zua*) *subcylindrica* (L.) [*lubrica*, Müll.], Canada, New England, Nebraska. Binney & Bland, l. c. p. 225.

Stenogyra (subgen. *Rumina*) *decollata* introduced at Charleston, Binney & Bland, *l. c.* p. 228.

Stenogyra colimensis, sp. n., Crosse & Fischer, Journ. Conch. xvii. p. 424 Colima, Mexico.—*St. bocourtiana*, sp. n., Crosse & Fischer, *ibid.*, Guatemala.—*St. wallisi*, sp. n., Mousson, Mal. Blätt. xvi. p. 178, New Granada.

Opeas (*Bulimus*) *pealei*, sp. n., Tryon, Am. Journ. Conch. v. p. 110, pl. 10. fig. 5, Andaman Islands.—*Stenogyra subula* (Pfr.) in Florida, Binney & Bland, Land- and Freshwater Moll. N. Am. i. p. 231.

Melaniella pickardi (Arango) fully described and figured by Crosse, Journ. Conch. xvii. p. 21, pl. 1. fig. 5, Cuba.—*Stenogyra gracillima* (Pfr.), Florida, Binney & Bland, *l. c.* p. 232.

Columna (subgenus *Rhodea*) *californica* (Pfr.), Binney & Bland, *l. c.* p. 190. [Belongs rather to *Stenogyra* than to *Columna*.]

Clausilia rosmässleri (Pfr.), var. *lorinæ* (Gobanz), Tyrol. This variety is more distinct from the type of the species than the latter from *Cl. stentzii* (Rossm.). Gredler, Verh. zool.-bot. Gesellsch. Wien, 1869, p. 913.

Clausilia rugosa (Drap.) and *dubia* (Drap.). Jeffreys protests against their separation, Brit. Conch. v. p. 161.—*Cl. solida* (Drap.), a single specimen found near Bristol, Jeffreys, *ibid.* p. 162, pl. 99. fig. 2.

Clausilia weyersii, sp. n., Roffiaen, Ann. Soc. malac. Belg. iii. p. 79, Switzerland.

Pseudocerva, Schaufuss, in Paté's Catalogue und Systeme, p. 15, substituted as subgeneric name for *Iphigenia* (Gray), this being preoccupied among bivalves.

Clausilia crossi, sp. n., Hidalgo, Journ. Conch. xvii. p. 413, Ecuador.

[*Strophia*] *Pupa gubernatoria*, sp. n., Crosse, Journ. Conch. xvii. p. 186, Bahama Islands. [Ought to be compared with *P. weinlandi* (Wein.) from the same group of islands.]

Pupa (subgenus *Strophia*) *incana* (Binn.), Florida Keys, Binney & Bland, *l. c.* p. 247.

Pupa gularis, var. *spoliata* (Rossm.), found in the Carpathian Mountains, but not the type of the species, as formerly in Tyrol. Martens, Nachrichtsbl. mal. Gesellsch. i. p. 120.

Pupa boileausiana (Charp.) is a variety of *secale* (Drap.), Dubrueil, Catal. Moll. de l'Hérault, p. 98.

Pupa (subgen. *Pupilla*) *muscorum* (L.), St. Lawrence and New England; *blandi* (Morse), Missouri river; *hoppii* (Möller), Greenland; *variolosa* (Gould), East Florida; *pentodon* (Say), southwards to Georgia; *decora* (Gould), Lake Superior and Great Slave Lake; *corpulenta* (Morse), Nevada; *rowelli* (Newcombe) and *californica* (Newcombe), California. Binney & Bland, *l. c.* pp. 233-239.

Pupa masclaryana (Paladilhe) is = *muscorum*, var. *bigranata* (Rossm.). Dubrueil, Catal. Moll. de l'Hérault, p. 97.

Pupa tirolensis, sp. n., Gredler, Verhandl. zool.-bot. Gesellsch. Wien, 1869, p. 912, mountains of Fassin and Rodlerberg, in Tyrol, near the upper limit of trees.

Pupa milleri (not *milleri* of Pfr., which belongs to *Strophia*), *gorgonica*, and *molecula*, spp. nn., Dohrn. Mal. Blätt. xvi. p. 11, Cape-Verde Islands.

Pupa abyssinica, sp. n., Reinhardt in V. d. Decken, Reisen in Ost-Afrika, vol. iii. p. 151, Southern Abyssinia.

Pupa condita, sp. n., Gassies, Journ. Conch. xvii. p. 73, Art Island, New Caledonia.—*Pupa pazi*, sp. n., Hidalgo, Journ. Conch. xvii. p. 412, Amanaeaz in Peru, and Guayaquil.

Vertigo gouldii (Binn.), *bollesiana* (Morse), *milium* (Gould), *ovata* (Say), *ventricosa* (Morse), and *simplex* (Gould), Binney & Bland, l. c. pp. 249–254.

Vertigo tridentata, sp. n., Wolf, Am. Journ. Conch. v. p. 193, pl. 13. fig. 1, Canton, Illinois.

Pupa (subgen. *Leucochila*) *fallax* (Say), *modica* (Say), *arizonensis* (Gabb), *hordeacea* (Gabb), *armifera* (Say), *contracta* (Say), *rupicola* (Say), *corticaria* (Say), *chordata* (Pfr.), Mazatlan, *pellucida* (Pfr.), Texas. Binney & Bland, l. c. pp. 239–246.

Pupa placida (Say) is probably founded on a specimen of the European *Bulimulus obscurus* (Müll.), accidentally introduced. Ibid. p. 248.

Fauxulus, Schaufuss, in Pätel's Cataloge und Systeme, p. 15, substituted as subgeneric name for *Faula*, H. Adams; the latter is said to be preoccupied.

GONIOGNATHA.

Punctum minutissimum, New England and Ohio, Binney & Bland, Land- and Freshwater Moll. N. Am. i. p. 222.

Achatina (subgen. *Liguus*) *fasciata* (Müll.), Florida, Binney & Bland, l. c. p. 213.

Orthalicus zebra (Müll.) [*melanochilus*, Val.], Key Biscaine at Florida, and Mexico; *undatus* (Brug.), Key West, Jamaica, and Cuba. Binney & Bland, l. c. pp. 216–219.

Orthalicus zebra (Müll., Shuttleworth) and *obductus* (Shuttl.), from Granada, Mousson, Mal. Blätt. xvi. p. 179.

Orthalicus pfeifferi, sp. n., Hidalgo, Journ. Conch. xvii. p. 412, Ecuador. *O. leucochilus*, sp. n., Crosse & Fischer, Journ. Conch. xvii. p. 423, Orizaba Mexico.

[*Bulimulus*] *Bulimus spicifer* (Gabb), California; jaw like that of *Orthalicus*. Binney & Bland, l. c. p. 191.

Bulimulus (subgenus *Drymaeus*) *serperastrus* (Say), Texas and Mexico, Binney & Bland, l. c. p. 192.

Bulimulus (subgen. *Liostracus*) *ziegleri* (Pfr.), Mazatlan and Central America; *marielinus* (Poey), *floridanus* (Pfr.), and *dormani* (Binn.), Florida, Binney & Bland, l. c. pp. 193–195.

Bulimulus (subgen. *Mesembrinus*) *pallidior* (Sow.) = *vegetus* (Gould), *excelsus* (Gould), and *inscendens* (Binn.), California; *multilineatus* (Say) = *virgatus* (Binney not Férussac), Florida and Venezuela. Binney & Bland, l. c. pp. 195–199.

Bulimulus (subgen. *Thaumastus*) *californicus* (Reeve), California; *patriarcha* (Binn.), Texas; *alternatus* (Say), from Louisiana, through Texas into Mexico; *schiedeanus* (Pfr.), with var. *mooreanus* (Binn.), Texas and Mexico. Binney & Bland, l. c. pp. 199–205.

Bulimulus (subgen. *Mormus*) *sufflatus* (Gould) and *pilula* (Binn.), California. Binney & Bland, l. c. p. 206.

Bulimulus (subgen. *Scutalus*) *proteus* (Brod.), Cape St. Lucas [?]; *dealbatus* (Say), from North Carolina to Missouri and Texas; *xantusi* (Binn.), Cape St. Lucas. Binney & Bland, l. c. pp. 207–210.

Bulinus (subgen. *Peroncaus*) *artemisia* (Binn.), Cape St. Lucas. Binney & Bland, l. c. p. 210.

Bulinus rhodotrema (Martens), Pfeiffer, Novitat. iii. p. 463, pl. 101. figs. 10, 11, Costa Rica.

Bulinus vaporeus, sp. n., described from an imperfect specimen, and *B. semifasciatus*, sp. n., both from northern parts of South America, Mousson, Mal. Blatt. xvi. pp. 174, 175, with remarks on *B. elaeodes* (Pfr.), *speciosus* (Pfr.), *glaber* (Gmel.), *fabrefactus* (Reeve), *cattivorus* (Brod.), *roseatus* (Reeve), *tenuilabris* (Pfr.), *piuranus* (Albers), and some others.

Bulinus corydon and *B. aristæus*, spp. nn., Crosse, Journ. Conch. xvii. p. 185, Quito; *B. semipictus* and *B. bæzensis*, spp. nn., Hidalgo, ibid. pp. 188, 189, Ecuador.—*Bulinus stenacme* (Pfr.) and *vespertinus* (Pfr.), both from Patux in Peru, Pfeiffer, Novit. iii. pp. 464 & 465, pl. 101. figs. 12, 13, and 16–19; *B. peliostomus* (Philippi), *williamsi* (Pfr.), *subeffusus* (Phil.), *tæniatus* (Phil.), *elatus* (Phil.), *monticola* (Phil.), *ulloæ* (Phil.), *spretus* (Phil.), and *subroseus* (Phil.), *brephoides* (Orb.), *biformis* (Pfr.), *bisculptus* (Pfr.), and *monachus* (Pfr.), all from Peru. Pfeiffer, ibid. pp. 466–472, pl. 101. fig. 22, pl. 102. fig. 15, and pp. 491–493, pl. 106. figs. 3–10.

Bulinus lentiginosus, *monticola*, *elatus*, *ulloæ*, *spretus*, *tumidus*, *subeffusus*, *heterogyrrus*, spp. nn., all from Peru, Philippi, Mal. Blatt. xvi. pp. 32–36 and 42. Additional notes on these species, as well as on *B. bisculptus*, sp. n., and *subroseus*, sp. n., also from Peru; *B. heterogyrrus*, supposed to be = *altoperuvianus* (Reeve), Pfeiffer, Mal. Blatt. xvi. pp. 88–90.

Bulinus pluto and *prometheus*, spp. nn., Crosse, Journ. Conch. xvii. pp. 422, 3, Peru.—*Bulinus longurio*, sp. n., Crosse, ibid. p. 185, Chile, allied to *cienum*.

Bulinulus gravesii (King) is a name substituted for *peruvianus* (Brug., fgm., Pfr.), as the species does not live in Peru, but in Southern Chile. Martens, Mal. Blatt. xvi. p. 216.

Bulinus ciliatus (Gould). Adult specimens have a reflected lip; this species occurs in the suburbs of Rio Janeiro. Brown, Ann. Lyc. Nat. Hist. N. York, Feb. 1869.

Bulinus henselii (Martens), Pfeiffer, Novitat. iii. p. 464, pl. 101. figs. 14, 15, Province Rio Grande do Sul, Brazil.

Bulinus tryonianus, sp. n., Tate, Am. Journ. Conch. v. p. 157, pl. 16. fig. 4, Nicaragua. [Allied to *B. montivagus*.]

[*Eudiotus*] *Bulinus visendus*, sp. n., G. Hidalgo, Journ. Conch. xvii. p. 50, pl. 5. fig. 8, Ecuador.

Macroceramus kieneri (Pfr.) and *gossei* (Pfr.), Florida, the latter also from Texas; jaw and lingual dentition of *M. signatus* (Goulding) figured by Binney & Bland, Land- and Freshwater Moll. N. Amer. pp. 220, 221.

Inliaculus, Schaufuss, in Pütel's Cataloge und Systeme, p. 15, substituted as subgeneric name for *Lia*, Alb.

Cylindrella. H. Crosse & P. Fischer have examined numerous preparations of the jaw and radula of species of this genus, and state that *Cylindrella* and *Macroceramus* agree in having a very thin jaw, folded obliquely, and a radula with very oblique rows of teeth, which have the shape of "palmettes." They distinguish, according to the number of lateral and marginal teeth, four sections of the genus *Cylindrella*, of which *C. bahamensis* (Pfr.), *elliottii* (Poey), *rosea* (Pfr.), and *maugeri* (Wood) are the types. Journ. Conch. xvii. pp. 321–323.

Cylindrella rosea (Pfr.). Jaw figured by Binney, Am. Journ. Conch. v. p. 37, pl. 8. fig. 2 (photograph).—*Cylindrella scæva* (Gundlach). Lingual dentition figured by Binney & Bland, Land- and Freshwater Moll. N. Am. i. p. 22.

Cylindrella splendida (Pfr.), *transparens* (Pfr.), *tryoni* (Pfr.), *vineta* (Gundlach), *concreta* (Gundlach), *mexicana* (Cumming), var. *clara* (Wright), *cris-tallina* (Wright), *croseana* (Pfr.), *flammulata* (Pfr.), *eximia* (Pfr.), *crenata* (Weinland), *adnata* (Pfr.), *crenulata* (Gundl.), *decolorata* (Gundl.), *grandis* (Pfr.), *wrighti* (Pfr.), *macra* (Wright), *hilleri* (Pfr.), *tarcasiana* (Gundl.), *perlata* (Gundl.), and *lævigatus* (Gundl.), most of them from Cuba, all described and figured by L. Pfeiffer, Novitat. Conchol. iii. pp. 432-440 and 453-460, pls. 97 & 100.

Cylindrella crenata (Weinland & Martens) and *C. eximia* (Pfr.) allied, but apparently distinct species; for *Helix petiveriana* (Fér.) founded on a bad figure of Petiver, really indeterminable, without description, no priority can be claimed. Pfeiffer, Mal. Blätt. xvi. pp. 91-94.

Cylindrella (subgenus *Gongylostoma*) *poeyana* (Orb.) and *jejuna* (Gould), Florida, and *irregularis* (Gould), Lower California, Binney & Bland, l. c. pp. 22, 23.

Cylindrella (subgenus *Holospira*) *roemeri* (Pfr.) and *goldfussi* (Menke), Texas, Binney & Bland, l. c. p. 24.

Berendtia, gen. nov. Radula like that of *Eucalodium*; jaw arcuated, "longitudinally divided;" shell similar to that of *Clausilia*, but without any plait in the aperture; apex not decolated; aperture biangulate. Type *Clausilia taylori* (Pfr.) = *Cylindrella newcombiana* (Gabb), from Moleje, in Mexican California. Crosse & Fischer, Journ. Conch. xvii. p. 191. The same species described and figured as *Eucalodium taylori* by Binney & Bland, Land- and Freshwater Moll. i. p. 189.

ELASMOGNATHA.

Some objections against the distinctness of this family are raised by Cooper, Am. Journ. Conch. v. p. 218.

Succinea wrightii, Crosse, Journ. Conch. xvii. p. 393, pl. 12. fig. 6, China.

Succinea acuminata, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 449, Yunan.

Succinea lowei and *wollastoni*, spp. nn., Dohrn, Mal. Blätt. xvi. p. 13, Cape-Verde Islands.

Succinea badia (Morelet) described from Abyssinia, and compared with other African species, Martens, Mal. Blätt. xvi. p. 210.

Succinea haydeni (Binn.), Nebraska; *retusa* (Lea), Ohio; *sillimanni* (Bland), Nevada; *ovalis* (Gould, not Say), Canada, Northern and Middle States; *higginsii* (Bland), Lake Erie; *haleana* (Lea), Louisiana; *mooresiana* (Lea), Platte River; *grosvenorii* (Lea), Kansas and Louisiana, probably identical with *forshyei* (Lea), Texas; *wilsoni* (Lea), Georgia; *concordialis* (Gould), Texas; *luteola* (Gould), Florida and Texas; *lineata* (Binn.), Nebraska; *avara* (Say), all over Eastern North America; *stretchiana* (Bland), Nevada; *verrilli* (Bland), Anticosti; *aurea* (Lea), Ohio; *grænländica* (Beck), Greenland; *obliqua* (Say), from Gaspé to Georgia, and from the Red River of the North to Arkansas; *totteniana* (Lea), New England and New York; *campestris* (Say), Florida and Georgia; *hawkinsii* (Baird), British Columbia; *cingulata*

(Forbes), Mazatlan ; *ruticana* (Gould), California ; *nuttalliana* (Lea), Oregon and California ; *oregonensis* (Lea), Binney & Bland, *l. c.* pp. 255-270. *S. pelucida* (Lea) appears to be = *Limnaeus columella* (Say), figured *l. c.* p. 271.

Succinea (subgen. *Brachyspira*) *salleana* (Pfr.), New Orleans, and *effusa* (Shuttl.), East Florida. Binney & Bland, *l. c.* p. 271.

LIMNOPHILA.

AURICULIDÆ.

Pythia savaiensis, sp. n., Mousson, Journ. Conch. xvii. p. 345, Savai and Manua Islands, Samoa group.

Cassidula crassiuscula, sp. n., Mousson, Journ. Conch. xvii. p. 343, pl. 15. fig. 1, Upolu, Samoa Islands.

Plecotrema striata (Phil.). The living animal described ; the eyes are inserted at the hinder inner basis of the tentacles. Pease, Proc. Zool. Soc. 1869, p. 59.

Plecotrema binneyi (Crosse, 1867), Crosse, Journ. Conch. xvii. p. 369, Sharks Bay, Australia.

Pedipes naticoides, sp. n., Stearns, Proc. Bost. Soc. Nat. Hist. Oct. 1869, Tampa Bay, Florida.

Auricula nitidula (Blanf.) = *gangetica* (Bens.), var., Blanford, Journ. As. Soc. Bengal, xxxviii. p. 143.

Auricula binneyana, *hanleyana*, and *gundlachi*, spp. nn., Gassies, Journ. Conch. xvii. pp. 75, 76, Art Island, New Caledonia.

Melampus bidentatus (Montagu) and *myosotis* (Drap.), Jeffreys, Brit. Conch. v. pp. 103-109, pl. 4. fig. 2, and pl. 98. figs. 1 & 2. [In Dr. Pfeiffer's system neither of these species belongs to the genus *Melampus*, but the first to *Leuconia* (Gray), the second to *Alexia* (Leach).]

Melampus (Tralia) semiplicatus (Pease) and *parvulus* (Nuttall). The living animals described by Pease, Proc. Zool. Soc. 1869, p. 60.

Melampus lucidus, sp. n., Pease, Am. Journ. Conch. v. p. 75, Oahu.

Melampus obtusus and *granum*, spp. nn., Gassies, Journ. Conch. xvii. pp. 74, 75, Art Island, New Caledonia.—*M. semisulcatus*, sp. n., Mousson, Journ. Conch. xvii. p. 347, pl. 15. fig. 2, Samoa Islands.—*M. flexuosus* (Crosse, 1867), Crosse, Journ. Conch. xvii. p. 394, pl. 12. fig. 4, Sharks Bay, Australia.

Laimodonta anaensis, sp. n., Mousson, Journ. Conch. xvii. p. 63, pl. 5. fig. 1, Anaa Island, Paumotu group.

Ophicardelus irregularis and *O. minor*, spp. nn., Mousson, *ibid.* pp. 64, 65, pl. 5. figs. 2 & 3, Lake Tom-Tom, Wollongong [Australia?].

Blauneria gracilis (Pease). The living animal described, differing considerably from the type of the genus, *B. pellucida*. It is marine, or at least amphibious, dwelling, like *Pedipes*, in the crevices of stones overflowed at high water. Pease, Proc. Zool. Soc. 1869, p. 60.

Otina otis (Turt.), Jeffreys, Brit. Conch. v. p. 110, pl. 4. fig. 3, and pl. 98. fig. 3.

LIMNÆIDÆ.

The anatomy and the development of the sexual organs of *Limnaea auricularia* are the subject of a paper by H. EISIG, Zeitschr. wiss. Zool. xix. p. 297. He observes that the male sexual organs are developed at an earlier period than the female.

A few observations on the eggs and young of *Limnæa stagnalis* (L.) are given by NAUCK in Correspondenzblatt d. naturforschenden Vereins in Riga, vol. xvii. 1869, p. 177.

The auditory sac and its contents in *Limnæus stagnalis* and *Ancylus lacustris* is described and figured by GULLIVER, Journ. of Anat. and Physiol. v. pp. 79-81, pl. 2. figs. 1 & 2. The author does not appear to have been acquainted with a more extensive paper on the same subject by Ad. Schmidt in Giebel's Zeitschrift für die gesammten Naturwissenschaften, vol. viii. 1856, with 2 plates.

Chilina fluctuosa (Gray), var., from Southern Chile, Martens, Mal. Blätt. xvi. p. 217.

Limnæa auricularia (L.) and *peregra* (Müll.) found in copula, Heynemann, Nachrichtsbl. mal. Gesellsch. i. p. 37.

Limnæa involuta (Harvey) from Lough Crincaum; the living animal does not show an outward expansion of the mantle, and therefore does not belong to *Amphipeplea*. More, Ann. & Mag. Nat. Hist. iv. p. 46, pl. 3. fig. 3.

Limnæa variabilis (Millet). Notes by L. Bardin, Act. Soc. Linn. Bordeaux, vol. xxvi. part 4, March 1868.

Limnæa sordulenta (Morelet) = *L. ovatus*, var. *stuebeli* (Reibisch), and *L. ribeirensis* (described by Reibisch as variety of *auricularius*), from the Cape-Verde Islands, regarded as distinct species and described by Dohrn, Mal. Blatt. xvi. pp. 14, 15.

Physa wahlbergi (Krauss) from the Cape-Verde Islands and many parts of Continental Africa, very variable. The following are not to be distinguished specifically from it:—*Bulinus scalaris* and *schmidtii* (Dunker), *Isidora lamellosa* (Roth), *Physa apiculata*, *semiplicata*, and *clavulata* (Morelet). Dohrn, Mal. Blatt. xvi. pp. 15-18.—E. v. Martens treats of the same subject, and comes to similar conclusions, from Abyssinian specimens; he adopts the name *forskali* (Ehrenberg) as being the oldest. Ibid. pp. 213, 214.

Physa pisana found also in Spezzia. Issel, Bullett. mal. Ital. ii. p. 31.

Physa seychellana, sp. n., Martens in V. d. Decken's Reisen in Ost-Afrika, vol. iii. p. 60, pl. 2. fig. 3, Seychelle Islands.—*Physa artensis*, sp. n., Gassies, Journ. Conch. xvii. p. 76, Art Island, New Caledonia.

Planorbis coretus (Desh.), Cape-Verde Islands. Dohrn, Mal. Blätt. xvi. p. 18.

Planorbis rüppelli (Dunker) described by Martens, Mal. Blätt. xvi. p. 271, 272, Abyssinia.

Planorbis lauricochæ, *raimondi*, and *trigyrus*, spp. nn., Peru, Philippi, Mal. Blätt. xvi. pp. 33, 32.—*Planorbis declivis*, sp. n., Tate, Am. Journ. Conch. v. p. 159, Nicaragua.

Ancylus fluviatilis (Müll.). On its varieties, several of which have been regarded as distinct species by other authors, Dubrueil, Cat. Moll. de l'Hérault, p. 101.

Ancylus milleri, sp. n., Dohrn, Mal. Blätt. xvi. p. 18, Cape-Verde Islands.

THALASSOPHILA.

Siphonaria kurracheensis (Reeve) figured in Descript. l'Egypte, pl. 1. f. 1, Red Sea. Issel, Malac. mar. ross. p. 153.

Siphonaria stellata (Helbling, 1779) = *exigua* (Sow.). Martens, Mal. Blätt. xvi. p. 235.

PULMONATA OPERCULATA.

CYCLOPHORIDÆ (CYCLOTACEA).

J. MACDONALD states that in this family there are invariably otoconia in the ear-sacs, but in the "Cyclostomatous type" single spherical otoliths. Ann. & Mag. Nat. Hist. iv. p. 79, pl. 4. fig. 1.

Cyclotus perdistinctus (Gundl.), Cuba, *vortex* (Weinland), Haiti, and *minimus* (Gundl.), Cuba. Pfeiffer, Novitat. Conch. iii. pp. 445, 446, pl. 98. figs. 14-16, 17-20, and 21-24.

Spiraculum andersoni, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 447, Bhamo, on the Iravadi.—*Sp. fairbanki*, sp. n., Blanford, Journ. As. Soc. Bengal, xxxviii. p. 135, Pulney Hills, Southern India.

Mychopoma, gen. nov. Shell turbinated, with a thick dark hairy epidermis; aperture crenulated within; operculum very similar to that of *Opisthoporus*. *M. hirsutum* and *limbiferum*, spp. nn., Blanford, Journ. As. Soc. Beng. viii. pp. 131-134, pl. 16. figs. 5 & 4; dentition in woodcut, p. 131, Calcad and Pulney Hills, Southern India.

Pterocyclos? *tristis*, sp. n., Blanford, ibid. p. 134, pl. 16. fig. 9, South Canara.

Pterocyclos wilsoni (Pfr.), Formosa, *labuanensis* (Pfr.), and *lowianus* (Pfr.), Labuan. Pfeiffer, Novitat. Conch. iii. pp. 442, 443, pl. 98. figs. 5-7, 8-10, 11-13.

Pterocyclos? *endædaleus*, sp. n., Crosse, Journ. Conch. xvii. p. 187, Borneo.

Cyclophorus fulguratus (Pfr.), var., from Pegu, and *C. patens* (Blanf.), Pegu, figured by Pfeiffer, l. c. pp. 440, 441, pl. 98. figs. 1, 2 and 3, 4.

Cyclophorus lævigatus, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 445, Bhamo, on the Iravadi.—*C. ravidus* (Bens.), var., from the Annamullay Hills and the Wynaad. Blanford, Journ. As. Soc. Bengal, xxxviii. p. 143.

Cyclophorus delphinulus, sp. n., Mousson, Mal. Blatt. xvi. p. 180, northern part of South America.

Cyclostoma? *leaii*, sp. n., Tryon, Am. Journ. Conch. v. p. 111, pl. 10. fig. 6, Andaman Islands. Operculum unknown. [Fig. 6 seems to agree with *Cyclophorus atramentarius* (Sow.), and fig. 6a with *C. foliaceus* (Chemn.), the latter, indeed, being an Andaman shell. See Reeve, Conch. Icon. vol. xiii.]

[*Cyclophorus*] *Ostodes adjunctus*, sp. n., Mousson, Journ. Conch. xvii. p. 351, pl. 14. fig. 9, Tutulla, Samoa Islands.

[*Cyclophorus*] *Ditropis*, subgen. nov. Shell nearly vitreous, translucent, with two or more spiral ribs. *C. (D.) planorbis*, *beddomei*, and *convexus*, spp. nn., Blanford, Journ. As. Soc. Bengal, viii. pp. 126-131, pl. 16. figs. 1-3; dentition in woodcut p. 131, Travancore, in Southern India.

Craspedopoma hespericum (Morelet), Azores, *costatum* (Shuttl.), Palma Island, Canaries, and *monizianum* (Lowe), Madeira. Pfeiffer, Novitat. Conch. iii. pp. 446, 447, pl. 98. figs. 25-27, 28-30, and 31-33.

Alycaeus, see *Diplommatinacea*.

PUPINEA.

Cataulus calcadensis, sp. n., Blanford, Journ. As. Soc. Bengal, xxxviii. p. 137, pl. 16. fig. 18, Calcad Hills, province Travancore, Southern India.

DIPLOMMATINACEÆ.

Diplommatina. J. Macdonald states that the eyes are situated at the outer bases of the tentacles, as in the *Cyclophoridae*, and that the lingual dentition agrees with that of the family mentioned; further he points out that the conchological characters of this genus are wider than is generally acknowledged, there being dextral and sinistral species, species with and without tooth on the columellar lip, and even species with rudimentary operculum. Ann. & Mag. Nat. Hist. iv. pp. 77-81, pl. 4. figs. 1-10. [According to this view the genera *Paxillus*, *Palaina*, and *Moussonia* must be merged in *Diplommatina*.]

In many species there is a constriction in the penultimate whorl, but concealed by the peristome. As this genus agrees in the sculpture, want of colour, &c. with *Alycæus*, and differs therein from the rest of *Cyclophoridae*, a subfamily, "*Alycæinae*," is proposed; dentition not yet known. Blanford, Ann. & Mag. Nat. Hist. iii. p. 243.

Diplommatina martensi (H. Ad.) found in the Island of Avolau, Fiji Islands. Brazier, Proc. Zool. Soc. 1869, p. 560.

Palaina coxi (H. Ad.) found in the pine-forests of Norfolk Island. Brazier, *ibid*.

Ophisthostoma macrostoma, sp. n., Blanford, Journ. As. Soc. Bengal, xviii. p. 139, pl. 16. fig. 7, Bramagivi Hills, Malabar; *O. fairbanki* (Blanf.) figured on the same plate, fig. 6.

Alycæus. Dentition of *A. vulcani* (Blanf.) figured. Blanford, Ann. & Mag. Nat. Hist. iii. p. 344.

Alycæus ingrami (Blanf.), Arakan, and *vulcani* (Blanf.), Ava. Pfeiffer, Novitat. Conchol. iii. pp. 448, 449, pl. 98. figs. 34-36 and 37-39.

CYCLOSTOMIDÆ.

Cyclotopsis (Blanf.), foot longitudinally divided as in *Cyclostoma* proper; operculum resembling that of *Choanopoma*; *Cyclotus conoideus* (Pfr.) belongs to *Cyclotopsis*. Blanford, Ann. & Mag. Nat. Hist. iii. p. 342.

Cyclostoma. Two species, of which one appears to be new, were found on a newly formed island near Mauritius; there is no doubt that they were transported by waves. Robillard, Trans. R. Soc. of Arts and Sciences of Mauritius, iii. p. 106.

W. H. PEASE has published a list of the species of the "family *Realiea*," and arrived at conclusions similar to those published by the Recorder in Mal. Blätt. 1864 (see Zool. Record, i. p. 239). He states that the name *Realia* (*Liarea* of Gray) should be restricted to the New-Zealand species, and that a great number of small shells, described by several authors as *Hydrocena*, do not belong to this genus. He enumerates 6 species of *Realia*, 58 of *Omphalotropis* (a genus with two sections distinguished by the presence or absence of a basal keel), 3 of *Scalinella*, 4 of *Japonia*, and 2 of *Bourciera*. Crosse is right in opposing the arrangement of the last genus with this family. Journ. Conch. xvii. pp. 131-161. Many of the species are figured.

Realia rubens (Quoy and Gaimard). Its dentition described and figured; it resembles very much that of *Chondropoma*; *Omphalotropis* ought not to be separated from it generically. Blanford, Ann. & Mag. Nat. Hist. iii p. 341.

Omphalotropis pfeifferi (Crosse, 1868), Crosse, Journ. Conch. xvii. p. 396, Lord Howe's Island, New Hebrides.

Pomatias bourguignati, sp. n., Ollastre, Pyrénées-Orientales; *P. benoiti*, sp. n., Sicily; *P. protractus*, sp. n., Sicily and Southern Italy; *P. paladilhianus*, sp. n., Sicily; *P. hispanicus*, sp. n., Oviedo; *P. mabillianus*, sp. n., Eaux-bonnes, Dép. Basses-Pyrénées; *P. athenarum*, sp. n., Athens; *P. hellenicus*, sp. n., Mount Parnassus, in Greece. St. Simon, Revue et Mag. Zool. 1869, pp. 3-8.

The same author enumerates 42 recent species of this genus, *ibid.* pp. 8-22; it extends from the Himalayas through Middle and Southern Europe to the Canary Islands. Five other species are known from tertiary and diluvial strata.

TRUNCATELLIDÆ.

Acutalia. Schaufuss in Patet's Systeme und Cataloge, pp. 16 & 92, substitutes this name [quite unnecessarily] for *Acicula* (Hartm.), which is said to be preoccupied. [The Recorder does not know that the name *Acicula* has been used on any other occasion than by Risso for *Achatina acicula*, and this dates from 1826, whilst Hartmann published in 1821. Moreover there are two other generic names for the first species of *Acicula*, viz. *Acme* Hartm., 1821, and *Pupula*, Ag., 1837.]

Acmella is a new subgenus of *Acicula*, proposed by Blanford for *Hydrocena tersa* (Bens.). Ann. & Mag. Nat. Hist. iii. p. 177, pl. 16. fig. 2.—E. v. Martens thinks that this cannot belong to *Acicula*, but rather to *Assimineæ*. Mal. Blätt. xvi. p. 225.

Truncatella costulata (Risso) = *truncatula* (Drap.). Spinelli says that this animal lives attached to plants growing on the banks (rive) of channels of brackish water. Catal. Moll. terr. e flum. Venez. p. 24.

Truncatella arctecostata, sp. n., Mousson, Journ. Conch. xvii. p. 68, pl. 5. fig. 4, Paumotu Islands.—*T. diaphana*, sp. n., Gassies, *ibid.* p. 78, Art Island, New Caledonia.

ASSIMINÆ.

W. H. PEASE has given a list of 31 species probably belonging to *Assimineæ*, expressing it as his opinion that some others should be referred to *Omphalotropis*.—*Assimineæ lucida*, sp. n., Anaa Island, Journ. Conch. xvii. pp. 161-166, pl. 7. fig. 10.—Crosse expresses his doubts with regard to the pertinence of *A. gallica* to this genus, *ibid.* p. 162, footnote.—*Assimineæ nitida* figured by Pease, *ibid.* fig. 11.

Hydrocena tersa (Bens.) belongs perhaps to *Assimineæ*. Martens, Mal. Blätt. xvi. p. 225.

Assimineæ grayana and *littorina*, Jeffreys, Brit. Conchol. v. pp. 97-102, pl. 4. fig. 1, pl. 97. figs. 5 & 6.

Assimineæ obeliscus, sp. n., Paladilhe, Rev. et Mag. Zool. 1869, p. 379, pl. 19. figs. 4, 5, from alluvial soil in Algeria [an *Assimineæ* vel *Hydrobia*?].

HELICINIDÆ.

Helicina nodæ (Arango), fully described and figured by Crosse, Journ. Conch. xvii. p. 23, pl. 1. fig. 6, Cuba.

Helicina lifouana, sp. n., Crosse, ibid. p. 25, pl. 2. fig. 5, Lifou or Loyalty Island, near New Caledonia.—*H. anaënsis*, sp. n., Mousson, ibid. p. 66, pl. 5. fig. 6, Anaa Island, Paumotu group.—*H. miltochila*, sp. n., Crosse, ibid. p. 187, "Oceania?"—*Helicina beryllina* (Gould), var. *flavida*, Mousson, ibid. p. 357, Samoa Islands.

Helicina bocourti, sp. n., Crosse and Fischer, ibid. p. 251, Central America.

Helicina occulta (Say) found alive by E. R. Leland and Prof. McDonald. Am. Journ. Conch. v. p. 118.

Hydrocena caledonica, sp. n., New Caledonia, in a wood, a league from, and about 100 metres above, the sea. Crosse, Journ. Conch. xvii. p. 24, pl. 2. fig. 4.

Hydrocena raiatensis, sp. n., Mousson, ibid. p. 67, pl. 5. fig. 5, Raiatea, Society Islands, is perhaps a variety of *H. terebralis* (Gould).—*H. crosseana* and *hidalgoi*, spp. nn., Gassies, ibid. pp. 77, 78, Art Island, New Caledonia.

Hydrocena tersa (Bens.). See under *Assimineæ* and *Acmella* (*Truncatulidæ*).

Georissa (Blanf.). The characters of this genus are revised from the living animal and operculum, by W. Blanford, Ann. & Mag. Nat. Hist. ser. 4, vol. iii. p. 174, pl. 16. fig. 1.

E. v. Martens has reviewed this paper, and suggests that *Georissa* is identical with *Hydrocena*, the differences in the position of the eyes and in the lines of the operculum being rather slight, and perhaps due to the different modes of observation; besides, *Hydrocena* is in reality not a marine form, but lives in damp places of mountainous regions, just as *Georissa*. Mal. Blatt. xvi. pp. 223–225.

SOLENOCONCHÆ.

Siphonodentalium lofotense (Sars), Jeffreys, Brit. Conchol. v. p. 195, pl. 101. fig. 2.

Cadulus subfusiformis (Sars, as *Siphonodentalium*), near Unst. Jeffreys, ibid. p. 196, pl. 101. fig. 3.

CONCHIFERA.

This class is arranged by C. RECLUZ in the following manner (Act. Soc. Linn. Bord. xxvii.):—

A. Dimyaires.

1. Ordre Disiphonophores.

a. Scoliéphores. b. Ascoliéphores.

2. Ordre Monosiphonophores.

3. Ordre Asiphonophores.

B. Monomyaires.

a. Pédifères. b. Sans pied (Ostreidæ).

INCLUSA, Cuv. (*Pholadacea*, Ad.).

Teredo. The experiments made during ten years by a special commission corroborate the fact that impregnation with creosote is the only sure means of preserving wood from the attacks of *Teredo*. E. A. v. Baumhauer, Archives Néerland. des Sci. exactes et naturelles, iv. pp. 160-166.

Le Juge has written on the boring of *Pholus dactylus* and exhibited a piece of gneiss perforated by this shell. Transact. R. Soc. of Arts and Sciences of Mauritius, pp. 3 and 9-11.

Cyrtopleura exilis, sp. n., Tryon, Am. Journ. Conch. v. p. 170, pl. 14. fig. 2, St. Croix.

Solen curtus (Desmoulins) is a distinct species. Récluz, Act. Soc. Linn. Bordeaux, xxvii.

Solen (*Siliquaria*) *seresianus*, sp. n., Récluz, l. c., Cette.

Macha divaricata, sp. n., Lischke, Mal. Blatt. xxi. p. 108, and Moll. Jap. p. 142, pl. 10. figs. 1, 2, Nangasaki.

Saxicava arctica is a circumpolar species, occurring also in Japan. Lischke, Moll. Jap. pp. 124-126.

Panopæa plicata (Montagu) should, perhaps, not be referred to this genus. Petit, Catal. Moll. Eur. p. 244.

Mya arenaria (L.) = *japonica* (Jay) is a circumpolar species, occurring also in Japan. Lischke, Moll. Jap. pp. 138-141.

Sphenia is distinct from *Mya*. Petit, Catal. Mol. Eur. p. 245.

Thracia speciosa, sp. n., Angas, Proc. Zool. Soc. 1869, p. 48, pl. 2. fig. 12, Port Jackson.

Rupicilla. Schaufuss in Pâtel's Systeme und Cataloge, p. 18, has substituted this subgeneric name for *Rupicola* (Fleurian de Bellevue).

Souleyetia, gen. nov., shell inaequilateral; spoon-like processes directed backwards. *S. moulinsii*, sp. n., Récluz, Act. Soc. Linn. Bordeaux, xxvii., Borneo.

CARDIACEA, Cuv. (*Veneracea*, Ad.).

MACTRIDÆ.

Macra truncata. Its differences from *subtruncata* are pointed out by Petit, Catal. Mol. Eur. p. 146.

Macra gabbi, sp. n., Tryon, Am. Journ. Conch. v. p. 170, pl. 16. fig. 7, Lower California.

Spissula catilliformis and *dolabriformis* (Conrad) figured by the author, Am. Journ. Conch. v. pl. 13. fig. 1, and pl. 12. fig. 1.

Harvella pacifica (Conrad) figured by the author, l. c. pl. 12. fig. 2.

Lutrania nuttalli (Conrad) = *maxima* (Middendorff) = *capax* (Gould), and *L. maxima* (Jonas) = *larga* (Reeve), described from Japanese specimens by Lischke, Moll. Jap. pp. 136-138.

Lutrania costata, sp. n., Tryon, l. c. p. 171, pl. 16. fig. 6, Senegal.

Lutrania (*Eastonia*) *rugosa*. The name of this species has been given by Helbling. Martens Mal. Blatt. xvi. p. 236.

Cæcella chinensis (Desh.) from Nangasaki. Lischke, Moll. Jap. p. 133, pl. 10. figs. 5, 6.

TELLINIDÆ.

Soletellina olivacea (Jay, as *Psammobia*) = *japonica* (Debeaux), described from Japanese specimens by Lischke, Moll. Jap. p. 131.

Hiatula nitens, sp. n., Tryon, Am. Journ. Conch. v. p. 171, pl. 16. fig. 9, New Zealand.

Sanguinolaria robertsi, sp. n., Tryon, l. c. fig. 8, Philippines.

Tellina. Notes on the structure of the shell with reference to the oblique burrows made by these mollusks, by W. von Vest, Verhandl. Siebenbürg. Verein. f. Naturwiss. xvii. 1866, pp. 29-31.

Tellina. Plates 55-58, containing species 323-345, and concluding the monograph of this genus, are published by Sowerby in Reeve's 'Conchologia Iconica,' among them the following are new:—*T. brazieri*, fig. 323, Port Jackson; *shanghaiensis*, fig. 324, Shanghai; *crassiplicata*, fig. 332, Sandwich Islands; *seminflata*, fig. 334, *politissima*, fig. 340, *amphidesmoides*, fig. 341, *lenticularis*, fig. 342, Japan. Others have been previously described by Deshayes, but are here figured for the first time.

Tellina (Macoma) arsinoensis and *erythræa*, spp. nn., Issel, Malacol. mar. rosso, p. 59, pl. 1. figs. 3 & 4, Suez.

Tellina (Tellinula) fragillima, sp. n., Issel, l. c. p. 60, pl. 6. fig. 5, Red Sea.

Donax bellardii, sp. n., Tapparone-Canefri, Atti Soc. Ital. Scienze Nat. xii. p. 371, Spezia and Chioggia.

Donax laskeyi (Montagu, as *Tellina*) is a distinct European species; *D. brevis* (Requien) is the young of *D. trunculus* (L.). Petit, Catal. Moll. Eur. p. 248.

Iphigenia (Schumacher). A monograph of this genus has been published by Ed. Römer, in which he distinguishes and describes the following species:—*lævigata* (Chemn.), Guinea; *brasiliensis* (Lam.), with var. *I. media* (Shuttl.), Brazil and West Indies; *altior* (Sow.), west coast of America from the Gulf of California to Tumbez in Northern Peru; and *I. rostrata*, sp. n., Upper Guinea. Mal. Blätt. xvi. pp. 150-155.

Galatæa. Sowerby's monograph of this genus in Reeve's 'Conchologia Iconica,' published in September 1868, contains on six plates 16 species, of which the following are new:—*G. biangulata*, pl. 5. fig. 12, and *triangularis*, pl. 6. fig. 15, localities unknown; all species the locality of which is known are African.

[*Scrobicularia*] *Lavignon deshayesii* and *L. moulinsii*, spp. nn., Récluz, Act. Soc. Linn. Bordeaux, xxvii., Languedoc.

Syndosmya (Récluz). Its generic distinctness from *Scrobicularia* (Schumacher) is maintained by Petit, Cat. Moll. Eur. p. 248.

Syndosmya subrostrata, sp. n., Issel, Malacol. mar. rosso, p. 54, pl. 1. fig. 1, Suez.

Ervilia scaliola, sp. n., Issel, l. c. p. 53, pl. 1. fig. 2, Suez.

VENERIDÆ.

A list of 68 species of *Veneridæ* occurring in the Japanese Seas is given by A. Adams, Ann. & Mag. Nat. Hist. iii. pp. 229-236; most of them were observed there by himself.

Dosinia gibba, sp. n., A. Adams, l. c. p. 234, Japan.

Venus (subgenus *Cytherea* sectio *Circe*). *C. scripta* (L.), *personata* (Desh.), *rivularis* (Born), *plicatina* (Lam.), *undatina* (Lam.), including as variety *C. albida* (Desh.), *lenticularis* (Desh.), *corrugata* (Chemn.) = *rugifera* (Lam.), *tunefacta* (Sow.), *crocea* (Gray) = *sugillata* (Jonas), *intermedia* (Reeve), *speciosa*, sp. n., Philippines, *lirata*, sp. n., China Sea, 10° N. lat. in 50 fathoms,

sulcata (Gray)=*erythræa* (Jonas)=*plebeja* (Hanl.) &c., *paralytica*, sp. n., Madagascar, *robillardii* (Bernardi), *undata* (Dunker), and *minima* (Montagu)=*triangularis* (Montagu) are accurately described and beautifully figured by E. Roemer, Monograph *Venus*, pp. 191-215, pls. 52, 53.

Venus (subgenus *Cytherea*, sectio *Crista*). *C. pectinata* (L.), *gibbia* (Lam.), *menkei* (Jonas), *adunca*, sp. n., Indian Seas, *æquiroca* (Chemn.), *cuneata* (Lam.), *divaricata* (Chemn.), *discors* (Spengler), *dispar* (Chemn.)=*pulicaris* (Lam.)=*marmorata* (Reeve), *abbreviata* (Lam.), *transversaria* (Desh.), and *nummulina* (Lam.) are accurately described and figured by E. Roemer, Monogr. *Venus*, pp. 172-189, pls. 47-51.

Venus (*Lioconcha*) *arabica* (Chemn.). Its varieties of colour pointed out by Issel, Malac. mar. ross. p. 65.

Cytherea meretrix (L.), including as varieties *lusoria* (Chemn.)=*formosa* (Sow.) and *petechialis* (Lam.), common at Japan, fully described by Lischke, Moll. Jap. pp. 122-126; it is eaten by the Japanese, and used in a simple game by them, A. Adams, Ann. & Mag. Nat. Hist. iii. p. 229.

Cytherea mediterranea, sp. n., Tiberi, is perhaps a variety of *C. rudis* (Poli); previously indicated, but not yet sufficiently described, by Petit, Catal. Moll. Eur. p. 250.

Venus. On the variations of *V. casina* and *fasciata*, and on *V. cygnus*, which is distinct from *V. multilamella*, see Petit, l. c. pp. 250-252.

Venus roemeriana, sp. n., Issel, Malacol. mar. ross. p. 64, figured but not described by Savigny, Descript. de l'Egypte, Coquilles, pl. 8. fig. 3, Suez.

Liocyma, gen. nov. Shell trigonal or elongate-ovate, with concentric undulations and a polished epidermis; pallial sinus small, rounded, triangular; three teeth in each valve, divaricate; lunule faint, no areola; ligament set in below the exterior surface. Soft parts described in detail. Type *Venus fluctuosa* (Gould), in Massachusetts; another species is new, viz. *L. beckii*, from Plover Bay, East Siberia, and Alashka. Dall, Proc. Bost. Soc. Nat. Hist. xiii. pp. 256, 257.—*V. fluctuosa* (Gould) found at Hammerfest, Norway. Petit, Catal. Moll. Eur. p. 352.

Crassivenus is a new generic name proposed for *Mercenaria* (Schumacher, 1817) by Perkins, Proc. Bost. Soc. Nat. Hist. Dec. 1869.

Totteniana, afterwards corrected into *Tottenia*, is a new generic name for *Venus gemma* (Totten) proposed by Perkins, l. c. [already named *Gemma* by Deshayes, Cat. Brit. Mus.].

Tapes philippinarum (A. Adams and Reeve), including as varieties *indica* (Hanley), *japonica* (Desh.), and *denticulata* (Sow.), very near to *decussata* (L.), common in Japan, fully described by Lischke, Moll. Jap. pp. 115-118.

Tapes englyptus (Phil.) described by Lischke, ibid. p. 119.

Sacidorus purpuratus=*S. nutalli* (Schrenck)=*S. giganteus* (Desh.?, Martens), described by Lischke, l. c. pp. 127-129, pl. 9. figs. 4, 5.

Clementia (Gray). The history and characters of this genus are discussed and three species distinguished by Dr. L. Pfeiffer, viz. *papyracea* (Gray), *vitrea* (Chemnitz), and *hyalina* (Phil.); no locality is given. Mal. Blätt. xvi. pp. 190-194.

PETRICOLIDÆ.

Petricola hemprichii, sp. n., Issel, Malacol. mar. ross. p. 61, pl. 1. fig. 6, Suez.

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Petricola divaricata (Uhemn.), Martens in V. d. Decken's Reisen in Ost-Afrika, iii. p. 66, pl. 3. fig. 3.

CYRENIDÆ (CORBICULIDÆ).

In his catalogue of recent species of *Corbiculidæ*, published as appendix to the Am. Journ. Conch. vol. v. part 2, T. PRIME enumerates, in alphabetical order, with quotations of figures and synonyms, 107 species of *Corbicula*, 30 of *Batissa*, 3 of *Velorita*, 81 of *Cyrena*, 55 of *Sphærium* [*Cyclas*], and 46 of *Pisidium*. The species eliminated from the genera are also mentioned.

Cyrena protexta, sp. n., Conrad, Am. Journ. Conch. v. p. 107, Tampa Bay, Florida.

Cyrena variegata (Orb.) = *limosa* (Maton); *C. obsoleta* (Desh.) perhaps = *paranensis* (Orb.). Martens, Mal. Blätt. xvi. p. 86.

Cyclas lacustris (Müll.). The auditory sac and its contents are described by Gulliver, Journ. of Anat. and Physiol. v. pp. 79-81, pl. 2. fig. 3.

Cyclas lauricochæ, sp. n., Lake Lauricocha, near the sources of the Amazon River, and *C. forbesii*, sp. n., Lake Titicaca. Philippi, Mal. Blätt. xvi. p. 41, and Pfeiffer's Novitat. iii. p. 489, pl. 105. figs. 12-14 and 15-17.

CARDIIDÆ.

Cardium. Dr. E. ROEMER distinguishes the following subgenera:—

1. *Tropidocardium*, type *C. costatum* (L.).
2. *Acanthocardium*, type *C. aculeatum* (L.).
3. *Cerastoderma* (Poli, Mörch), type *C. edule* (L.).
4. *Trachycardium* (Mörch), type *C. isocardia* (L.).
5. *Pectunculus* (Adanson, Mörch), type *C. asiaticum* (Brug.).
6. *Papyridea* (Swains.), type *C. bullatum* (Chemn.).
7. *Lævicardium* (Swains.), type *C. serratum* (L.).
8. *Serripes* (Beck), type *grænlandicum* (Chemn.).
9. *Fragum* (Bolten), type *C. unedo* (L.).
10. *Corculum* (Bolten), type *C. cardissa* (L.).
11. *Lunulicardia* (Gray), type *C. retusum* (L.).

Seventy-three species are accurately described and most of them well figured by E. Roemer in the continuation of the work of Martini and Chemnitz, edited by Küster, section 57, pp. 13-120, pls. 2-14.

TH. GRAHAM-PONTON (Journ. Conch. xvii. pp. 217-225) proposes for the genus *Cardium* the following sections:—

- A. Typical—*Cardia costata* (L.) and *hians* (Brocchi).
- B. Subtypical—1. Rugosculptæ: *aculeata* (L.), *isocardia* (L.), &c.
 2. Lævicultæ: *lævigata* (L.), &c.
 3. Lyrasculptæ: *pectinata* (L.) and *lyrata* (Sow.).

4. Semicordiformes: *fragum* (L.), *unedo* (L.), *donaciformis* (Spengl.), &c.
5. Hemicardiaformes: *cardissa* (L.).
6. Impressilunuliales: *auricula* (Forskål).
7. Papyracæ: *bullata* (L.), *papyracea* (Chemn.), &c.
8. Serripeditæ: *grænlandica* (Chemn.).

Gen. *Adacna*, with subgen. *Monodacna* and *Didacna*.

Cardium nuttalli (Conrad) is distinct from *corbis* (Martyn), Conrad, Am. Journ. Conch. v. p. 105.—*C. californiense* (Desh.)=*pseudofossile* (Reeve)=*C. blandum* (Gould), and *C. muticum* (Reeve)=*japonicum* (Dunker)=*papyraceum* (Schrenck not Chemn.), both from Japan. Lischke, Moll. Jap. pp. 144, 145.

Cardium pulchrum, var., allied to *rugatum* (Gronov.), Martens in v. d. Decken's Reisen in Ost-Afrika, iii. p. 66, pl. 3. fig. 2, from Zanzibar.

Cardium isthmicum and *arabicum*, spp. nn., figured in Savigny's Descript. de l'Egypte, Coquilles, pl. 9. figs. 11 and 14; and *C. sueziense*, sp. n., from Suez, Issel, Malacol. mar. ross. pp. 75-77; the last figured on pl. 3. fig. 4.

ISOCARDIIDÆ.

Isocardia (Lam.). E. Römer distinguishes the following subgenera:—

1. *Tychocardia*, type *I. cor* (L.), and
2. *Meiocardia* (H. & A. Adams), type *I. moltkiana* (Spengler).

Five species of this genus are accurately described and well figured in Lister's continuation of the work of Martini and Chemnitz, section 57, pp. 5-9, pl. 1.

TRIDACNIDÆ.

Tridacna squamosa. Specimens from Japan described by Lischke, Moll. Jap. p. 160.

MYTILACEA, Cuv. (*Lucinacea*, Ad.).

LUCINIDÆ.

Jagonia, gen. nov., Récluz, for *Lucina pecten* (Lam.). Act. Soc. Linn. Bord. xxvii.

Lucina semperiana and *erythræa*, spp. nn., figured in the Descript. de l'Egypte, pl. 8. figs. 12 and 8; *L. fischeriana*, sp. n., from Suez, Issel, Malacol. mar. ross. pp. 82-84; the last two figured on pl. 1. figs. 9 and 8.

Lucina spinifera (Montagu), a variety of it is *Venus buschærdi* (Requien), indicated by Petit, Catal. Moll. Eur. p. 247.

Ungulina oblonga (Daudin), found at Cadiz alive, probably accidentally introduced. Petit, l. c. p. 247.

KELLIIDÆ.

Kellia miliacea, sp. n., Issel, Malacol. mar. ross. p. 87, pl. 1. fig. 11, Suez.

Montacuta tumidula, sp. n., Jeffreys, Brit. Conchol. v. p. 177, pl. 100. fig. 5, Hebrides and Shetlands, Southern Sweden.

GALEOMMIDÆ.

Galeomma turtoni (Sow.). Observations on the living animal, by Jeffreys, Brit. Conchol. v. p. 176.

ASTARTIDÆ.

Astarte. Conrad states that the oolitic species to which Sowerby has given this name differ generically from the tertiary and recent species commonly referred to this genus; hence it follows that for the recent species the name *Crassina* (Lam.) is to be adopted. Am. Journ. Conch. v. p. 46.

The *Astarte* found in the Baltic at Warnemiünde has been determined as *A. arctica* (Gray) = *corrugata* (Brown), Wiechmann, Arch. d. Vereins f. Naturgeschichte in Mecklenburg, vol. xxiii. p. 192. (See Zool. Record, v. p. 442.)

Astarte lutea, sp. n., Perkins, Proc. Bost. Soc. Nat. Hist. Dec. 1869, New-haven.

Gouldia modesta, sp. n., H. Adams, Proc. Zool. Soc. 1869, p. 275, pl. 19. fig. 14, Gulf of Tunis.—*Gouldia lamellosa*, sp. n., Issel, Malacol. mar. ross. p. 73, pl. 1. fig. 7, Suez.

Elathia, gen. nov. Shell æquivalve, inæquilateral, compressed, without ribs or folds; in each valve a single strong and elongate cardinal tooth, like that of *Curditu sulcata* (Brug.). *E. arconatii*, sp. n., Issel, Malac. mar. ross. p. 85, pl. 1. fig. 10, Gulf of Elath or Akaba, Red Sea.

UNIONIDÆ.

The soft parts of several species of *Unio* are described by Lea, Journ. Acad. Nat. Scienc. Philad. vi. p. 326.

Unio. Sowerby's monograph of this genus in Reeve's Conchologia Iconica is concluded with species 525, pl. 96 (published in October 1868). A rather large list of "errata and remarks," chiefly corrections of names and references, is given at the end.

Unio lardereliani, sp. n., Pecchioli, Bull. Mal. Ital. ii. p. 163, pl. 5, and virons of Florence; perhaps too nearly allied to *U. requienii* (Mich.); all the soft parts are described.

Unio homsensis and *emesaensis*, North Syria, *orphaensis*, Tigris river, *kulethensis* and *mardinensis*, Mardin, formerly described by Lea, and now figured Journ. Acad. Nat. Scienc. Philad. vi. pp. 249-254, pls. 29 and 30.

Unio evitatus (Lea), Bengal, Lea, l. c. p. 279, pl. 38. fig. 92; *siamensis*, *asperulus*, and *pilatus* (Lea), Siam, ibid. pp. 279-281, pl. 38. figs. 93-95.

Unio burmanus, sp. n., Blanford, Proc. Zool. Soc. 1869, p. 449, Iravadi.

Unio chinensis (Lea), figured by Lea, l. c. p. 325, pl. 53. fig. 138, Hongkong.—*U. wrightii* and *tortuosus* (Lea), China, ibid. pp. 283-286, pl. 39. figs. 97 and 98.—Some remarks on the priority of names and synonymy of some Chinese species by Lea, ibid. p. 286, note.

Unio marginis, Georgia, *proprius*, Georgia, *protensus*, North Carolina, *amabilis*, Georgia, *cromwelli*, Georgia, *lyonii*, East Tennessee, *doliaris*, Georgia, *punctatus*, Tennessee, formerly indicated by Lea, and now fully described and figured by him, l. c. pp. 255-261, pls. 31 and 32. figs. 69-76.—*U. jewettii*, Florida, *bisseliani*, North Carolina, *clinchensis*, Tennessee (Lea), ibid. pp. 276-278, pl. 37. figs. 89-91; *U. beaverensis*, *nubilus*, *datus*, *dorsatus*, *humerosus*, and *pavensis* (Lea), all from North Carolina, ibid. pp. 297-302, pls. 44 and 45. figs. 109-114.

Unio murrayensis, Georgia, *whareensis*, North Carolina, *genuinus*, North Carolina, *fascians* [*fascians*?], Virginia, *sparus*, Georgia, *copei*, Virginia, *cylindrellus*, Georgia, *brazosensis*, Texas, *corvinus*, Georgia and North Caro-

lina, *difficilis*, Georgia and Virginia, *lincecumii*, Texas, *topekaensis*, Kansas and Nebraska, *corrunculus*, Georgia, *vallatus*, Alabama river, *planior*, Tennessee and Virginia, *refulgens*, Mississippi, *sphaericus*, Mississippi. Lea, *l. c.* pp. 303-319, pls. 46-51. figs. 115-132.

Unio strebeli and *veracruzensis*, Vera Cruz, Lea, *l. c.* pp. 518 and 520, pl. 51. fig. 131, pl. 52. fig. 133; *U. granadensis*, *encarpus*, *gabbianus*, and *nicaraguensis*, *ibid.* pp. 293-296, pls. 42 and 43. figs. 103-107, Lake Nicaragua; *U. ortonii*, Ecuador, *ibid.* p. 521, pl. 52. fig. 134; *U. paraguayensis*, Paraguay, *ibid.* p. 271, pl. 35. fig. 85; *U. locellus*, Buenos Ayres, *ibid.* p. 264, pl. 33. fig. 79; *U. rugosusulcatus*, Central America, *parvus*, *apprimus*, *peculiaris*, *firmus*, *ampullaceus*, *acutirostris*, South America, without indication of locality, *U. rufofuscus* and *prunoides*, probably South America, *ibid.* pp. 262-270, 282 and 523, pls. 33-35. figs. 77-84, pl. 39. fig. 96, and pl. 53. fig. 136.

All these species are redescribed, with the same plates, in Lea's *Observ. Gen. Unio*, vol. xii.

Unio longus, *jacobæus*, *landhecki*, *valdivianus*, *solidulus*, *casablancae*, *montanus*, *foncki*, *dipledon*, *colchaguensis*, and *ianthinus*, spp. nn., from Peru, named and described by Philippi, *Mal. Blatt.* xvi. pp. 44-49, figured in Pfeiffer's *Novitat.* iii. pp. 477-485, pls. 103 and 104.

Castalia. Sowerby's Monograph in Reeve's *Conchologica Iconica* contains on three plates the following species:—*ambigua* (Lam.), *retusa* (Hupé), *schomburgiana* [*schomburghiana*], sp. n., pl. 1. fig. 3, British Guyana; *ovata*, pl. 1. fig. 4, Brazil; *hanleyana*, pl. 1. fig. 5; *carolinensis*, sp. n., pl. 2. fig. 6, South Carolina [perhaps a young specimen of *Unio*]; *quadrata*, sp. n., pl. 2. fig. 7; *cordata* (Humphrey), pl. 2. fig. 8; *multicostata* (Hupé), *lateriquadrata* (Orb.), *turgida* (Hupé), *acuticostata* (Hupé), and *dolabella*, sp. n.

Castalia ecarinata, sp. n., Puerto-nuevo, New Granada, with notes on *C. inflata* (Orb.), Mousson, *Mal. Blatt.* xvi. p. 185.

Hyria. Sowerby's Monograph in Reeve's *Conchologia Iconica* contains on five plates the following species:—*corrugata* (Lam.), *contorta* (Lea), Shanghai; *exasperata*, sp. n., British Guyana, pl. 2. fig. 3; *latialata*, sp. n., pl. 2. fig. 4, British Guyana; *rugisissima*, sp. n., River Amazon, pl. 3. fig. 5; *avicularis* (Lam.), *transversa* (Hupé), *castelnaudii* (Hupé), *complanata* (Hupé); *recta*, sp. n., pl. 5. fig. 10, locality unknown; *syrrhatophora* (L.), *browniana* (Lea); *alata*, sp. n., pl. 5. fig. 13, Guyana. [All these species are South American except the second, which scarcely belongs to this genus.]

[*Hyria*] *Triqueta corrugata* and *T. avicularia*, from the Amazon river, Mousson, *Mal. Blatt.* xvi. p. 186.

Plagiodon rotundatus, sp. n., Mousson, *l. c.* p. 186, northern part of South America.

Monocondylæa mardinensis, Lea, *Journ. Acad. Nat. Sc. Philad.* vi. p. 252, pl. 80. fig. 70,—*M. lentiformis* and *pazii*, South America, Lea, *ibid.* pp. 272, 273, pl. 36. figs. 86 and 88.

Microcondylæa, g. n., proposed for *Margaritana bonellii* (Fér.), on account of the gills being united with the mantle in their whole length, whereas in the typical *Marg. margaritifera* they are somewhat separated behind. Hinge only a little tubercle in each valve. Probably also *Anodonta lata* (Raf.) = *Unio delascens* (Say) will belong to this genus. W. V. Vest, *Verhandl. u. Mittheil. Siebenbürg. Vereins. f. Naturwiss.* xvii. 1866, pp. 193-201, with two plates.

Anodon. Sowerby figures in the *Conchologia Iconica*, on pls. 21-24, species 82-95, among which *A. amethystus*, locality unknown, and *tricostatus*, China, are new.

Anodonta anatina. Its branchial opening is not only comparatively but actually much larger, and fringed with much more delicate and numerous tentacles than in *Anodonta cygnea*. Normally this opening serves only for the entrance of a water-current, which is expelled through the anal orifice; but under peculiar circumstances (for example, when the former is covered by sand or mud) the current can also enter by the anal orifice. Lloyd, Ann. & Mag. Nat. Hist. vol. v. p. 65.

H. v. Maltzan reduces the German species of *Anodonta* to two, *cygnea* and *piscinalis*, subordinating to the former as distinct varieties *cellensis* (Schröt. [Gmel.]), *rostrata* (Kokeil), *intermedia* (Lam.), and *complanata* (Ziegl.); to the latter *ponderosa* (O. Pfr.), *ventricosa* (C. Pfr.), and *anatina* (L.). Archiv d. Vereins f. Naturkunde in Mecklenburg, 1869, pp. 170-178.

Anodonta youkanensis, Upper Youkan River, Arctic America, *A. grandensis*, *jewettii*, *lenticularis*, *bridgesii*, and *inæquivalva*, all from Lake Nicaragua, formerly indicated, now fully described and figured by Lea, Journ. Acad. Nat. Scienc. Philad. vi. pp. 287-293, pls. 40-43. figs. 99-108.

Anodonta strebeli, Vera Cruz, *napoënsis*, Equador, figured by Lea, l. c. pp. 322 and 324, pl. 52. fig. 135, and pl. 53. fig. 137.—*A. pazii*, South America, ibid. p. 275, pl. 36. fig. 87.

Anodonta wallisi, sp. n., and *A. limonoica* (Orb.), both from New Granada, Mousson, Mal. Blätt. xvi. p. 188.

Anodonta subrostrata, *ucayalensis*, *subsinnuata*, and *incarnum*, spp. nn., from Chile, named and described by Philippi, Mal. Blätt. xvi. pp. 39-41; figured in Pfeiffer's Novitat. iii. pp. 486-488, pl. 104. figs. 1-11.

Mycetopus pygmaeus (Spix as *Anodonta*). Soft parts described by Lea, Journ. Acad. Nat. Scienc. Philad. vi. p. 275, pl. 23. figs. 3 & 4.

Mycetopodus longinus (Spix), from the Amazon River, distinct from *siliquosus* (Spix), from Brazil and Paraguay. Mousson, Mal. Blätt. xvi. p. 189.—*M. weddelli* found in Nicaragua, Tate, Am. Journ. Conch. v. p. 160.

The *Acaridæ* living parasitically in the shells of the *Anodonta* and *Unio* of Germany are the subject of a paper by E. Bessels in Jahreshefte d. Vereins für. Vaterländische Naturkunde in Württemberg, xxv. 1869, p. 146.

MUTELIDÆ.

Pleiodon macmurtrei (Conrad) distinct from *Iridina ovata* (Swains.). Conrad, Am. Journ. Conch. v. p. 104.

Spatha hartmanni (Martens) and *nilotica* (Fér.) from the Yoriba River, Western Africa. Martens, Mal. Blätt. xvi. p. 74.

MYTILIDÆ.

Mytilus crassitesta (Lischke), Japan, Lischke, Moll. Jap. p. 151, pl. 11; *M. dunkeri* (Reeve) from Nangasaki, Lischke, ibid. p. 153, pl. 10. figs. 7, 8.

Modiola modiolus, circumpolar, also in Japan, Lischke, ibid. p. 157.

Modiola, sp., nearly allied to the Mediterranean *M. adriatica* (Lam.), figured in Descript. de l'Égypte, pl. 11. fig. 4, Gulf of Akaba; *Modiola*

variabilis (Krauss) = *Mytilus exustus* (Vaillant, not Linné), Descr. Egy. pl. 11. fig. 5, common at Suez. Issel, Malac. mar. ross. pp. 94, 95.

Modiola peasei, sp. n., Newcombe, Am. Journ. Conch. v. p. 162, pl. 17. fig. 2, Sandwich Islands.

Crenella vaillanti and *ehrenbergi*, spp. nn., Issel, l. c. pp. 91, 92, pl. 1. figs. 13 & 12, Suez.

Lithodomus aristatus (Dillw.) found in cavities on the pearl-oyster *Margaritina meleagrifera*, Appellius, Nachrichtsbl. mal. Gesellsch. i. p. 19.

DREISSENIDÆ.

Dreissena polymorpha (Pall.). See above, p. 531.

AVICULIDÆ.

Avicula tarentina. A large bank of it has been found at the South-western coast of France, near Arcachon, by P. Fischer, Act. Soc. Linn. Bordeaux, xxvii., Comptes Rendus, Nov. 1868, pp. 1004-1006; Journ. Conch. xvii. p. 300; and Ann. & Mag. Nat. Hist. iii. p. 95. [See Zool. Record, v. p. 442.]

Pinna japonica (Reeve) described from full-grown specimens by Lischke, Moll. Jap. p. 159.

OSTREACEA, Cuv. (*Pectinacea*, Ad.).

ARCIDÆ.

Arca subcrenata, sp. n., Lischke, Mal. Blatt. xvi. p. 107, and Moll. Jap. p. 147, pl. 9. figs. 1-3, Japan; *A. decurvata*, new name for *obliquata* of Reeve, not of Gray, Lischke, ibid. p. 108; *A. inflata* (Reeve) = *broughtonii* (Schrenck), *ambigua* (Reeve), *obtusa* (Reeve), and *decussata* (Sow.), Lischke, Moll. Jap. pp. 146-149.

Arca candida (Helbling, 1779) = *helblingii* (Brug.). Martens, Mal. Blatt. xvi. p. 236.

Barbatia erythræensis (Jonas) and *velata* (Sow.) figured by Dunker, Novitat. Conchol. pl. 40. figs. 6-8, and pl. 41.

Arca diluvii. Young individuals are extremely variable. C. Tapparone-Canefri, Att. Soc. Ital. Sc. Nat. xii. p. 406.

Anomalocardia floridana, sp. n., Conrad, Am. Journ. Conch. v. p. 108, pl. 13. fig. 2, Gulf of Mexico and Texas [Florida?].

Anomalocardia subgranosa, sp. n., Dunker, Novitat. Conchol. p. 122, pl. 40. figs. 1-3, Java.

Noetia contraria (Reeve), var., Dunker, l. c. pl. 40. figs. 4, 5.

Cucullæa concamerata (Martini), *granulosa* (Jonas), and *auriculifera* (Lam. part.) figured by Sowerby in Reeve's Conchologia Iconica, vol. xvii. *Cucullæa*, pl. 1. [The Recorder does not think that these three species can be kept distinct.]

Pectunculus. Some critical remarks on the European species by Petit, Catal. Moll. Eur. p. 253.

Limopsis borealis, Jeffreys, Brit. Conchol. v. p. 174, pl. 100. fig. 3, North of Hebrides and Norway.

NUCULIDÆ.

Leda lucida (Lovén as *Foldia*), North of Hebrides, Jeffreys, Brit. Conchol. v. p. 173, pl. 100. f. 1.

PECTINIDÆ.

Pecten maximus. The manner of swimming described by P. Fischer, Journ. Conch. xvii. p. 121.

Pecten japonicus (Gmel.), *yessoënsis* (Jay), *luqueatus* (Sow.), *crassicostatus* (Sow.), and *latus* (Gould), described from Japanese specimens by Lischke, Moll. Jap. pp. 164-170; the second and the last figured on pl. 10. figs. 3, 4, and pl. 12. figs. 6, 7.

Pecten sentis (Reeve) = *P. pusio* (L.); *P. daucus* (Reeve) doubtful, perhaps exotic; *P. bruei* (Payr.), its identity with *aratus* (Müll.) very uncertain; *P. dislocatus* (Say), said to have been found on the coast of Portugal. Petit, Catal. Moll. Eur. p. 250.

Pecten vitreus (Chemnitz), Shetland, Jeffreys, Brit. Conchol. v. p. 168, pl. 99. f. 6; the animals of several British species of *Pecten* described by the same, *ibid.* pp. 166, 167.

Pecten ruschenbergerii, sp. n., Tryon, Am. Journ. Conch. v. p. 171, pl. 14. fig. 4, Bay of Muscat. Allied to *P. asperrimus*.

Lima elliptica and *subauriculata* (Sow.). The living animal and its spinning described by Jeffreys, Brit. Conchol. v. p. 169.

Lima bullifera (Desh.) = *squamosa*, var., of Vaillant and Sowerby, from the Red Sea; distinct from the European species. Issel, Malac. mar. ross p. 101.

Lima squamosa. Specimens from Japan described by Lischke, Moll. Jap. pp. 162-164. The author assumes that this species is distributed throughout the tropical seas, and extends to the south coast of Japan and the south coast of Australia.

Spondylus cruentus (Lischke), fully described by Lischke, *l. c.* pp. 172-174, pl. 12. figs. 1-5, Nangasaki. Also *Sp. sinensis* (Sow.), *ducalis* (Chemn.), and *zonalis* (Lam.), from Japan. Lischke, *ibid.* p. 171.

OSTREIDÆ.

Ostrea edulis. Some observations on its breeding and fry by Jeffreys, Brit. Conchol. v. p. 165.

The culture of oysters, principally on the island De Ré, in Western France, and at Grado, in Dalmatia, is the subject of the little book by R. von Erko mentioned above. An account of the oyster-culture in South-western France will be found in P. Fischer's Supplement to the Conchological Fauna of the Gironde, Act. Soc. Linn. Bordeaux, vol. xxvii.

Ostrea hippopus. Its differences from *O. edulis* are pointed out by E. Friedel, who thinks that the former is the original oyster of the shores of Schleswig, *O. edulis* being introduced. Mal. Blatt. xvi. pp. 62-65.

Ostrea paulucciæ, sp. n., Crosse, Journ. Conch. xvii. p. 188, China.

Ostrea denselamellosa, sp. n., Lischke, Mal. Blatt. xvi. p. 109, and Moll. Jap. p. 177, pl. 13 and pl. 14. fig. 1, Yeddo and Nangasaki; *O. rivularis* (Gould), from Nangasaki, Lischke, *ibid.* p. 176, pl. 14. figs. 2, 3; *O. gigas*

(Thunberg, 1793) = *laperousii* (Schrenck) = *talienwhanensis* (Crosse), common in Japan. Lischke, *ibid.* pp. 174-176.

Anomia laqueata (Reeve?) described from Japanese specimens by Lischke, *l. c.* p. 179.

BRACHIOPODA.

The egg and some early stages of *Terebratulina septentrionalis* (Couth.) are described by E. S. Morse, *Am. Naturalist*, Sept. 1869, and *Am. Journ. of Science and Arts*, January 1870, p. 103.

Davidson has examined the original specimens of recent Mediterranean Brachiopods in Risso's collection, and publishes the synonymy. *Terebratula spada* (Aradas) is probably = *Waldheimia flavescens* and not Mediterranean: the generic name *Platidia* (Costa) for *Orthis anomioides* (Scacchi) is prior to Davidson's *Morrisia*. Davidson, *Ann. & Mag. Nat. Hist.* iii. pp. 374-377.

Terebratula cranium (Müll.). Observations on the living animal, the loop, &c. by Jeffreys, *Brit. Conchol.* v. p. 163.

Terebratella spitzbergensis (Davidson), dredged off Unst, not living. Jeffreys, *ibid.* p. 165, pl. 99, f. 3.

One species of Brachiopods, *Thecidium mediterraneum* (Risso), seems to be identical in the Mediterranean and in the West Indies; several other species of the Mediterranean are represented by very similar forms in the West Indies; but there are also some genera occurring only in the one or in the other sea. Crosse and Fischer, *Journ. Conch.* xvii. p. 116.

MOLLUSCOIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

ALLMAN, G. J. On *Rhabdopleura*, a new form of Polyzoa, from deep-sea dredging in Shetland. Quart. Journ. Mic. Science, 1869, pp. 57-63, plate 8.

This interesting new form is not only generically distinct from all previously known forms, but is in many respects so peculiar as to render it necessary to regard it as the representative of a still more general section of the class Polyzoa (see p. 597).

KIRCHENPAUER, —. Neue Bryozoen. Catalog IV. of the Museum Godeffroy, Hamburg, May 1869, pp. xxv, xxxiv.

KROHN, A. Ueber die Fortpflanzungsverhältnisse bei den Botrylliden. Archiv. f. Naturg. xxxv. 1. Band, pp. 190-196.

—. Ueber die früheste Bildung der Botryllusstöcke. Archiv f. Naturg. xxxv. 1. Bd. pp. 326-333, Taf. xiv.

KUPFFER, C. Die Stammverwandschaft zwischen Ascidien und Wirbelthieren. Schultze's Archiv f. mikrosk. Anatomie, Bd. v. 1869, pp. 459-463.

A brief letter to the editor of the Archiv, corroborating the important discovery of Kowalevsky. The author investigated the development of *Phallusia canina*, a different species from any investigated by Kowalevsky. In treating of the chorda, he says that it consists of a double row of four-sided cells, surrounded by the still oval muscle-cells, and projecting a little into the body portion, so that its long axis would penetrate between the nervous cavity and the alimentary canal. One cannot imagine, he says, a more beautiful model of a vertebrate embryo. On the convex side, above the axis, there is the nerve-canal; on the concave side, under the axis, there is the visceral canal; the contrast of dorsal and ventral is as clear as possible.

METSCHNIKOW, EL. Entwicklungsgeschichtliche Beiträge. Bull. de l'Acad. Imp. d. Sc. St. Pétersbourg, t. xiii. no. 3, 1868, pp. 283-300.

In these notes the development of many of the invertebrata is described; in no. 7 we have "Ueber die Larven und Knospen von *Botryllus*," and no. 8 "Embryonalentwicklung der ein

fachen Ascidien." The other portions are referred to under the Nematodea and Echinodermata. (The date of the reading of this paper is Oct. 8, 1868; but it did not reach England until late in 1869.)

The author differs from Kowalevsky in that he does not regard the primitive development of the organs in the simple Ascidia as in any way typically resembling that of Vertebrata; for when the primary cell-mass which bounds the spacious primary cavity has become differentiated into its different segments, from these the nervous, muscular, and the rudiments of the respiratory and alimentary systems take their origin.

NITSCHÉ, H. Beiträge zur Kenntniss der Bryozoen. Heft 1, with three plates. Leipzig, 1869, pp. 1-36.

Contains:—1. Remarks on the development of some cheilostomatous Bryozoa; and 2. Observations on the Anatomy of *Pedicellina echinata*, Sars. [Extracted from Heft 1, Band xx. of the Zeitschrift für wissensch. Zool.]

SCHNEIDER, A. Zur Entwicklungsgeschichte und systematischen Stellung der Bryozoen und Gephyreen. Schultze's Archiv f. mikrosk. Anat. Bd. v. pp. 260-280, Taf. 16, and woodcuts.

This memoir treats of *Cyphonautes*, Ehr., included by some among the Rotifers, and of *Mitraria*, with some concluding considerations. Many investigators have taken *Cyphonautes* as a developmental stage of a mussel; and the points of resemblance are very great; so are they also great to a larval form of worm, *Actinotrocha*; and the author appears to trace a common descent between this form and the Polyzoa (through *Membranipora*) on the one hand, and the Gephyrea on the other, reminding us of the resemblance between *Phoronis*, a true Gephyrean, and the Polyzoa. The novel views put forward in this paper are as startling as new; and nothing short of a translation of the entire paper would give the reasons urged by the author in their favour. *Mitraria* is regarded as having affinities to *Sternaspis*. Two species of *Cyphonautes* are alluded to in addition to *C. compressus*, Ehrbg.

STEPANOFF, PAUL. Ueber die Entwicklung der weiblichen Geschlechtselemente von *Phallusia*. Bull. de l'Acad. Imp. d. Sc. St. Pétersbourg, t. xiii. 1868, no. 3, pp. 209-218, with a plate.

STOLICZKA, F. On the anatomy of *Membranipora bengalensis*, a new (Polyzoan) Bryozoon living in brackish water at Port Canning. Journ. Asiatic Soc. part ii. no. 1, Physical Science, 1869, pp. 55-61, pl. 12.

ULJANIN, B. Zur Anatomie und Entwicklungsgeschichte der *Pedicellina*. Bull. Soc. Imp. Nat. Moscou, 1869, no. 2, pp. 425-440, Taf. 5 & 6.

TUNICATA.

Phallusia canina. For its development, see Kupffer, *l. c.*

Phallusia intestinalis. Stepanoff, *l. c.*, gives a very detailed account of the development of the organs of reproduction (female) in this species, which he found common at Jalta, on the northern shore of the Black Sea.

KROHN, from his researches into the development of *Botryllus*, is struck by the parallelism between it and that of *Salpa*, finding in *Botryllus* also a nurse-form, *l. c.* p. 190. The same author's paper, on the early stages of development, is already too condensed to admit of being epitomized further here.

Botryllus auratus. For a sketch of the larval form and of the budding of this and other species, see a brief account by Metschnikow, *l. c.* p. 291. It seems pretty clear that the buds in *Botryllus* in no wise take their origin, as Milne-Edwards affirms, from the tegumentary appendages, but from the body of the *Botryllus* itself.

Appendicularia furcata. Dr. Moss very briefly describes the Haus, as well as a peculiar organ met with in this species. Quart. Journ. Mic. Science, 1869, p. 323.

BUCHHOLZ describes a number of species of Crustacea living in Ascidia. Zeitschr. f. wissenschaft. Zoologie, Bd. xix. Heft 1, p. 99 *et seq.*

POLYZOA.

Entoprocta. Nitsche gives this name to a group composed of *Pedicellina*, *Loxosoma*, and *Urnatella*, *l. c.* p. 34.

NITSCHKE concludes, from his observations, *l. c.*, that, 1, some cheilostomatous Bryozoa are hermaphrodite; 2, the ova and spermatozoa are formed in the body-cavity (general cavity) of the parent; 3, the impregnated ova pass over into the oviduct, which may be regarded as an incubatory pouch; 4, the escaped ciliated larva, apparently well organized, attaches itself, and becomes changed into a crowded mass of formative material, without perceptible organization, surrounded by a firm membrane; 5, the polypid originates in this mass, through an inner budding, precisely in the same way as the inner half of the bud forms itself on the top of the stock.

ULJANIN mentions (*l. c.*) finding *Pedicellina belgica* and *P. echinata* in the Gulf of Naples; he describes in some detail the anatomy of the latter species. Between the descending and ascending portions of the alimentary tract a cavity is described, well seen on a cross section of the Polyzoön being made just below the crown of tentacles, into which the ovarian tubes enter, and in which the ova appear to undergo a certain amount of development; apparently they leave this incubatory pouch (Bruthöhle) as free-swimming larval forms. Not a single male example among those examined was found. The dark bodies first observed by Hassel, and described by Van Beneden as ovaries and testicles, are nothing else than the partitions of the incubatory pouch seen through the transparent body-wall. The spindle-shaped cells, which contribute so much to the contractility of the stem, are figured and described.

Gosse (whose name is scarcely recognizable as given by the author) thought that the young embryo escaped through the mouth of the parent;

but there is a separate opening into the incubatory pouch, which he confounded with the oral opening.

Also see the remarks of Nitsche on this subject.

Beania mirabilis. F. Roper records the occurrence of this Polyzoan at Eastbourne, Sussex. Ann. and Mag. N. Hist. ser. 4, vol. iv. Oct. 1869, p. 293. Also recorded by H. Lee as occurring at Shanklin, Isle of Wight, *ibid.*, Nov. 1869, p. 357.

Retihornera, g. n., Kirchenpauer, *l. c.* p. xxix. Stem calcareous, inflexible, erect, forming a network; cells depressed, only on one side of the stem, almost tube-shaped; oral opening tube-like, projecting, somewhat curved. *R. graeffei*, sp. n., Kirchenpauer, *l. c.* p. xxx, Fiji Islands; *R. affinis*, sp. n., Kirchenpauer, *l. c.* p. xxx, Fiji; *R. plicata*, sp. n., Kirchenpauer, *l. c.* p. xxxi, and *R. parasitica*, sp. n., Kirchenpauer, *l. c.* p. xxxi, both from Gulf of St. Vincent; *R. dentata*, sp. n., and *R. corbicula*, sp. n., Kirchenpauer, *l. c.* p. xxxii, both from Bass's Strait.

Salicornaria pilosa, sp. n., Kirchenpauer, *l. c.* p. xxvi, South Australia.

Onchopora salicornioides, sp. n., Kirchenpauer, *l. c.* p. xxvii, Fiji.

Farciminaria punctata, sp. n., Kirchenpauer, *l. c.* p. xxvii, South Africa, nearly related to *F. flexilis*, Busk.

Eschara spongiaformis, sp. n., Kirchenpauer, *l. c.* p. xxvii, Australia; *E. reniformis*, sp. n., Kirchenpauer, *l. c.* p. xxviii, Bass's Strait.

Hornera australis, sp. n., Kirchenpauer, *l. c.* p. xxxiii, Bass's Strait.

Idmonea flabellata, sp. n., Kirchenpauer, *l. c.* p. xxxiii, Gulf St. Vincent.

Serialaria (Vesicularia?) semispiralis, sp. n., Kirchenpauer, *l. c.* p. xxxiv, Samoa.

Membranipora bengalensis, sp. n., Stoliczka, *l. c.* p. 55, pl. 12, found, with *Sagartia schilleriana*, in a tank of brackish water, and all along the river Mutlah.

Rhabdopleura, g. n., Allman, *l. c.* p. 58. *Canacium* consisting of a branched, adherent, membranous tube, in whose walls, along their adherent side, a rigid chitinous rod extends, and whose branches terminate each in a free open tube, through which the *polypides* emerge. *Lophophore* hippocrepical, with a shield-like process on the hæmal side of the tentacular series. *Polypides* connected to the chitinous rod by a flexible cord or funiculus. *R. normani*, sp. n., Allman, *l. c.* p. 58, pl. 8. Creeping over the surface of dead shells from a depth of ninety fathoms in the Shetland seas.

In following the development of this new form, the author was struck by the resemblance of the valve-like fleshy plates to the mantle of the Lamellibranchiata, whose lobes lie, as here, to the right and left of the body, instead of dorsally and ventrally, as in the Brachiopoda; and perhaps thus there is a new light shed on the affinities of the Polyzoa, whose relations will be then closer to the Lamellibranchiata than to the Brachiopoda, the most important difference between the two former classes being the neural flexure of the intestine in the Polyzoa, and the hæmal flexure in the Lamellibranchiata. These relations are illustrated by diagrammatic figures.

CRUSTACEA

BY

EDUARD VON MARTENS, M.D., C.M.Z.S.

BENEDEN, EDOUARD VAN. Recherches sur l'embryogénie des Crustacés. I. Observations sur le développement de l'*Asellus aquaticus*. II. Développement des *Mysis*. Bulletins de l'Acad. Roy. de Belgique, 2nd series, vol. xxviii. pp. 54-87 and 232-249, with two plates.

——. Mémoire sur la formation du blastoderme chez les Amphipodes, les Lernéens et les Copépodes. Mémoires couronnés de l'Acad. Roy. de Belgique, tome xxxiv.

——. Sur la mode de formation de l'œuf et le développement embryonnaire des *Sacculines*. Comp. Rend., Nov. 1869.

BERCHON, LE FOLIN, and PÉRIER. Les Fonds de la Mer. Paris, 8vo, with plates. Livraisons 6 & 7, 1868, pp. 97-112; Livr. 8-12, 1869, pp. 113-176. pls. 11-19, concluding the first part of the first volume.

Contains chiefly enumerations of *Cytheridæ* and a few other Crustacea, found in mud, from various European and exotic seas, with descriptions and figures of the new species, by G. S. Brady.

BESSELS, EMIL. Einige Worte über Entwicklungsgeschichte und morphologischen Werth des kugelförmigen Organes der Amphipoden. [Some words on the development and morphological signification of the globular organ in Amphipods.] Jena. Zeitschrift für Medicin und Naturwiss. v. 1869, 8vo, pp. 91-101, with some woodcuts.

BOECK, AXEL. Observations on the *Amphipoda* occurring on the Norwegian coasts. Ann. & Mag. Nat. Hist. 4th series, iii. pp. 325-340 and 401-419.

This is an English translation of the original, written in Danish, and published in the Förhandlingar ved de Skandinaviske Naturforskere ottende Möde i Kjöbenhavn, 1860, published 1861, 8vo, pp. 631-677.

BRADY, G. S. On the Crustacean Fauna of the salt-marshes

- of Northumberland and Durham. Nat. Hist. Transact. of Northumberland and Durham, iii. pp. 120-136, pls. 4 & 5.
- BRADY, G. S. Description of an Entomostracum inhabiting a coal-mine. Quart. Journ. Microscop. Science, ix p. 23, pl. 6.
- . Contributions to the Study of the Entomostraca. Ann. & Mag. Nat. Hist. 4th series, vol. iii. pp. 45-50, pls. 7 & 8.
- BRADY, G. S., and ROBERTSON, DAVID. Notes of a week's dredging in the West of Ireland. Ibid. pp. 353-374, pls. 21, 22.
- . See also BERCHON, &c., Les Fonds de la Mer.
- BUCHHOLZ, REINHOLD. Beiträge zur Kenntniss der innerhalb der Ascidien lebenden parasitischen Crustaceen. [Contributions to the knowledge of the parasitic Crustacea living in Ascidia.] Zeitschr. wiss. Zool. xix. pp. 99-155, pls. 5-11.
- . See also MÜNTER.
- CAJANDER, A. J. Bidrag till kännedommen om sydvästen Finnlands krustaceer. [Contributions to the knowledge of the Crustacea of South-western Finland.] Notiser på Flora and Fauna fennica, 1869, pp. 373-376.
- CARBONNIER, PIERRE. L'Ecrevisse. Paris, 1869, 8vo, pp. 200. Not seen by the Recorder.
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THE GENERAL SUBJECT.

Anatomy and Physiology.

An account of the chief anatomical and morphological peculiarities of the Crustacea is given by Prof. HUXLEY in his 'Introduction to the classification of animals,' p. 53.

The development of the ovum of various orders of Crustacea is the subject of several papers by ED. VAN BENEDEN, which are noticed above. It is very remarkable that there is a difference between the freshwater and marine species of *Gammarus*: in the latter the separation of deutoplasm and protoplasm occurs immediately after the complete cleaving of the yolk, as in *Chondracanthus* and the Copepods; in the freshwater species, on the contrary, the deutoplasm is not included in the multiplication

of the egg-cells. An abstract of these papers will also be found in the Quart. Journ. Microsc. Science, January 1870, pp. 81-84.

Dr. FR. HILGENDRUF calls the attention of naturalists to some apparatus in the higher Crustacea which seem to be destined to produce sounds; they are crenulated linear ridges in one part of the body, chiefly the hands, which, by the usual movement of the articulations, are easily brought into contact with exquisitely rough surfaces of other parts of the body. Such apparatus are described in the genera *Ocypode*, *Gelasimus*, *Sesarma*, *Matuta*, and *Cænobita*. V. d. Decken, Reisen in Ost-Afrika, iii. p. 70, pl. 3.

CONTRIBUTIONS TO FAUNAS.

1. Europe.

CAJANDER enumerates sixty-one species of Crustacea observed by him in Finland, among which *Astacus fluviatilis*, *Palaemon squilla*, two species of *Mysis*, one *Corophium*, *Idothea entomon* and *tricuspidata*, *Iæra albifrons*, one *Asellus*, seven terrestrial Isopods, the rest *Daphniidæ*, *Lynceidæ*, *Cypridæ*, *Cytheridæ*, and *Cyclopidæ*. We are sorry to learn that the author died during the publication of his essay. Notiser på Fauna and Flora fennica, 1869, pp. 373-376.

The occurrence of several Crustacea in the Baltic is mentioned by NIC. SAENGER in the journal noticed above. At Reval *Idotea tricuspidata* (Desm.) and the genus *Iæra* occur at a depth of 5-20 feet; species of *Crangon*, *Mysis*, *Gammarus*, and *Corophium longicorne* (Fabr.) at about 40 feet; *Idotea entomon* at from 40 to 60 feet.

The Crustacea of the shores of Pomerania and the island of Rügen are enumerated by Prof. MÜLLER. Mittheil. naturwissensch. Vereins von Neuvorpommern u. Rügen, i. pp. 1-4. Almost all the higher systematic divisions are represented; thirty-eight genera are enumerated. The marine species of Decapods are *Carcinus maenas*, *Crangon vulgaris*, and *Palaemon squilla*; of Stomatopods, *Mysis spinulosa* and *vulgaris*; of Amphipods, *Gammarus locusta*, *G. ambulans*, *Corophium longicorne*, *Talitrus saltator*, *Orchestia euekore*, *O. gryphus*, *Leptocheirus pilosus*; of Isopods, *Idotea entomon* at the little island Hiddensee, *I. tricuspidata* and *pelagica*, *Anthura gracilis*, *Tanaïs* sp. indet., *Iæra krøyeri*, *Sphæromma serratum*. The rest are freshwater or terrestrial species, and a relatively large number of *Branchiopoda*, *Cladocera*, *Copepoda*, and *Siphonostoma*, both from sea and fresh water.

G. O. SARS gives an account of the Crustaceans found by him in the Firth of Christiania to a depth of 250 fathoms; he mentions at the same time some species from other classes, and gives a topographical sketch of the localities explored. *Pontophilus norvegicus* (M. Sars) and *Pandalus borealis* (Krøyer) are common in about 200 fathoms, *Pasiphaë norvegica* (M. Sars) less so at the same depth. *Mysidæ* are common, and represented by several new genera; there are also many species of *Cumacea*. *Munnopsis typica* (M. Sars) and *Eurycope cornuta* (sp. n.) are the most common at still greater depths. *Macro-*

stylis spinifera (Sars) and *Ischnosoma bispinosum* (Sars) are forms most peculiar to the greatest depths. The author points out that most of these deep-sea species are similar to, or identical with, species from the Arctic Ocean. Undersög. Christ. Dybvandsf. pp. 1-16.—One hundred and one species of Crustacea and one Pycnogonid, living at from 200 to 300 (some at 450) fathoms, on the coast of Norway, are enumerated by M. Sars. Vidensk. Selsk. Forhandl. 1868, p. 246; Ann. & Mag. Nat. Hist. iii. pp. 430-432. At 450 fathoms occur only *Cytherella abyssorum* (Sars), *Pseudomma roseum* (Sars), and *Pontophilus norvegicus* (Sars); at 300-400 *Lysianassa*, sp. (*magellanica* of Lilljeborg, not of Milne-Edwards).

A. M. NORMAN gives an elaborate report on the Crustacea dredged in the years 1861-1868, by Mr. JEFFREYS, Mr. WALLER, and others, at the *Shetland* Islands, a locality which proved to be extremely rich, and a meeting-place of northern and southern types. Many species are here extraordinarily circumscribed in their habitat, but locally in considerable numbers, for example, *Nika edulis*. There are now known from the Shetlands 18 species of *Brachyura*, 11 *Anomura*, 26 *Macrura*, 23 *Stomapoda*, 110 *Amphipoda*, 21 *Isopoda*, 1 *Phyllopod*, 2 *Cladocera*, 87 *Ostracoda*, 51 *Copepoda*, 6 *Cirripedia* (and 6 *Pycnogonoidea*): total 362. The number of British Crustacea has increased in the years 1861-1868 from 412 to 662 (including *Pycnogonoidea*), 80 species having been discovered by the Shetland dredging. Nineteen species, chiefly Amphipods, are mentioned as being Scandinavian and Arctic species not observed further south than Shetland, and for the most part inhabitants of very deep water, among which *Sabinea septemcarinata* (Sabine), *Lophogaster typicus* (Sars), *Anonyx ampulla* (Phipps), *Pontoporeia affinis* (Lindström), *Macrocypris minna* (Baird), &c.: twenty-four species have as yet only been found in the Shetland seas. *Portunus tuberculatus* (Roux) is a Mediterranean species occurring in Shetland, but not yet found at intermediate localities; the same is the case with *Spatangus meridionalis* (Risso) among Echinoderms. At least 73 species, from all subdivisions, are as yet not known further northwards. Norman, Rep. Brit. Assoc. for 1868, pp. 247-262.

The Crustacea of the saltwater marshes in Northumberland and Durham are the subject of an interesting essay by G. S. BRADY. The most common are *Carcinus maenas*, *Palæmon varians*, *Crangon vulgaris*, *Mysis vulgaris*, *Gammarus locusta*, *Corophium longicorne*, and *Sphæroma rugicauda*; further, many species of Copepoda and Ostracoda, among which *Cythere castanea* (G. O. Sars), *Cytheridea littoralis* (Brady), and *Temora velox* (Lillj.), are very common; *Cypris salina* (Brady) and *Cypridopsis aculeata* (Norman) occur in pools above the highest limit of spring-tides, where, to the taste, the water is quite fresh.

Some new species will be mentioned in the special part. Nat. Hist. Transact. of Northumb. and Durham, iii. pp. 121-123.

West of Ireland. Six species of Decapods, 23 of Tetradeapods, and numerous *Cladocera* and *Ostracoda*, observed during a week's dredging near Westport, Clifden, and Roundstone, also some in Dublin Bay, are enumerated by G. S. BRADY and D. ROBERTSON, Ann. & Mag. Nat. Hist. iii. pp. 358-364. Several species are new.

Twenty-two species of Entomostraca found in the river *Scheldt*, near Antwerp, are enumerated by G. S. BRADY, Ann. & Mag. Nat. Hist. iii. p. 45; four of them are new.

Thirty-five species of marine Crustacea, found on the coast of *Normandy* at St. Vaast-la-Hougue, most of them between tide-marks, are enumerated by ED. GRUBE in the paper noticed above, p. 600.

One species of *Gammarus*, two of *Cyclops*, two of *Daphnia*, two or three of *Cypris*, have been found at a depth of 75 metres, about 250 feet, in the *Lake of Geneva*; at 300 metres one species of the order Amphipoda, one *Cypris*, one *Cyclops*. FOREL in Bulletin de la Soc. Vaudoise des Sci. Nat. x. 1869, p. 221.

C. HELLER refers to several species of Crustacea which live in fresh waters of *Southern Europe*, and are nearly allied to others living in the sea or in brackish water; he thinks that the former have originated from the latter, and have been somewhat changed by the conditions of their new home. They are *Palæmonetes varians* (Heller), *Sphæroma fossarum* (Martens), near Rome, *Gammarus veneris* and *Orchestia cavimana* (Heller), both from a spring in the island of Cyprus. Zeitschr. f. wiss. Zoologie, xix. pp. 156-162.

Several species of Entomostraca, found in the *Ægean Sea*, the *Dardanelles*, on the coast of *Syria*, and at *Port Said*, are described in "Fonds de la Mer," 1868, pp. 99, 102, 104, 105, 110, 112, 117, and 122; and Ann. & Mag. Nat. Hist. iii. 1869, p. 45.

2. Exotic Faunas.

Several Crustacea from the *Cape-Verde Islands* are described by A. MILNE-EDWARDS, Rev. et Mag. Zool. l. c.

Brazil. Thirty-two species of Crustaceans are enumerated by S. L. SMITH in Trans. Ac. Connect. ii. pp. 1-31 (Am. Journ. Arts & Sc. xlviii. pp. 338-391). A list of all the known Brazilian species of *Crustacea Podophthalma* is added, pp. 31-41.

The Crustaceans collected by Dr. Hensel in *Southern Brazil*, at *Rio Janiero*, and in the *Province Rio Grande do Sul* are described by E. VON MARTENS, Arch. Naturgesch. xxxv. pp. 1-37. The author adds a list of all Decapods hitherto known from brackish and fresh waters of South America.

Fifty species of Crustacea, chiefly Decapods, collected in *Eastern Africa* by the companions of the late V. der Decken, are enumerated by Dr. FRANZ in V. der Decken's Reisen in Ost-Afrika, iii. pp. 69-103, with 6 plates. A list of all the species hitherto known from Eastern Africa has been added by the Recorder, pp. 103-114, p. 147. Careful comparison with numerous other specimens from the Indian archipelago, and with the original specimens of Herbst, gives an additional value to the descriptions in this paper.

ALPH. MILNE-EDWARDS gives an account of some higher Crustacea collected at *Manado*, in Northern Celebes, among which a new genus, *Gnathograpsus*. Nouv. Arch. Mus. iv. pp. 173-185.

A considerable number of *Polynesian* Crustacea, with indication of the localities, is contained in Schmeltz's Catalogue IV. of the Museum Godeffroy, Hamburg, 1869, 8vo.

DECAPODA.

BRACHYURA.

OXYRHYNCHA.

Phycodes, gen. nov. Cephalothorax piriform; rostrum bicuspidate; inner edges of the orbits not prolonged into spines; orbits large, not well circumscribed. Basal joint of the outer antennæ long and dilated at its extremity, with two spines; the second joint very slender. Fourth joint of the inner maxillipeds (merognaths) with a very oblique hinder margin, and with a very sensible notch at its antero-internal angle for the insertion of the fifth joint. *Ph. antennarius*, sp. n., Cape-Verde Islands. Alph. M.-Edwards, Revue et Mag. Zool. pp. 374-376.

Parthenope bouvieri, sp. n., Alph. M.-Edw. l. c. p. 350, Cape-Verde Islands.

Ethra scutata, sp. n., Smith, Am. Journ. Science and Arts, and Ann. & Mag. Nat. Hist. iv. p. 230, La Paz, Lower California. L. Smith thinks with Stimpson that this genus has its proper place here, and not in the *Cyclo-metopa*.

CYCLOMETOPA.

Actæa rüppelii (Krauss as *Ægle*). Critical remarks by Hilgendorf in V. d. Decken's Reisen in Ost-Afrika, iii. p. 73.

Banareia, gen. nov., allied to *Actæa* (De Haan), but the buccal area notched by the efferent channels of the gills; basal joint of the outer antennæ short, nearly square; third joint of the outer maxillipeds much truncate; claws cutting and pointed. *B. armata*, sp. n., New Caledonia. Alph. Milne-Edwards, Ann. Soc. Entomol. de France, vol. ix. p. 168, pl. 8.

Lophactæa picta, sp. n., Alph. M.-Edwards, Revue et Mag. Zool. p. 410, Cape-Verde Islands.

Xantho denticulatus (White) redescribed by Smith, Proc. Bost. Soc. Nat. Hist. xii. p. 275, Abrolhos, Aspinwall, Bermuda.

Xantho corrosus [-a] and *X. bouvieri*, spp. nn., Alph. M.-Edw. Revue et Mag. Zool. pp. 376-378, Cape-Verde Islands.

Xanthodes rufopunctatus, sp. n., Alph. M.-Edw. l. c. p. 409, Cape-Verde Islands.

Chlorodius edwardsii (Heller), from Zanzibar, its outer maxillipeds notched as in *Daira*, Hilgendorf, l. c. p. 74, pl. 2. fig. 2; *Ch. depressus* (Heller), noticed, *ibid*.

Ozius speciosus, sp. n., Hilgendorf, l. c. p. 74, pl. 2. fig. 1, Zanzibar.

Panopeus herbstii (M.-Edw.), var. *obesus*, Florida and Aspinwall; *P. validus*, Panama; *harttii*, Abrolhos; *bradleyi*, Panama; *politus*, Abrolhos; *planus*, Panama; *depressus*, Newhaven; and *sayi*, Newhaven, spp. nn., with some remarks on other species of this genus, Smith, Proc. Bost. Soc. Nat. Hist. xii. pp. 275-285.—*P. harttii* and *politus*, redescribed and figured by the

same author in Transact. Connecticut Acad. of Arts and Science, ii. pp. 3-7, pl. 1. figs. 5 & 4.

Chlorodius (Leptodius) convexus, sp. n., Alph. M.-Edw. Revue et Mag. Zool. p. 410, Cape-Verde Islands.

Actumnus parvulus, sp. n., Alph. M.-Edwards, l. c. p. 411, Cape-Verde Islands.

Pilumnus limosus, sp. n., Smith, Proc. Bost. Soc. Nat. Hist. xii. p. 485, Peru and Panama.

Eriphia lævimana (Latr.), hands sometimes tuberculated; *E. smithii* (MacLeay) not to be distinguished from it. Hilgendorf, l. c. p. 75.

Notes on *Trapezia rufopunctata* (Herbst) and *T. cymodoce* (Herbst), *Tr. subdentata* (Gerstæcker) and *T. cærulea* (Rüppell) by Hilgendorf, l. c. pp. 75, 76, pl. 2. figs. 3-5.

Trapezia formosa, sp. n., and *T. cymodoce* (Herbst)?, both from Panama, described by Smith, Proc. Bost. Soc. Nat. Hist. xii. pp. 286-288.

Quadrella nitida, sp. n., Smith, l. c. p. 288, Bay of Panama.

Callinectes danaë, new name for *Lupa diacantha* of Dana, not of Milne-Edwards or Stimpson. Smith, Transact. Acad. Connecticut, ii. p. 7, and Am. Journ. Sci. and Arts, vol. xlviii. p. 382, Pernambuco and Bahia.

Achelous ordwayi (Stimps.) described by Smith, l. c. p. 9.

Thalamitoides, new subgenus of *Thalamita*. Fingers at their tips spoon-like, excavated, front broad; first pair of feet strongly spinous, the femoral joints of all the feet with a pointed tooth at the ends of the lower (posterior) margin. *Thalamitoides quadridens* and *Th. tridens*, spp. nn., from Madagascar. Alph. Milne-Edwards, Nouv. Arch. Mus. v. pp. 146-149.

Goniosoma acutum, Japan, *læve*, New Caledonia, *dance* and *longifrons*, from Upolu, spp. nn., Alph. Milne-Edwards, l. c. pp. 150-156, pl. 7. figs. 8-10, 6-7, and 1-5; the second is not figured.

Camptonyx rotundifrons, sp. n., Milne-Edwards, l. c. pp. 156-158, pl. 7. figs. 11, 12, New Caledonia and Samoa Islands; with remarks on this genus, established 1861 by C. Heller, nearly allied to *Goniosoma*, but with its hinder eet not natatorial.

Portunus tuberculatus (Roux) = *pustulatus* (Norman, 1861) found in the Shetland sea. Norman, Report Brit. Assoc. for 1868, p. 263. Hitherto only known from the Mediterranean.

CATOMETOPA.

Deckenia imitatrix (Hilgendorf, see Zool. Record, vol. v. p. 515), an aberrant form of *Thelphusidæ* resembling the *Leucosiidæ* by the efferent aperture of the branchial cavity, which reach to the front of the carapace. From the continent of Eastern Africa, river Kudiano, described by Fr. Hilgendorf in v. der Decken's Reisen in Ost-Afrika, iii. pp. 77-80, pl. 1. fig. 1.

Thelphusa. Thirty-six species of this genus are enumerated with their synonyms, and their differences indicated, in a monograph published by Alph. Milne-Edwards in Nouv. Arch. Mus. vol. v.; the following are figured: — *Th. leschenaulti* (M.-Edw.), pl. 8. fig. 3, Pondichery and Mauritius; *lar-naudii*, sp. n., pl. 8. fig. 4, Bangkok; *denticulata* (M.-Edw.), pl. 10. fig. 3, Han-keou, China; *sinuatifrons*, sp. n., pl. 10. fig. 2, locality unknown; *grapsoides* (White), pl. 8. fig. 2, Luzon; *angustifrons* (Alph. M.-Edw.), pl. 8.

fig. 1, Cape York; *siamensis*, sp. n., pl. 8. fig. 5, Bangkok; *obtusipes* (Stimpson as *Geothelphusa*), Ousima, Japan; *difformis* (M.-Edw.), pl. 9. fig. 1, locality unknown; *crassa*, sp. n., pl. 9. fig. 2, Cape York; *perlata* (M.-Edw.), pl. 11. fig. 3, Cape of Good Hope; *inflata* (M.-Edw.), pl. 11. fig. 5, locality unknown; *guerini* (M.-Edw.), pl. 11. fig. 4, India?; *longipes*, sp. n., pl. 9. fig. 5, Pulo Condore; *margaritaria*, sp. n., pl. 9. fig. 4, Island of St. Thomas, in Western Africa; *africana*, sp. n., pl. 11. fig. 2, Gaboon.

Thelphusa depressa (Krauss) from Zanzibar, described by* Hilgendorf, *l. c.* p. 77, pl. 1. fig. 2 (hand).

Trichodactylus (Latr.), *Sylviocarcinus* (M.-Edw.), and *Dilocarcinus* (M.-Edw.). The known species are enumerated and characterized by Milne-Edwards; new are:—*T. crassus*, Bahia; *Sylviocarcinus peruvianus*, Guyallaga, Peru; *S. latidens*, Upper Amazon Rivér; *Dilocarcinus armatus*, Rio Janeiro. Ann. Soc. Entomol. de France, ix. pp. 170–178. [The last seems to be very nearly allied to *Sylviocarcinus panoplus* (Martens).]

Trichodactylus quadratus (Latr.) common at Rio Jauero. Martens, Arch. f. Naturgesch. xxxv. p. 2.

Sylviocarcinus panoplus, sp. n., Martens, *l. c.* p. 3, pl. 1. fig. 1, Province Rio Grande do Sul, Southern Brazil.

Dilocarcinus multidentatus, sp. n., Martens, *l. c.* p. 5, pl. 1. fig. 2, Bahia.

Uca cordata described, with remarks on two other American species, by Smith, Transact. Acad. Connecticut, ii. pp. 13–15. [Unfortunately the author was not acquainted with Dr. Gerstaecker's notes on the species of *Uca* published in Troschel's Arch. f. Naturgeschichte, 1856, in which it is shown that *U. levis* (M.-Edw.) is the male, and *U. una* (Latr.) the female of the same species.] E. v. Martens remarks that *U. una* (Latr.) lives in brackish water. Archiv f. Naturgeschichte, xxxv. p. 12.

Ocypode ceratophthalma (Pall.), *fabricii* (M.-Edw.), and *cordimana* (Latr.), from Zanzibar. Hilgendorf, *l. c.* pp. 80–82; the sound-producing apparatus proves to be a valuable character for specific distinction in this genus as well as in *Sesarma*; that of *O. fabricii* is figured on pl. 3. fig. 1.

Gelasinus. Five species from Zanzibar, viz. *G. vocans* (L.), *dussumieri* (M.-Edw.), *tetragonon* (Herbst), *annulipes* (Latr.), and *chlorophthalmus* (Latr.), are described by Hilgendorf, *l. c.* pp. 83–85, pl. 4: fig. 1 (*G. dussumieri*).

Gelasinus vocator (Herbst) = *palustris* (M.-Edw.), from Rio Jauero, described by Martens, Archiv f. Naturgesch. xxxv. pp. 6–10; it inhabits brackish water, and is different from Sloane's *Cancer palustris*, which is = *G. maracoani* (Latr.).

Dotilla fenestrata, sp. n., distinguished by large pellucid spots on the sternum, Hilgendorf, *l. c.* p. 86, pl. 3. fig. 5, Eastern Africa.

Macrophthalmus brevis (Herbst) = *carinimanus* (Latr.). Remarks by Hilgendorf, *l. c.* p. 86, pl. 3. fig. 4.

Eucratopsis, gen. nov. Type *Eucrate crassimana* (Dana). Differs by the sternal position of the verges from *Eucrate* (De Haan), in which they arise from the coxæ of the posterior legs, and which therefore belongs to the *Caracinoplacidae*. Smith, Transact. Acad. Connecticut, ii. p. 35, and Am. Journ. of Sci. and Arts, vol. xlviii. p. 391.

Grapsus (*Geograpsus*) *rubidus* (Stimps.). Specimens from Zanzibar described by Hilgendorf, *l. c.* p. 87, pl. 5.

Grapsus (Pachygrapsus) æthiopicus, sp. n., Hilgendorf, *l. c.* p. 88, pl. 4. fig. 2, Continent of Eastern Africa, in fresh water.

Cryptograpsus cirripes, sp. n., Smith, Transact. Acad. Connecticut, ii. p. 11, pl. 1. fig. 3, and Am. Journ. Sci. and Arts, vol. xlviii. p. 389, Rio de Janeiro.

Sesarma quadrata (Fabr.)=*picta* (De Haan)=*affinis* (De Haan), *S. tetragona* (Fabr.?, M.-Edw.), *S. bidens* (De Haan), and *S. leptosoma*, sp. n., all from Zanzibar, described by Hilgendorf, *l. c.* pp. 89-92, pl. 3. fig. 3, *a-d*, pl. 4. fig. 3, and *S. leptosoma*, pl. 6. fig. 1. *S. fascicularis* (Herbst), described from the original specimen=*mederi* (M.-Edw.), *ibid.* p. 89, pl. 3. fig. 3 *b*.

Sesarma lividum, New Caledonia, *guttatum*, Zanzibar, *angustifrons*, Sandwich Islands, *leve*, Aroo Islands, *frontale*, Madagascar, *germani*, Pulo Condore, *bocourti*, Bangkok, *mullerii*, Desterro, *elongatum*, Madagascar, *rotundifrons*, *dentifrons*, and *villosum*, from Upolu, Samoa Islands, and *S. (Holometopus) aubryi*, New Caledonia, spp. nn., Alph. Milne-Edwards, Arch. Mus. Hist. Nat. v. pp. 25-31.

Sesarma (Aratus) pisonis (M.-E.), from brackish water at Rio Janeiro, E. v. Martens, Arch. f. Naturgesch. xxxv. p. 12, pl. 1. fig. 4 (hand).

Helice granulata (Dana) from Rio Janeiro, in brackish water, described by E. v. Martens, *l. c.* p. 11, pl. 1. fig. 3.

Metagrapsus indicus, sp. n., Alph. Milne-Edwards, Nouv. Arch. Mus. iv. p. 174, pl. 26. figs. 1-5, Manado, Celebes.

Pseudograpsus crassus, sp. n., Alph. Milne-Edwards, *ibid.* p. 176, pl. 26. figs. 6-9, Manado, Celebes. With remarks on the definition of this genus.

Gnathograpsus, gen. nov., the palpus or exognath of the external maxillipeds as broad as the maxilliped itself. *G. riedelii*, Celebes, and *G. pilipes*, Philippines, spp. nn., Alph. Milne-Edwards, Nouv. Arch. Mus. iv. pp. 180-185, pl. 27. figs. 1-5 and 6-10.

OXYSTOMA.

Matuta victor (Fabr.). The peculiar raised cross-ridged spots and crenulated ridges on the hand described, and supposed to be an instrument of sound, by Hilgendorf, *l. c.* p. 93, pl. 3. fig. 2.

ANOMURA.

The last pair of thoracic feet (pleopods) in the genus *Porcellana*, usually regarded as rudimentary and without function, has been observed by FR. MÜLLER to be nearly always in motion, and very essential for cleaning the back or the cavity of the gills, or for leading a current of water to them or to the eggs. Also in *Hippa* and *Pagurus* they have the same function. Fr. Müller, Jenaische Zeitschr. f. Med. u. Naturwiss. v. p. 259.

Remipes testudinarius (Latr.)=*pictus* (Heller)=*ovalis* (Alph. M.-Edw.), from Eastern Africa and Indian archipelago, Hilgendorf, *l. c.* p. 94.

Pagurus tricarinatus, sp. n., Norman, Rep. Brit. Assoc. for 1863, p. 264, Shetland Islands.

Pagurus (Clibanarius) virescens (Krauss)=? *Clib. signatus* (Heller), and *P. (Cl.) longitarsus* (De Haan), from Zanzibar, described, with critical remarks, by Hilgendorf, *l. c.* p. 95.

Cænobita. Dr. Hilgendorf distinguishes two sections:

a. *Pagurus-like Cænobita*: squamiform appendix of the outer antennæ

distinct from their basal joint; a hairy spot only on the right hand. *C. clypeatus* (M.-Edw.).

b. *True Cænobitæ*: squamiform appendix coalescent with the basal joint of the outer antennæ; a hairy spot on both hands. *C. rugosus* (M.-Edw.), and *C. violascens* (Heller)=? *compressa* (M.-Edw.), l. c. pp. 97-99, pl. 6. figs. 2-4.

Cancer clypeatus of Herbst is not the species of the same name described by Milne-Edwards, but a young *C. diogenes* (L.) from the West Indies, ibid. p. 98. Etymological remarks on the name *Cænobita*, which is masculine, ibid., footnote.

Birgus latro (L.). Specimen from the Comoro Islands described, Hilgen-dorf, l. c. p. 101. *B. hirsutus* (Hess) belongs to *Cænobita* and not to *Birgus*, ibid. p. 101.

Petrolisthes brasiliensis, new name for *Porcellana boscii*? of Dana, not of Savigny. Smith, Transact. Acad. Connecticut, ii. p. 38, and Am. Journ. Sci. and Arts, vol. xlviii. p. 391.

Porcellana (Platycheles) crassa, sp. n., Alph. M.-Edw. in Berchon &c. 'Les Fonds de la Mer,' livr. viii. p. 128, with a plate, Bay of Panama.

Æglea laevis (Leach), from rivulets in Southern Brazil, not different from the Chilian species. E. v. Martens, Arch. f. Naturgesch. xxxv. p. 14.

MACRURA.

LORICATA.

Scyllarus æquinoxialis (Fabr.) described by Smith, Trans. Acad. Connec. ii. p. 18.

Arctus americanus, sp. n., Smith, Ann. & Mag. Nat. Hist. iv. p. 229, Egmont Key, West Florida.

Eviacus, gen. nov. Lateral margin entire, incision of the cervical suture closed; orbits halfway between the rostrum and the outer angle, closed, connected with the margin only by a suture. *E. princeps*, sp. n., Smith, Ann. & Mag. Nat. Hist. iv. p. 228, La Paz, Lower California.

Panulirus echinatus, sp. n., Smith, Transact. Acad. Connecticut, ii. pp. 20-22, and Silliman's Am. Journ. Sci. and Arts, vol. xlviii. p. 389, Pernambuco, closely allied to *P. guttatus* (Olivier).

ASTACINA.

Astacus pilinanus, sp. n., and *A. brasiliensis*, sp. n., from the province Rio Grande do Sul, Southern Brazil, found by Dr. R. Hensel, the former burrowing in the ground; allied to the subgenus *Engæus* (Erichsen); remarks on the different subdivisions of *Astacus*, as proposed and defined by different authors. E. v. Martens, Archiv f. Naturgeschichte, xxxv. pp. 15-22, pl. 2. figs. 1 and 2.

Callianassa turnerana sold as food in the markets of Old Calabar. A. Murray, Proc. Zool. Soc. 1869, p. 530.

CARIDES.

Pontophilus norvegicus (M. Sars). The differences of young specimens from full-grown described by G. O. Sars, Undersøgels. Christ. dybv. pp. 17-19.

Atya (*Atyoida*), sp., very nearly allied to *bisulcata* (Randall) and *tahitensis* (Stimps.), from the Seychelle Islands. Hilgendorf, *l. c.* p. 101.

Palæmon idæ (Heller), from Zanzibar, Hilgendorf, *l. c.* p. 102, pl. 6. fig. 5.

Palæmon jamaicensis (Herbst), *spinimanus* (M.-Edw.)=*olfersii* (Wiegmann), and *forceps* (M.-Edw.)=*acanthurus* (Wiegmann) are freshwater species from Brazil; *P. appuni*, sp. n., from Venezuela; remarks on the genus *Macrobrachium* (Sp. Bate, see preceding volume of the Record, p. 518), and a list of the known South-American species of *Palæmon*, by E. v. Martens, Arch. f. Naturgeschichte, xxxv. pp. 22-33, pl. 2. figs. 3-5 (hands of *P. spinimanus*, *forceps*, and *appuni*).

Palæmon ensiculus, sp. n., Smith, Transact. Acad. Connecticut, ii. p. 26, pl. 1. fig. 2, and Am. Journ. Sci. and Arts, vol. xlviii. p. 300, Para.—Comparative measurements of *P. jamaicensis* (Oliv.) and *forceps* (M.-Edw.) are given by the same author, *ibid.* p. 24.

Palæmonetes, gen. nov. Mandibles as in *Anchistia*, flagella of the antennulæ as in *Palæmon*. Type *Palæmon varians* (Leach, 1814)=*Palæmon antennarius* (Milne-Edwards, 1837)=*Palæmon lacustris* (Martens, 1857)=*Anchistia migratoria* (Heller), living in brackish water on the British shores, and in freshwater lakes of Italy, as well as in the Albufera, near Valencia, in Spain, and in the Nile. Heller, Zeitschr. f. wiss. Zool. xix. pp. 157-161.

Xiphopeneus, gen. nov. Rostrum very long and slender; gastrohepatic sulcus scarcely perceptible; lamelliform appendages very small; antennular flagella very long and slender. Fourth and fifth pairs of legs very long, the terminal segments very slender and flagelliform. In other respects like *Peneus* (Fabr.). *X. hartti*, sp. n., from Caravellas, province of Bahia. Smith, Transact. Acad. Connecticut, ii. pp. 27-30, pl. 1. fig. 1, and Am. Journ. Sci. and Arts, vol. xlviii. p. 300.

CUMACEA.

A. DORRIN has examined the structure and development of *Cuma rathkei* (Kröyer), *trispinosa* (Goodsir), *plicata* (?), *goodsiri* (Van Beneden as *Bodotria*), and several others in the Frith of the Clyde. These species are found with eggs in the month of July. The eggs are very similar to those of the Amphipods and Isopods; also the first stages of development of the egg, the formation of a fold which penetrates to the middle of the yolk, are the same as observed and described in the genus *Asellus* and other Isopods, by the same author; but during the progress of development the animal assumes gradually the shape of a Decapod. In the first stage there are two pairs of antennæ, the first very large, three pairs of buccal organs, and seven pairs of bifurcated legs. The outer branch of the first pair of legs is transformed afterwards into the third maxilla, the inner branch becoming obsolete; in the second pair the inner branch only develops itself into a maxillary organ; in the two following the inner branches are stretched forwards on the lower side of the body, the outer branches producing the natatory setæ; in the last three pairs the inner branch develops itself into normal legs; the outer branch becomes obsolete in some species, in others it serves as a natatory appendage. The eyes are at first

truly pedunculated and two in number; during the further development they are enclosed by the cephalic shield and coalesce. The males are distinguished from the females by the length of the inferior antennæ, by the presence of bifid natatory feet in the postabdomen, and the greater number of abdominal feet with natatory appendages. The genus *Bodotria* (Goodsir) is nothing but the male sex of *Cuma*. The bag-like form of the liver, the want of trabeculæ in the heart, the shape of the caudal appendages, and the five segments before the postabdomen not being covered by the dorsal shield are points which bring the Cumacea nearer to the Isopods than to the Decapods. The formation of an incubatory pouch on the abdominal feet is also unusual in most Decapods, except *Mysis* and *Lophogaster*, but common in the Edriophthalm Crustacea. The single gill and the heart are described by the author, but the results concerning these two organs are incomplete and somewhat different from those obtained by G. O. Sars in Vidensk. Selsk. Forhandl. f. 1864.

Cuma anomala, sp. n., Dohrn, l. c., Scotland.

Cuma scorpioides (Montagu?). Remarks by Norman, Report Brit. Assoc. for 1868, p. 273.

Leucon nasicooides (Lilljeborg), Christianiafjord, in 30–40 fathoms, described by G. O. Sars, l. c. p. 41.

Eudora hirsuta, sp. n., G. O. Sars, l. c. p. 43, Christianiafjord, 150–200 fathoms.

Cumella agilis, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 272, Shetlands.

Iphinoë. The genus *Cyprianassa* (Bate) is founded on the male of *Iphinoë*. Norman, ibid. p. 273.

Diastylis laevis, sp. n., and *spinosa*, sp. n., Norman, Rep. Brit. Assoc. for 1868, pp. 270, 271; *D. bispinosa* (Stimps.) = *bicornis* (Bate) = *cornuta* (Boeck) = *bispinosa* (G. O. Sars), ibid., all from the Shetlands.

Leptostylis, g. n. Near *Diastylis*; a rudimentary palp, consisting of two joints at the third and fourth pairs of feet in the male, as in *Lamprops*. Type *Diastylis longimana* (Sars); other species, *D. ampullacea* (Lilljeborg) and *L. villosa*, sp. n., Christianiafjord, 50–60 fathoms. Sars, Undersög. Christ. dybvandsf. pp. 39, 40.

STOMAPODA.

SCHIZOPODA.

The development of *Mysis ferruginea* (Beneden) has been studied by Ed. VAN BENEDEN. The blastoderm is formed by the partial cleaving of the yolk; the blastodermic vesicle extends over the whole surface of the egg before any organ appears; the division of the embryo into a cephalic lobe and a caudal lobe results from the division of a primordial cellular fold into two laminæ; the caudal appendix of *Mysis* is reverted beneath the abdomen as in all Decapods. The caudal lobe begins to be formed before there is any trace of the antennæ; these latter make their

appearance at the same time as the mandibles, and in the form of simple cellular protuberances. The cuticula belonging to the stage of *Nauplius* is developed at the same time on the whole surface of the embryo, and it is its first cuticula, there being no blastodermic mould. The tail, which is bifid in *Mysis vulgaris* (Thomps.) and *chamaleon* (Bell), is simple, and terminates in a blind sac in *Mysis ferruginea*. Finally there is formed on the sides of the embryo an organ which has the same morphological value as the foliaceous appendages of *Asellus aquaticus*. Bull. Acad. Roy. Belg. xxviii. pp. 232-249, with a plate.

Mysis mixta (Lilljeborg), perhaps = *latitans* (Krøyer), and *M. neglecta*, sp. n., Christianiafjord, described by G. O. Sars, Undersög. Christ. dybvandsf. pp. 35-37.

Mysis inermis (Rathke), *spiritus* (Norman), and *armata* (Sars), observed at the Shetland Islands, described by Norman, Rep. Brit. Associat. for 1868, pp. 266, 267.

Mysidopsis ? *hispida*, sp. n., Norman, ibid. p. 267, Shetland Islands.

Mysideis, g. n. Abdominal feet of the male as in the preceding, mandibles unequally armed, second maxillæ with only two lobi incisivi. Type, *Mysis insignis* (Sars), Christianiafjord, Sars, Undersög. Christ. dybvandsf. pp. 28, 29.

Leptomysis, g. n. Abdominal feet of the male as in the two preceding genera. Body very slender and nearly uncoloured. Type *Mysis gracilis* (Sars); a second species is *M. linguura* (Sars). Sars, l. c. p. 29.

Gastrosaccus, gen. nov., for *Mysis sancta* (Beneden), Norman, Rep. Brit. Assoc. for 1868, p. 268, Shetland.

Boreomysis, gen. nov. All the abdominal feet (pereopods) in the male strongly developed, two-branched, natatory. Auditory organ rudimentary. Type *Mysis arctica* (Krøyer), Christianiafjord, in 200 fathoms, and Greenland; another species, *B. tridens*, sp. n., Lofoten Islands. This genus appears to be littoral in the Arctic seas, and to belong to the deep-sea fauna in Southern Scandinavia. Sars, l. c. pp. 26-28.

Hemimysis, gen. nov. Abdominal feet as in the preceding genera, otherwise next to the true *Mysis*; abdomen attenuated and depressed behind. *H. abyssicola*, sp. n., Christianiafjord, 150-200 fathoms, and Lofoten Islands, 250 fathoms. G. O. Sars, l. c. pp. 32-34.

Erythrops, G. O. Sars, new name for *Nematopus* of the same author, which is preoccupied; *E. abyssorum*, sp. n., Christianiafjord, 200-230 fathoms, and Lofoten Islands in northern Norway, 300 fathoms. G. O. Sars, l. c. pp. 21-23.

Nematopus serratus (G. O. Sars) described by Norman, ibid. p. 268, found at the Shetland Islands.

Parerythrops, gen. nov., distinguished from *Erythrops* by the very short and stout shape of the body. Type *Nematopus obesus* (Sars), G. O. Sars, l. c. p. 24.

Amblyopsis, gen. nov. [preoccupied for the subterranean fish from Kentucky]. "Oculi rudimentarii singulari modo in laminas duas subtriangulares intus contiguas non vero coalitas transformati, in medio pigmento rubro diffuso, nullis vero lentibus vel aliis in oculis compositis demonstratis partibus

instructi." Type *Pseudomma abbreviatum* (Sars), Christianiafjord, 180 fathoms; Lofoten Islands, 250 fathoms. Sars, *l. c.* pp. 24-26.

Siriella norvegica, sp. n., Sars, *l. c.* p. 30, Christianiafjord, 50-60 fathoms, very rare.

Euphausia mülleri (Claus) has been observed in an early stage of development, the postabdomen being rudimentary, and only two pairs of feet being developed. El. Metschnikow, Zeitschr. wiss. Zool. xix. pp. 479-482, pl. 36.

SQUILLINA.

Squilla stylifera, in Mauritius; its life, hatching, motions, &c. described by G. Clark, Proc. Zool. Soc. 1869, p. 3.

Squilla bradyi, sp. n., Alph. M.-Edw. in Berchon &c. 'Fonds de la Mer,' p. 137, pl. 17. f. 11, St. Vincent, Cape-Verde Islands.

AMPHIPODA.

E. BESSELS has given a *résumé* of his researches into the development of these Crustaceans, the detailed description having been unfortunately lost during his journey. Jena. Zeitschr. f. Med. u. Naturw. 1869, pp. 91-101.

A. BOECK's memoir on Norwegian Amphipods (1861) is translated in Ann. & Mag. Nat. Hist. iii. pp. 325-340, 401-419.

Probolium (Costa, 1853) = *Montagua* (Bate, 1855). *Pr. serratipes*, sp. n. Norman, Rep. Brit. Assoc. for 1868, p. 273, Shetland Islands.

Anonyx nanoides (Lillj.), new to Great Britain, Shetland, and West Island, Brady, Report. Brit. Assoc. for 1868, and Ann. & Mag. Nat. Hist. iii. p. 358.

Anonyx ampulla (Phipps) found at the Shetland Islands, agreeing in all respects with Spitzbergen examples. Norman, Rep. Brit. Assoc. for 1868, p. 275.

Ampelisca æquicornis (Bruzelius), *tenuicornis* (Lilljeborg), *carinata* (Bruzelius) = *gaimardi* (Bate), and *lævigata* (Lilljeborg) described by Norman, *l. c.* pp. 270, 277, from the Shetland Islands.

Edicerus æquicornis, sp. n., Norman, *l. c.* p. 278, Shetland Islands.

Syrrhoë hamatipes, sp. n., Norman, *l. c.* p. 278, Shetland Islands.

Urothoë marinus (Bate?), var. *pectinatus*, Grube, Verhandl. Schles. Gesellsch. vaterl. Kultur, p. 29, pl. 1. fig. 1, St. Vaast la Hougue, Normandy.

Epimeria tricostata (Costa, 1853) = *Acanthonotus owenii* (Bate), Norman, *l. c.* p. 280, Shetland Islands.

Atylus macer, sp. n., Norman, *l. c.* p. 280, Shetland Islands.

Eusirus helvetiæ (Bate) = *bidens* (Heller), Norman, *l. c.* p. 281, Shetlands.

Aora gracilis (Bate) = *Autonoë punctata* (Bruzelius), Norman, *l. c.* p. 281, Shetlands.

Microdeuteropus anomalus (Rathke), West Ireland; the species described by Spence Bate under this name is probably different; *M. talpa* (Sp. B.) is the young; but the true *M. talpa* (Costa) from the Mediterranean is a different species. Norman, Rep. Brit. Assoc. for 1868, p. 281, and Ann. & Mag. Nat. Hist. iii. p. 358.

Microdeuteropus vesiculatus (Bate) and *websteri* (Bate). Remarks by Norman, Rep. Brit. Assoc. for 1868, p. 282.

Megamphopus (gen. nov.) *cornutus*, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 282, Shetland Islands.

Protomedeia pectinata, sp. n., Norman, ibid. p. 283, Shetland Islands; with remarks on *Protomedeia*? *whitei* (Bate) and *hirsutimana* (Bate).

Gammarus puteanus (Koch) is not blind, but sensible to light. Plateau, Ann. & Mag. Nat. Hist. iii. p. 13.

Melita obtusata. *Melita proxima* and *Gammarus obtusatus* are male forms, *Megamæra alderi* is the female. Norman, Rep. Brit. Assoc. for 1868, p. 284, and Ann. & Mag. Nat. Hist. iii. p. 359.

Evunguia, gen. nov. Most nearly allied to *Cratippus*, but first gnathopods long, slender, filiform, with obsolete dactylus. Flagella of both antennæ rudimentary. *E. stilipes*, sp. n., Norman, Ann. & Mag. Nat. Hist. iii. p. 359, pl. 22. figs. 7-12, Birterbuy Bay, West Ireland.

Cyrtophium armatum, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 235 Shetland Islands.

Corophium bonellii (B. & W.) is the female of *C. crassicorne* (Bruzelius), Norman, Rep. Brit. Assoc. for 1868, p. 286, and Ann. & Mag. Nat. Hist. iii. p. 360; *C. tenuicorne*, sp. n., Norman, ibid., p. 286, Shetland Islands.

Hyperia galba (Montagu) the female, *Lestrigonus kinahani* (Bate & Westw.) the young male, ? *H. medusarum* (Bate, not Krøyer) the young female, ? *Lestrigonus exulans* (Bate & Westwood) the young male of the same species. Norman, Rep. Brit. Assoc. for 1868, p. 286.

Hyperia oblivia (Krøyer) found at the Shetlands, described by Norman, ibid. p. 287.

Metoëcus medusarum (Krøyer) also found at the Shetlands, Norman, ibid.

ISOPODA.

Paranthura costana. A. Dohrn has examined the anatomical organization of this animal at Messina; the vascular system is more developed than in most other Crustacea; the heart is divided into two parts, one behind the other, the foremost surrounded by adipose tissue. There are some affinities between it and *Praniza*, but in other respects the *Anthuridæ* stand quite by themselves in the system. Zeitschr. f. wiss. Zool. xx. pp. 81-93, pl. ix.

The development of *Asellus aquaticus* (L.) (see Record, vol. iv. pp. 617, 618) has been studied by ED. VAN BENEDEN. His chief results are the following:—The egg, when leaving the ovary, is clothed only with one membrane, which is the true chorion; the second membrane, mentioned by Sars and Dohrn, is the blastodermic cuticle of the embryo itself. The blastoderm is formed by a superficial cleaving of the yolk, in which the first segmentations have no result; and each cleaving is followed by an apparent or real coalescence of particles of the yolk. The blastodermic cellules are formed on the whole surface, before any other organ is formed; but those which form the dorsal lamina very easily escape observation. The foliaceous

appendages make their first appearance at the posterior part of the cephalic lobes in the form of cellular protuberances; afterwards they are reverted beneath the ventral side of the embryo; they are the first organs, and are completely developed at the time when the ordinary appendages make their appearance. Of these the two pairs of antennæ are formed before the mandibles and maxillæ; and in this stage (the stage of *Nauplius*) a new cuticula is formed, which Van Beneden terms naupliar cuticula, and which he thinks to be homologous with the larval membrane ("Larvenhaut") of *Ligia*; hence it follows that the embryo has two moulds, the blastodermic and the naupliar. When the naupliar cuticula is lost, the embryo leaves the egg, having then already essentially the form of the adult.

Ilyarachna, G. O. Sars, new name for *Mesostenus*; *I. longicornis* (Sars), Christianiafjord, 200 fath., G. O. Sars, Undersög. Christ. dybvandsf. p. 44.

Apsudes anomalus, sp. n., lacking the curious appendix of the under antennæ, Christianiafjord, 40-150 fathoms; *Ap. talpa* (Mont.) in the same locality on muddy ground, 50 fathoms, G. O. Sars, *l. c.* pp. 45-49.

The chief results of A. DOHRN's anatomical and embryological researches concerning *Praniza* are that their mouth is transformed into a suctorial organ, the mandibles being stiliform and pointed, and that, after the sexual organs have attained to maturity, a metamorphosis takes place, the eyes becoming much reduced, and two new pairs of buccal organs being developed, which do not correspond to the mandibles or any other buccal appendage of the former state. These new organs are small in the female, but very large and of the well known mandible-like size in the male; but they are not used for obtaining food, nourishing particles being brought to the mouth of the animal by a whirling motion of the surrounding water; the animal attaches itself with their aid to larger objects. These animals have been found by the author in fissures of rocks and on weed. Zeitschr. wiss. Zool. xx. pp. 55-80, pl. vi.-viii.

G. O. Sars states he has observed the development of *Anceus oxyuraus* (Lilljeborg) to be quite the same as in the rest of the Isopoda, the first formation of all the parts of the body being recognizable at a very early stage within the membranes of the egg; a contradictory statement of an "observer otherwise very correct," M. Hesse, is supposed by Sars to be based on eggs of parasites which are sometimes found within the egg-capsules of some Isopoda. G. O. Sars, Undersög. Christ. dybvandsf. p. 49.

Cymothoa henselii, sp. n., found in fresh water on a fish of the genus *Geophagus* in the Rio Cadea, Southern Brazil. E. v. Martens, Arch. f. Naturgeschichte, xxxv. p. 33, pl. 2. fig. 6.

Cirolana truncata, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 288, Shetland Islands.

BRANCHIOPODA.

PHYLLOPODA.

METSCHNIKOW has studied the development of *Nebalia*. The nutritive part of the vitellus is separated quite at the commencement of the development, without participating in the segmentation of the plastic part as in *Balanus* and *Basanistes*. This genus does not appear to go through a remarkable metamorphosis; the changes consist merely in an evolution of the persistent form of the body and its parts. See the journal noticed above, p. 600.

Branchipus. A. E. Verrill distinguishes the following "generic groups":—

1. *Branchipus* restricted. Male with stout, two-jointed claspers; female with large, thick, ovate egg-pouches; a pair of simple appendages resembling antennæ between the bases of the claspers in front. *B. stagnalis* (L.), *spinosus* (M.-Edw.), *vernalis*, sp. n., Massachusetts, and perhaps *paludosus* (Middend.).

2. *Branchinecta*. Claspers slender and simple, no appendages between them; egg-pouches elongated, with lateral lobes; branchial organs more elongated, the middle ones longest. *Branchipus* (*Branchinecta*) *arcticus*, sp. n., Labrador, *Br.* (*Br.*) *grœnlandicus*, sp. n., Greenland, and *B. ferox* (M.-Edw.). Verrill "prefers for the present to regard it as a subgenus of *anchipus*"

3. *Heterobranchipus*, gen. nov. Claspers of the male very long, three-angled, flexuous; external male organ very long, slender, curved. *Branchipus cafer* (Loven).

4. *Chirocephalus* (Prévost). Two long, ligulate fleshy processes, serrated on each side, coiled in a spiral beneath the head, between the claspers of the male, extended in copulation. *C. diaphanus* (Prévost).

Artemia gracilis, sp. n., found in a tub of water from the salt marsh near New Haven and Boston, and *A. monica*, sp. n., locality unknown; with some remarks on this genus generally, and its occurrence in concentrated salt water. Verrill in Silliman's Am. Journ. xlviii. pp. 244-249. *A. fertilis*, sp. n., Great Salt Lake, Verrill, *ibid.* p. 430.

CLADOCERA.

Notes on the development and structure of *Daphnia (longispina)* and *Lynceus*, by A. DOHRN. Jena. Zeitschr. f. Med. u. Naturw. v. pp. 278-292, pl. 10.

Lynceus. The outer form and the anatomy of this genus have been studied by F. Plateau, Mém. Couronnées Acad. Belg. xxxiv. (abstract in Ann. & Mag. Nat. Hist. iii. p. 13).

OSTRACODA.

CYPRIDIDÆ.

Cypris monacha (Mull.). The existence of males and females in this species has been observed by F. PLATEAU; this agrees with the observations 1869. [VOL. VI.] 2 U

made by H. Zenker. The male organs are described. He has also observed that specimens of *Cypris* and *Cyclops* can live without water in wet mud for about eight days. Mém. Couronnés Acad. Belg. vol. xxxiv. (abstract in Ann. & Mag. Nat. Hist. iii. p. 14).

Pontocypris variegata, sp. n., Brady, in Berchon &c. 'Fonds de la Mer,' p. 138, pl. 17. figs. 1 & 2, St. Vincent, Cape-Verde Islands; *P. obtusata*, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 47, pl. 8. figs. 7, 8, Piræus.

Pontocypris hispida (G. O. Sars) described by Norman, Rep. Brit. Assoc. for 1868, p. 289, Shetland Islands.

Cypridopsis obesa, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 364, pl. 18. figs. 5-7, Mullingar Canal, Dublin.

Algæa complanata, sp. n., Brady, l. c. p. 365, pl. 20. figs. 4, 5, Westport Bay, West Ireland.

Bairdia milne-edwardsi, sp. n., Brady, in Berchon &c. 'Fonds de la Mer,' p. 139, pl. 17. figs. 3, 4, St. Vincent, Cape-Verde Islands; *B. victrix*, sp. n., Brady, ibid. p. 152, pl. 18. figs. 17, 18, Aspinwall; *B. elegans*, sp. n., Brady, ibid. p. 156, pl. 16. figs. 11, 12, Hong-Kong; *B. rhomboidea*, sp. n., Brady, ibid. p. 162, pl. 12. figs. 14, 15, Mauritius.

Bairdia fulva (Brady), not from Shetland but from the Orkneys and Dublin, Brady, Ann. & Mag. Nat. Hist. iii. p. 365, pl. 18. figs. 1-4.

CYTHERIDÆ.

Cythere porcellanea, sp. n., Antwerp; also found in West Ireland and Northumberland, Brady, Ann. & Mag. Nat. Hist. iii. p. 47, pl. 7. figs. 1-4, ar. p. 366, pl. 19. figs. 1-4; *C. fuscata*, sp. n., Antwerp, Brady, ibid. p. 47, pl. 7. figs. 5-8; *C. maccollana* and *gibbosa*, spp. nn., West Ireland, Brady, ibid. p. 367, pl. 19. figs. 5-9, and pl. 21. figs. 1-3; *C. pulchella* (Brady), ibid. p. 368, pl. 20. figs. 1-3; *C. robertsoni* (Brady), Dublin Bay, new Britain, ibid. p. 368; *C. cicatricosa* (Sars) = *badia* (Brady in part) and = ? *crispata* (Brady), West Ireland, only to be got by dredging, ibid. p. 368.

Cythere drammensis and *C. propinqua*, spp. nn., G. O. Sars, Ondersög. Christ. dybvandsf. pp. 56-58, Dramm inlet, Southern Norway, 2-3 fathoms.

Cythere abyssicola and *crenulata* (G. O. Sars as *Cythereis*), from the Shetlands, described by Norman, Rep. Brit. Assoc. for 1868, pp. 290, 291.

Cythere leioderma, sp. n., Norman, ibid. p. 291, Shetland Islands.

Cythere affinis, sp. n., Brady, ibid. p. 47, pl. 7. figs. 1-4, Besica Bay, Ægean Sea.—*C. stimpsoni* (Brady), Piræus, ibid. p. 48, pl. 7. figs. 9-12.—*C. speyeri*, sp. n., Brady, in Berchon &c. 'Fonds de la Mer,' livr. vi. and vii. 1863, p. 99, pl. 12. figs. 8-10, Grecian archipelago, road of Syra.—*C. prava* (Baird) identified with *deformis* (Baird), ibid. p. 100.—*C. muscosa*, sp. n., Brady, ibid. p. 102, pl. 12. figs. 14, 15, Dardanelles.—*C. inconstans*, sp. n., Brady, ibid. p. 106, Rhodes, perhaps a young state of *C. stimpsoni*.—*C. subcoronata* (Speyer) identified with *C. jonesii*, var. *ceratoptera* (Bosq.), ibid. p. 107.—*C. subsignoidea*, sp. n., Brady, ibid. livr. viii. 1869, p. 113, pl. 13. figs. 8-10, Alexandrette.—*C. berchoni*, sp. n., Brady, l. c. p. 117, pl. 14. figs. 3, 4, Port Said.—*C. senticosa* (Baird) identified with *C. hystrix* (Reuss), ibid. p. 117.—*C. perrensis*, *montezuma* et *danaiana*, spp. nn., Brady, ibid. pp. 123, 124, pl. 14. figs. 9, 10, 11, 12, and 13, 14, New Providence Island, Bahamas.—*C. alderi*, *macra*, and *insulana*, spp. nn., Brady, ibid. pp. 129, 140, pl. 17. figs. 5, 6, 7, 8, and 9, 10, St. Vincent, Cape-Verde Islands.—*C. tere*,

sp. n., Brady, *ibid.* p. 147, pl. 14. figs. 17, 18, Gulf of Gascony.—*C. bradyi*, sp. n., Folin, *ibid.* p. 148, Gulf of Gascony.—*C. rectangula, reussi, serrulata*, ? *fischeri*, and *pannosa*, spp. nn., Brady, *ibid.* pp. 151, 152, pl. 18. figs. 13-14, 9-10, 11-12, 15-16, and pl. 19. figs. 1-2, Aspinwall.—*C. cymba, euplectella*, and *salebrosa*, spp. nn., Brady, *l. c.* pp. 157, 158, pl. 16. figs. 1-4, 5-7, and 8-10, Hong Kong.—*C. duperrei*, sp. n., Brady, *l. c.* p. 160, pl. 18. figs. 7, 8, Haiti.—*C. melobesioides, audei*, and *nodulifera*, spp. nn., Brady, *l. c.* pp. 162, 163, pl. 19. figs. 10-11, 12-13, and 24-25, Mauritius.

Cytheridea littoralis, Brady, new name for the species called *C. torosa* by the same author in his Monograph of Recent British Ostracoda, but different from the true *torosa* (Jones) = *lacustris* (G. O. Sars), which is a fresh-water species, while *C. littoralis* prefers brackish water. Brady, Nat. Hist. Transact. of Northumb. and Durham, iii. pp. 125-127.—*C. ? cornea*, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 370, pl. 20. figs. 9, 10, Dublin Bay.—*C. ? elatior*, sp. n., Dardanelles; *C. castanea*, sp. n., Port Said; *C. setipuncta*, sp. n., Bahama Islands; *C. similis*, sp. n., Gulf of Gascony; *C. impressa*, sp. n., Hong Kong. Brady, in Berchon &c. Les Fonds de la Mer, livr. vi. and vii., with figures.

Ilyobates ? judea, sp. n., Brady in Berchon &c. Fonds de la Mer, livr. vi. and vii. 1868, p. 112, pl. 13. figs. 17, 18, Alexandrette in Syria, in the sea.

Eucythere declivis, var. *prava*, Brady, Ann. & Mag. Nat. Hist. iii. p. 370, pl. 21. figs. 12-14, West Ireland.

Loxococoncha angustata, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 48, pl. 8. figs. 16, 17, Besika Bay.—*L. tumida*, sp. n., Brady, *ibid.* p. 48, pl. 8. figs. 11, 12, Piræus.—*L. laurini*, sp. n., Brady, in Berchon &c. Fonds de la Mer, livr. vi. and vii., 1868, p. 99, pl. 12. figs. 11-13, Grecian archipelago, road of Syra.—*L. lata*, sp. n., Brady, *ibid.* p. 102, pl. 13. figs. 1-4, Dardanelles.—*L. sculpta*, sp. n., Brady, *ibid.* p. 140, pl. 18. figs. 5, 6, St. Vincent, Cape-Verde Islands.—*L. sinensis* and *hastata*, sp. n., Brady, *ibid.* pp. 158, 159, pl. 16. figs. 17-18 and 19-20, Hong Kong.

Cytherura nervosa and *C. deformis*, spp. nn., Brady, in Berchon &c. Les Fonds de la Mer, livr. viii. p. 114, pl. 13. figs. 13-14 and 15-16, coast of Syria.—*C. flavescens*, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. pp. 49 and 371, pl. 8. figs. 13-15, Antwerp; Clifden Bay, in West Ireland, and river Ouse, in Lynn.—*C. quadrata* and *navicula*, spp. nn., Norman, Rep. Brit. Assoc. for 1868, p. 292, Shetland Islands.—*C. concentrica* (Crosskey), alive at the Shetland Islands, *ibid.* p. 292.

Sarsiella (g. n.) *capsula*, sp. n., Norman, *l. c.* p. 293, Shetlands.—The largest of British Cytheridæ.

Cytherideis cylindrica, sp. n., Brady, in 'Fonds de la Mer,' 1869, p. 113, pl. 13. figs. 11-12, Alexandrette, in Syria.—*C. teres*, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 49, pl. 8. figs. 5-6, Ægean Sea.

Cytheropteron stellatum, sp. n., Brady, in 'Fonds de la Mer,' livr. vi. and vii. 1868, p. 107, Rhodes.—*C. acutum*, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 49, pl. 8. figs. 1-4, Dardanelles; *C. rectum* (Brady), West Ireland, Brady, *ibid.* p. 371, pl. 20. figs. 6-8.—*C. alatum* (G. O. Sars), described by Norman, Rep. Brit. Assoc. for 1868, p. 294, Shetland Islands.

Sclerochilus ? gracilis, sp. n., and *S. contortus*, var. *abbreviatus*, Brady, Ann. & Mag. Nat. Hist. iii. p. 372, pl. 20. figs. 11-12 and 15-16, West Ireland.

Bythocythere orientalis, sp. n., Brady, in 'Fonds de la Mer,' p. 159, pl. 16.

figs. 21-23, Hong-Kong.—*B. tenuissima*, sp. n., Norman, Rep. Brit. Assoc. 1868, p. 294, Shetland Islands.

Limnocythere sancti-patricii, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 369, pl. 18. figs. 8-11, and pl. 21. fig. 4, Lough Moher, West Ireland.

CYPRIDINIDÆ.

Cypridina agassizii, *nitidula*, and *grubii*, spp. nn., at Desterro, in Southern Brazil, near the shore; the two first with gills like *Asterope*, the third with two very long terminal filaments at the antennæ like *Philomedes*. Only males observed. With various remarks on the homology of the organs of these and other Crustacea. F. Müller, Jena. Zeitschr. Med. u. Naturw. v. pp. 255-276, pls. 8 & 9.

Eurypylus, gen. nov. Shell calcareous, densely foveolated, with a little beak anteriorly, compressed behind. Upper antennæ with a bundle of very short bristles. *E. petraeus*, sp. n., Brady, in Fonds de la Mer, p. 141, pl. 18. figs. 1, 2, St. Vincent, Cape-Verde Islands.

Philomedes longicornis (Lilljeborg) is the fully or, rather, excessively developed male of *Cypridina globosa* (Lilljeborg); of the nearly allied *C. lilljeborgii* (Sars) a similar male has been observed.—*C. teres* (Norman) and *maria* (Baird) are female and male of the same species, belonging to the genus *Asterope* (Philippi). The generic name *Philomedes* may be retained for the *Cypridinæ* with dissimilar males, and coincides with *Bradycinetes* (Sars). G. O. Sars, Undersög. Christ. dybvandsf. p. 53.

Asterope (Phil.) distinguished from all other Ostracoda by the presence of gills on the sides of the abdomen quite similar in aspect and structure to those of the Decapods. *A. norvegica*, sp. n., Christianiafjord, 50-60 fathoms' on argillaceous ground; *A. abyssicola* (Sars), without eyes, Lofoten Islands, 120 fathoms. G. O. Sars, l. c. pp. 53-55.

POLYCOPIDÆ.

Polycope compressa, sp. n., Brady, Ann. & Mag. Nat. Hist. iii. p. 372, pl. 21. figs. 5-11, Clifden Bay, West Ireland, and Messina.—*P.*, sp. indetermin., from Candia, Brady, ibid. p. 49, pl. 7. figs. 15, 16.

CYTHERELLIDÆ.

Cytherella truncata, sp. n., Brady, in Fonds de la Mer, p. 154, pl. 19. figs. 3, 4, Aspinwall; *C. cingulata*, sp. n., Brady, ibid. p. 159, pl. 16. figs. 24, 25, Hong Kong; *C. polita*, sp. n., Brady, ibid. p. 161, pl. 19. figs. 1, 2, Hayti; *C. nitida*, sp. n., Brady, ibid. p. 163, pl. 19. figs. 8, 9, Mauritius.

ENTOMOSTRACA.

Cyclops lubbockii, sp. n., Brady, Nat. Hist. Transact. of Northumb. and Durham, iii. p. 127, pl. 4. figs. 1-8, pools of brackish water at Hartlepool.—*C. æquoreus* (Fischer), in brackish pools at Seaton Sluice, Northumberland, new to Great Britain, described and figured by G. S. Brady, ibid. p. 128, pl. 4. figs. 9-16.—*C. nigricauda* and *pallidus*, spp. nn., Norman, Rep. Brit. Assoc. for 1868, p. 295, Shetland Islands.

Amymone falcata, sp. n., Norman, ibid. p. 296, Shetland Islands.

Canthocamptus cryptarum, sp. n., Brady, Quart. Journ. Microsc. Science, ix. p. 23, pl. 6, West Cramlington Colliery, near Newcastle, on the roof of the low main, kept constantly wet by the percolation of water from above, amongst imperfect slimy algæ.

Tigriopus (gen. nov.) *lilljeborgii*, new name for *Harpacticus chelifera* (Lilljeborg), Norman, Rep. Brit. Assoc. for 1868, p. 296, Shetlands.

Thalestris clausii, sp. n., Norman, *ibid.* p. 297, Shetland Islands.

Tachidius brevicornis (Müll.), from brackish pools in Northumberland and Durham, new to Britain, described and figured by G. S. Brady, Nat. Hist. Transact. of Northumb. and Durham, iii. p. 130, pl. 5. figs. 1-9.

Dactylopus tisburyi (Claus, not of Brady), in rock-pools at Roker, county of Durham, and the great Isle of Arran, Galway Bay; also in pools of brackish water at Seaton Sluice, Northumberland, new to Britain, described by G. S. Brady, *ibid.* pp. 131-133 [pl. 6 appears to represent this animal, but the plate is not referred to in the paper].

Delavallia, gen. nov. Superior antennæ 8-jointed, having no flagellum; inferior antennæ bearing a biarticulated secondary branch. First pair of feet 2-branched, the external branch 3-jointed, the internal 2-jointed, not prehensile; both branches of the three following pairs 3-articulate; fifth pair rudimentary, foliaceous. Two ovisacs. *D. palustris*, sp. n., brackish pools at Seaton Sluice, Northumberland. G. S. Brady, *l. c.* p. 133, pl. 5. figs. 10-15.

Aspidiscus (gen. nov.) *fusciatus*, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 298, Shetland Islands.

Antaria latericia, sp. n., Grube, Verhandl. schles. Gesellsch. vaterl. Kultur, 1869, p. 32, pl. 1. fig. 3, St. Vaast-la-Hougue.

Species of *Notodelphyidæ* living in Ascidia have been observed at Naples by R. Buchholz, some new, others hitherto imperfectly known. The author gives also a general outline of the family. Zeitschr. f. wiss. Zool. xix. pp. 99-110 (abstract in Ann. & Mag. Nat. Hist. iv. pp. 137, 138).

Notodelphys mediterranea and *N. puella*, spp. nn., Buchholz, *l. c.* pp. 111 and 115, pls. 5, 6. figs. 1, 2, Naples.

Deropygus pullus, sp. n., and *D. gibber* (Thorell), Buchholz, *l. c.* pp. 116 & 120, pls. 6, 7. figs. 3, 4, Naples.

Botachus fusiformis, sp. n., Buchholz, *l. c.* p. 123, pls. 7, 8. fig. 5, Naples.

Notopterophorus (Costa). Buchholz states that the buccal organs of this genus agree with those of the other *Notodelphyidæ*. *N. elongatus* (Costa) and *obtus* (Costa) form, according to him, one species, which is described and figured, *l. c.* pp. 125-135, pls. 8, 9. fig. 6.

Goniodelphys, gen. nov. Body triangular, flat above, both sides converging beneath; first thoracic segment united with the head, fifth large and produced behind into a process, in which the young ones are bred; antennæ 8-jointed. *G. trigona*, sp. n., Buchholz, *l. c.* p. 129, pls. 9, 10. fig. 7, Naples.

Enterocola eruca, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 300, Shetland Islands.

Gunentophorus globularis (Costa). Buchholz states that the buccal organs agree essentially with those of the other genera of this family, *l. c.* p. 144, pl. 10. fig. 8.

Ascidicola rosea (Thorell) = *Cæliocola setigera* (Hesse), observed at Naples by Buchholz, *l. c.* p. 150.

Lichomolgus (Thorell) *elongatus*, sp. n., Buchholz, *l. c.* p. 151, pl. 11. fig. 9, Naples.

Ascomyzon echinicola, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 300, Shetland Islands, parasitic on *Echinus esculentus*.

SIPHONOSTOMA.

CALIGIDÆ.

Nogagus lütkenii, sp. n., Norman, Rep. Brit. Assoc. for 1868, p. 300, Shetland Islands, on a Skate.

LERNÆIDÆ.

Nereidicola bipartita, sp. n., Grube, Verhandl. schles. Gesellsch. vaterl. Kultur, 1869, p. 33, pl. 1. fig. 2, St. Vaast-la-Hougue, on *Nereis cultrifera*.

Lernæa. A Metzger's paper on the male and female before the commencement of the retrograde metamorphosis, written in German (Zool. Record, vol. v. pp. 512, 533), has been translated into English by W. S. Dallas, Ann. & Mag. Nat. Hist. iii. pp. 154-157.

Lernæa gadus minutus [sic !], sp. n., found on the gills of *Gadus minutus*, described by M. Hesse, Ann. Sci. Nat. xiii. 1870, pp. 1-30, pl. 1. The author had two full-grown females and two younger ones. He describes some stages of the embryonic development, and enters into the physiology and metamorphoses of these Crustacea. His statements that the heart is a tube closed on all sides, and that the fluid contained in it is different from the nourishing fluid in the other parts of the body, is contradicted in a concluding remark by Alph. Milne-Edwards.

SUCTORIA.

Sacculina. On the development of the eggs within the ovary, Gerbe, Compt. Rend. lxxviii. pp. 460-462; Ann. & Mag. Nat. Hist. iii. pp. 321, 322; Revue et Mag. Zool. 1869, p. 80.

CIRRIPEDIA.

Paradolepas, gen. nov., allied to *Lepas* and *Dichelaspis*, having five contiguous plates like the former, transparent in their general extent, but strengthened by the deposit of shelly matter, like the rudimentary valves of *Dichelaspis*, without, however, overlapping each other.—*P. neptuni*, sp. n., Macdonald, Proc. Zool. Soc. 1869, pp. 440-444, pls. 33, 34, parasitic on the branchiæ of *Neptunus pelagicus* (L.) in Moreton Bay.

Balanus improvisus (Darwin), var. *gryphicus* (Münter), is fully described, with many observations on its development, by Dr. Buchholz, Mittheilungen aus dem naturwissenschaftlichen Vereine von Neuorpommern und Rügen, i. pp. 4-40, with 2 plates.

PYCNOGONIDA.

Observations on the development of *Pycnogonum littorale*, *Achelia lævis*, and *Phoxichilidium*, sp., have been published by

A DOHRN, Jenaische Zeitschr. f. Med. u. Naturwiss. v. pp. 138-157, pl. 5, 6. The author comes to the conclusion that the Pycnogonida are neither Arachnida nor Crustacea, that they are not allied to the Arachnida, and that they have, in common with the Crustacea, a *Nauplius*-like first stage of development, but that the further progress of their development is different from that of the Crustacea.

Ammothea longipes (Hodge) described and figured by E. Grube in Verh. schles. Gesell. für vaterländische Kultur, 1869, p. 25, pl. 1. fig. 4, St. Vaast-la-Hougue.

Achelia echinata (Hodge) described and figured by the same author, p. 27, pl. 1. fig. 6, St. Vaast-la-Hougue.

Pallene brevirostris (Johnst.), Grube, *ibid.* p. 28, pl. 1. fig. 5, St. Vaast-la-Hougue.

ROTIFERA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

CUBITT, C. *Floscularia coronetta*, a new species, with observations on some points in the economy of the genus. *Month. Micr. Journ.* Sept. 1869, vol. ii. pp. 133-140, pls. 24 & 25.

GRENACHER, H. Einige Beobachtungen über Räderthiere. *Zeitschr. f. wiss. Zool.* 1869, pp. 483-498, Taf. 37.

HUDSON, C. T. On *Rhinops vitrea*, a new Rotifer. *Ann. & Mag. N. Hist.* ser. 4, vol. iii., Jan. 1869, pp. 27-29, pl. 2.

——. Notes on *Triarthra longiseta*. *Monthly Microscopical Journal*, March 1869, pp. 176, 177, pl. 6.

——. Notes on *Hydatina senta*. *Ibid.* July 1869, vol. ii. pp. 22-25, pl. 19.

A further contribution to our knowledge of the Rotifers, accompanied by an excellent plate. The internal parasites of *Hydatina*, figured first by Leydig, are here described and figured from living specimens.

Rhinops vitrea, gen. et spec. nov., Hudson, *l. c.* p. 27, pl. 2. No generic diagnosis is given; but this is an illoricated Rotifer. The ciliated wreath is divided into several series. The proboscis is ciliated all over its ventral surface and its edge, except at the extreme point; this proboscis can be turned over towards the dorsal surface; it also carries two brilliant-ruby eyes. It belongs to the *Hydatinae*, and was taken in some numbers in a pond at Bristol.

Floscularia coronetta, sp. n., Cubitt, *l. c.* p. 135, pl. 24, on *Fontinalis anti-pyretica*, from small pools on Wimbledon Common.

Floscularia proboscidea, Ehrbg. (*Fl. campanulata*, Dobie), is described and figured by Grenacher, *l. c.* p. 483.

Microcodon clavus, Ehrbg., is also described and figured by Grenacher, *l. c.* p. 487. Out of 100 examples examined, but one male was found.

Triarthra longiseta, Ehrbg. Grenacher, *l. c.* p. 491, describes and figures this species. The figure is excellent.

ANNELIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

Papers published in Journals.

BAIRD, W. Remarks on several genera of Annelides belonging to the group Eunicea, with a notice of such species as are contained in the collection of the British Museum, and a description of some others hitherto undescribed. Journ. Linn. Soc. Zoology, vol. x. 1869, pp. 341-361.

——. Description of a new species of Earth-worm (*Megascolex diffringens*) found in North Wales. Proc. Zool. Soc. 1869, pp. 40-43 (woodcut). Additional remarks on *Megascolex diffringens*. Ibid. pp. 387-389.

——. Descriptions of some new Suctorial Annelides in the collection of the British Museum. Ibid. pp. 310-318.

BUCHHOLZ, R. Zur Entwicklungschichte von *Alciope*. Zeitschr. f. wissensch. Zoologie, xix. 1869, pp. 95-98, Taf. 4.

CLAPARÈDE, ED. Histologische Untersuchungen über den Regenwurm (*Lumbricus terrestris*, Linn.). Zeitschr. f. wissensch. Zoologie, xix. 1869, pp. 562-624, Taf. 43-48.

Although the labours of many, from Morren to Lankester, have taught us much about the anatomy of the Earthworm, still its true histological history remains unwritten. This essay of Professor Claparède is meant to, in some measure (to use the modest words of the author), help to fill up this very perceptible gap, to point out the mistakes and misunderstandings of previous writers on the subject, as well as to illustrate the minute structures met with, which is done in great detail.

CLAPARÈDE, E., and MECZNIKOW, E. Beiträge zur Kenntniss der Entwicklungsgeschichte der Chaetopoden. Zeitschr. f. wissensch. Zoologie, xix. 1869, pp. 163-205, Taf. 12-17.

In treating in detail of the development of many interesting Annelids, the authors remark on the breaking down of the artificial divisions of Busch, Müller, and even of their own. Thus

many *Terebella*-larvæ are true Nototrochæ, others are quite destitute of ciliary rows; many larvæ of Eunicidæ are genuine Polytrochæ, while others would be Atrochæ in the sense in which Müller used this term. It will be remembered that in many of the species only portions of their development were observed.

COSTA, A. Di un nuovo genere di Chetognati, and Di un genere di Sipunculidei. Annuario del Mus. Zool. della R. Univ. di Napoli, Anno v. 1865. Napoli, 1869, pp. 54-57, tav. 3.

GRUBE, E. Beschreibungen neuer oder weniger bekannter von Hrn. Ehrenberg gesammelter Anneliden des Rothen Meeres. Monatsber. Ak. Wiss. Berlin, 1869, pp. 484-521.

KROHN, A. Ueber eine lebendiggebärende *Syllis*-Art. Archiv f. Naturg. xxxv. 1. Bd. pp. 197-200.

LANKESTER, E. RAY. A contribution to the knowledge of the lower Annelids. Trans. Linn. Soc. vol. xxvi. part 3, 1869, pp. 631-646, tab. 48, 49.

Contains:—I. On the anatomy and fissiparous reproduction of the asexual *Chætogaster limnæi*, v. Bär; II. Remarks on *Chætogaster niveus*, Ehr.; III. On *Æolosoma quaternarium*, Ehr., and its young form; and IV. Relations of *Chætogaster* and *Æolosoma* to other low Annelida.

——. The sexual form of *Chætogaster limnæi*. Quart. Journ. Mic. Science, 1869, pp. 272-285, plates 14 & 15.

——. On the existence of distinct larval and sexual forms in gemmiparous Oligochætous Worms. Ann. & Mag. Nat. Hist. ser. 4, vol. iv. Aug. 1869, pp. 102-104.

LEIDY, JOSEPH. Notice of some American Leeches. Proc. Acad. Nat. Sciences Phil. 1868, pp. 229, 230.

The author describes a new species, and gives in detail the characters of the Medicinal Leech of America.

M'INTOSH, W. C. On the early stages in the development of *Phyllodoce maculata*, Johns. Ann. & Mag. Nat. Hist. ser. 4, vol. iv. Aug. 1869, pp. 104-108, pl. 6.

——. On some new British Annelids. Trans. Roy. Soc. Edin. vol. xxv. pp. 305-433, plates 4 to 16.

The first portion of this paper treats of the anatomy of the Nemertean worms. *Vide* under SCOLECIDA.

MALMGREN, A. J. Ueber die Gattung *Heteronereis* (Erst.) und ihr Verhältniss zu den Gattungen *Nereis* (Gr.) und *Nereilepas* (Gr.). Zeitschr. f. wissenschaft. Zoologie, xix. 1869, pp. 476-478, and in Archiv f. Naturg. xxxv. pp. 58-61.

PANCERI, P. Altre larve di Alciopide (*Rhynconerulla*). Rendi-

con. della R. Acad. d. Scienze Fis. e Math. di Napoli, 1868 (known only from reference in Buchholz's paper).

Describes a larval form belonging to Costa's genus *Rhynchonerulla*, as found parasitic in *Cydippe densa*.

RATZEL, F. Histologische Untersuchungen an niederen Thieren. (Erster Artikel.) Zeitschr. f. wissensch. Zoologie, xix. 1869, pp. 257-280, Taf. 22 & 23.

On the muscular system of the Oligochætes.

——. Vorläufige Nachricht über die Entwicklungsgeschichte von *Lumbricus* und *Nepheleis*. Ibid. pp. 281-284.

TANDON, G. MOQUIN-. Note sur une nouvelle Annélide chétopode hermaphrodite. Compt. Rend. tom. lxxviii. 1869, pp. 869, 870.

ANNELIDA POLYCHÆTA.

M'INTOSH (l. c.) describes the following species as new to the British fauna:—

Amphinome vagans, Leach (?), Shetland seas; *Lætmonice filicornis*, Kinb. = *L. kinbergi*, Baird, north and north-west of Scotland; *Lepidonotus pellucidus*, Ehl., North Uist; *Polynoë longisetis*, Grube, St. Andrews; *Halosydna gelatinosa*, Sars, St. Andrews Bay; *Sthenelais dendrolepis*, Clap., North Uist; *S. hmicola*, Ehl., Shetland; *Notophyllum polynoides*, Ørst., St. Andrews Bay; *Ophiodromus vittatus*, Sars, North Uist; *Autolytus pictus*, Ehl., North Uist and St. Andrews; *Syllis krohnii*, Ehl., var., North Uist; *S. cornuta*, Rathk., Hebrides; *S. macrocera*, Grube, North Uist; *Sphaerosyllis hystrix*, Clap., North Uist and Minch; *Rhodine loveni*, Malm., Shetland; *Axiothea catenata*, Malm., Shetland; *Praxilla prætermissa*, Malm., north and west of Scotland; *P. gracilis*, Sars, North Uist; *Clymene ebiensis*, Aud. & Ed., Shetland; *Amnochæres ottonis*, Grube, = *Ops digitata*, Carrington, St. Andrews; *Amphicteis gunneri*, Sars, = *Crossostoma midas*, Gosse, North Scotland; *Ampharete arctica*, Malm.; *Terebella zostericola*, Ørst.; *Pista cristata*, Müll.; *Grymæa bairdi*, Malm.; *Lysilla loveni*, Malm.; *Ereutho smitti*, Malm. ?; *Trichobranthus glacialis*, Malm. Some new species are referred to below.

M'INTOSH gives a list of Annelids from the neighbourhood of Plymouth; the majority of the species are well known forms; but *Nereis marionii*, Aud. & Edw., and *Terebella (Polymnia) danielsseni*, Mlgr., are mentioned as now first recorded as British. Rep. Brit. Assoc. 1869, pp. 89-91.

Burrowing Annelids.—Dr. O. Mörch states that in Dr. M'Intosh's paper on this subject (vide 'Zool. Record,' 1868, p. 546) several Annelids are mentioned as burrowing, although he several years ago showed that two of the genera enumerated undoubtedly belong to the subkingdom Mollusca (*Stoa* and *Spiroglyphus*; these have a multispiral lid never met with in Annelids); and two of the serpulids mentioned never burrow. He also adds that Swammerdam (Biblia Naturæ, 1735, vol. i.

p. 182) has given an excellent account of an Annelid burrowing in *Littorina littorea*. Ann. & Mag. Nat. Hist. ser. 4, vol. iii., January 1869, p. 87.

APHRODITIDEA.

Polynœ (Lepidonotus) trissochaeta, sp. n. (Ehrb.), Grube, l. c. p. 485, Red Sea.
P. (L.) curimulata, sp. n., Grube, l. c. p. 488, Red Sea.
P. (Harmothoe, Kbg.) grisea, sp. n. (Ehrb.), Grube, l. c. p. 489, Red Sea.
Sthenelais longipinnis, sp. n., Grube, l. c. p. 490, Red Sea.

EUNICEA.

Eunice flaccida, sp. n., Grube, l. c. p. 491, Red Sea; *E. longicirris*, sp. n., Grube, l. c. p. 492, Suez; *E. pectinata*, sp. n. (Ehrb.), Grube, l. c. p. 492; *E. flavo-cuprea*, sp. n. (Ehrb.), Grube, l. c. p. 493, Red Sea; *E. collaris*, sp. n., (Ehrb.), Grube, l. c. p. 494, Tor.

Eunice elsyi, sp. n., Baird, l. c. p. 344, North Australia; *E. madeirensis*, sp. n., Baird, l. c. p. 344, Madeira, very close to *E. adriatica*, Schm.; *E. fijiensis*, sp. n., Baird, l. c. p. 347, Fiji; *E. woodwardi*, sp. n., Baird, l. c. p. 347, Corunna, very near *Leodice hispanica*, Sav.; *E. antarctica*, sp. n., Baird, l. c. p. 348, Antarctic Seas, near *E. hawaica*, Kinb.; *E. plicata*, sp. n., Baird, l. c. p. 348, Freemantle, Australia; *E. bowerbanki*, sp. n., Baird, l. c. p. 349, Australia; *E. guttata*, sp. n., Baird, l. c. p. 350, between Bombay and Singapore; *E. narconi*, sp. n., Baird, l. c. p. 350, Island of Narcon, Antarctic Seas; *E. guildingi*, sp. n., Baird, l. c. p. 351, St. Vincent's, West Indies.

Lysidice collaris, sp. n. (Ehrb.), Grube, l. c. p. 495.

Lumbriconereis versicolor, sp. n. (Ehrb.), Grube, l. c. p. 496, Tor; *L. nitida*, sp. n. (Ehrb.), Grube, l. c. p. 496, Tor; *L. hemprichii*, sp. n. (Ehrb.), Grube, l. c. p. 497.

CLAPARÈDE & MECZNIKOW describe the development of the following (*l. c.*) :—

Lumbriconereis, p. 182. The development of Müller's *Atrocha* appears to prove it to be a species of this genus.

Ophryotrocha puerilis, p. 184. This form is described as a new genus and species, first met with in the larval form in the author's aquarium.

Staurocephalus chigji, Clprd., p. 186.

Staurocephalus kefersteini, sp. n., McIntosh, l. c. p. 417, pl. 16. figs. a-g, North Uist.

Marphysa parishii, sp. n., Baird, l. c. p. 352, Brazil.

Tradopia, g. n., Baird, l. c. p. 355. Branchiæ pectinated; tentacular cirri placed on dorsal part of buccal segment; tentacles, antennæ, and palpi strongly annulated on inferior or basal portion, which is more than half the length of the whole organ. *T. maculata*, sp. n., Baird, l. c. p. 355, Madras.

Hyalinaccia bilineata, sp. n., Baird, l. c. p. 358, 20 to 40 fathoms off the coast of Cornwall; *H. varians*, sp. n., Baird, l. c. p. 359, St. Vincent's, West Indies.

NEPHTHYDEA.

Nephtys scolopendroides, Delle Chiaje. The development of this species is described by Claparède & Mecznikow, l. c. p. 187. Its larval form is Telo-

trochan; and the authors remark that it is impossible for them to distinguish the apparently correct delineations of the larvæ of *Nareda* as figured by A. Agassiz from the larvæ of *Nephtys*.

CIRRATULEA.

Cirratulus auricapillus, sp. n. (Ehrb.), Grube, *l. c.* p. 503, Tor; *C. gracilis*, sp. n. (Ehrb.), Grube, *l. c.* p. 504, Tor; *C. nigromaculatus*, sp. n., Grube, *l. c.* p. 504, ?Red Sea.

Cirratulus chrysoderma?, Clprd. Its development is described by Claparède & Mecznikow, *l. c.* p. 192.

Audouinia filigera (*Lumbricus filigerus*, Delle Chiaje). Its development is described by Claparède & Mecznikow, *l. c.* p. 192.

CHLORÆMEA.

Siphonostoma buskii, sp. n., M'Intosh, *l. c.* p. 420, pl. 15. fig. 13 & pl. 16. fig. 4, Lochmaddy, North Uist.

LYCORIDEA (*Nereïdea*).

Nereis massiliensis, sp. n., M. Tandon, *l. c.* p. 870. Described as an hermaphrodite species.

Nereis fasciata, sp. n. (Ehrb.), Grube, *l. c.* p. 498, Red Sea.

Heteronereis grandifolia, Mgrn. The agreement between this species and *Nereis pelagica* is in many points so surprising that Malmgren (*l. c.*) considers it to belong to the same generation-series; while, on the other hand, *H. fucicola* appears to be combined with *Nereilepas variabilis*, Örst. (= *Nereis dumerili*, auct.), in the one generation-series. Vide also Ehlers's remarks, 'Zool. Record,' 1867, p. 633.

Iphinereis and *Heteronereis*. Malmgren (*l. c.* p. 478) suspects, from reasons given, that the species of these genera are but sexual forms of still unknown genera.

SYLLIDEA.

Syllis vivipara, sp. n., Krohn, *l. c.* p. 198. Very closely related to *S. armandi*, Clprd. This species is viviparous.

Syllis picta, sp. n. (Ehrb.), Grube, *l. c.* p. 499, Red Sea; *S. violacea*, sp. n. (Ehrb.), Grube, *l. c.* p. 500, Red Sea; *S. neglecta*, sp. n. (Ehrb.), Grube, *l. c.* p. 501, Tor.

Pimosyllis malmgreni, sp. n., M'Intosh, *l. c.* p. 414, pl. 16. fig. 10, Minch.

PHYLLODOCEA.

Eumenia jeffreysii, sp. n., M'Intosh, *l. c.* p. 419, pl. 16. fig. 5, Hebrides and Shetland.

Phyllodoce maculata, Johnst. M'Intosh (*l. c.*) describes and figures the development of this species from the time the ovum is impregnated to about its fourteenth day.

Phyllodoce. The development of a species of this genus is described by Claparède & Mecznikow, *l. c.* p. 189.

Alciopidæ.

Alciopina panceri, sp. n., Buchholz, *l. c.* p. 98, Taf. 4. figs. 1 to 4, found parasitic in *Cydippe densa*, Försk., from the Bay of Naples, making with the *A. parasitica*, Clap. & Panc., and *Rhynchonerulla* —?, Panc., the third form found living in the interior of this Ctenophore.

Claparède and Panceri's paper on an Alciopid, a parasite of *Cydippe densa* (see 'Zool. Record,' 1867, p. 635), will be found translated in *Ann. & Mag. Nat. Hist.* ser. 4, vol. iv. July 1869, pp. 29–34, pl. 5.

CHÆTOPTERIDEA.

Phyllochætopterus arabicus, sp. n. (Ehrb.), Grube, *l. c.* p. 507, very near *P. gracilis*, Gr.

The development of the following species is described by Claparède & Mecznirow, *l. c.* :—

Telepsavus costarum, p. 178.

Phyllochætopterus socialis?, p. 181.

CLYMENEA.

Dasybranchus carneus, sp. n. (Ehrb.), Grube, *l. c.* p. 505, Tor; queried by Grube as perhaps a var. of *D. caduci*, Gr.

LEUCODOREA.

The development of the following species is more or less fully described by Claparède and Mecznirow, *l. c.* :—

Spio fuliginosus, Clprd. p. 169. *S. mecznikowianus*, Clprd. p. 170: this species differs from all hitherto known Chætopods in the development of spermatophores, which are to be found regularly disposed in the segmental organs of the middle and lower, never in the upper portions of the bodies of the males; this, it is well to note, is a fact in favour of the author's view about the segmental organs. Several larvæ of unknown species are described at p. 175.

Nerine cirratula (= *Lumbricus cirratulus*, Delle Chiaje), p. 173. It is most remarkable that in the ova of this species the yolk should remain the same as when first formed in the ovary, as a wreath of transparent balls or bladders, whose significance is quite enigmatical.

Polydora (*Leucodora*, Johnst.), species unknown, p. 175.

TEREBELLEA.

Terebella. a. Branchiis utrinque 3, cirratis. *T. thoracica*, sp. n. (Ehrb.), Grube, *l. c.* p. 508, Tor.—b. Branchiis utrinque 3, ramosis. *T. vigintipes*, sp. n. (Ehrb.), Grube, *l. c.* p. 509, Tor; *T. variegata*, sp. n. (Ehrb.), Grube, *l. c.* p. 510; *T. virescens*, sp. n. (Ehrb.), Grube, *l. c.* p. 511, Tor; *T. ehrenbergi*, sp. n., Grube, *l. c.* p. 511.—c. Branchiis utrinque 2, ramosis. *T. (Physelia) ochroleuca*, sp. n. (Ehrb.), Grube, *l. c.* p. 512, Tor; *T. (P.) atricapilla*, sp. n. (Ehrb.), Grube, *l. c.* p. 513, Tor; *T. (P.) fasciata*, sp. n. (Ehrb.), Grube, *l. c.* p. 513, Tor.

Terebellides umbella, sp. n. (Ehrb.), Grube, *l. c.* p. 514, Tor.

Polycirrus coccineus, sp. n. (Ehrb.), Grube, *l. c.* p. 515; *P. tribullata*, sp. n., McIntosh, *l. c.* p. 424, Shetland.

Terebella meckelii, Claparède & Mecznirow, *l. c.* p. 194, describe the development of this species.

SERPULEA.

Sabella fusca, sp. n., Grube, *l. c.* p. 516.

Dasychone luctuosa, sp. n. (Ehrb.), Grube, *l. c.* p. 517, Tor.

Pomatostegus sanguineus, sp. n. (Ehrb.), Grube, *l. c.* p. 519.

Eupomatus albiceps, sp. n. (Ehrb.), Grube, *l. c.* p. 520, Tor.

Dasychone lucullana (Delle Chiaje), *Spirorbis pagenstecheri* (Qtrfg.), *Pileolaria militaris* (Clprd.). Stages in the development of these species are described by Claparède and Mecznirow, *l. c.* pp. 197-201.

ANNELIDA OLIGOCHÆTA.

LUMBRICINA.

Megascolex diffringens, sp. n., Baird, *l. c.* p. 41, figs. 1 to 4, from a plant-stove in the gardens at Plas Machynlleth, in Montgomeryshire, North Wales. Baird thinks that there is no sufficient distinction between Schmarda's genus *Perichæta* and Templeton's *Megascolex*, and proposes to do away with the former. He mentions that Schmarda does not quote the description of Templeton's genus accurately; and we may observe that the same mistake has been fallen into by Vaillant, who probably simply copied Schmarda (see 'Zool. Rec.' 1868, p. 548).

Claparède & Mecznirow, *l. c.* p. 191, describe the development of *Lumbricus capitatus*, Fabr.

Lumbricus. Ratzel, *l. c.*, states that the development of the mouth and the primitive streak and the origin of the "colossal cells" is just the same in *Lumbricus* as in *Nepheleis*.

ENCHYTRÆINA.

Pachydriulus krohnii, sp. n., Claparède. Described in a footnote in Claparède's memoir on the minute anatomy of the Earthworm, p. 571, q. v.; it would appear that the structure described as met with in the hypodermis of the Earthworm is not peculiar to it among the Oligochæta, but is also met with in this new species of *Pachydriulus*, which is not marine, but lives in the salterns of Kreuznach.

NAIDINA.

Nais serpentina. Lankester, *l. c.*, calls attention to the development of a new segment between the larval fourth and fifth fascicular segments, which is provided with fasciculi carrying a special form of "genital setæ."

CHÆTOGASTRINA.

Chætogaster limnæi. Lankester, *l. c.*, describes at length and figures the sexual form of this worm.

ANNELIDA DISCOPHORA.

Aulastomum lacustris, sp. n., Leidy, *l. c.* p. 229, Twin Lake, Minnesota.

Hirudo decora, Say. Leidy (*l. c.* p. 230) describes this, the common medicinal leech of America, in detail; it has hitherto been so imperfectly described, that Diesing, in his 'Systema Helminthum,' placed it in the "Bdel-lidea, species genere penitus dubiæ."

ANNELIDA CHÆTOGNATHA.

Pterosagitta, g. n., A. Costa, *l. c.* p. 54. Corpus sagittiforme, lateribus sparse setosum, pinnulis duabus thoracis flabelliformibus e radiis rigidis constitutis, pinnaque caudali horizontali itidem radiata præditum. Os ut in gen. *Sagitta*. *P. mediterranea*, A. Costa, *l. c.* p. 55, tav. 3. fig. 1.

ANNELIDA GEPHYREA.

Urophysalus grubii, gen. & sp. nov., A. Costa, *l. c.* p. 56, tav. 3. fig. 2. This genus resembles *Phascolosoma* very closely, indeed only differs from it in the form of the caudal appendage.

SCOLECIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

BALBIANI, E. G. Recherches sur le développement et la propagation du Strongyle géant. Compt. Rend. tome lxxix. No. 21 (Nov. 1869), pp. 1091-1095.

COBBOLD, T. S. Entozoa, being a supplement to the Introduction to the study of Helminthology. Roy. 8vo, pp. 1-124. London, 1869.

This supplementary volume contains notes on feeding-experiments with *Trichina spiralis*, on the rearing of the Larvæ of *Tenia mediocanellata*, on the nature of certain Pseud-Entozoa found in diseased and healthy Cattle, on the Entozoa of the Dog, Common Fowl, and Game Birds, on the *Distoma clavata* of the Swordfish, and on the *D. elephantis* of the Indian Elephant;

and on the question of Organic Individuality entozoologically considered. There are also appendices, giving the Supplemental Bibliography, Index of authorities, &c.

COBBOLD, T. S. Description of a species of Trematode from the Indian Elephant, with remarks on its affinities. Quart. Journ. Micr. Science, 1869, pp. 48-49.

FLÖGEL, J. H. L. Ueber die Lippen einiger *Oxyuris*-Arten. Zeitschr. f. wissensch. Zoologie, xix. 1869, pp. 234-243, Taf. 20.

A very interesting memoir on the oral orifice and lips of three species of *Oxyuris*. *O. vermicularis* and *O. obvelata* were examined in a quite fresh condition, and *O. curvula* from spirit specimens.

FRIIS, —. En hidtil ubeskreven Bændelorm hos Fugle (*Ophryocotyle proteus*). Videnskab. Meddel. fra den Naturhist. For. Kjöbenhavn, 1869, pp. 121-124, tab. 1.

GREEFF, R. Untersuchungen über einige merkwürdige Formen des Arthropoden- und Wurm-Typus. Archiv f. Naturg. Jahrg. xxxv. 1. Bd. pp. 71-121, Taf. 4-7.

See under *Echinoderes* in special part.

GRENACHER, H. Ueber die Muskelemente von *Gordius* (Nachtrag zu meiner Arbeit: Zur Anatomie der Gattung *Gordius*). Zeitschr. f. wissensch. Zoologie, xix. Bd. 2. Heft, Juli 1869, pp. 287-288, Taf. 24. fig. 4.

KOCH, J. Der Nachweis des *Cysticercus Tæniæ mediocanellatæ* in den quergestreiften Muskeln der Rinder. Ein Beitrag zur Entwicklungsgeschichte der *Tænia mediocanellatæ*. Bull. de l'Acad. Imp. d. Sc. St. Pétersbourg, t. xii. 1868, pp. 346-359, with a plate.

—. Sur le mode de développement du *Bothriocephalus latus*. Journ. de l'Anat. et de la Physiol. t. vi. 1869, pp. 139-146.

KRABBE, H. Bidrag til Kundskab om Fuglenes Bændelorme. Vidensk. Selsk. Skr. 5. Række, Natur. og Math. Afd. 8, Bd. vi. Kjöbenhavn, 1869, pp. 251-370, tab. 1-10. [The paging at 339 is marked 337, and so on to end of memoir.]

Cestoid worms of the genus *Tænia*, as Krabbe (*l. c.*) remarks, are met with more frequently among birds than perhaps among any other vertebrates. Rudolphi, in describing 145 species, refers to 84 as found in birds; and among the 242 species of *Tænia* enumerated by Diesing, 138 are met with in birds. They are more frequent in the aquatic than in the terrestrial birds, and, of the latter, occur oftener among the Insectivora than the Granivora or Raptores. The latter fact is worthy of note, as it

is among the Carnivorous Mammalia that *Tenia* abound. Dr. Krabbe had the opportunities of consulting the specimens of Rudolphi and Creplin, as well as those described by Wedl. He describes many new species, and gives excellent illustrations of the more characteristic portions of each species. There is also appended (p. 352) a list of the 112 birds examined, with a list of the *Tenia* found in each, and a list of authors on the subject.

M'INTOSH, W. C. On the structure of the British Nemerteans and some new British Annelids. Trans. Roy. Soc. Edin. vol. xxv. pp. 305-433, pls. 4-16.

The first part of this memoir is an important contribution to our knowledge of the Nemertean worms.

MELNIKOW, N. Ueber die Jugendzustände der *Tenia cucumerina*. Archiv f. Naturg. xxxv. 1. Bd. pp. 62-70, Taf. 3.

METSCHNIKOFF, E. Remarques sur les Echinoderes. Bull. de l'Acad. Imp. des Science de St. Pétersbourg, tome xiv. No. 4, pp. 351-353, Sept. 1869.

Points out some mistakes in Greeff's paper on *Echinoderes*, and mentions that some of the details given by Greeff of *Desmoscolex* and *Trichoderma* were as interesting as novel.

— Studien über die Entwicklung der Nemertinen. Mém. Acad. Imp. d. Sc. St. Pétersbourg, t. xiv. No. 8. 1869, pp. 49-65, tab. 9.

This is the latter portion of a memoir, by the same author, on the development of the Echinoderms.

SCHNEIDER, A. Noch ein Wort über die Muskeln der Nemmatoden. Zeitschr. f. wissensch. Zoologie, xix. Bd. 2. Heft, Juli 1869, pp. 284-286.

STEENSTRUP, JAP. Om Jord-Fladormens (*Planaria terrestris*, O. F. M.) Forekomst i Danmark. Videnskab. Meddel. fra den Naturhist. For. Kjöbenhavn, 1869, pp. 189-194.

On the recent occurrence of *P. terrestris* in Denmark.

WILLEMOES-SUHM, R. VON. Helminthologische Notizen. Zeitschr. f. wissensch. Zoologie, xix. Bd. 3. Heft, 6 Sept. 1869, pp. 469-475, Taf. 35.

1. On the development of *Schistocephalus dimorphus*, Creplin. 2. On an hermaphrodite of *Ascaris heteroura*, Crep. 3. On the genus *Ophiostomum*, Rud.

CESTOIDEA.

KRABBE (*l. c.*) describes the following new species:—

Tenia socialis, p. 258, figs. 1, 2, from *Uria troile*; *T. sternina*, p. 259, figs. 7, 8, 9, from *Sterna macroura*; *T. dodecacantha*, p. 261, figs. 14, 15, from *Larus minutus*; *T. larina*, p. 261, figs. 16, 17, from *Larus tridactylus*; *T. mi-*

cracantha, p. 262, figs. 19, 20, from *L. canus* and other species; *T. campylacantha*, p. 263, figs. 22, 23, from *Uria grylle*; *T. microphallos*, p. 266, figs. 35-37, from *Vanellus cristatus*; *T. microrhyncha*, p. 266, figs. 39, 40, from *Machetes pugnax* &c.; *T. clavigera*, p. 267, figs. 41-43, from *Tringa alpina* &c.; *T. citrus*, p. 270, figs. 49, 50, from *Scolopax gallinago* (*T. variabilis*, Rudolphi, ex parte); *T. ericetorum*, p. 270, figs. 51, 52, from *Charadrius plumalis*; *T. platyrhyncha*, p. 271, figs. 56-58, from *Totanus calidris*; *T. cingulifera*, p. 272, fig. 60, from *T. calidris*; *T. ægyptiaca*, p. 272, fig. 62, from *Cursorius isabellinus*; *T. bacilligera*, p. 273, figs. 63, 64, from *Scolopax rusticula*; *T. embryo*, p. 273, figs. 65, 66, from *Scolopax major*; *T. stellifera*, p. 274, figs. 67, 68, from *Scolopax*, sp. ?; *T. nilotica*, p. 276, figs. 77, 78, from *Cursorius isabellinus*; *T. transfuga*, p. 281, figs. 91-93, from *Platalea ajaja*; *T. retirostris* (Creplin), p. 282, fig. 98, from *Streptopelia interpres* &c.; *T. megaloccephala*, p. 283, figs. 100-102, from *Tringa alpina*; *T. megalorhyncha*, p. 284, figs. 104, 105, from *Tringa maritima*; *T. teres*, p. 284, figs. 106-108, from *Anas mollissima* &c.; *T. anatina*, p. 287, figs. 114-116, from *Anas boschas*, dom. et fera; *T. liophallos*, p. 291, fig. 122, from *Cygnus atratus*; *T. minuta*, p. 292, fig. 127, from *Phalaropus fularicus*; *T. cryptacantha*, p. 293, fig. 132, from *Glareola pratincola*; *T. nitida*, p. 294, figs. 133-135, from *Tringa maritima*; *T. gracilis*, (Zeder), p. 299, figs. 154, 155, from *Anas boschas*, dom.; *T. fasciata* (Rudolphi), p. 300, fig. 157, from *Anser cinereus*, dom.; *T. fragilis*, p. 300, figs. 158-160, from *Anas crecca*; *T. octacantha*, p. 301, figs. 161, 162, from *Anas clypeata*; *T. furcifera*, p. 306, figs. 176-178, from *Podiceps rubricollis* &c.; *T. fusus*, p. 307, figs. 180-181, from *Larus glaucus* &c.; *T. cirrosa*, p. 308, figs. 182-184, from *Larus canus*; *T. recurvirostra*, p. 308, figs. 186-188, from *Recurvirostra avocetta*; *T. himantopodis*, p. 309, figs. 189, 190, from *Himantopus melanopterus*; *T. brachyphallos*, p. 310, figs. 193, 194, from *Tringa maritima* &c.; *T. crassirostris*, p. 314, figs. 202-204, from *Scolopax major* and others; *T. clandestina* (Creplin), p. 316, figs. 208, 209, from *Himantopus ostralegus*; *T. grælandica*, p. 316, figs. 210, 211, from *Anas glacialis*; *T. creplini*, p. 317, figs. 214, 215, from *Anser arvensis*; *T. fallax*, p. 319, figs. 221, 222, from *Anas marila*; *T. dujardini*, p. 319, figs. 223, 224, from *Turdus musicus*; *T. bilharzii*, p. 321, fig. 229, from *Sylvia galactodes*; *T. coronina*, p. 325, fig. 241, from *Corvus corone*; *T. affinis*, p. 330, figs. 257, 258, from *Corvus frugilegus*; *T. colliculorum*, p. 330, fig. 259, from *Hirundo riparia*; *T. producta*, p. 336, fig. 266, from *Picus viridis*; *T. parvirostris*, p. 336, fig. 267, from *Hirundo urbica* and *rustica*; *T. leuckartii*, p. 337, figs. 268, 269, from *Ardea*, sp.; *T. triangulus*, p. 339, fig. 274, from *Turdus*, sp.; *T. meropina*, p. 340, figs. 279-281, from *Merops superciliosus*; *T. borealis*, p. 340, figs. 282, 283, from *Emberiza nivalis*; *T. trigonocephala*, p. 341, figs. 284-286, from *Motacilla flava* &c.; *T. circumvallata*, p. 345, fig. 295, from *Perdix coturnix*; *T. australis*, p. 345, figs. 297, 298, from *Dromaius novæ-hollandiæ*; *T. circumcincta*, p. 346, fig. 299, from *Ardea garzetta*.

Ophryocotyle proteus, sp. n., Friis, l.c. p. 123, pl. 1. figs. 1-12. This cestoid worm was found in some numbers in the superior part of the intestinal canal of *Tringa alpina*, *Charadrius hiaticula*, and *Larus canus*. There were often as many as a hundred in each bird. The "head" consists of five small elevations arranged in a row, which can be protruded and contracted, below which are four rounded elevations carrying a triple row of crotchets.

KRABBE'S paper on the Cestoid worms of the Bustard (see 'Zool. Record,'

1868, p. 552) will be found translated in Ann. & Mag. N. H. ser. 4, vol. iv. July 1879, pp. 47-61, pl. 3. figs. 4-13.

Bothriocephalus proboscideus. On its development, see the remarks of Metschnikoff in Bull. de l'Acad. Imp. d. Sc. St. Pétersbourg, t. xiii. No. 3, p. 290.

TREMATODA.

Fasciola jacksonii, sp. n., Cobbold, l. c. p. 49, from the liver of an elephant at Rangoon. Now for the first time described, but apparently the same referred to as a doubtfully distinct form by Diesing as *Distomum elephantis*.

NEMATOIDEA.

Eustrongylus gigas, Dies. Balbiani (l. c.) remarks on the development of this species:—1. That the development commences in the uterus of the female, but is soon arrested, only to be continued when the egg is expelled from the body of the host and comes into contact with water or humid earth. 2. Between this period and that of the appearance of the embryo there are in winter five or six months, in summer the interval is probably much shorter. 3. The embryo may remain in the ovum a year or less without perishing; placed in contact with pure water, as in artificial hatching, the embryo alters rapidly; it only lives well in albuminous fluids. 4. The egg is not hatched in the alimentary tube of the animals where the *Strongylus* acquires its complete development, but in a different species (yet unknown) which forms a temporary host for the parasite until its migration into its final host.

Echinoderes. One of the results of Greeff's investigations proves that the species of this genus are independent and adult forms, and not merely, as was suggested by several, larval forms, he having found the female sexual organs as well as seen certain stages of their development. After describing their outer form and chitinous integument, their alimentary, nervous, and generative systems, their development, &c., Greeff proceeds to describe the following species:—

E. dujardini, Clpr., Greeff, l. c. p. 88, Taf. 4. figs. 1-5; *E. monocercus*, Clpr., Greeff, l. c. p. 90, Taf. 5. fig. 10; and as new species, *E. setigera*, l. c. p. 89, Taf. 5. figs. 1-5, Ostend; *E. canariensis*, l. c. p. 90, Taf. 5. fig. 6, Lanzarote; *E. borealis* l. c. p. 90, Taf. 5. fig. 8, North Sea (? Ostend); and *E. lanuginosa*, l. c. p. 92, Taf. 5. fig. 12. Greeff considers the affinities of this group to be towards the Nematoids.

Desmoscolex minutus, Clpr. Greeff, l. c. p. 100, describes this species at great length, and regards it as a transition form between the true Nematodes and the Annelids. As new species he describes *D. nematoides*, l. c. p. 112, Taf. 6. fig. 8; *D. adelphus*, l. c. p. 113; *D. chatogaster*, l. c. p. 114, Taf. 6. figs. 11, 12.

Trichoderma oxycaudatum, g. and sp. n., Greeff, l. c. p. 115, Taf. 6. figs. 9,

10. This genus wants the characteristic head and ventral setæ of *Desmoscolex*. This form at first looks Ichthydian, but is truly Nematoid.

Eubostrichus filiformis, g. and sp. n., Greeff, *l. c.* p. 117, Taf. 7. figs. 1-4. Only females of this remarkable form were found. It is about 8 millims. in length; body long, thread-like, covered with very fine setæ or hairs; mouth funnel-shaped; intestine simple.—North Sea. *E. phalacrus*, *l. c.* p. 118, Taf. 7. figs. 5-8, Lanzarote.

TURBELLARIA.

M'INTOSH (*l. c.*) shows the essential differences which exist between the Ommatopleans and the Borlasians, from the skin even to the microscopical structure of the proboscis. These names are provisionally used because the majority of these soft animals group themselves round two centres, represented respectively by the common *Ommatoplea alba* and *Borlasia olivacea*. The minute structure of both these species is described in great detail, taking them as types of each group; and the differences that are met with between these and allied species are pointed out.

METSCHNIKOFF (*l. c.*) concludes his observations on the development of the Nemerteans by stating that on glancing at the special developmental history of the Nemerteans, which are formed with the pilidium, the following principal facts are observed:—1. The first appearance of the body of the Nemertean is under the form of two pairs of infolding of the skin, which become converted, not only into the bodies of the worm but also into the very amnion surrounding them. 2. Moreover two central vesicles are formed, which later become amalgamated with the lateral vessels. 3. The four lamellæ arising from a portion of the infolding of the skin which represents the future germ-streaks (for so, after Leuckart, we call the cup-shaped bodies) arise from two germ-folds placed together; of these, the outer fold forms the epidermis of the central nervous system, while the inner and thinner fold forms the muscular system. 4. The germ-streaks produced by the growth of the four layers (Scheiben) represent the future ventral surface, with the cephalic portion of the Nemertean, whilst the dorsal covering is formed afterwards. 5. The proboscis appears in the form of a simple infolding of the fore end of the germ-streak. *Vide* also the remarks of the same author in Bull. de l'Acad. Imp. d. Sc. St. Pétersbourg, t. xiii. No. 3, p. 228.

ECHINODERMATA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

AGASSIZ, A. Preliminary Report on the Echini and Starfishes dredged in deep water between Cuba and the Florida Reef by L. F. de Pourtales. Bulletin Mus. Comp. Anat. Harvard College, Camb. Mass., No. 9, 1869, pp. 253-308.

——. On the habits of a few Echinoderms. Proc. Bost. Soc. Nat. Hist. vol. xiii. 1869, pp. 104-107.

BRADY, G. S., and ROBERTSON, D. Notes of a week's dredging in the West of Ireland. Ann. & Mag. N. Hist. ser. 4, vol. iii. May 1869, pp. 353-374, pls. 18-22.

These notes are chiefly confined to the Entomostraca and smaller Crustacea met with, but also record the occurrence of an Ophiuroid, *Ophiopsila annulosa* (Sars), new to Ireland.

COSTA, A. Descrizione di una nuova Oloturia. Annuario del Mus. Zool. del R. Univ. di Napoli, Anno v. 1865. Napoli, 1869, pp. 57-59, tav. 3.

DUTHIERS, LACAZE. Note sur une Station d'une encrine vivante (*Pentacrinus europæus*) sur les côtes de France. Compt. Rend. t. lxxix. No. 24 (Dec. 1869), pp. 1253-1256.

Mentions the discovery in great numbers of *Antedon rosaceus* and its different stages at the Port of Roscoff, adhering to a species of *Sargassum*?

LOVEN, S. Note sur l'*Hyponome sarsi*, espèce récente du groupe des Echinodermes cystides. Compt. Rend. tom. lxxix. No. 12 (Sept. 1869), pp. 711, 712.

LYMAN, THEODORE. Preliminary report on the Ophiuridæ and Astrophytidæ dredged in deep water between Cuba and the Florida Reef by L. F. de Pourtales. Bull. Mus. Comp. Anat. Harvard College, Camb. Mass., No. 10, Nov. 1869, pp. 309-354.

LÜTKEN, CHR. Endnu et Par Ord om de gamle Söliiers "Snabel" og Mund. Videnskab. Meddel. fra den Naturlhist. For. Kjöbenhavn, 1869, pp. 160-188.

Some few additional remarks on the "trompe" and the mouth of the fossil Crinoids, the author instancing the recent *Hyponome sarsii*, Lov., as a positive proof that the "trompe" is nothing but an anal tube, and that the mouth is internal in the Cystideans.

— Additamenta ad historiam Ophiuridarum. Beskrivende og kritiske Bidrag til kundskab om Slangestjernerne. Tredie Afdeling. Vidensk. Selsk. Skr. Kjöbenhavn, 1869, pp. 24-109. Résumé français, pp. 101-109.

This memoir forms a most valuable supplement to the author's two previous memoirs published in 1858-1859, on the Ophiuroids; in addition to the description of several new genera and species it contains a "Synopsis generum Ophiuridarum verarum." The diagnoses of the genera and families are given in Latin. The fossil forms of Ophiuroids are also referred, for the most part, to recent genera.

— Ueber *Choriaster granulatus*, eine neue Gattung aus der Familie der Asteriden. Separat-Abdruck aus dem Catalog iv. des Museum Godeffroy. Hamburg, 1869 (p. xxxv in Catalogue).

METSCHNIKOFF, ELIAS. Studien über die Entwicklung der Echinodermen und Nemertinen. Mém Acad. Imp. Sci. St. Pétersb. xiv. No. 8, 1869, pp. 1-73, tab. 1-12.

This important memoir treats:—1. Of the metamorphosis of *Auricularia*; 2. Of the embryology of *Amphiura squamata*; 3. The metamorphoses of the Ophiuridæ; 4. On two *Pluteus*-formed Ophiuroid larvæ; 5. Metamorphosis of an *Asterias*; 6. On the metamorphosis of the Echinoidea. Gives an account of the development of *Echinus lividus* and of a spatangoid larva.

POURTALES, L. F. DE. List of the Crinoids obtained on the coasts of Florida and Cuba by the United States Coast Survey Gulf-stream Expeditions in 1867, 1868, 1869. Bull. Mus. Comp. Anat. Harvard College, Camb. Mass., No. 11, Nov. 1869, pp. 355-358.

— List of Holothuridæ from the deep-sea dredgings of the United States Coast Survey. Ibid. No. 12. Nov. 1869, pp. 359-362.

TROSCHER, F. H. Nachträgliche Bemerkung über die Gattung *Crustulum*. Archiv f. Naturg. xxxv. 1. Bd. pp. 52-57.

VERRILL, A. E. On new and imperfectly known Echinoderms and Corals. Proc. Bost. Soc. Nat. Hist. vol. xii. April 7, 1869, pp. 381-396.

Geographical Distribution.

The following Echinoids and Asteroids are recorded by A. Agassiz (*l. c.* p. 253 *et seq.*) as dredged in deep water between Cuba and the Florida Reef:—

Cidaris annulata, Gray; *Dorocidaris abyssicola*, A. Ag.; *Salenocidaris rariospina*, A. Ag.; *Diadema antillarum*, Phil.; *Cænopedina cubensis*, A. Ag.; *Echinocidaris punctulata*, Desml.; *Podocidaris sculpta*, A. Ag.; *Echinometra michelini*, Des.; *E. viridis*, A. Ag.; *Echinus gracilis*, A. Ag.; *E. flemingii*, Ball; *Genocidaris maculata*, A. Ag.; *Trigonocidaris albida*, A. Ag.; *Lytechinus variegatus*, A. Ag.; *Tripneustes ventricosus*, Ag.; *Clypeaster rosaceus*, Lam.; *Stolonocypus prostratus*, Ag.; *S. ravenelli*, A. Ag.; *Mellita testudinata*, Klein; *M. hexapora*, Ag.; *Encope michelini*, Ag.; *E. emarginata*, Ag.; *Echinoneus semilunaris*, Lam.; *Echinolampas caratomoides*, A. Ag.; *Rhyncholampas caribbeorum*, A. Ag.; *Neolampas rostellatus*, A. Ag.; *Pourtalesia miranda*, A. Ag.; *Lissonotus fragilis*, A. Ag.; *Brissus columbaris*, Ag.; *Meloma ventricosa*, Lüttk.; *Plagionotus pectoralis*, Ag.; *Brissopsis lyrifera*, Ag.; *Agassizia excentrica*, A. Ag.; *Echinocardium ovatum*, Gray; *E. lævigaster*, A. Ag.; *E. kurtzi*, Gir.; *Schizaster cubensis*, D'Orb.; *Mera atropos*, Mich.

Asterina minuta, Gray (= *Asteriscus brasiliensis*, Lüttk., and *A. stellifer*, Möb.); *Pteraster militaris*, M. T.; *Pentaceros gigas*, Ag.; *Astropecten antillensis*, Lüttk.; *A. articulatus*, Lüttk.; *A. variabilis*, Lüttk.; *Luidia clathrata*, Lüttk.; *L. alternata*, Lüttk.; *Ophidiaster ornithopus*, Val.; *O. flaccidus*, Lüttk.; *Othilia spinosa*, Gray; *O. braziliensis*, Ag.; *Asteracanthion mexicanum*, Lüttk.; *A. tenuispinum*, Ltk.

LYMAN records (*l. c.* p. 309) the following *Ophiuroidea* from the same locality:—

Ophiura squamosissima, Ly.; *O. rubicunda*, Ly.; *O. cinerea*, Ly.; *O. elaps*, Ly.; *O. brevicauda*, Ly.; *O. guttata*, Ly.; *O. brevispina*, Say; *O. appressa*, Say; *Ophioglyphu acervata*, Ly.; *O. falcifera*, Ly.; *Ophiocten depressum*, Ly.; *Ophiolepis paucispina*, M. T.; *O. elegans*, Ltk.; *Ophiomusium eburneum*, Ly.; *Ophiözona impressa*, Ly.; *Ophiocoma echinata*, Ag.; *O. riisei*, Ltk.; *O. pumila*, Ltk.; *Ophioblenna antillensis*, Ltk.; *Ophiacantha meridionalis*, Ly., (= ? *O. pentacrinus*, Ltk.); *Ophiomytra valida*, Ly.; *O. sertata*, Ly.; *Ophiostigma isacanthum*, Ly.; *Ophiocodrus convolutus*, Ly.; *Ophiactis krebsii*, Ltk.; *O. mülleri*, Ltk.; *O. humilis*, Ly.; *O. loricata*, Ly.; *O. plana*, Ly.; *Amphiura riisei*, Ltk.; *A. gracillima*, Ltk.; *A. stimpsonii*, Ltk.; *A. tenera*, Ltk.; *A. grandisquama*, Ly.; *A. semiermis*, Ly.; *A. pulchella*, Ly.; *Ophiophragmus septus*, Ly.; *O. wurdemanni*, Ly.; *Ophiocnida scabriuscula*, Ly.; *O. olivacea*, Ly.; *Ophionephthys limicola*, Ltk.; *Ophionema intricata*, Ltk.; *Ophiathanmus vicarius*, Ly.; *Ophionereis reticulata*, Ltk.; *Ophiopsila riisei*, Ltk.; *Ophiomyces mirabilis*, Ly.; *O. frutescens*, Ly.; *Ophiothrix violacea*, M. T.; *O. ørstedii*, Ltk.; *O. suensonii*, Ltk.; *O. lineata*, Ly.; *Ophiomyxa flaccida*, Ltk.

Ophiocreas lumbricus, Ly.; *Astrophyton costosum*, Seba; *A. arborescens*, M. & T.; *A. cæcilia*, Ltk.; *A. krebsii*, Ltk.; *A. mucronatum*, Ly.; *Astrogomphus vallatus*, Ly.; *Astroporpa annulata*, (Erst. & Ltk.); *A. affinis*, Ltk.; *Astroschemamoligactes*, Ltk.; *Hemieuryale pustulata*, Martens.

POURTALES (*l. c. p. 355*) records the following *Crinoidea* from the same locality :—

Anedon hagenii, Pourt.; *A. meridionalis*, A. Ag.; *A. armata*, Pourt.; *A. cubensis*, Pourt.; *A. rubiginosa*, Pourt.; *A. brevipinna*, Pourt.; *Pentacrinus mülleri*, Ørst.; *Rhizocrinus lofotensis*, Sars.

POURTALES records (*l. c. 359*) the following *Holothuroidea* also from the same locality :—

Cuvieria operculata, Pourt.; *Thyonidium conchilegum*, Pourt.; *T. gemmatum*, Pourt.; *Echinocucumis typica*, Sars; *Cucumaria frondosa*, Gunner; *Molpadia borealis*, Sars.

Development.

Here we may mention the important notes appended by A. AGASSIZ to his Report on the deep-sea *Echini* (*l. c. p. 279*), on the young stages of *Echini*. He was enabled to study the changes due to growth in no fewer than thirty-two species. The changes some species undergo are so great that nothing would have been more natural than to place the two extremes of the series, not only in different species but often in different genera. Detailed descriptions, accompanied with figures, are promised shortly. In the present notes brief allusions are made to the changes undergone during growth by *Toxopneustes drobachiensis*, Ag.; *Cidaris*, *Echinometra*, *Echinocidaris*, *Echinus*, and allied genera; by the Temnopleuridæ; by the Clypeastroids, as *Echinarachnius*, *Mellita*, *Encope*, *Echinocyamus*; by the Spatangoids. It would be impossible, within the limits of this Record, even to indicate the remarkable peculiarities in these young forms described by A. Agassiz; but their importance in relation to classification cannot be overlooked. Removing *Echinoneus* from the Galeritidæ, A. Agassiz would associate the Galeritidæ having teeth with the true Echinoids.

METSCHNIKOFF (*l. c. p. 27*) mentions the following as facts now pretty well established by his observations on the development of the *Ophiuridæ* :—

1. The ambulacral system and the side plates arise from one and the same origin.

2. Both layers of the tegumentary system of the larvæ undergo, at a certain point, a thickening, and immediately become differentiated into a shape according to that of the perfect animal. But as, after the formation of the star bodies, some of the provisional calcareous rods enclosing portions of the skin remain attached which later disappear, so it may be assumed that they are not directly transformed into the tegumentary portions of the Ophiurid, but are either thrown off by degrees or are absorbed by the star.

3. The transformation of the bilateral larva into a radial form is accomplished by the retreat, both in the dorsal and ventral

regions, of several organs in a direction to the right; a cross motion is thereby effected, by which the organs previously occupying a straight line to the left side of the larva now form a decided cross.

4. The œsophagus is surrounded by the ambulacra, whereby it is brought into the centre of the ambulacral ring. It, as well as the mouth, passes over from the larval to the perfect form without change.

CYSTIDEA.

Hyponome sarsi. Lovén's paper on this recent Cystidean is translated in Ann. & Mag. N. Hist. ser. 4, vol. iv. Sept. 1869, p. 159.

CRINOIDEA.

Antedon armata, sp. n., Pourtales, l. c. p. 356; *A. cubensis*, sp. n., Pourtales, l. c. p. 356; *A. rubiginosa*, sp. n., Pourtales, l. c. p. 356.

OPHIUROIDEA.

Ophiuridæ.

LÜTKEN l. c. p. 97) arranges this family as follows. We have given uniformly the termination *inæ* to the subfamilies:—

1. *O. dentibus papillisque oralibus numero diverso præditæ absque papillis dentalibus veris.*
 - A. *O. lacertosæ.*
 - a. *Ophioderminæ*: *Ophioderma*, M. Tr. (*Ophiura*, Lym.); *Ophiopsammus*, Ltk.; *Pectinura*, Forbes (non Heller); *Ophioconis*, Ltk. (*Pectinura*, Hell.); *Ophiopeza*, Pet.
 - b. *Ophiochætinae*; *Ophiochata*, Ltk.
 - c. *Ophiolepinæ*: *Ophiolepis*, M. Tr. (*Ophiozona*, Lym.); *Ophioglyphæ*, Lym. (*Ophiura*, Forb.); *Ophioceramis*, Lym.; *Ophiocten*, Ltk.; *Ophiopus*, Lgm.
 - B. *O. echinatae.*
 - d. *Ophionereinae*: *Ophionereis*, Ltk.; *Ophioplocus*, Lym.
 - e. *Ophiocanthinae*: *Ophioblenna*, Ltk.; *Ophiarachna*, M. Tr.; *Ophiacantha*, M. Tr.
 - f. *Amphiurinae*: *Amphipholis*, Lgm.; *Ophiostigma*, Ltk.; *Ophiopholis*, M. Tr.; *Ophiactis*, Ltk.; *Hemipholis*, Lym.; *Amphiura*, Forb.; *Ophionephthys*, Ltk.; *Ophiopeltis*, Dub. Kor.; *Ophionema*, Ltk.; *Ophiocentrus*, Lym.; *Amphilepis*, Lgm.
2. *O. echinatae, papillas infra dentalibus numerosis instructæ.*
 - g. *Ophiocominae*: *Ophiocoma*, M. Tr.; *Ophiomastix*, M. Tr.; *Ophiopsila*, Forb. (*Ophianoplus*, Sars); *Ophiarthrum*, Pet.
 - h. *Ophiothricinae*: *Ophiocnemis*, M. Tr.; *Ophiogymna*, Lgm.; *Ophiothrix*, M. Tr.
3. *O. disco, brachiis et spinis cute molli obductæ, spinis oralibus vel papillis oralibus dentiformibus solis instructæ.*
 - i. *Ophiomycinae*: *Ophiomyxa*, M. Tr.
 - k. *Ophioscolicinae*: *Ophioscolex*, M. Tr.

Ophionephthys, g. n. (Lütken, *l. c.* pp. 25 and 29), disco decies inciso, molli, scutis et scutellis radialibus, oralibus, adoralibus, genitalibus, marginalibusque et acervis squamarum quinque in dorso disci, scutorum radialium partes introversas circumdantibus, exceptis, nudo; brachiis longissimis tenuibus, scutellis spinisque brachialibus 4-5 ut in *Amphiuris* instructis; papillæ ambulacrales singulæ adsunt, orales utrinque 2 vel 3, infradentali interna ab externa vel externis duabus intervallo sejuncta. *O. limicola*, n. sp., Ltk., St. Thomas, W. I.

Ophionema, g. n. (Lütken, *l. c.* pp. 27 and 28), disco omnino molli, nudo scutis radialibus angustis genitalibusque solis exceptis; papillis oralibus infradentalibus binis, externa vulgo utrinque singula, spinis brachialibus 4-5, papilla ambulacrali nulla. Differt ab *Ophiopelti* squamulis disci nullis et spina brachiali securiformi nulla. *O. intricata*, n. sp., Ltk., hab. cum præcedente.

Ophioconis, g. n., for *Pectinura forbesi* (Heller), Lütken, pp. 31 & 98.

Ophiopsammus, g. n., for *Ophiopeza yoldii*, Ltk., Lütken, pp. 31 & 98.

Ophiochæta, g. n. (Lütken, pp. 31 & 98), differt ab *Ophioderma* rimis genitalibus simplicibus (decem), incisuris disci ad basin brachiorum nullis, disco utrinque setis gracilibus brevibus (non granulis) dense oblecto; scuta radialia oblecta; cetera *Ophiodermæ*. *O. setosa*, n. sp., Ltk., Fiji Islands.

Amphipholis fissa, sp. n., Ltk. *l. c.* p. 99, Amur.

Ophiarachna affinis, sp. n., Ltk. *l. c.* p. 99, Fiji.

Ophiomastix mixta, sp. n., Ltk. *l. c.* p. 100, Samoa and Fiji Islands; *O. asperula*, sp. n., Ltk. *l. c.* p. 100, Fiji; *O. caryophyllata*, sp. n., Ltk., p. 100, Fiji.

Ophiomyxa australis, sp. n., Ltk. *l. c.* p. 99, Bass's Straits.

Ophiocoma canaliculata, sp. n., Ltk. *l. c.* p. 99, Bass's Straits.

Ophiacantha pentacrinus, sp. n., Ltk. *l. c.* p. 99, Antilles, on *Pentacrinus mülleri*.

Ophiothrix striolata, sp. n., Grube, Lütken, *l. c.* p. 99, New Guinea, China Sea; *O. elegans*, sp. n., Ltk. *l. c.* p. 99, China seas; *O. trilineata*, sp. n., Ltk. p. 100, Samoa Islands; *O. capensis*, sp. n., Ltk. p. 100, Cape of Good Hope, on Gorgoniæ.

Asterias tricolor, Abgd. Lütken (*l. c.* p. 47) demonstrates that this must be a species of *Ophiacantha* and not of *Ophiothrix*, as was formerly thought, which inhabits the southern coasts of Norway, and that the *Ophiactis clavigera* of Ljungman, found in the same locality and at a great depth, is very certainly none other than the *A. tricolor*, and should be quoted as *Ophiacantha tricolor* (Abgd.). He also expresses a wish that the "*Ophiocoma granulata*," found by Dr. Wallich at a depth of 1260 feet in the Atlantic, should be again examined to see whether it may not also be this species.

Ophiothrix fragilis, Abgd., of the North Sea, is not, as is generally thought, to be met with in the Mediterranean, but is there replaced by two species, *O. echinata*, from the Adriatic, and *O. quinquemaculata* (D. Ch.), from the Gulf of Naples. Lütken, *l. c.* p. 51.

Ophiocoma ocellata, Martens, is *Ophiarachna incrassata* (Lmk.). The genus *Ophiarachna* would appear to embrace two very distinct types—one represented by this species, which recalls to mind somewhat the genus *Ophiocoma*, the other embracing *O. gorgonia* &c., approaching *Ophioderma*, for which Forbes's name, *Pectinura*, has the priority. Lütken, *l. c.* p. 31 &c.

Ophiarachna spinosa, Ljungman, is *Ophiopeza fallax*, Peters. Lütken, *l. c.* p. 31.

Ophiomusium, g. n., Lyman, *l. c.* p. 322. Teeth; no tooth-papillæ; mouth-papillæ soldered in a continuous row, so that their former outlines are scarcely to be seen; disk covered by plates and radial shields, all of which are intimately soldered, forming a surface like porcelain; upper and under arm-plates minute; side arm-plates meeting above and below, swelled, intimately soldered with the neighbouring parts; no tentacle-pores beyond the basal arm-joints; small arm-spines on outer edge of arm-plates. Two genital slits on each interbrachial space. *O. eburneum*, sp. n., Lyman, *l. c.* p. 322.

Ophiomitra, g. n., Lyman, *l. c.* p. 325. Teeth; numerous, small, nearly equal mouth-papillæ; no tooth-papillæ; disk flat, circular, and erect, covered with scales and radial shields, and beset with thorny spines or stumps; arm-spines rough; side arm-plates large and nearly or quite meeting above and below. *O. valida* and *O. sertata*, spp. nn., Lyman, *l. c.* pp. 325, 326.

Ophiocoondrus, g. n., Lyman, *l. c.* p. 327. Teeth and mouth-papillæ; no tooth-papillæ; disk granulated, contracted so that the interbrachial spaces are reenteringly curved, and are further much reduced by the encroachment of the stout arms; side mouth-shields wide and thick, and meeting within; side arm-plates meeting below, and there closely soldered, so as to form a continuous belt: two genital slits in each interbrachial space. *O. convolutus*, sp. n., Lyman, *l. c.* p. 328.

Ophiothammus, g. n., Lyman, *l. c.* p. 341. Teeth; no tooth-papillæ; mouth-papillæ, of which the outer is much the broadest; side mouth-shields long and stout, extending outside the mouth-shields, and making with them a conspicuous raised pentagon; side arm-plates large, meeting above and below, and bearing slender rough spines on their sides; disk puffed and overlying the bases of the arms, covered with scales and radial shields, which are beset with spines. *O. vicarius*, sp. n., Lyman, *l. c.* p. 342.

Ophiomyces, g. n., Lyman, *l. c.* p. 343. Teeth; no tooth-papillæ; numerous wide, flat mouth-papillæ, which are turned downwards and outwards and arranged in two or more imbricated rows, covering the whole mouth-angle; side mouth-shields large, and meeting above; disk finely scaled, without visible radial shields; arm-spines within the disk shorter, stouter, and of a different character from those of the joints further out. *O. mirabilis* and *O. frutescens*, spp. nn., Lyman, *l. c.* pp. 343, 345.

Ophioglypha acervata, sp. n., Lyman, *l. c.* p. 316; *O. falcifera*, sp. n., Lyman, *l. c.* p. 319.

Ophiocten depressum, sp. n., Lyman, *l. c.* p. 320.

Ophiacantha meridionalis, sp. n., Lyman, *l. c.* p. 342? = *O. pentacrinus*, Ltk.

Ophiactis humilis, sp. n., Lyman, *l. c.* p. 329; *O. plana*, sp. n., Lyman, *l. c.* p. 330; *O. loricata*, sp. n., Lyman, *l. c.* p. 331.

Amphiura semiermis, sp. n., Lyman, *l. c.* p. 332; *A. grandisquama*, sp. n., Lyman, *l. c.* p. 334; *A. pulchella*, sp. n., Lyman, *l. c.* p. 337.

Amphiura. Lyman, *l. c.* p. 338, gives an analysis of all the known species.

3. *Ophiocnida olivacea*, sp. n., Lyman, *l. c.* p. 340.

Pectinura (*Ophiarachna*) *maculata*, sp. n., Verrill, *l. c.* p. 388, New Zealand.

i. *Ophionereis crassispina*, Ljung., = *O. porrecta*, Verrill. Possibly *O. squa-*

k. *iata*, Ljung., may be the adult form of the same species. Verrill, *l. c.* p. 390.

Hemipholis affinis, Ljung., = *H. gracilis*, Verrill, on the supposition that

Ljungman's "*Ophiuroidea viventia huc usque cognita*" was not published before March 1867. *Vide* Verrill, *l. c.* p. 391.

Ophiothela danæ, sp. nov., Verrill, *l. c.* p. 391, Fiji Islands, in large numbers on *Melitodes virgata*, V.

Ophiopsila (*Ophianoplus*) *annulosa* (Sars) is mentioned by Brady, *l. c.* p. 355, pl. 22. figs. 1-6, as dredged in Birterbuy Bay, Connemara. Only a single ray was found in the dredge. The type specimen was taken by Sars in the Bay of Naples.

Asterophytidæ.

LÜTKEN (*l. c.* p. 63) gives the following conspectus of this family :

A. Brachiis simplicibus.

a. Rimæ genitales binæ in fossis, scutis oralibus immediatim juxtapositis, approximatæ, nec non

1. In intima parte ventrali disci, discus et brachia omnino nuda ; spinæ ambulacrales breves 4, longa una, orales papillarum oralium et dentium locum tenentes. *Asteronyx*, M. Tr.

2. In lateribus disci, in angulis brachiorum ; discus et brachia granulata, hæc autem ad basin nodosa ; spinæ ambulacrales breves binæ ; papillæ orales et dentes adsunt *Asteromorpha*, Ltk.

b. Rimæ genitales sejunctæ, ad basin brachiorum, non in fossa communi binæ.

3. Discus et brachia granulata, ceterum lævia ; spinæ ambulacrales binæ ; papillæ orales, dentes? *Asteroschema*, (Estd., Ltk.

4. Costæ disci et brachia profunde annulata, asperrima ; spinæ ambulacrales 5 aut 6 ; spinæ orales *Asteroporpa*, (Estd., Ltk.

B. Brachiis divisis, aut

5. In extrema parte modo ; rimæ genitales approximatæ, in angulis brachiorum, id est in lateribus disci, sed non in fossa communi junctæ. Papillæ orales et dentes veræ adsunt. *Trichaster*, Ag.

Brachiis divisis, aut

6. A basi inde ; rimæ genitales late sejunctæ, ad basin brachiorum ; pro dentibus et papillis oralibus spinæ orales plerumque adsunt.

Asterophyton, M. Tr.

Asterophyton stimsonii, sp. nov., Verrill, *l. c.* p. 388. Allied to *A. lamarchii*, Ochotsk Sea, and also north of Behring's Straits.

Asterophyton mucronatum, sp. n., Lyman, *l. c.* p. 348.

Astrogomphus, g. n., Lyman, *l. c.* p. 350. Disk with ten low, very narrow radial lips running nearly to its centre, and beset with numerous spines ; arms simple ; skin of arms and disk covered by a mosaic of small flat grains, the joints of the former distinguished by ridges, each of which consists of belts of granules, some of them bearing minute hooks ; arm-spines like thorny stumps, and arranged in clumps just above the tentacle-pores ; teeth ; tooth-papillæ and mouth-papillæ all similar and spiniform : two genital slits ie each interbrachial space. *A. vallatus*, sp. n., Lyman, *l. c.* p. 350.

Ophiocreas, g. n., Lyman, *l. c.* p. 347. Disk and arms uniformly covered with soft skin, bearing microscopical grains ; disk small, its interbrachial outlines reenteringly curved ; five pairs of narrow, rather high radial ribs running from the margin quite to the centre ; arms simple, very long and

smooth, the joints indicated by very slight depressions; small arm-spines standing just above the tentacles; teeth; one or more tooth-papillæ; mouth-papillæ arranged in a clump on the side of the mouth-frame and above its lower edge; two genital slits nearly as long as the disk is high. *O. lumbricus*, sp. n., Lyman, l. c. p. 347.

Asteromorp a (n. gen., Lütken, l. c. pp. 60 & 100); disco costato granulato, brachiis sat robustus 5 vel 6, indivisis, interna parte supra nodosa et distincte annulata, ceterum glabris, indistincte annulatis, spinis ambulacralibus binis utrinque in facie inferiore brachiorum; ore papillis dentibusque veris instructo; rimis genitalibus per paria approximatis, in fossis 5 vel 6, latera disci et angulos interbranchiales occupantibus, collocatis. *A. steenstrupii*, n. sp., Ltk. p. 60 (woodcut), habitat unknown.

ASTEROIDEA.

Choriaster granulatus, g. et sp. n., Lütken, l. c. p. xxxv. Starfish belonging to the group with distinct anus and two rows of ambulacral feet, with well-marked sucking-disks. Body high, with five short, thick, nearly cylindrical arms with rounded extremities, their length not quite the diameter of the disk; disk and arms quite smooth on both upper and lower surface, without spines of any kind or visible tegumentary plates, but covered by a soft leathery, densely granular integument; anus large, central; pore-area with numerous irregularly round, sharply defined pores, and occurring on the back of the body and on the sides and back of the arms, with the exception of the last third of the arms, where, as on the underside, the pores are completely wanting; they otherwise form eight rows in length on each arm; ambulacral papillæ two-rowed in hand-shaped groups, the inner 6-7, the outer generally coarser, 4: larger radius 105 mm. (about four inches); smaller radius 50 mm. Habitat Pelew Island and the Fijis.

Echinaster spinulosus, sp. n., Verrill, l. c. p. 386, west coast of Florida.

Pteraster danæ, sp. n., Verrill, l. c. p. 385, Rio Janeiro?

ECHINOIDEA.

Dorocidaris abyssicola, g. et sp. n., A. Agassiz, l. c. p. 253. Test depressed; spines not as distinctly fluted and crenated as in *Cidaris hystrix*, often worn perfectly smooth, and attain their greatest diameter at about one-fifth the length of the spine from the base; milled ring and neck of spine sharply defined. Mamelon of primary tubercles small, deeply cut at its base, high, mammillary boss not prominent. Scrobiculae deeply sunk; scrobicular circle and interambulacral miliaries prominently raised; secondary tubercles of scrobicular circle but slightly larger than the miliaries, diminishing regularly towards the sutures of the plates, which are clearly and sharply cut, as are also the sutures of the ambulacral plates; each plate carries a larger exterior tubercle, with a smaller one nearer the abactinal edge, and sometimes a third and fourth miliary between the two. The poriferous zone is narrow but slightly undulating, and occupying half the ambulacral plate. Sutures of abactinal plates marked by distinctly cut lines; abactinal system large; ocular plates heart-shaped; genital plates irregularly octagonal. From 40 to 270 fathoms.

Salenocidaris rarispina, gen. et sp. nov., A. Agassiz, l. c. p. 254. The ab-

actinal system is that of *Salenia*, but the position of the anal system is that of *Hyposalenia*. As nothing is known of the spines of either of these genera, this new genus is established on the peculiarity of the abactinal system and the imbricated buccal membrane, which is covered thickly with plates arranged somewhat as they are in *Echinocidaris*. The primary tubercles of the interambulacral area are large, arranged in two vertical rows in the two areas; those of the ambulacral area are smaller, and diminish rapidly towards the abactinal pole. Three posterior genital plates much larger than two anterior; the reverse is the case of the ocular plates; there is a trace of a madreporic body on the largest genital plate. Off Double Head-Shot Key, 315 fathoms.

Cænopedina cubensis, gen. et spec. nov., A. Agassiz, *l. c.* p. 256. This is a living representative of *Hemipedina*, Wright, as emended by Desor, but differs by the peculiar arrangement of the pores, which have a tendency to arrange themselves in lateral arcs of three pairs. General outline of test is that of *Cyphosoma*; its perforate tubercles are not crenulated, are nearly of the same size, and there are but two rows, extending from pole to pole. Abactinal part of test is flat; the actinal opening is large, spines long, moderately stout; genital plates heptagonal, carrying five to six small tubercles and as many still smaller ones. Ocular plates pentagonal; ocular pore large, surrounded by an arc of small tubercles. Anal system large; plates numerous and minute. Anus central. Teeth like those of *Echinocidaris*; buccal membrane is strengthened round the mouth, close to the teeth, by ten large perforated plates, occupying nearly the whole membrane, with eight to ten smaller ones around these. From 138 to 270 fathoms.

Echinus lividus. For its development see Metschnikoff, *l. c.* p. 42.

Echinus gracilis, sp. n., A. Agassiz, *l. c.* p. 261. Intermediate between *E. flemingii*, Ball, and *E. melo*, Lam. From 93 to 200 fathoms.

Podocidaris sculpta, gen. et sp. nov., A. Agassiz, *l. c.* p. 258. Has the general facies of a young *Echinocidaris*, with a depressed abactinal surface as in *Astropyga*, the ambulacra rising in ridges above the surface. The whole surface of the test is covered with long-stemmed articulated pedicellariæ, having each a distinct mamelon for their support, surrounded by a sort of scrobicular circle, the base of the pedicellariæ forming a ball-and-socket joint with the tubercle, while there is a true muscular membrane holding them in place, as in true spines. Only four anal plates, as in *Echinocidaris*; genital and ocular plates with small rudimentary knob-shaped spines. From 138 to 315 fathoms.

Genocidaris maculata, gen. et sp. nov., A. Agassiz, *l. c.* p. 262. This is the living representative of *Opechinus*. The spines resemble those of *Temnopleurus*, but are short; actinal membrane, with the exception of ten small circular buccal plates, is bare: a single circular plate, slightly conical, occupies nearly the whole anal system, with the exception of a small crescent-shaped slit, covered by four very small plates. Genital plates large, pentagonal; genital opening in a deep groove; ocular plates pentagonal, elongated horizontally. From 30 to 160 fathoms.

Trigonocidaris albida, gen. et sp. nov., A. Agassiz, *l. c.* p. 263. Allied to *Genocidaris*. The principal tubercles have the same structure; but, in addition, the whole test is covered by a reticulation of ridges similar to those of *Podocidaris*, extending from the base of the different tubercles, and uniting them

all into a complicated raised system of network, with irregularly shaped cells, the ridges leaving more or less deep pits, giving the test the appearance of having been gouged out in spots; abactinal system resembles that of *Cænopedina*; but the anal system is covered by only four triangular plates, one larger than the rest. Whole test covered with pedicellariæ, having a sharp-pointed head articulated on a long, slender thread. From 40 to 270 fathoms.

Echinometra michelini, Des. A. Agassiz, *l. c.* p. 259, gives as synonyms *E. lucunter*, Lütke. (non Lam.), *Heliocidaris mexicana*, auct. (nqn. Ag.), *H. castelnaudi*, Hupé.

Spatangoideæ.

Spatangus raschi, Lovén. Professor Lovén exhibited specimens of this new species at the meeting of Scandinavian naturalists at Christiania, July 1868. It was discovered by Prof. H. Rasch on the deep-sea bank of Storgözen, off the coast of Norway, in 1844, and since in the Zetland seas by Mr. Gwyn Jeffreys. It comes nearest to *S. purpureus*, O. F. M. In very young *Spatangi* the peristomium, situated nearer the middle of the body than in the adult, is exactly pentagonal; the mouth, forming an oval opening in its centre, is surrounded by perforated plates of an irregular form; the mouth is soon drawn backwards; and when it reaches the posterior side of the peristomial pentagon, this side begins to protrude forward and assume the vaulted lip peculiar to the Spatangidæ. Lovén, in Ann. & Mag. N. Hist. ser. 4, vol. iv. Sept. 1869, p. 220.

Lissonotus fragilis, gen. et sp. nov., A. Agassiz, *l. c.* p. 273. This genus has the general outline of *Mareta*, but is somewhat more elongate; it is also closely allied to *Platybrissus*; but the presence of a subanal fasciole, as well as a slight anterior groove, readily distinguish the two; the mouth is pentagonal, with a well-developed floscelle; the plates of the two posterior ambulacra are broad, while all the other ambulacra are made up of smaller plates; genital openings large, three, right anterior one obliterated; anal system transversely elliptical, its membrane covered by minute granulations; anus opens in a short, delicate tube, similar to that of *Neolampas*, but shorter. From 320 to 368 fathoms.

Agassizia excentrica, sp. nov., A. Agassiz, *l. c.* p. 276, from 36 to 115 fathoms.

Agassizia subrotunda, Gray. The locality given by Dr. Gray is Australia. Verrill, *l. c.* p. 382, suggests that this may be erroneous, as two specimens were examined by him from La Paz, Gulf of California.

Desoria * *nodosa*, sp. nov., Verrill, *l. c.* p. 382, locality unknown.

Echinocardium levigaster, sp. nov., A. Agassiz, *l. c.* p. 277, from 79 to 121 fathoms.

Pourtalesia miranda, gen. et sp. nov., A. Agassiz, *l. c.* p. 272. Body elongated, bottle-shaped; test thin, transparent, neck being the posterior extremity; at the base of the neck the test carries a deep pit, surrounded at its anterior extremity by a rostrum projecting from the test; and under this, at the bottom of the pit, is placed the anus. The lower surface is convex, regularly arched from the posterior to the anterior extremity. The posterior

* This name, given to a genus of *Thysanura* by Agassiz in 1841, ought to be changed.

pair of ambulacra extend on both sides of an elongated plastron to the base of the snout-like prolongation, where they curve sharply upwards and follow close to the abactinal part of the test, along a marked wedge-shaped ridge extending from the apical system into the rostrum, protecting the anus, to the apical system, situated almost at the summit of the nearly vertical anterior extremity; the pair of anterior ambulacra take a similar course, but curve more regularly, and do not extend beyond the median line towards the posterior end; the odd ambulacrum is made up of two lines of pores far apart, situated in the deep anterior groove. The four large genital openings placed close together, with the madreporic body tolerably well defined in the centre, are situated at the origin of the anterior groove. The actinal system is elliptical, in the trend of the groove, very large, edges sharply defined, covered by very minute plates; no floscelle; no petaloid portion in the ambulacra. This is a living representative of *Infulaster* of the Cretaceous period. But one specimen was taken, at a depth of 349 fathoms.

Cassidulidæ.

Neolampas rostellatus, gen. et sp. nov., A. Agassiz, *l. c.* p. 271. Outline from above resembling *Echinolampas*, but more elongated. Three large genital openings; left anterior one atrophied, placed closely together; madreporic body restricted to a narrow ridge separating them. Anal system large, elliptical, occupying the whole of the posterior truncated end, somewhat as in *Bothriopygus*, the test being turned in like the finger of a glove, while the anus opens at the end of a long, slender tube, extending well beyond the outline of the test, starting from the upper part of the anal membrane, which is covered by small plates, gradually diminishing in size, and eventually firmly soldered together to form the basis of the anal tube. Test thin; mouth placed near anterior extremity, having a well developed floscelle and prominent bourrelets; spines straight, very fine, resembling those of the *Scutellidæ*. Only $\frac{1}{2}$ of an inch, but evidently adult. From 100 to 125 fathoms.

Echinolampas caratomooides, sp. nov., A. Agassiz, *l. c.* p. 269, 36 fathoms.

Rhyncholampas. A. Agassiz (*l. c.* p. 270) forms this genus for the *Cassidulus caribbæarum*, Lam.

Chlypeastridæ.

Stolonoclypeus ravenelii, sp. nov., A. Agassiz, *l. c.* p. 265, off Charleston Bar, Florida, in 34 fathoms.

Crustulum, Troschel, = *Astriclypeus*, Verrill; *C. gratulans*, Troschel, = *A. manii*, Verrill. See Troschel, *l. c.* p. 52.

Encope emarginata, Ag. As synonyms: *E. valenciennesii*, Ag.; *E. subclausa*, Ag.; *E. oblonga*, Ag.; *E. quinqueloba*, Ag.; *E. griesbachii*, Béval; *E. emarginata*, Ltk.; *Moulinsia cassidulina*, Ag. (young!). See Agassiz, *l. c.* p. 267.

HOLOTHUROIDEA.

Uroxia, g. n., A. Costa, *l. c.* p. 57. Corpus ovato-fusiforme, posterius abrupte attenuatum; pedicellis per lineas quinque ambulacrales duplici serie dispositis, nec non in areis interambulacralibus sparsis. Tentacula oralia decem, crassa; octo normalia, æqualia, ramis frondosis; duo brevissima abortiva. *U. aurantiaca*, A. Costa, *l. c.* p. 58, tav. 3. fig. 3.

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2 Y

CŒLENTERATA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

A. *Separate Publications.*

FOL, H. Ein Beitrag zur Anatomie und Entwicklungsgeschichte einiger Rippenquallen: Inauguraldissertation vorgelegt am 17. August 1869. Berlin: 4to, pp. 1-14, Taf. 1 to 4.

The author accompanied Professor Hæckel to the Canary Isles in the winter of 1866-7. Though the fauna of the coast of the islands was not as rich as was expected, yet on clear, calm days the charming *Eurhamphæa vexilligera* swam by in swarms on the surface of the ocean, accompanied now and then by a species of *Beroë*; a single example of *Eucharis multicornis* and but two of *Cestum veneris* were seen. A new genus belonging to *Cestida* was also met with. The author promises to describe more particularly the nervous system in a work to be soon published on the minute anatomy of *Beroë*.

HINCKS, THOMAS. A History of the British Hydroid Zoophytes. 2 volumes, 8vo. Vol. i. text, pp. i-lxviii & 1-338, with 45 woodcuts; vol. ii. 67 plates. London, 1868. [These volumes, though dated 1868, were not published until January 1869.]

The Introduction contains an account of the reproduction, rate of growth, geographical distribution, and classification of the Hydroida. In addition to the description of the genera and species, there is also appended a selected list of works written on the Hydroida. These important volumes form part of the beautiful illustrated works on British Natural History published by Mr. Van Voorst.

B. *Papers published in Journals, &c.*

AGASSIZ, LOUIS. Report upon Deep-Sea Dredgings in the Gulf-stream during the Third Cruise of the U.S. Steamer 'Bibb,' addressed to Professor Peirce. Bull. Mus. Comp.

Anat. Harvard College, Camb. Mass. No. 13. Nov. 1869, pp. 363-386.

One of the most important results of this cruise is thus mentioned by Professor Agassiz :—" Corals undergo a succession of changes peculiarly their own, and yet hardly less marked than the embryonic changes already known among many animals."

CRESPIGNY, C. DE. Notes on the friendship existing between the Malacopterygian Fish *Premnas biaculeatus* and the *Actinia crassicornis*. Proc. Zool. Soc. 1869, pp. 248, 249.

GRAY, J. E. Descriptions of some new genera and species of Alcyonoid Corals in the British Museum. Ann. & Mag. N. Hist. ser. 4, vol. iii. Jan. 1869, pp. 21-23 (woodcut).

—. Notes on the fleshy Alcyonoid Corals (*Alcyonium*, Linn., or *Zoophytaria carnosa*). Ibid., Feb. 1869, pp. 117-131.

—. On *Berbyce mollis*, a new British Coral. Ibid., March 1869, p. 246.

GRAY, J. E., & CARTER, H. J. On *Spoggodes conglomeratus*, sp. n., and on a new genus of Fleshy Alcyonoids. Ibid. vol. iv. Nov. 1869, pp. 360, 361.

HÄCKEL, ERNST. Ueber die Crambessiden, eine neue Medusen-Familie aus der Rhizostomeen-Gruppe. Zeitschr. f. wissenschaft. Zoologie, xix. Bd. 4. Heft, Nov. 6, 1869, Taf. 38, 39, pp. 509-537.

A description of a new genus and species belonging to a new family of the *Rhizostomea*, with an analysis of the families of this order. This memoir is the result of several days' labour when the author was doing quarantine in the Tagus en route to the Canary Islands.

—. Zur Entwicklungsgeschichte der Genera *Physophora*, *Crystallodes*, *Athorybia* und Reflexionen über die Entwicklungsgeschichte der Siphonophoren im Allgemeinen. Utrecht, 1869, pp. 1-119, plates 1-14 (some coloured).

This is a prize essay read before the Academy of Utrecht, and contains the result of investigations carried on during the winter of 1866-67 at Lanzarote into the development of the Siphonophora. The memoir gives :—1. An historical survey of the subject; 2. Remarks on the elementary form and topography of the Siphonophorous larvæ; 3. On the development of *Physophora*; 4. Description of some varieties and monstrosities of Physophorous larvæ; 5. Systematic remarks on the new genus of Agalmidæ, *Crystallodes*; 6. On the development of *Crystallodes*; 7. Experiments on the multiplication of the larvæ of *Crystallodes* by artificial division; 8. Description of some varieties and monstrosities of *Crystallodes*; 9. Development of *Athorybia*; and 10. Reflections on the peculiar develop-

mental phases of the Siphonophora, and their significance from a palæontological point of view.

JONES, J. M. Contributions to the Natural History of the Bermudas.—Coralliaria. Proc. & Trans. Nova Scotia Ins. vol. ii. part 2, 1869, pp. 7-16.

Gives a list of nine species of stony corals and four of Alcyonaria. Doubtless a little closer examination of the Bermudian reefs would yield a much larger number of species.

KÖLLIKER, A. Anatomisch-systematische Beschreibung der Alcyonarien. Erste Abtheilung. Die Pennatuliden. Erste Hälfte mit x. Tafeln. Abhandl. d. Senckenb. Naturf. Gesellschaft, Bd. vii. 1869, pp. 1-148.

In our special part will be found an analysis of the genus given in this first part of Professor Kölliker's memoir, and a list of the new species. It is impossible within our limits to give an epitome of the details of the anatomy of the group. This is the less to be regretted, as the student of this group must possess this most valuable memoir.

PAGENSTECHE, A. Eine neue Entwicklungsweise bei Siphonophoren. Zeitschr. f. wissensch. Zoologie, xix. Bd. 2. H. 1. Juli 1869, pp. 244-252, Taf. 21.

The author describes a very remarkable young form referred to Siphonophora, but which it would be impossible, until further development is known, to refer to any known genus. Within this young form a small Siphonophorous colony is found suspended by a short cord. On one side was a portion of a swimming-column with the bells not yet differentiated; and on the other was the axial filament, where the polyp-bodies would be developed; each had a separate peduncle, and developed its base stinging-filaments.

The author describes the sea off Mentone in the early spring of 1868 as abounding in oceanic creatures.

POUCHET, G., and MYÈVRE, A. Sur l'anatomie des Alcyonaires. Compt. Rend. tome lxxix. No. 21 (Nov. 1869), pp. 1098-1099.

This is only an abstract of a paper, in which the authors give an account of the muscular system of *Alcyonium digitatum* and *A. palmatum*.

RICHIARDI, SEBASTIANO. Monografia della famiglia dei Pennatularii. Archivio per la Zoologia, l'Anatomia e la Fisiologia, serie 2, vol. i. Firenze, 1869, pp. 1-150, plates 3-16. Also as a separate reprint at Bologna, with plate 1 to 14.

In this monograph there is an account of all the species of *Pennatulidæ* known; very excellent figures are given of many

the species. The minute anatomy, however, is scarcely alluded to by Professor Richiardi. One new genus and several new species are described. Many species of modern authors are reduced to the ranks of synonyms. The references to the plates in our special part are to the reprint.

SARS, M. (Remarks on the distribution of Animal Life in the Depths of the Sea.) Videnskabs-Selskabs Forhand. 1868, pp. 246-275. Translated in Ann. & Mag. N. Hist. ser. 4, vol. iii. June 1869, pp. 423-441.

Contains a Catalogue of the marine Invertebrata known at the date of publication to exist on the coast of Norway from 200 to 450 fathoms of depth. The number of species enumerated is, of Rhizopods 68, Sponges 5, Actinozoa 20, Hydrozoa 2, Crinoids 2, Asterids 21, Echinids 5, Holothuroids 8, Gephyrea 6, Annelida 51, Polyzoa 35, Tunicates 4, Brachiopods 4, Mollusca 90, Arachnid 1, Crustacea 105—a total of 427 species.

STOLICZKA, F. On the anatomy of *Sagartia schilleriana*, a new Coral living in brackish water at Port Canning. Journ. Asiat. Soc. part 2, No. 1, 1869. Physical Science, pp. 28-54, pls. 10, 11.

This new species is remarkable for possessing a number of solid scleroid particles in its tissue—these being formed by siliceous and carbonate of lime, in the proportion of one of the former to twenty of the latter.

VERRILL, A. E. Descriptions of a remarkable new Jellyfish and two Actinians from the coast of Maine. Silliman's Journal, July 1869, pp. 116-118, and Ann. & Mag. N. Hist. ser. 4, vol. iv. Sept. 1869, pp. 160-163.

— Notes on Radiata. Review of the Corals and Polyps of the West Coast of America. Trans. Connecticut Acad. vol. i. pp. 423-462, January 1869; pp. 463-478, February 1869; pp. 479-502, March 1869.

— On new and imperfectly known Echinoderms and Corals. Proc. Boston Soc. Nat. Hist. vol. xii. April 1869, pp. 381-396.

The author describes several new species of Echinoderms, and a new genus and several new species of Corals.

— Critical remarks on Halcyonoid Corals. No. 3. Am. Journ. Sci. 2nd ser. vol. xlvii. No. 140, March 1869, pp. 282-285. No. 4. Ibid. vol. xlviii. Nov. 1869, pp. 419-429.

No. 3 criticises Dr. J. E. Gray's paper on Fleishy Alcyonoid Corals.

WALLICH, G. C. On *Physalia* and certain Scrombroid (?) Fish which are frequently associated with it in Tropical and

Subtropical Seas. Ann. & Mag. N. Hist. ser. 4, vol. iii. Jan. 1869, pp. 8-10.

WRIGHT, E. PERCEVAL. On a new genus of Gorgonidæ from Portugal. Ann. & Mag. Nat. Hist. ser. 4, vol. iii. Jan. 1869, pp. 23-26 (woodcuts).

——. Notes on the animal of the Organ-pipe Coral. (*Tubipora musica*). Ibid., May 1869, pp. 377-383, pl. 23.

HYDROZOA.

HYDROIDÆ.

HINCKS, I. C., adopts the following classification of the Hydroida:—

Suborder I. ATHECATA. Hydroida destitute of true thecæ or protective cases, either for the polypites or gonophores.

Family 1. Clavidæ. Genera *Clava*, Gm.; *Tubiclava*, Allm.; *Turris*, Less.; *Cordylophora*, Allm.

2. Hydractinidæ. Genus *Hydractinia*, Van Ben.

3. Podocorynidæ. Genera *Podocoryne*, Sars.; *Corynopsis*, Allm.; ? *Cionistes*, St. Wright.

4. Laridæ. Genus *Lar*, Gosse.

5. Corynidæ. Genera *Coryne*, Gaert.; *Syncoryne*, Ehb.; *Zanclea*, Gegbr.

6. Stauridiidæ. Genera *Cladonema*, Duj.; *Stauridium*, Duj.

7. Clavatellidæ. Genus *Clavatella*, Hincks.

8. Myriothelidæ. Genus *Myriothela*, Sars.

9. Eudendriidæ. Genus *Eudendrium*, Ehrb.

10. Atractylidæ. Genera *Atractylis*, St. Wright; *Perigonimus*, Sars; *Hydranthea*, g. nov.; *Garveia*, St. Wright; *Bimeria*, St. Wright; *Dicoryne*, Allm.; *Heterocordyle*, Allm.; *Bougainvillia*, Less.

11. Tubulariidæ. Genera *Tubularia*, Linn.; *Ectopleura*, Ag.; *Corymorpha*, Sars.

12. Pennariidæ. Genera *Vorticlava*, Ald.; *Acharadria*, St. Wright.

Suborder II. THECAPHORA. Hydroida furnished with thecæ.

Family 1. Campanulariidæ. Genera *Chytea*, Lamx.; *Obelia*, Pér. & Lesr.; *Campanularia*, Lamk.; *Lovenella*, g. n.; *Thaumantias*, Esch.; *Gonothyræa*, Allm.

2. Campanulinidæ. Genera *Campanulina*, Van Ben.; *Zygodactyla*, Brdt.; *Opercularella*, g. n.

3. Leptoscyphidæ. Genus *Leptoscyphus*, Allm.

4. Lafoeidæ. Genera *Lafoëa*, Lamx.; *Calycella*, Hincks; *Cuspidella*, Hincks; *Salacia*, Lamx.; *Filellum*, g. n.

5. Trichydridæ. Genus *Trichydra*, St. Wright.

6. Coppiniidæ. Genus *Coppinia*, Hass.

7. Haleciidæ. Genera *Halecium*, Oken; *Ophiodes*, Hincks.

8. Sertulariidæ. Genera *Sertularella*, Gray; *Diphasia*, Ag.; *Sertularia*, Linn.; *Hydrallmania*, g. n.; *Thuiaria*, Flüg.

9. Plumulariidae. Genera *Antennularia*, Lamk.; *Aglaophenia*, Lamk.; *Plumularia*, Lamk.

Suborder III. GYMNOCHROA. Hydroids destitute of polypary, locomotive.

Family 1. Hydridae. Genus *Hydra*, Linn.

New genera and species :—

Hydranthea, g. n., Hincks, l. c. p. 99, for *Atractylis agarica*, Hincks.

Lovenella, g. n., Hincks, l. c. p. 177, for *Campanularia clausa*, Lovén.

Opercularella, g. n., Hincks, l. c. p. 193, for *Campanularia lacerata*, Johnst.

Filellum, g. n., Hincks, l. c. p. 214, for *Reticularia immersa*, Wy. Thomson, = *Campanularia serpens*, Hass.

Hydrallmania, g. n., Hincks, l. c. p. 273, for *Sertularia falcata*, Linn.

Obelia plicata, sp. n., Hincks, l. c. p. 159, pl. 30. fig. 1, Shetland. Referred provisionally to this genus.

Campanulina turrita, sp. n., Hincks, l. c. p. 190, pl. 36. fig. 2, Holywood, Belfast.

Lafoea pocillum, sp. n., Hincks, l. c. p. 204, pl. 40. fig. 2, Oban Bay; *L. pygmaea*, Alder, MS., Hincks, l. c. p. 205, pl. 40. fig. 3, Tynemouth, Sark.

Cuspidella grandis, sp. n., Hincks, l. c. p. 210, pl. 40. fig. 4, Connemara;

C. costata, sp. n., Hincks, l. c. p. 210, pl. 40. fig. 5, Whitby.

Halecium plumosum, sp. n., Hincks, l. c. p. 227, pl. 64. fig. 1, Ireland.

Podocoryne proboscidea, sp. n., Hincks, l. c. p. 317, pl. 23. fig. 4, Ilfracombe.

Hydra. For some remarks on the muscular structure of *Hydra*, see Ratzel's "Histologische Untersuchungen an niederen Thieren," Zeitschr. f. wissensch. Zoologie, Bd. xix. p. 272, tab. 23. figs. 20-22.

PHYSOPHORIDÆ.

Agalmidæ, Brandt, = *Stephanomidæ*, Huxley. Hæckel, l. c. p. 48, arranges this family thus :—

Subfamily 1. HALISTEMMINÆ. Terminal threads of the stinging-organs simple.

Genus 1. *Forskalia*, Hæck. Swimming-bells in many rows; stinging-organs naked.

Genus 2. *Halistemma*, Huxley. Swimming-bells distichous; stinging-organs naked.

Genus 3. *Stephanomia*, Péron and Lesueur. Swimming-bells unknown; stinging-organs covered by an involucre.

Subfamily 2. CRYSTALLODINÆ. Terminal threads of the stinging-organs double, with a pouch-like body between the two terminal threads; stinging-organs covered by an involucre.

Genus 4. *Agalmopsis*, Sars. Cœnosarc highly contractile and shortened, with leaf-like, thin, widely separated bracts; polypites dispersed spirally on the cœnosarc; stinging-filaments leaving the stem on all sides.

Genus 5. *Agalma*, Eschscholtz. Cœnosarc rigid and not much contracted, with wedge-shaped thick bracts one over the other; polypites spirally dispersed on the stem; stinging filaments suspended only from the distal end of the cœnosarc.

Genus 6. *Crystallodes*, gen. nov., Hæckel, l. c. p. 43. This genus is intermediate between *Agalma* and *Stephanomia*; cœnosarc rigid and not per-

ceptibly shortened, with wedge-shaped thick bracts one over the other; polypites at intervals, singly on the ventral side of the stem; the stinging-filaments suspended between the bracts on the ventral side. *C. rigidum*, sp. nov., Hackel, *l. c.* p. 49, tab. 10. figs. 65-71.

Häckel details some remarkable experiments made on this species by cutting the larva into two, three, or four pieces, each of which developed or grew after a few days into ordinary larval forms. *l. c.* p. 73.

Physophora. For its development see Hackel, *l. c.* p. 17. The larva is traced from its exit from the egg; at its thirteenth day it resembles somewhat the *Hybocodon prolifer* of A. Agassiz. The species observed appears to be new, and is described, p. 37, as *P. magnifica*.

Athorybia. Häckel describes its development (*l. c.* p. 88) as far as the seventeenth or eighteenth day.

RHIZOSTOMIDÆ.

HÄCKEL gives the following classification of the Rhizostomidæ, *l. c.* p. 509:—

1. *Rhizostomidæ*. Four genital pouches and four subgenital pores; arms simple, unbranched, without tentacles, with numerous crisped foliations on the plaits and throughout the greater part of the length of the fastened-together sucking-combs; eyes eight, four perradial (in the meridian of the four arm-roots) and four interrarial (in the meridian of the four genital spots). Genera *Rhizostoma*, *Stomolophus*, *Stylonectes*, *Mastigius*, *Himantostoma*, *Catostylus*, *Rhacopilus*, *Toxoclytus*, *Melitæa*, *Thysanostoma*, *Evagora*.

2. *Leptobrachidæ*. Four genital pouches and four subgenital pores; arms simple, unbranched, without tentacles, very long and thin, with only one tuft of border-plaits and sucking-knobs near their end; eyes eight (?). Genus *Leptobrachia*.

3. *Cassiopejidæ*. Eight genital pouches and eight subgenital pores; arms without tentacles, forming an eight-rayed simple or double rosette of dendritic tufts around the oral centre; eyes eight. Genera *Cassiopeja*, *Crossostoma*, *Stomaster*, *Holigocladodes*.

4. *Cepheidæ*. Four genital pouches and four subgenital pores; arms short, very complicated, with helved sucking-knobs between the terminal twigs of the tufts, and with long thin tentacles between them; eyes eight. Genera *Cephea*, *Polyrrhiza*, *Diplopilus*, *Hidroticus*, *Cotylorhiza*, *Phyllorhiza*.

5. *Polyclonidæ*. Four genital pouches and four subgenital pores; arms long, continuously dichotomously twigged, without helved sucking-knobs and without long tentacles; eyes twelve, four perradial (in both meridians of the four arm-roots) and eight adradial (on both sides of the former), but none interrarial (*i. e.* in both meridians of the genital pores). Genera *Polyclonia*, *Salamis*, *Homopneusis*.

6. *Crambessidæ*. A single, central, cross-shaped genital pouch over the stomach, and four subgenital pores; arms long, simple, unbranched, without tentacles, with many long rows of numerous isolated, wrinkled, head-shaped sucking-knobs; eyes eight (four perradial and four interrarial). Genus *Crambessa*.

Crambessa tagi, gen. et spec. nov., Hackel, *l. c.* p. 511, Taf. 38 & 39, River Tagus, between Lisbon and Belem, and found where the water is even brackish.

MEDUSIDÆ.

Callinema, gen. nov., Verrill, *l. c.* p. 116. Disk broad, moderately thick, with numerous broad channels running to the marginal one, arranged in sixteen systems, two or three parallel and undivided tubes alternating with a group of five or six branching ones, which unite together into one toward the central portion of the disk, each of which corresponds in position with one of the sixteen eye-bearing marginal lobes. Toward the marginal channel the branching tubes anastomose freely, the undivided ones but slightly, or not at all, though two often unite into one near the margin. Margin deeply and regularly divided into scalloped lobes, sixteen of which bear eyes, and are bilobed for more than half their length, bearing the eye at the division just below which the channel in the lobe divides into two divergent branches, one of which goes to each division. Alternating with the eye-lobes are somewhat longer lobes, which are divided at the edge into two, three, or four rounded scollops, each of which receives a simple channel. Tentacles in a nearly regular circle, but arranged in groups of five or six at the bases of the interocular lobes, very long, highly contractile, flat, one edge double, finely scalloped, the scollops again finely crenulate. Ovaries large, much convoluted pendent pouches. Lobes of the actinostome four, large, elongated, pointed, complexly lobed and frilled. *C. ornata*, sp. n., Verrill, *l. c.* p. 117, Eastport Harbour, coast of Maine.

Medusa æguorea, Forsk. Dr. Gray mentions, on the authority of Mr. R. M'Andrew, that the individuals of this species are in the habit of lying on their backs on the sand under water in the Red Sea, with their tentacles expanded like a flower, and pointing upwards. *Ann. & Mag. Nat. Hist.* ser. 4, vol. iv. Oct. 1869, p. 295.

ACTINOZOA.

In the 'American Naturalist' for November 1869, Verrill publishes a paper on the comparison of the Coral faunæ of the Atlantic and Pacific coasts of the Isthmus of Darien. No species were found to be identical; and even the genera and families show remarkable contrasts.

ALCYONARIA.

ALCYONIDÆ.

J. E. GRAY divides the fleshy Alcyonoid Corals as follows (*l. c.* p. 117):—

I. DERMOCORALLIA. The coral crust-like, attached by the lower surface, or lobed and branched, with polypes on the whole of the exposed surface.

1. *Antheliadæ*. Coral crust- or skin-like, 'spreading, and attached by the lower surface. Polypes produced above the surface of the coral, not retractile. Spicules fusiform or cylindrical, spinous or tubercular. Genus *Anthelia*, Savigny.

2. *Sympodiadæ*. Polypes and tentacles completely retractile into the skin-like or crustaceous coral. Genera: 1. *Massarella*, gen. nov., p. 119, for *Gorgonia coralloides*, Pal. (the same species taken by Kölliker as the type of *Sympodium*), *Sympodium roseum*, Ehrb., and *S. verum*, D. & M.; 2. *Eunoella*,

gen. nov., p. 120, for *Alcyonium gorgonoides*, Ell. & Sol.; 3. *Sympodium*, Ehrb.; 4. *Erythropodium*, K  l.; 5. *Ojeda*, D. & M. (according to K  lliker, in a letter to Verrill, this is a sponge).

3. *Lobulariadae*. Coral with a hard, crustaceous, smooth, external coat. Polypes retractile. Genera: 1. *Lobularia*, Lamk.; 2. *Sphaerella*, gen. nov., p. 122, for *Alcyonium tuberculosum*, Q. & G.; 3. *Chlorozoa*, gen. nov., p. 122, for *Alcyonium viride*, Q. & G.; 4. *Rhodophyton*, Gray; 5. *Amicella*, gen. nov., p. 123, for *Alcyonium amicum*, Q. & G.

II. *PODOCORALLIA*. The coral pedunculated, the lower portion stem-like, barren, the upper lobed or branched, with the polypes on the surface. The polypes with an elongated tubular body.

4. *Alcyoniadae*. Coral fleshy, divided into lobes or branches above, bearing the polypes on all sides; stem more or less coriaceous externally. Polypes retractile. Genera: 1. *Alcyonium*; 2. *Danella*, gen. nov., p. 124, for *Alcyonium confertum*, Dana; 3. *Amocella*, gen. nov., p. 124, for *Lobularia pauciflora*, Ehb  g.

5. *Sarcophytidae*. Coral discoidal or hemispherical, pedicelled; stem and under surface barren, rather coriaceous, granular. Polypes on the upper surface of the frond, retractile. Genera: 1. *Sarcophyton*, Lesson; 2. *Areocella*, gen. nov., p. 125, for *Sarcophyton latum*, Verrill (Verrill says that this is a true *Sarcophyton*); 3. *Cladiella*, gen. nov., p. 125, for *Alcyonium sphaerophora*, Dana.

6. *Bellonelladae*. Coral capitate; stem thick, with a coriaceous granular outer surface, grooved, showing the tubular form of the bodies of the polypes above; head hemispherical. Polype-cells cylindrical, with a plaited mouth. Polypes retractile. Genus *Bellonella*, Gray.

7. *Xeniadae*. Coral soft and fleshy; stem simple or slightly branched, smooth, or minutely granular. Polypes clustered on the rounded ends of the branches, not retractile; skin of the stem of polypes to the end of the pinules strengthened with spicules. Genera: 1. *Xenia*, Savigny = *Creptularia*, Valenc.; 2. *Loridella*, gen. nov., Gray, l. c. p. 126, for *Cornularia subviridis*, Q. & G. (Verrill says that he cannot separate generically *Xenia florida*, Dana, *X. elongata*, Dana, or *X. caerulea*, Dana, all referred to *Loridella* by Gray, from *X. umbellata*, Sav.); 3. *Wardella*, gen. nov., Gray, l. c. p. 127, for *Xenia indivisa*, Sars.

8. *Nidalidae*. Coral simple or branched; stem cylindrical, cartilaginous, with a crustaceous skin and imbedded spicules. Polypes on the upper surface of a hemispherical head, with prominent, large, conical polype-cells; stem and polype-cells covered with large fusiform spicules. Genus *Nidalia*, Gray.

9. *Spoggodidae*. Coral membranaceous, cellular, branched, the outer surface covered with opaque fusiform spicules. Polype-cells at the ends of the branchlets, and surrounded by a series of projecting spicules. Polypes retractile. Genera: 1. *Spoggodes*, Lesson; *Spoggodia*, Gray (Verrill states that his *Spoggodes gigantea* connects the latter genus with the former.)

10. *Nephtyidae*. Coral fleshy, cellular, branched; stem coriaceous or granular externally; branches and polype-cells with superficial spicules. Polype-cells subcylindrical, incurved. Polypes retractile. Genera: 1. *Nephtya*, Savigny; 2. *Ammothea*, Savigny; 3. *Capnella*, gen. nov., Gray, l. c. p. 129, for *Ammothea imbricata*, M.-Edw.; 4. *Morchellana*, Gray.

11. *Lemnaliadae*. Coral simple at the base; stem formed of the clustered cylindrical, tubular bodies of the polypes; outer surface smooth, without spicules. Genera: 1. *Lemnalia*, Gray (Verrill objects to his *Ammonothea nitida* being included in this genus, for its surface is filled with an abundance of minute, slender, interlaced spicules); 2. *Verrilliana*, gen. nov., Gray, l. c. p. 130, for *Acyonium ramosum*, Q. & G. (Verrill says that Gray includes his *Nephthya thyrsoidea* as a synonym of *Ammonothea thyrsoidea*, Ehrb.; but the latter is destitute of external spicules, while the former is described and figured with long external spicules; for this species Verrill makes the new genus *Eunephthya*).

12. *Paracyonidae*. Coral membranaceous, branched above, smooth, with minute dermal spicules near the mouths of the polypes; the bodies of the polypes opening into each other, making a common cavity. The coral retractile into a tubular sheath covered with large dermal spicules. Tentacles retractile. Genus *Paracyonium*, M.-Edw.

Eunephthya, gen. nov., Verrill, l. c. p. 284, for *Nephthya thyrsoidea*, Verrill; *E. glomerata*, sp. n., Verrill (Lütken, sp.), l. c. p. 284, from Greenland.

Acyonium (?) *bradleyi*, sp. n., Verrill, l. c. p. 459, Panama.

Tubipora musica. The Recorder describes and figures the animal of this species met with at the Seychelles. The tube is constructed of fusiform calcareous spicules, which become consolidated. Spicules of various forms are also met with in the ectodermic layer of the polype.

PENNATULIDÆ.

RICHARDI divides the family as follows, l. c. p. 16:—

I. *Polyps long, on the margin and face of the pinnae*.

Provided with spicules on the outside, which also extend to the body of the zoanthodeme 1. *Pennatula*, Linn.

Spicules united in bundles, frequently projecting as spines beyond the margin of the polyp-bearing portion .. 2. *Pteroides*, Herkl.

Fleshy, kidney-shaped, no spicules. 3. *Sarcoptilus*, Gray.

Fleshy, kidney-shaped, with spicules 4. *Ptilosarcus*, Gray.

Covering the lateral edge and dividing on the front of the body of the zoanthodeme; axis rectangular; polyps numerous; wanting spicules.

5. *Sceptonidium*, g. n.

Covering only the lateral edge of the zoanthodeme transversely; polyps numerous 6. *Halisceptrum*, Herkl.

Covering only the lateral edge of the zoanthodeme obliquely; polyps few (10-12) 7. *Scytaliem*, Herkl.

Entirely adhering to the body of the zoanthodeme, with spicules.

8. *Stylatula*, Verrill.

Entirely adhering to the body of the zoanthodeme, with spicules.

9. *Virgularia*, Lamk.

Sickle-shaped, free throughout their whole length, no spicules.

10. *Lygus*, Herkl.

Few in number (4-5), only on the summit of the body of the zoanthodeme 11. *Crenillum*, V. der Hoef.

II. *Polyps carried on isolated polypidoms*.

In a series on three sides of the body of the zoanthodeme.

12. *Funiculina*, Lamk.

In a mass on the extremity of the body of the zoanthodeme.

13. *Umbellularia*, Lamk.

III. *Polyps retractile into the parenchyma of the zoanthodeme.*

Anterior and lateral 14. *Kophobelemnon*, Asbjör.

On all the surface.

Axis well unfolded, quadrangular 15. *Lituarium*, Valenc.

Axis slightly cylindrical 16. *Cavernularia*, Valenc.

Axis rudimental, sometimes wanting 17. *Veretillum*, Cuv.

On one of the two sides of the edge of the laminar body, reniform.

18. *Renilla*, Lamk.

RICHARDI describes the following new species :—

Pennatula targionii, Richiardi, *l. c.* p. 34, tav. 1. fig. 8, 9, 10, habitat unknown.

Pteroides grayi, Richiardi, *l. c.* p. 54, tav. 3. figs. 18–20, for *Pennatula grisea*, Esper, not *P. grisea*, Pallas; *P. vogtii*, Richiardi, *l. c.* p. 55, tav. 4. figs. 26–28, Mediterranean; *P. cornalæ*, Richiardi, *l. c.* p. 57, tav. 5. figs. 37–39, Adriatic; *P. clausii*, Richiardi, *l. c.* p. 58, tav. 6. figs. 43–46, Mediterranean; *P. pancerii*, Richiardi, *l. c.* p. 59, tav. 7. figs. 49–51, habitat unknown.

Virgularia leuckartii, Richiardi, *l. c.* p. 82, tav. 10. figs. 75–77, North Sea, *V. koellikerii*, Richiardi, *l. c.* p. 83, tav. 10. figs. 71–74, Mozambique.

Cavernularia haimeii, Richiardi, *l. c.* p. 119, tav. 13. fig. 110, habitat unknown; *C. defilippii*, Richiardi, *l. c.* p. 121, tav. 13. fig. 111, ? Mediterranean.

Sceptonidium, g. n., Richiardi, *l. c.* p. 63. Zoanthodeme simple, short; body large; the pinnuliferous portion distinct from the sterile part; pinnules fleshy, short, upon the anterior and lateral faces; the posterior naked and smooth; the polyps numerous, retractile, in one long single series on the margins of the pinnules; the stem or axis largely calcareous, rectangular in section. *S. mozambicanum*, sp. n., Richiardi, *l. c.* p. 763, tav. 9. figs. 63–66, habitat Mozambique.

KÖLLIKER, *l. c.*, divides the Pennatulidæ as follows :—

I. Pars polypifera with bilateral symmetry.

A. Pars polypifera feather-shaped, peduncle with 4 principal canals.

Tribe 1. *Pennatulaceæ*.

B. Pars polypifera leaf-shaped, peduncle with 2 canals.

Tribe 2. *Renillaceæ*.

II. Pars polypifera with the polyps arranged after a radial type.

Tribe 3. *Veretilliacæ*.

First Tribe. *Pennatulaceæ*.

1st family. *Penniformes*. Pennatulæ with well-formed pinnæ and well-pronounced feather-shaped figure.

1st subfamily. *Pteroidinæ*. The principal zooids reaching to the pinnæ.

1. The pinnæ with main rays.

a. With many rays 1. *Pteroides*, Herkl.

b. With only a single main ray 2. *Godeffroyia*, g. n.

2. The pinnæ without rays 3. *Sarcophyllum*, g. n.

2nd subfamily. *Pennatulinaæ*. The principal zooids situated on the ventral side of the rachis.

1. The pinnæ with calcareous spicula.

- a. Spicula spreading over the whole pinna. 4. *Pennatula*, L.
 - b. Spicula only in the polyp-zone.
 - a. The polyp-cup with 1 tooth. 5. *Leioptilum*, Verr.
 - β. The polyp-cup with 2 teeth. 6. *Ptilosarcus*, Gray.
 - 2. The pinnae without any spicules. 7. *Halisceptrum*, Herkl.
- 3rd subfamily. *Virgularinæ*. Pennatulæ with a long, narrow pars polypifera: pinnae small, or polyps absolutely inserted on the stem.
- A. Pars polypifera with pinnae.
 - 1. Pars polypifera without calcareous spicules.
 - 8. *Virgularia*, Lam.
 - 2. Pars polypifera with calcareous spicules.
 - a. A plate formed of large spicules below the pinnae.
 - 9. *Stylatula*, Verrill.
 - b. Pinnae without such a plate.
 - α. Polyps present on a thick ridge, with spicules on tentacles.
 - 10. *Pavonaria*, g. n.
 - β. Polyps on thick pinnae; calcareous bodies on stem and on the polyps. 11. *Scytalum*, Herkl.
 - B. Pars polypifera with solitary polyps.
 - 1. Dorsal zooids forming two rows; cup with 8 teeth.
 - 12. *Funiculina*, Lam.
 - 2. Zooids lateral; cup with 2 small teeth. . . 13. *Halipterus*, g. n.

The new genera are sufficiently indicated in the above scheme for the purposes of this Record. We here only give the references to the new genera and species described in Part I:—

Pteroides speciosum, l. c. p. 54, fig. 13, locality unknown; *P. nigrum*, l. c. p. 56, locality unknown; *P. hartingii*, l. c. p. 58, fig. 14, locality unknown; *P. lacazii*, l. c. p. 60, two varieties figured, fig. 15 *spinosum*, fig. 17 *molle*, Australia, Sumatra; *P. multiradiatum*, l. c. p. 63, Penang; *P. schlegelii*, l. c. p. 65, fig. 20, Japan; *P. hystrix*, l. c. p. 72, locality unknown; *P. longepinnatum*, l. c. p. 74, locality unknown; *P. caledonicum*, l. c. p. 75, fig. 28, New Caledonia; *P. diibenii*, l. c. p. 77, Mozambique; *P. gracile*, l. c. p. 77, Philippines; *P. brachycaulon*, l. c. p. 78, fig. 30, Philippines; *P. breve*, l. c. p. 78, fig. 31, Philippines; *P. pellucidum*, l. c. p. 80, fig. 33, Philippines; *P. manillense*, l. c. p. 81, Philippines; *P. breviradiatum*, l. c. p. 82, Indian Ocean; *P. tenerum*, l. c. p. 84, fig. 37, locality uncertain; *P. flavidum*, l. c. p. 85, Java; *P. ferrugineum*, l. c. p. 86, Java; *P. herklotsii*, l. c. p. 87, figs. 38, 39, locality unknown; *P. sparmannii*, l. c. p. 89, figs. 42, 43, locality unknown; *P. imbricatum*, l. c. p. 89, figs. 45, 46, Singapore; *P. acuminatum*, l. c. p. 91, Turan?; *P. lugubre*, l. c. p. 94, New Holland; *P. crassum*, l. c. p. 95, figs. 48, 49, Singapore; *P. westermannii*, l. c. p. 96, fig. 52, locality unknown; *P. bleekerii*, l. c. p. 96, locality unknown; *P. fusco-notatum*, l. c. p. 99, Chinese Sea; *P. latissimum*, l. c. p. 102, figs. 56, 57, China.

Godeffroyia, g. n., l. c. p. 114. *G. elegans*, sp. n., l. c. p. 116, figs. 63, 65, Siam.

Sarcophyllum, g. n., l. c. p. 116. *S. australe*, sp. n., l. c. p. 121, figs. 66, 69, Australia.

Leioptilum, Gray, char. emend. l. c. p. 139, and *Ptilosarcus*, Gray, char. emend. l. c. p. 144.

GORGONIDÆ.

VERRILL, having critically examined many of the types of species described by Esper, Lamarck, Valenciennes, &c., now arranges the genera and species as follows:—

Leptogorgia (sens. mod.), l. c. p. 420.

A. Dichotomously or arborescently branched; branches usually numerous, more or less elongated, often virgate, sometimes subpinnate.

a. Cells not raised on prominent verrucæ, flat or slightly elevated.

L. viminalis, E. & H., Mediterranean and Canary Isles; *L. rosea* (Lam.), E. & H., loc. (?), perhaps a variety of the preceding; *L. webbiana*, E. & H., Canary Isles; *L. virgulata*, E. & H. (+ *L. viminea*), North Florida to Cape Hatteras; *L. teres*, Verrill, "Bay of New York;" *L. virgea*, E. & H., Antilles; *L. floridana*, V., sp. nov., Florida; *L. esperi*, V. (*G. violacea*, Esper, non Pall.), V., West Indies (?); *L. festiva*, V. (*Pterogorgia festiva*, Duch. & M.), Antilles, perhaps the same as the preceding; *L. clavata*, V. (*Lophogorgia clavata*, Horn, Proc. Phil. Acad., 1860, p. 233), locality unknown; *L. alba* (Duch. & M.), Verrill (*Litigorgia levis*, V., loc. cit.), Panama to San Salvador; *L. flexilis*, Verrill (*Litigorgia*, V., op. cit.), Bay of Panama; *L. rigida*, Verrill, Bulletin M. C. Z. 1864, San Salvador to Cape St. Lucas and La Paz; *L. cuspidata*, Verrill, 1865, Zorritos, Peru, to Cape St. Lucas; *L. caryii*, Verrill (*Litigorgia fucosa*, V., Trans. Conn. Acad. i. p. 404, 1st ed., non *Gorgonia fucosa*, Val.), near San Francisco; *L. peruana*, Verrill (*Litigorgia*, op. cit.), Callao; *L. californica*, V. (*Litigorgia*, op. cit.), Lower California; *L. sarmentosa* (Esper), Verrill (? *Gorgonella sarmentosa*, E. & H.), Mediterranean, Azores; *L. crista*, V. (*Lophogorgia crista*, Möb.), Africa:

b. Cells at the summit of distinct verrucæ.

L. punicea, Verrill (*Gorgonia punicea*, Val., E. & H.), Brazil, Rio Janeiro (U. S. Expl. Exp.); *L. miniata*, V. (*Gorgonia miniata*, Val., E. & H.), Antilles; *L. ramulus*, V. (*Gorgonia ramulus*, Val., E. & H.), Zorritos, Peru, to Acapulco; *L. pumila*, V. (*Litigorgia pumila*, V., op. cit.), Zorritos; *L. diffusa*, V. (*Litigorgia diffusa*, V., op. cit.), Panama Bay and Corinto, Nic.; *L. hebes*, V., sp. nov., Key West, Florida; *L. radula*, V. (*Gorgonia radula*, Möb.).

B. Branches pinnate, bipinnate, or tripinnate, spreading usually in a single plane.

a. Cells scarcely raised on distinct verrucæ.

L. pinnata, V. (*G. pinnata*, Linn. ed. x.), Gaboon, West Africa; *L. flammea* (Ellis), V. (*Lophogorgia palma*, E. & H., non *G. palma*, Pallas), Cape of Good Hope.

b. Cells on prominent verrucæ.

L. floræ, V. (*Litigorgia floræ*, V., op. cit.), Pearl Islands, Bay of Panama; *L. violacea* (Pallas), V. (*Pterogorgia petechizans*, E. & H. (?), non Pallas), West Coast of Africa at Sombrero I. (?); *L. sanguinolenta*, V. (*Gorgonia sanguinolenta*, Pallas, V., Bull. M. C. Z., non Esper; *G. petechizans* (pars) auct.), West Indies.

C. Branches wholly or in greater part reticulated, flabelliform.

a. Cells not raised on prominent verrucæ.

L. stenobrachis, Verrill (*Rhipidogorgia stenobrachis*, Val., E. & H.), Zor-

ritos, Peru, to Gulf of California; *L. cribrum*, V. (*Rhipidogorgia cribrum*, Val., E. & H.), New Zealand.

b. Cells raised on distinct verrucæ.

L. agassizii, V. (*Litigorgia agassizii*, V., Tr. Conn. Acad. i. p. 388, 1st ed.), Acapulco to Cape St. Lucas; *L. adamsii*, V. (*Litigorgia adamsii*, V., *op. cit.*), Zorritos, Peru, to Acapulco; *L. eximia*, V. (*Litigorgia eximia*, V., *op. cit.*), Bay of Panama; *L. media*, V. (*Litigorgia media*, V., *op. cit.*), San Salvador to Cape St. Lucas; *L. arenata*, V. (*Rhipidogorgia arenata*, Val., Edw. & H.), New Zealand. The following species, which Dr. Kölliker refers to his first section of the genus *Gorgonia*, probably belong to *Leptogorgia*, as modified; but I have not examined them:—*G. umbella*, Esp. (*Rhipidogorgia*, E. & H.); *G. venusta*, Dana (*Rhipidogorgia*, E. & H.); *G. ventolina*, Linn. (*Rhipidogorgia*, E. & H.); *G. cauliculus*, K. (*Gorgonella*, Val., *Leptogorgia*, E. & H.). *G. sanguinolenta*, Esp. (non Pallas), Köll. Icones, Taf. xviii. fig. 239 (? *G. petechizans*, Pallas). Two species described by Duchassaing and Michelotti, *L. flavida* and *Gorgonia oblita*, are probably additional species.

Gorgonia, Linn. (sens. mod.), Verrill, l. c. p. 424.

A. Flabelliform; branches reticulated and coalescent, with open meshes. (*Rhipidogorgia*.)

G. flabellum, Linn., Bermuda, Florida, West Indies; *G. occatoria* (Val.), V. Guadeloupe.

B. Plumose or paniced; the branches regularly pinnate, usually long and slender, with the cells in rows along the sides. (Typical *Pterogorgia*.)

G. acerosa, Pallas (*G. setosa*, Linn. ed. xii.), Bermudas, Florida, West Indies; *G. turrida* (Ehr.), V., Florida, Bermudas, West Indies; *G. americana*, Gm. (*P. ellisiana*, E. & H.), Florida, West Indies; *G. sloanei* (?) (E. & H.), V., West Indies; *G. setosa* (?) Linn. pars, non Esper, West Indies.

C. Flabelliform; the branches bipinnate, sparingly coalescent, flattened.

G. bipinnata, V. (*Pterogorgia bipinnata*, V., Bulletin M. C. Z. p. 37, 1864), Cumana, Ven.

D. Dichotomous, with elongated, slender branches.

G. miniacea, Esper (*Leptogorgia miniacea*, E. & H.); *G. tenella*, V. (= *Gorgonia ceratophyta*, Esper, tab. xix., non Linn. nec Pallas), perhaps young; *G. gracilis*, V. (*Pterogorgia*, Trans. Conn. Acad. vol. i. p. 359, 1868), Abrolhos Reefs, Brazil; *G. sanguinea*, Lam. (*Leptogorgia sanguinea* (pars), E. & H.), locality unknown.

E. Dichotomous, often fasciculate; the branches ascending, with the coenenchyma developed laterally into marginal wings, thus producing flat or triquetral branches, with the cells in rows along the edges. (*Xiphigorgia*.)

G. anceps, Pallas, Florida, West Indies; *G. guadalupensis* (Duch. & Mich.), V., Guadeloupe; *G. citrina*, Esper, Florida, Bahamas, St. Thomas; *G. pumila*, V. (= *X. americana*, D. & M., Suppl. p. 113, tab. 2. fig. 6, non *G. americana*, Gmel.), perhaps a variety of the preceding, Antilles.

F. Foliateous, the branches slender, not reticulated; but the coenenchyma laterally developed into broad, frond-like forms. (*Hymenogorgia*.)

G. quercifolia, Ehr., West Indies, Guadeloupe, &c.

G. Flabelliform and foliaceous, the branches reticulated and coalescent, but the meshes closed by the lateral development of the cœnenchyma. (*Phyllogorgia*.)

G. dilatata, Esper, Bahia, Brazil; *G. foliata* (Val.), V., Guadaloupe. Several other described species of *Gorgonidae*, which I have not seen, appear to belong to this genera, judging from external characters.

Eunicella, gen. nov., Verrill, *l. c.* p. 425, = *Gorgonia* (pars), Pallas and subsequent authors (*non* Linn. Syst. Nat. ed. x.); *Eunicea* (pars), Ehw.; *Gorgonia* (pars), Dana; *Gorgonia* (pars), Edw. & Haime, Kolliker.

A. More or less flabelliform, much branched; cells prominent.

Eunicella verrucosa (Pallas), V., Mediterranean; *E. venosa* (Val., E. & H.), V., Algeria, Madeira; *E. subtilis* (Val., E. & H.), V., Algeria; *E. tenuis*, V., (sp. nov.), West Indies (?).

B. Branches dichotomous, elongated, slender; cells prominent or flat.

E. graminea (Lam.), V., Mediterranean, Naples; *E. bertolonii* (Lamx.), V., Mediterranean; *E. crinita* (Val.), V., Archipelago Bizagos, Africa.

C. Low, fruticose; branches short and stout; cells prominent.

E. papillosa (Esper), V., Cape of Good Hope.

D. Palmate; branches flattened, elongated; cells scarcely prominent.

E. palma, V.* (*G. palma*, Pallas; *G. albicans*, Koll.), Cape of Good Hope.

Leptogorgia aurantiacea, Edw. & Haime, is an *Echinogorgia*. Verrill, *l. c.* pp. 424 & 428.

Thesea gemmata, sp. n., Verrill, *l. c.* p. 428, St. Croix, West Indies.

Keratoisis, gen. nov., Perceval Wright, *l. c.* p. 23. Coral branched, irregularly furcate; axis jointed, composed of horny and calcareous portions; the latter hollow, smooth, varying considerably in length, and maintaining their form after maceration in caustic alkalies; the branches are given off from the calcareous portions. The cœnenchyma is well developed, and contains a large number of calcareous spicules. The polyps are irregularly and somewhat densely grouped all round the axis; they are of large size, and completely covered with spicules, which are closely packed side by side. A variable number (nine to eleven) of long fusiform spicules surround the apical portion of the polype, forming a calyx. Tentacles eight, pinnately lobed. *K. grayii*, sp. n., P. Wright, *l. c.* p. 24, deep water off Setubal, on the coast of Portugal. Woodcut, figs. 1-3.

Bebryce mollis, Phil. Dr. J. E. Gray (*l. c.*) records this Gorgonoid as taken by Mr. M'Andrew in Loch Toridon, in Ross-shire, and also near Syracuse by the Recorder. The latter specimens were dredged by the Recorder near Messina, as well as at Syracuse. See Quart. Journ. Mic. Science, 1869, p. 319, where he describes the various forms of spicules met with. One peculiar spicule abounded, which was not mentioned by Kolliker.

Telesco. Gray, *l. c.* p. 21, would divide this genus into three subgenera, as follows:—

I. TELESKO. The coral shrub-like, furcately branched from the base, the polype-cells terminating the branches and branchlets. 1. *T. aurantiaca*,

* Pallas's description applies to this species, and not to *Leptogorgia flammea*.

Lamx. (*T. lutea*, Lamx.), Australia; 2. *T. ramulosa*, Verr. (*Cornicularia aurantiaca*, Stimp.), Hongkong; 3. *T. pelagica*, Lamx. (*Alcyonium pelagicum*, Bosc; *T. fruticulosa*, Dana), North America.

II. TELESCELLA. The coral erect, with successive spreading clusters of branches, which are ramulose on the sides. 4. *T. (T.) nodosa* (*Telesco* ? *nodosa*, Verr.), Loochoo.

III. ALEXELLA. The coral erect, simple, with short, cylindrical, adressed polype-cells on the side of the stem, generally opposite each other, or scattered; some have one or more cells produced into a short lateral branch. 5. *T. (A.) smithii*, sp. n., Gray, l. c. p. 21 (woodcut), Garden Island, Sydney.

Spoggodes conglomeratus, sp. n., Gray & Carter, l. c. p. 391, South-east Coast of Arabia.

Eusclerides, gen. nov., Gray & Carter, l. c. p. 360. Coral fleshy, consisting of a growth of thick contorted laminae with rounded upper edge; the lower part of the lamina and base bare, the upper part with regularly disposed polypes with numerous small concavities placed at the base on the surface between the polype-cells, inner part strengthened with thick, fusiform, longish tubercular spicules with three or five wide, smooth, sunken cross bands, separating the tubercular surface of the middle of the spicules into bands respectively. *E. chinensis*, sp. n., Gray & Carter, l. c. p. 361, North China.

Raynerella, g. n., Gray, l. c. p. 22. Coral much branched, fan-shaped, expanded in a plane; branches and branchlets pinnate; branches diverging, subcylindrical, slender, nearly of a uniform size; branchlets opposite or alternate, diverging. Bark thin, with an even, very slightly corrugated surface, internally finely granular. Polype-cells prominent, roundish, close together, diverging irregularly on all sides of the slender branches; apex rather conical, contracted, with a central dot. Axis calcareous, hard, white, with well-marked longitudinal grooves. *R. aurantia*, sp. n., Gray, l. c. p. 22, Dewi Reef, Bass's Strait.

Brandella, g. n., Gray, l. c. p. 22. Coral very much branched, very slender, linear; branches diverging, pinnate, and nearly parallel to each other; branchlets pinnate, opposite or alternate, diverging at nearly right angles, often sinuous, inosculating, uniting the diverging parallel branches into an irregular network. Bark, when dry, very thin, almost membranaceous, smooth, and slightly wrinkled. Polype-cells on all sides of the branchlets, alternate or opposite, cylindrical, short, smooth externally, with a convex eight-valved top. Axis very slender, thread-like, except the main stems, calcareous, hard, pale horn-colour, very brittle. *B. intricata*, sp. n., Gray, l. c. p. 23, Dewi Reef, Bass's Strait.

VERRILL describes the following new species:—

Muricea squarrosa, l. c. p. 423, pl. 6. fig. 13, pl. 8. fig. 4, Panama and Pearl Islands; *M. crassa*, l. c. p. 425, pl. 7. fig. 10, pl. 8. fig. 5, Pearl Islands; *M. fruticosa*, l. c. p. 428, pl. 7. fig. 2, Pearl Islands, allied to *M. echinata*; *M. austera*, l. c. p. 430, pl. 8. fig. 7, Pearl Islands, Panama; *M. retusa*, l. c. p. 432, pl. 8. fig. 8, Pearl Islands; *M. formosa*, l. c. p. 434, pl. 8. fig. 15, Zorritos, Peru; *M. tenella*, l. c. p. 446, pl. 6. fig. 12, pl. 8. fig. 14, Peru, Panama, &c.; *M. aspera*, l. c. p. 448, Panama.

Verrill, l. c. p. 449, would subdivide *Muricea* into:—1. *Eumuricea*, typical species *E. acervata*; 2. *Muricea*; and 3. *Muricella*, *M. flexuosa* as type.

Callipodium, gen. nov., Verrill, l. c. p. 455. Corallum incrusting stones and 1869. [VOL. VI.]

shells, with a firm, more or less thickened, finely granulous cœnenchyma, which may spread either in broad expansions or narrow stolons. Polypes rather large, at the summit of round-topped verrucæ, which are more or less elevated above the surface of the cœnenchyma, and either distantly scattered or closely crowded together, in the latter case often united laterally nearly to their summits. Polyps wholly contractile, and also capable of involving the summits of the verrucæ, which, in contraction, are usually eight-rayed. Spicula short, of moderate size, brightly coloured, very abundant in the cœnenchyma and verrucæ, of various forms and sizes, mostly with very roughly warted prominences. *C. pacificum*, Verrill, *l. c.* p. 456, *C. aureum*, sp. nov., Verrill, *l. c.* p. 457, both from Panama.

Echinomuricea, gen. nov., Verrill, *l. c.* p. 285. Type *E. coccinea*, V., = *Acanthogorgia coccinea*, V.

Solanderia verrucosa, Möb. Dr. J. E. Gray mentions having received a communication from Dr. Möbius, in which he says:—"The specimen of *S. verrucosa* described by me was overspread on all its twigs with the sponge whose needles I have figured on tab. I. fig. 6. I erroneously regarded this parasitical sponge as a dermal formation of the polype. Your *Homophyton gattyie* (Proc. Zool. Soc. 1866, Jan. 9) appears to me to be very like my *S. verrucosa*. It is also from the coast of South Africa (Algoa Bay)." Ann. & Mag. Nat. Hist. ser. 4, vol. iii. Mar. 1869, p. 248; also *ibid.*, Jan. 1869, p. 96.

ZOANTHARIA.

MALACODERMATA.

Sagartia schilleriana, sp. n., Stoliczka, *l. c.* p. 32, pls. 10 & 11. This species lives attached to old trunks of trees all along the banks of the Mutlah river. The water here is very brackish. The species, on account of the presence in its tissue of solid calcareous and siliceous particles, seems scarcely referable to *Sagartia*.

Sagartia crispata, sp. n., Verrill, *l. c.* p. 484, *S. carcinophila*, sp. n., Verrill, *l. c.* p. 484, *S. panamensis*, sp. n., Verrill, *l. c.* p. 484, *S. bradleyi*, sp. n., Verrill, *l. c.* p. 484, all from Panama.

Edwardsia elegans, sp. n., Verrill, *l. c.* p. 118, Eastport; *E. farinacea*, sp. n., Verrill, *ibid.*, South Bay, Lubec.

Lophactis, gen. nov., Verrill, *l. c.* p. 463. Column elevated, its walls firm, subcoriaceous; in contraction rough, with deep corrugations and wrinkles; not verrucose, and without apparent suckers in the preserved specimens. Simple tentacles, large, placed at a considerable distance from the margin. Branchiæ few in number (12), arranged in a circle between the margin and the tentacles, large and broad, laterally compressed, the upper edge of each bearing a series of finely divided papillæ, which consequently form radiating rows of secondary branchiæ. The large branchiform organs are united together on the inside nearly to their summits by a thin membrane, which forms a naked area between the branchiæ and tentacles; and they are also united on the outside by adherence to the marginal fold, so that, when contracted, there are deep chambers or cavities between them. This genus is closely allied to *Phyllactis*. *L. ornata*, sp. n., Verrill, *l. c.* p. 464, Pearl Islands.

Asteractis, gen. nov., Verrill, *l. c.* p. 464. Column versatile in form; walls firm and subcoriaceous. Disk broad, capable of involution, bearing near the mouth a circle of numerous simple tentacles, and outside of these a corresponding number of radiating rows of small, sessile, somewhat lobed and subdivided tubercles or papillæ, increasing in size to the margin, which is crenulate or dentate with the last tubercles of each series. This genus is somewhat allied to *Oulactis*. *A. bradleyi*, sp. n., Verrill, *l. c.* p. 465, Panama Reef.

Evactis, gen. nov., Verrill, *l. c.* p. 470. The column bears vertical rows of verruciform suckers or tubercles, and is perforated by numerous openings, from which water is ejected when the body suddenly contracts. The inner tentacles are smaller and shorter than the outer ones; mouth with four prominent lobes. *E. artemisia*, Drayton, Verrill, *l. c.* p. 471, and *E. xanthogrammica*, Brandt, probably the same as the former species.

Cladactis, gen. nov., Verrill, *l. c.* p. 471. Column firm in texture, low, broad, crowdedly covered with elevated, subtentaculiform tubercles or papillæ, which have round inflated tips; those on the sides simple, or two- or three-lobed; those at the margin of the disk elongated, pedunculated, the end divided into two to six rounded lobes. Tentacles numerous, rather long, the inner ones largest. Disk broad, with a naked area or "fosse" between the tentacles and the margin. *C. grandis*, sp. nov., Verrill, *l. c.* p. 472, Panama.

Anthopleura dowii, sp. nov., Verrill, *l. c.* p. 474, Panama.

Calliactis, gen. nov., Verrill, *l. c.* p. 481. Column very changeable in form; in full expansion elevated, subcylindrical, with a broadly expanded base; in contraction forming a broad, low, flattened cone, or convex disk. Surface nearly smooth in expansion, except near the base, where there are one or more transverse rows of conspicuous lateral pores or cinclidæ, which have thickened, permanently raised borders. Basal margin below the pores thin and expanded, usually with an additional internal lamella intercalated between the larger ones that extend to the disk, all of which are usually visible through the thin but firm walls. Tentacles numerous, slender, subulate, highly contractile. Acontia highly developed, emitted freely from the cinclidæ. *C. variegata*, sp. n., Verrill, *l. c.* p. 481, Panama.

Phellia panamensis, sp. n., Verrill, *l. c.* p. 490, Panama.

Paractis (?) *nobilis*, sp. n., Verrill, *l. c.* p. 491, Panama.

Epiactis, gen. nov., Verrill, *l. c.* p. 492. Integument firm. Column subcylindrical, capable of involving the summit and contracting into a hemispherical form, with a distinct submarginal fold or "parapet," separated from the tentacles by a narrow fosse. Surface smoothish, in contraction reticulately wrinkled; near the base it is surrounded by a circular wrinkle or depression, upon which there are borne a variable number of young of various sizes, appearing as if originating from surface-buds, but possibly produced from ova attached in this place to the skin. These young may be removed without rupture of the integument, although they adhere quite firmly, and leave a depression in the surface of the skin; but there are no apparent lateral openings in the wall. Tentacles numerous, about fifty, arranged in several rows. *E. prolifera*, sp. n., Verrill, *l. c.* p. 492, Puget Sound.

Mammillifera conferta, sp. n., Verrill, *l. c.* p. 497, San Salvador; *M. nitida*, sp. n., Verrill, *l. c.* p. 497, same locality.

Epizoanthus elongatus, sp. n., Verrill, *l. c.* p. 497, Pearl Islands; *E. humilis*,

p. n., Verrill, *l. c.* p. 498, Panama; *E. crassus*, sp. n., Verrill, *l. c.* p. 498, San Salvador.

SCLEROBASICA.

Antipathes panamensis, sp. n., Verrill, *l. c.* p. 499, Panama.

SCLERODERMATA.

Madreporidæ.

Montipora fragosa, sp. n., Verrill, *l. c.* p. 502, California. ○

Pavonia gigantea, sp. n., Verrill, *l. c.* p. 394, Pearl Islands, Bay of Panama;

P. clivosa, sp. n., Verrill, *l. c.* p. 395, same locality as last.

Astropsammia, g. n., Verrill, *l. c.* p. 392. Corallum massive, consisting of *Astræa*-like corallites, united quite to their summits by an abundant, very porous coenenchyma. Walls scarcely distinct from the coenenchyma, very porous. Septa in four cycles, with some members of a fifth, those of the fourth uniting to those of the third. Columella usually well developed, composed of loose, convoluted, and twisted lamellæ and trabeculæ. Cells at times shallow, the interseptal spaces cut off below by thin transverse septa, which often nearly coincide in all the chambers. Budding chiefly marginal and interstitial. *A. pedersenii*, sp. n., Verrill, *l. c.* p. 392, La Paz, Gulf of California. This genus is very remarkable for its abundant coenenchyma, which is quite exceptional in the family Eupsammidæ.

Dendrophyllia surcularis, sp. n., Verrill, *l. c.* p. 393, Pearl Islands, Bay of Panama.

Paracyathus stearnsii, sp. n., Verrill, *l. c.* p. 393, Monterey, California; *P. caltha*, sp. n., Verrill, *l. c.* p. 394, same locality as last.

CTENOPHORA.

Vexillum parallelum, gen. et spec. nov., Fol, *l. c.* p. 6, tab. 2, figs. 1, 2, 3, and tab. 4, fig. 5. Quite contrary to what is met with in *Cestum veneris*, we met with in this form a short stomachal cavity. The infundibular canal is very long, the principal tentacles are but little developed. The tentacle-sheath opens out quite near the under margin, and forms a prominence in the middle of the body, as is found in the *Cestum najadis* (Esch.), but not in *C. veneris*. Though it may be possible that this form is but the young of a species of *Cestum*, yet, for these reasons, and not forgetting that the *Ctenophora* are often capable of reproduction ere they arrive at their adult form, the author thinks it proper to refer this form to a new genus.

Cestum veneris is described by Fol, *l. c.* p. 8, and figured, tab. 6, 7.

Eurhamphæa vexilligera, Gegbr., = *Mnemia elegans*, Sars. Fol, *l. c.* p. 1, Taf. 1, 2, 3, gives a detailed account of the anatomy and minute structure of this species. Its development is also traced from the freshly laid egg (the ova abounded during February and March) up to the four-day-old form. The gap between this and the next stage in development described is in some measure filled up by A. Agassiz's description of *Bolina*. The last stage described is that of the young but nearly perfect form.

PROTOZOA

(Including SPONGIIDA, INFUSORIA,
and RHIZOPODA)

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

ARCHER, WILLIAM. On some freshwater Rhizopoda, new or little-known. Quart. Journ. Mic. Science, 1869, July, pp. 250-271, & October, pp. 386-397, plates 16, 17, & 20.

In this important paper we have seven new genera and thirteen new species described and figured, with observations on several known forms. The recent papers of Focke, Carter, and Greeff are also passed in review.

BOCAGE, J. V. BARBOZA DU. Eponges siliceuses nouvelles de Portugal et de l'île Saint Iago (Archipel de Cap-Vert.) Jour. des Sciences Math., Phys. et Natur. Lisbonne, May 1869, no. 4, pp. 159-162, plates 10 & 11.

The author describes two new genera and three new species of siliceous sponges.

BOWERBANK, J. S. On the generic name *Alcyoncellum*, and in reply to Dr. Gray's "Observations on Sponges and on their arrangement and nomenclature," 'Annals & Magazine of Natural History,' March 1868. Ann. & Mag. Nat. Hist. ser. 4, vol. iii. January 1869, pp. 84-87.

— . A monograph of the Siliceo-fibrous Sponges.—Part 1. Proc. Zool. Soc. 1869, pp. 66-100, plates 3-6. Part 2. Ibid. pp. 323-351, plates 21-25.

— . Remarks on the genus *Theonella*, J. E. Gray. Ibid. pp. 389, 390.

BRADY, H. B. Notes on the Foraminifera of mineral veins and the adjacent strata. Report Brit. Assoc. 1869, pp. 381, 382.

The author describes eight new species of *Involutina*, Terquem, from mineral veins and adjacent stratified rocks.

CARPENTER, W. B., & BRADY, H. B. Description of *Parkeria* and *Loftusia*, two gigantic types of arenaceous foraminifera. Monthly Mic. Journal, May 1869, pp. 299-304; also Ann. & Mag. Nat. Hist. ser. 4, vol. iii. June 1869, pp. 460-464; and Phil. Trans. 1869, pp. 721-754, plates 72-80.

Parkeria is from the Upper Greensand near Cambridge, and *Loftusia* from a tertiary limestone found near Ispahan, in the Persian Gulf; but they are too intimately associated with recent forms not to be alluded to here.

CARTER, H. J. Description of a siliceous Sand-sponge found on the south-east coast of Arabia. Ann. & Mag. Nat. Hist. ser. 4, vol. iii. January 1869, pp. 15-17 (woodcut).

——. Notes on Filigerous green Infusoria of the Island of Bombay. Ibid. April 1869, pp. 249-260, pl. 17.

——. A descriptive account of four Subspherous Sponges, Arabian and British, with general observations. Ibid. vol. iv. July 1869, pp. 1-28, pls. 1 & 2.

——. On *Grayella cyathophora*, a new genus and species of Sponge. Ibid. vol. iv. September 1869, pp. 189-197, pl. 7.

CZERNY, V. Einige Beobachtungen über Amœben. Schultze's Archiv f. mikrosk. Anat. Bd. v. pp. 158-163.

Treats of the different behaviours of Amœbæ under different reagents. Giant forms of *Amœba princeps* found on frog-spawn &c. taken from the Danube Canal, were treated to muriatic acid; and the author seems to be of opinion that the cilia of Infusoria are but a modified protoplasm, or rather a sort of constant pseudopod, differentiated and modified as we see partially in ciliated epithelium.

GRAY, J. E. On the manner of growth of *Hyalonema*. Ann. & Mag. Nat. Hist. iii. 1869, pp. 192-196.

Contains a letter from Professor Lovén, with a woodcut showing the presumed mode of growth of *Hyalonema*.

——. Note on *Ianthella*, a new genus of Keratose Sponges. Proc. Zool. Soc. 1869, pp. 49-51.

GREEFF, R. Ueber Radiolarien und Radiolarien-artige Rhizopoden des süßsen Wassers. Schultze's Archiv f. mikroskop. Anat. Bd. v. 1869, October, pp. 464-505, Taf. 26, 27.

Many new forms, described more particularly in the special part, are here recorded.

GRENACHER, H. Bemerkungen über *Acanthocystis viridis*, Ehb. sp. Zeitschr. f. wissensch. Zoologie, xix. Bd. 2 Heft, Juli 1869, pp. 289-296, Taf. 24.

HÄCKEL, ERNST. Ueber den Organismus der Schwämme und ihre Verwandtschaft mit den Corallen. Jenaische Zeitschrift, Bd. v. pp. 207-254.

To this memoir is appended a Prodrömus of a system of Calcareous Sponges. The author says that if we try to make an artificial boundary between Sponges and Corals, we find nothing of essential importance, save a higher degree of differentiation in the corals, and their possessing urticating cells; but this histological character is unimportant, and both physiologically and morphologically is but little adapted to establish a well-defined boundary. He, however, points out a very important, if absolutely established, difference, *i. e.* that sexual differentiation has not advanced so far as to differentiate "sperm" cells; and the supposed "germ" cells (ova) are probably agamic spores. It is of course here quite impossible to more than indicate the important facts.

JONES, T. R., PARKER, W. K., and KIRKBY, J. W. On the nomenclature of the Foraminifera.—Part xiii. The Permian *Trochammina pusilla* and its allies. Ann. & Mag. Nat. Hist. ser. 4, vol. iv. Dec. 1869, pp. 386-392, pl. 13.

KENT, W. S. On some new Infusoria from the Victoria Docks. Monthly Mic. Journal, May 1869, pp. 289-293, pl. 12.

MACDONALD, J. D. On the structure and relationship of the simple or nucleated and the compound or punctate forms of Thalassicollidæ. Quart. Journ. Mic. Science, 1869, pp. 147-149, pl. 11.

MOORE, T. J. On the habitat of the Regadera (watering-pot) or Venus's flower-basket (*Euplectella aspergillum*, Owen). Ann. & Mag. Nat. Hist. ser. 4, vol. iii. March 1869, pp. 196-199 (woodcuts).

The author mentions, on the authority of Captain Morgan, that the only place where this sponge is found is about three miles from the shore in front of the small village Talisay, which is about five or six miles south of the town of Cebú, Isle of Cebú. The mode of catching them is described.

MOXON, W. On some points in the Anatomy of *Stentor*, and on its mode of division. Journ. Anat. and Physiol. 1869 (May), pp. 279-293, pls. 5 & 6.

The author states the results of some observations on *Stentor caruleus*, and discusses certain questions concerning the anatomy of Infusoria. Dr. Moxon seems to regard the contractile vesicle as an organ connected with the excretion of food.

MÜLLER, C. J. On *Vaginicola valvata*. Quart. Journ. Mic. Science, 1869, pp. 25-27, pl. 7.

NORMAN, A. M. Notes on a few Hebridean Sponges, and on a

new species of *Desmacidon* from Jersey. Ann. & Mag. Nat. Hist. ser. 4, vol. iii. April 1869, pp. 296-299.

SCHMIDT, O. Vorläufige Mittheilungen über die Spongien der grönländischen Küste. Mitth. des naturwissens. Vereines für Steiermark, 2 Bd. 1 Heft, Graz 1869, pp. 89-97.

TATEM, J. G. On a new ciliated Infusorium. Monthly Microscopical Journal, Feb. 1869, pp. 117, 118, pl. 4 (coloured).

———. On free-swimming Amœbæ. Ibid. pp. 352-354, pl. 17.

THOMSON, W. On the depths of the Sea. Ann. & Mag. Nat. Hist. ser. 4, vol. iv. August 1869, pp. 112-124 (abstract of a lecture delivered April 10, 1869).

In this paper a new genus and species of sponge (*Holtenia carpenteri*) is referred to and illustrated by a woodcut.

———. On *Holtenia carpenteri*, a new genus and species of vitreous sponges. Abstract in ibid. Oct. 1869, pp. 284-287; in Proc. of Royal Soc. June 17, 1869; and Phil. Trans. 1869, pp. 701-720, pls. 67-71.

VAILLANT, L. Note sur la vitalité d'une éponge de la famille des Corticates la *Tethya lyncurium*, Lamk. Compt. Rend. t. lxxviii. Jan. 11, 1869, pp. 86-88, and Ann. & Mag. Nat. Hist. ser. 4, vol. iii. February 1869, p. 172.

The author gives an account of some experiments made on *Tethya lyncurium*, Lam., as to its repair of accidentally lost substance, and as to the effect of grafting one individual of this species upon another.

WALLICH, G. C. On the vital functions of the Deep-sea Protoza. Monthly Microscopical Journal, January 1869, pp. 32-41.

The object of this paper is to establish that in the lowest subdivision of the lowest order of the animal kingdom, where even a definite "nucleus" and "contractile vesicle" are absent, nutrition is effected by a *vital act*, which enables the organism to extract hydrogen, oxygen, carbon, nitrogen, and lime from the surrounding medium, and to convert these ingredients into sarcode and shell-material. The author also objects to the sufficiency of the evidence on which the genus *Bathybius* of Huxley is founded, and shows that there is not necessarily any connexion between it and the development of Cocoliths and Cocospheres.

———. On some undescribed testaceous Rhizopods from the North-Atlantic deposits. Ibid. February 1869, pp. 104-110, pl. 3.

The author remarks on the absence of the Acanthometræ from the post-tertiary fossil earths, and from the deposits now in course of formation at the bottom of certain seas. A new genus, *Protocystis*, and several new species of *Cadium*, are described (*vide* special part).

WALLICH, G. C. On the Rhizopoda as embodying the primordial type of Animal life. *Ibid.* April 1869, pp. 228-235.

— Observations on the Thalassicollidæ. *Ann. & Mag. Nat. Hist.* ser. 4, vol. iii. Feb. 1869, pp. 97-102.

WRZESNIEWSKI, A. Een Beitrag zur Anatomie der Infusorien. *Schultze's Archiv. f. mikrosk. Anat.* Bd. v. pp. 25-49, Taf. 3 & 4.

The facts detailed in this paper were published about three years since in Polish, in the 35th vol. of the Natural-History Society of Cracow, and are deservedly republished here, so as to secure their being read by all naturalists. The author describes in detail the contractile vesicle in *Enchelyodon farctus*, *Trachelophyllum apiculatum*, *Chilodon cucullulus*, *Climacostomum virens*, and *Uroleptus piscis*. He also describes trichocysts as sometimes present and sometimes absent in *Loxophyllum meleagris*. The author regards the contractile vesicle as an excretory organ.

SPONGIIDA.

Geographical Distribution.—Schmidt (*l. c.* p. 90) records the following as met with on the coasts of Greenland :—

CALCAREA. *a.* Social.—*Leucosolenia fabricii*, Sdt.; *Nardoa reticulum*, Sdt.; *Leuconia stikifera*, Sdt.; *Sycinula egedii*, Sdt.; *S. penicillata*, Sdt.; *S. clavigera*, Sdt. *b.* Solitary.—*Sycon ciliatum*, autt.; *S. raphanum*, Sdt.; *Ute utriculus*, Sdt. Also undetermined species of *Chalinula*, *Pachychalina*, *Suberites*, *Reniera*, and *Geodia*.

Rev. A. M. Norman (*l. c.* p. 296) gives the following list of sponges dredged off the coasts of the Hebrides. The nomenclature is after Bowerbank :—

CALCAREA: *Grantia compressa* (Fabr.); *G. ciliata* (Fabr.); *G. ensata*, Bwk.; *Leucosolenia coriacea* (Mont.); *Leuconea nivea* (Grant). **SILICEA:** *Normania crassa*, Bwk.; *Polymastia mamillaris* (Müll.); *Tethea cranium* (Müll.); *Dictyocylindrus stuposus* (Ellis & Sol.); *Phakellia ventilabrum* (Linn.); *Hymedesmia radiata*, Bwk.; *Hymeniacidon aurea* (Mont.); *H. ficus* (Esper); *Cliona celata*, Grant; *Halichondria panicea* (Pall.); *Hal. pattersoni*, Bwk.; *Hal. expansa*, Bwk.; *Isodictya cinerea* (Grant); *I. infundibuliformis* (Johnst.); *I. laciniata*, Bwk. **KERATOSA:** *Chalina seriata* (Grant); *Dysidea fragilis* (Mont.).

CALCAREA.

HÄCKEL (*l. c.* p. 236) gives a prodromus of the calcareous sponges, enumerating 6 orders, 18 families, 42 genera, and 132 species. As these will all be given in full in the illustrated Monograph of this group, which is promised at an early date,

we content ourselves here with the synoptical table of the orders and families :—

		Stomach-wall	
I. MONOSYCA.		solid, without cutaneous pores and	
Calcareous sponge	{	without parietal canals.	1. <i>Prosycaida</i> .
one person with		with simple cutaneous pores	2. <i>Olynthida</i> .
one mouth-open-		with regular, radial parietal canals.	3. <i>Sycarida</i> .
ing.		with irregular, branched parietal canals	4. <i>Dyssycida</i> .
II. POLYSYCA.		with simple cutaneous pores (stock	
Calcareous sponge	{	with developed persons)	5. <i>Soleniscida</i> .
a stock with		with simple cutaneous pores (stock	
many mouth-		with rudimentary persons)	6. <i>Tarromida</i> .
openings.		with regular, radial parietal canals.	7. <i>Sycodendrida</i> .
III. CÆNOSYCA.		with irregular, branched parietal canals	8. <i>Sycothamnida</i> .
Calcareous sponge	{	with simple, cutaneous pores	9. <i>Nardopsida</i> .
a stock with one		with irregular, branched parietal canals	10. <i>Cænostomida</i> .
mouth-opening.			
IV. CLISTOSYCA.			
Calcareous sponge	{	with simple cutaneous pores	11. <i>Clistolynthida</i> .
one person with-		with regular, radial parietal canals.	12. <i>Sycocystida</i> .
out a mouth-		with irregular, branched parietal canals	13. <i>Lipostomida</i> .
opening.			
V. COPHOSYCA.			
Calcareous sponge	{	with simple cutaneous pores	14. <i>Sycorrhizida</i> .
a stock without		with regular, radial parietal canals.	15. <i>Sycophyllida</i> .
mouth-opening.		with irregular, branched parietal canals	16. <i>Sycolepida</i> .
VI. METROSYCA.			
Calcareous sponge	{		
a stock composed		with simple cutaneous pores	17. <i>Thecometrída</i> .
of persons and		with regular, radial parietal canals.	18. <i>Sycometrída</i> .
stocks of various			
species and ge-			
nera.			

Order I. MONOSYCA, H.

- Fam. 1. *Prosycaida*, H. Gen. *Prosyceum*, H.
 Fam. 2. *Olynthida*, H. Gen. *Olynthus*, H.: *Olynthium*, H.
 Fam. 3. *Sycarida*, H. Gen. *Amphoridium*, H.; *Amphoriscus*, H.; *Sycarium*, H.; *Syconella*, O. Sdt.; *Sicum*, Risso; *Dunstervillia*, Bwbk.; *Artynas*, Gray; *Ute*, O. Sdt.; *Cyathiscus*, H.
 Fam. 4. *Dyssycida*, H. Gen. *Dyssycum*, H.; *Dyssiconella*, H.; *Sycinula*, O. Sdt.

Order II. POLYSYCA, H.

- Fam. 5. *Soleniscida*, H. Gen. *Leucosolenia*, Bwbk. *Soleniscus*, H.

- Fam. 6. Tarromida, *H.* Gen. *Tarrus*, *H.*; *Tarroma*, *H.*; *Clathrina*, *Gray*.
 Fam. 7. Sycodendrida, *H.* Gen. *Sycidium*, *H.*; *Sycodendrum*, *H.*; *Artynium*, *H.*; *Aphroceras*, *Gray*.
 Fam. 8. Sycothamnida, *H.* Gen. *Sycothamnus*, *H.*; *Leuconia*, *Grant*.

Order III. CÆNOSYCA, *H.*

- Fam. 9. Nardopsida, *H.* Gen. *Nardoa*, *O. Sdt.*; *Nardopsis*, *H.*
 Fam. 10. Cænostomida, *H.* Gen. *Cænostomella*, *H.*

Order IV. CLISTOSYCA, *H.*

- Fam. 11. Clistolythida, *H.* Gen. *Clistolythus*, *H.*
 Fam. 12. Sycocystida, *H.* Gen. *Sycocystis*, *H.*; *Artynella*, *H.*
 Fam. 13. Lipostomida, *H.* Gen. *Lipostomella*, *H.*

Order V. COPHOSYCA, *H.*

- Fam. 14. Sycorrhizida, *H.* Gen. *Sycorrhiza*, *H.*; *Aulorrhiza*, *H.*; *Auloplegma*, *H.*
 Fam. 15. Sycophyllida, *H.* Gen. *Sycophyllum*, *H.*; *Artynophyllum*, *H.*
 Fam. 16. Sycolepida, *H.* Gen. *Sycolepis*, *H.*

Order VI. METROSYCA, *H.*

- Fam. 17. Thecometrida, *H.* Gen. *Guancha*, *M.-M.*; *Thecometra*, *H.*
 Fam. 18. Sycometrida, *H.* Gen. *Sycometra*, *H.*

Schmidt, *l. c.* describes the following new species from Greenland.

Leucosolenia fabricii, *l. c.* p. 91.

Leuconia stilifera, *l. c.* p. 91.

Sycinula penicillata, *l. c.* p. 91; *S. egedii*, *l. c.* p. 92; *S. clavigera*, *l. c.* p. 92.

Ute utriculus, *l. c.* p. 93.

Alcyoncellum gelatinosum, De Blainv. Dr. Bowerbank (*l. c.* p. 84), on comparing specimens of a calcareous sponge received from Australia with the figures in plate 92 of De Blainville's 'Manuel d'Actinologie,' finds that they are identical. These specimens he had named in MS. in 1856 *Grantia virgultosa*. Giving as the earliest possible date of De Blainville's genus 1830, still Fleming's genus *Grantia* (1828) has the priority. Dr. Bowerbank believes De Blainville's species to be really a *Grantia*, so that it would stand as *Grantia gelatinosa*. This releases, as it were, the genus *Alcyoncellum*, which Dr. Bowerbank would maintain for the siliceous sponge figured under this name by Quoy and Gaimard, adding that "unless it be determined that genera founded on manifest errors are rightly or wrongly to maintain their places in science, the calcareous type of the genus in question must give place to the siliceous one." But is it not a fact that it was a manifest error in Quoy and Gaimard to apply the name *Alcyoncellum* to their new sponge? and hence should not their application of the name be forgotten? We would venture to suggest that the Australian calcareous sponge differs from *Grantia*, and that the name *Alcyoncellum* should once and ever be given to De Blainville's species.

Häckel gives the name of *Sycidium* to a genus containing *S. gelatinosum*, Blainville.

Grantia ciliata. Carter (*l. c.* p. 16) remarks that the spicules of this species among the calcareous sponges, as well as those of *Gorgonia* and those of *Operculina arabica* among the Foraminifera, have no central canal; in this differing from the spicules of the siliceous sponges. This statement is slightly modified by the author in *Ann. & Mag. N. Hist.* 1869, vol. iii. June, p. 466.

SILICEA.

Dr. BOWERBANK, in his memoir on the Siliceo-fibrous Sponges. criticises at some length (pp. 66-75) the views of Dr. J. E. Gray and of Prof. Wyville Thomson. A great many interesting facts in connexion with the structure of this group of sponges are incidentally mentioned in this portion of the paper. The following genera and species are recognised:—

Dactylocalyx pumiceus, Stutchbury, 1841, *l. c.* p. 77, pl. 3. fig. 1-15, Barbadoes, Martinique; *D. heteroformis* (Valenciennes), *l. c.* p. 85, pl. 4. fig. 1-4, Shanghai; *D. m'andrewii*, Bowk., = *M'Andrewia azorica*, Gray, 1859, *l. c.* p. 86, pl. 4. fig. 5, pl. 5. figs. 1-5, Azores; *D. prattii*, Bowk. *l. c.* p. 89, pl. 5. figs. 6-11, East Indies and Formosa; *D. masoni*, sp. n. Bowk. *l. c.* p. 91, pl. 6. fig. 1-4, Madeira; *D. bowerbanki*, Johnson, *l. c.* p. 94, pl. 6. figs. 5-8, deep water off Madeira; *D. polydiscus*, Bowk. *l. c.* p. 96, pl. 6. figs. 9-14, St. Vincent (*Discodermia polydiscus*, Bocage, Portugal).

Iphiteon panicea, Valenc. *l. c.* p. 324, pl. 21. fig. 1, pl. 22. fig. 1, Porto Rico; *I. beatrix*, Bowk., = *Aphrocaillstes beatrix*, Gray, *l. c.* p. 325, pl. 21. fig. 2-4, pl. 22. figs. 2-9, Malacca; *I. subglobosa*, Bowk., = *Dactylocalyx subglobosa* Gray, *l. c.* p. 329, pl. 22. figs. 10-13, Malacca?; *I. ingalli*, Bowk. = *D. pumicea*, Gray, *l. c.* p. 331, pl. 23. figs. 1-3, St. Vincent; *I. callocyathes*, Bowk., = *Myliusia callocyathes*, Gray in part, *l. c.* p. 333, p. 23. figs. 4-7, West Indies.

Myliusia grayii, Bowk., = *Myliusia callocyathes*, Gray in part, *l. c.* p. 335, pl. 23. fig. 8, pl. 25. fig. 1, St. Vincent's.

Kaliopsis, g. n., Bowerbank, *l. c.* p. 337, pl. 25. figs. 2-5. Skeleton siliceo-fibrous; basal fibres cylindrical and canaliculated; distal fibres non-canaliculated, compressed; basal reticulations symmetrical and reversedly arcuate; distal reticulations unsymmetrical and continuously ramifying; oscula and pores unknown; expansile dermal system furnished with foliately peltate connecting spicula, various in form, peltate heads more or less mammillated; basal portion of skeleton furnished with short stout cidarate prehensile fibres. *K. cidaris*, sp. n., Bowerbank, *l. c.* p. 338, parasitic on base of *Oculina rosea*, from the South Sea.

Farrea occa, Bowk. *l. c.* p. 339, pl. 24. figs. 1-7, Seychelles.

Purisiphonia, g. n., Bowerbank, *l. c.* p. 342, pl. 25. figs. 6-7. *P. clarkei*, sp. nov., Bowerbank, Wollumbilla, Queensland; fossil. This genus would appear to be intermediate in its structure between *Dactylocalyx* and *Farrea*. The matrix in which it is imbedded possesses much of the character of chalk; and Dr. Bowerbank remarks on the similarity of form and structure between the Australian and English chalk fossil sponges.

Alcyoncellum speciosum, Quoy & Gaimard, = *Euplectella aspergilum* and *E. cucumer*, Owen, Philippines, Bowerbank, *l. c.* p. 344, pl. 24. figs. 8-11.

A. speciosum. Dr. Bowerbank describes the dermal membrane as abundantly spiculous; spicules acerate, long, and slender, fasciculated; fasciculi compact, disposed in radiating or parallel groups.

In treating of the zoological position and affinities of the genus *Holtenia*, Wyville Thomson (*l. c.* p. 711) gives the following outline of a classification of sponges, "slightly modified from that of Oscar Schmidt." An outline of a classification very like the following was published in the *Ann. & Mag. Nat. Hist.* February 1868 (see *Zoological Record*, 1868, p. 581); but there are in the present one some very important modifications from the one there given: in particular the diagnosis of the Order 1. *Vitrea*, has been considerably amended; and it would have been well had the reader's attention been called to this fact.

Class PORIFERA, Grant.

Subclass I. (Porifera) CALCAREA, Bwk. "Skeleton composed of calcareous spicules, which are generally three-rayed stellate" (Gray), equivalent to O. Schmidt's first family. Examples: *Grantia*, *Sycon*.

Subclass II. (Porifera) SILICEA, Gray. "Sponges provided with a siliceous or horny skeleton, or with a horny skeleton strengthened with siliceous spicules."

Order 1. *VITREA*, Wyville Thomson. Sarcode usually soft, *containing but little formed horny matter in the form of minute granules**. The skeleton consists entirely of siliceous spicules, either separate (in fascicles or scattered) or *soldered together* and combined into a continuous siliceous network. The sarcode contains small free spicules, different in character from the spicules of the skeleton, and frequently of complicated forms. *In the typical sponges of the order* all the spicules, whether of the skeleton or of the sarcode, may be referred to the hexradiate type. Examples: *Holtenia*, *Hyalonema*, *Dactylocalyx*.

Order 2. *RADIANTIA*, Wyville Thomson (=Corticata, O. Sdt. in part). Globular, tuberous, or branched sponges, supported by regular radiating sheaves of long siliceous spicules, and invested with a more or less dense cortical layer, often containing spicules of special and characteristic forms.

Suborder 1. *Corticata* (=Corticata, O. Sdt.). Cortical layer dense and well defined. •Examples: *Tethya*, *Geodia*, *Placospongia*.

Suborder 2. *Leptophlea*, Wyville Thomson. Cortical layer consisting of a thin, almost membranous, sheet of soft sarcode. Examples: *Tisiphonia*, g. n., *Stylocordyla*, g. n. [these new genera are not described].

Order 3. *HALICHONDRIIDA*. Sponges tuberous, branching, cup-shaped, irregular, or incrusting, without any definite cortical layer. The sarcode is abundant, consistent, and in all cases is supported by a considerable amount of horny matter, which is fibrous, granular and diffused, or in the form of more or less distinct membranous expansions. The sponge frequently contains an abundance of siliceous spicules variously arranged.

* The italics indicate some of the chief emendations.

Suborder 1. *Halichondrina*, Lieberkühn. Sarcodæ abundant, usually consistent; the horny matter is granular or membranous, but is never in the form of a network of solid horny fibres. The skeleton consists mainly of siliceous spicules, which are usually essentially of the same form in all parts of the sponge. In one family, the *Esperiadæ*, the sarcodæ is soft, and the spicules are of two distinct types. Examples: *Halichondria*, *Spongilla*, *Esperia*.

Suborder 2. *Gumminina*, O. Sdt. Sponge-substance compact; skeleton of fine densely interwoven horny fibres. Siliceous spicules in some of the genera. Examples: *Gummina*, *Corticium*.

Suborder 3. *Spongina*, Lieberkühn. Skeleton an elastic, wide-meshed network of anastomosing horny fibres, frequently containing foreign bodies, such as grains of sand and spicules of other sponges, and occasionally having siliceous spicules developed within them, but never associated with free siliceous spicules in the sponge-mass. Examples: *Spongia*, *Chalina*, *Dysidea*.

Order 4. ARENOSA (= *Arenospongia*, Gray). Sponge consisting of a disk of agglutinated sand, with a series of diverging spicules at the circumference of the disk, and with a pencil of similar spicules at the mouth of the oscules on the upper surface of the disk. Example: *Xenospongia*.

Order 5. HALISARCINA. Sponge destitute of either siliceous or horny support. Example: *Halisarca*.

Holtenia carpenteri, gen. et sp. nov., W. Thomson, Proc. R. S. p. 285, and Phil. Trans. p. 702. Sponge-body nearly globular or oval; outer wall consists of an open, somewhat irregular network of large separate siliceous spicules; these are formed on the sexradiate stellate type; usually only five rays are developed, the sixth being represented by a tubercle. The four secondary branches of the spicule spread on one plane, the surface of the sponge; the fifth dips down into the sponge-substance; smaller stars, formed by the radiation of smaller spicules of the same class, occupy the spaces between the rays of the larger stars. The sarcodæ forms a very delicate network, with minute inhalant pores, over the entire mass; at the top of the sponge is a large osculum; around this, and over the upper third of the sponge, sheaves of rigid spicules project, forming a kind of fringe; over the lower third of the body fascicles of enormously long delicate siliceous spicules pass out from the sarcodæ-columns of the sponge-mass. The sarcodæ of the outer wall and of the wall of the oscular cavity, is loaded with minute quinquerradiate spicules and amphidisci. *Hab.* Lat. 59° 36' N. and long. 70° 20' W.

Phoronema, gen. nov., Leidy, Proc. Acad. N. S. Philadelphia; Biolog. & Microscop. Depart. 1868 (December), pp. 9-11, and Monthly Micr. Jour. 1869, p. 367. Sponge-body oblong ovoidal, narrower end upward; lower extremity rather cylindroid and rounded truncate; upper extremity conical; apex truncate, with a large circular orifice, four lines in diameter, which descends into the axis of the sponge for almost half its depth, and then appears to divide into several branches. The surface of the sponge exhibits an intricate interlacement of stellate siliceous spicules, including a tissue of finer spicules; at the lower end of the sponge fine sand appears to be introduced as an element of structure; from this end project a number of distinct or separate tufts of siliceous spicules. In the specimen examined there are fifteen tufts projecting around two thirds of the extremity of the sponge; in the

remaining third there are ten orifices from which tufts appear to have been extracted. Length of sponge $4\frac{1}{2}$ inches, diameter at middle 22 lines, at lower end 15 and 17 lines, at upper end 8 lines; length of tufts of spicules 2 inches. *P. annæ*, sp. n., Leidy, *l. c.* p. 10, locality Santa Cruz.

It is possible that this may be the same genus as that described by Wyville Thomson as *Holtenia*, of which it would have the priority, as his memoir on *Holtenia* was only received at the Royal Society on the 16th June, 1869; and a supplement in the memoir is dated Nov. 19, 1869; but no allusion is made by Wyville Thomson to Leidy's genus.

Hyalonema mirabilis. Dr. J. E. Gray, *l. c.* p. 195, again calls attention to the remarkable form of the spicules in the stem of this species, the concentric coats of which are quite *sui generis*; but Claus describes the same concentric coats in the spicules of *Euplectella*, as Dr. Gray acknowledges. *Ann. & Mag. N. Hist.* ser. 4, vol. iii. p. 323.

Discodermia polydiscus, Bocage, = *Dactylocalyx polydiscus*, Bwk., Bocage, *l. c.* p. 160, pl. 11. fig. 1. Prof. Bocage forms this genus for species of *Dactylocalyx* in which the external layer consists of superimposed disks. Coasts of Portugal and West Indies.

Podospongia lovenii, g. et sp. nov., Bocage, *l. c.* p. 159, pl. 10. fig. 1, coasts of Portugal, = *Lovenia borealis*, Bocage. *Vide Zool. Record*, 1868, p. 584.

Reniera grayi, sp. n., Bocage, *l. c.* p. 160, pl. 10. fig. 2, Coasts of Portugal.

Tethya lyncurium, Lam. Vaillant, *l. c.*, records the results of many experiments made on this species, and comes to the conclusion that either the cortical or medullary substance can, when isolated the one from the other, produce the one the other, but that the vitality of the former is greater than that of the latter substance. The grafting of individuals in this species is accomplished with facility; but the attempts to graft on it species of the genera *Sycon*, *Halichondria*, *Reniera*, and *Polymastia* failed. This species is also described in great detail by Carter, *l. c.* p. 7, pl. 2. figs. 1-6.

Tethya dactyloidea, sp. n., Carter, *l. c.* p. 15. Sea, south-east coast of Arabia, in shallow sandy bottom, near shore. This is a siliceous sponge growing erect on the sand. The woodcut shows it of natural size, with a body-pedicle and root or filamentous extension into the sand; the upper extremity has a septated vent, a vertical section of which shows a cloacal cavity and termination of excretory canals.

Tethya arabica, sp. n., Carter, *l. c.* p. 3, pl. 1. fig. 1-8, pl. 2. figs. 19, 20, south-east coast of Arabia, opposite the north-east end of the Island of Masira. Gemmule-like bodies are figured and described as occurring in this species, *l. c.* p. 20.

Geodia (Cydonium, Gray) arabica, sp. n., Carter, *l. c.* p. 4, pl. 1. figs. 9-16, south-east coast of Arabia, opposite the north-east end of the Island of Masira. Nearly allied to *G. zetlandica*.

Pachymatisma johnstonia, Bwk., is described minutely and figured by Carter, *l. c.* p. 8, pl. 2. figs. 7-18.

Placospongia melobesioides, Gray. The Recorder mentions having found this species living at Mahé, and quotes, with doubt, as a synonym, the *Acamas violacea* of Duchassaing and Michelotti. *Quart. Journ. Mic. Science*, 1869, p. 322.

CARTER, *l. c.* p. 18, objects to the term ovaria being applied to the siliceous radiate bodies met with in the corticate sponges. He calls them globular

crystalloids, and states that he has never been able to find one with any thing approaching to a central cavity.

Grayella cyathophora, gen. et spec. nov., Carter, *l. c.* p. 190, pl. 7. No distinct generic diagnosis is given; but the description of the species is very minute; and the figures are characteristic. Is not this species but one of the many forms assumed by *Papillina suberea*, Sdt.?

Latrunculia cratera, g. et sp. nov., Bocage, *l. c.* p. 161, pl. 11. fig. 2, St. Iago. This sponge was found in some quantities of different shades of brown, implanted on the stems of *Gorgonia* at the bifurcation of their branches. The surface is mammillated, on each of the elevations there is an osculum; the outer sarcode-layer is furnished with very remarkable spicules, compared to chessmen; the internal spicules are acerate.

Desmacidon copiosus, sp. n., Bowerbank. See Norman, *l. c.* p. 299, Jersey.

INFUSORIA.

Euglena tuba, sp. n. Carter, *l. c.* p. 249, pl. 17. fig. 13, freshwater, Island of Bombay. The anterior portion of the cyst is extended into a tubular prolongation, which ends in an open trumpet-shaped expansion.

Uvella bodo, Ehr. Carter, *l. c.* p. 250, gives an interesting account of this form, which he appears inclined to believe to be very nearly allied to *Euglena viridis*.

Volvox. Carter, *l. c.* p. 257, makes some very important remarks on the forms appertaining to this genus. He considers *V. aureus* (fig. 2, tab. 4, Ehr. Infus.) to be *V. globator* after impregnation of the spore-cells; fig. 11, tab. 3. *Uroglena volvox*, to represent the small or spermatic cell, which, having passed into spermatozoa, has become liberated from the parent, but still swims about entire in an abortive form. Fig. 8, tab. 3, *Sphaerosira volvox*, is the male cell of *V. globator*, with most of the spores passing into spermatozoa. Fig. 7, tab. 3, *Syncrypta volvox*, is probably the spermatic cell of *Volvox* in different degrees of division. Fig. 9, tab. 3, *Synura uvella*, appears to be another form of the divided spermatic cell of *V. globata*, in which the spermatozoa are fully formed and have more or less left the cell, to which their tails still adhere.

Eudorina elegans. Carter, *l. c.* p. 254, regards *Gonium pectorale*, *G. punctatum*, and *G. tranquillum* as but cell-group forms of this species. He also thinks *Pandorina morum* and *P. hyalina* to be large parasitized cells of the same, and Perty's *Synaphia dujardinii* to be but an abnormal form, where several of the cells here and there take on the spermatoid development, while the rest become abortive.

Glenoclosterium varians, g. et sp. n., Carter, *l. c.* p. 258, pl. 17. fig. 16. Cell-wall fusiform, spindle-shaped, elongate, acuminate, transparent. Body more or less inflated, and more or less confined to the centre, filled with protoplasm, granules, and chlorophyll, presenting a nuclear cell in the centre, a red eye-spot at one end, and four or more large chlorophyll- and starch-bearing utricles arranged longitudinally, decreasing in size from the centre towards each extremity. Extremities attenuated, pointed, colourless, transparent. Size 1-257th of an inch long, by 1-1800th broad in the centre. *Hab.* Island of Bombay.

Aporca ambigua, Bailey. Archer calls attention to a form referable, he thinks, to this species of Bailey. Quart. Journ. Mic. Science, 1869, p. 421.

Vasicola ciliata, gen. et. sp. nov., Tatem, *l. c.* p. 117, pl. iv. figs. 1-7. No generic or specific diagnosis of this Infusorium is given. It occurs both as a free swimming and as an invaginated form. The investing sheath is firm, hyaline, vase-shaped, transversely marked. The animal is ciliated all over. Oral aperture is large, and the raised margin is edged with long cilia. Habitat unknown.

Cothurnia operculigera, sp. n., Kent, *l. c.* p. 290, pl. 12. figs. 1-4, Victoria Docks, London.

Euplotes paradoxa, sp. n., Kent, *l. c.* p. 292, pl. 12. fig. 5, Victoria Docks, London.

Acineta socialis, sp. n., Kent, *l. c.* p. 292, pl. 12. figs. 6, 7, Victoria Docks, London.

RHIZOPODA.

Mr. ROBERTSON gives a list of thirty-five species of Foraminifera taken in about forty fathoms, seven miles south-east of the Eddystone. Rep. Brit. Assoc. 1869, p. 91.

Clathrulina elegans. Greeff, *l. c.* p. 467, and tab. 26. figs. 1-7, describes this beautiful form at great length, slightly amending the specific diagnosis. He mentions two forms of reproduction met with. He argues that both the perforate globe and stipes are siliceous, as they withstand the action of strong sulphuric acid. He also puts forward the somewhat strange suggestion that the formation of colonies by several individuals being attached to each other by means of their stipes, may be in connexion with a sexual reproduction.

Acanthocystis pertyana, sp. n., Archer, *l. c.* p. 252, pl. 16. fig. 1, counties Wicklow and Westmeath.

Acanthocystis viridis (Ehrbg.). Greeff, *l. c.* p. 481, tab. 26. figs. 8-17, describes and figures this species. Is not this *A. turfacea*, Carter? and is not *A. turfacea*, Carter, quite different from *Actinophrys viridis*, Ehrbg.? Greeff quotes *Raphidiophrys viridis*, Archer, as a synonym; but there is really no similarity between these genera.

Acanthocystis viridis. It may be doubted whether this is not the *A. turfacea*, Carter, and a totally different form from the *Actinophrys viridis*, Ehrbg. For an account of the species, see Grenacher, *l. c.* p. 289.

A. spinifera, sp. n., Greeff, *l. c.* p. 493, tab. 27. fig. 20-23. Some specimens were found with minute yellow bodies in their interior, which the author believes, though he has not absolutely seen the change from one stage to another, to be the young undeveloped forms represented in figures 24 to 28; the three latter of which certainly represent *Diplophrys archeri*, Barker (*vide* Zool. Record, 1868, p. 589). He further thinks the form represented in fig. 29 to be but a further stage of *Diplophrys*; but this is surely *Cystophrys oculæa*, Archer; and it seems scarcely probable that three such forms should be only stages in the development of *A. spinifera*.

A. pallida, sp. n., Greeff, *l. c.* p. 489, tab. 27. fig. 19. A pale form, perhaps, of *A. turfacea*.

Astrodisculus, gen. nov., Greeff, *l. c.* p. 496. Body of two distinct regions: the outer hyaline, porous, siliceous, not acted on by sulphuric acid; no external processes; the inner a sarcode mass, containing a round, smoothly

bounded central capsule, and sending out, through fine openings in the outer coat, linear pseudopodia. *A. minutus*, sp. n., Greeff, *l. c.* p. 497, fig. 30; *A. ruber*, sp. n., Greeff, *l. c.* p. 497, fig. 31; *A. flavescens*, sp. n., Greeff, *l. c.* p. 499, fig. 32; *A. flavocapsulatus*, sp. n., Greeff, *l. c.* p. 499, fig. 33; *A. radians*, sp. n., Greeff, *l. c.* p. 500, fig. 36. This latter species is described as provided with acicular, very slender radial spicula.

Hyalolampe fenestrata, gen. & spec. nov., Greeff, *l. c.* p. 501, fig. 37. This is the same as Archer's *Pompholyxophrys fenestrata*, which name has the priority. The Quart. Journ. Mic. Science containing Archer's papers were published on the 1st July and 1st October, 1869. The Archiv f. mikroskop. Anat. with Greeff's paper was published about the 15th Oct. 1869.

Rhaphidiophrys, gen. nov., Archer, *l. c.* p. 255, pl. 16. fig. 2. Composed of two distinct sarcode-regions, the inner forming one or several rounded individualized definitely bounded hyaline sarcode-masses, each containing a sub-peripheral stratum of colouring-granules, the outer more or less coloured, soft, and mobile, bearing numerous elongate irregularly scattered siliceous spicules, acute at both ends, and forming a common investment to the inner globular masses, which latter give off long, slender, non-coalescing pseudopodia. *R. viridis*, sp. n., *l. c.* p. 255, counties Cork, Westmeath, and Wicklow. See also Zool. Record, 1867, p. 677.

Pompholyxophrys, gen. nov., Archer, *l. c.* p. 386 (1st October, 1869) = *Hyalolampe*, Greeff, *l. c.* p. 501 (15? Oct. 1869). Composed of two distinct sarcode-regions; the inner a dense, coloured, globular sarcode-mass; the outer colourless, bearing a number of separate hyaline globular structures; these dispersed in a more or less thick layer around the inner globe, which latter gives off more or less elongate, slender, non-coalescing pseudopodia. *P. pumicea*, sp. n., Archer, *l. c.* p. 386, pl. 16. figs. 4, 5, = *H. fenestrata*, Greeff, *l. c.* p. 501, pl. 27. fig. 37, Ireland, counties Cork, Kerry, Westmeath, and Wicklow (Archer); near Bonn (Greeff).

Cystophrys, gen. nov., Archer, *l. c.* p. 259, pl. 17. figs. 1-3. Rhizopod changeable in figure. Sarcode-mass of but one character, and containing, immersed therein, more or less numerous cell-like structures, and giving forth slender marginal pseudopodia. *C. hückeliana*, sp. n., Archer, *l. c.* p. 259, pl. 17. fig. 1, 2, county Wicklow; *C. ocullea*, sp. n., Archer, *l. c.* p. 265, pl. 17. fig. 3, same locality.

Heterophrys, gen. nov., Archer, *l. c.* p. 267, pl. 16. fig. 3, and pl. 17. fig. 4. Outer region of a palish buff colour, or nearly colourless, mobile, not homogeneous, but showing various lines, dots, granules, and inequalities, frequently changing in aspect, and its margin fading off indefinitely, and giving off indefinite, variously figured marginal processes; inner region one or several orbicular sarcode-masses of a light bluish-coloured tint, enclosing various opaque granules, colourless, and of a brownish colour, and sometimes chlorophyll-granules, its margin sometimes exhibiting one or more pulsating vacuoles, and giving off numerous linear, colourless, graniferous, non-coalescing pseudopodia; the compound groups sometimes cohere for a length of time, finally conjoined only by the persistent mutual fusion of the pseudopodia extending from one to another. *H. myriopoda*, sp. n., Archer, *l. c.* p. 268, pl. 17. fig. 4, county Wicklow; *H. fockii*, sp. n., Archer, *l. c.* p. 270, pl. 16. fig. 3, moor-pools in counties Cork, Kerry, Wicklow, and Westmeath.

Diaphoropodon, gen. nov., Archer, *l. c.* p. 394, pl. 20. fig. 6. Rhizopod

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a nucleus, giving off rhizopodial processes of two kinds,—one from the anterior end, long, pellucid, and retractile; the other given off from the body, short, pellucid, and persistent, enclosed in a test formed of foreign particles minutely agglomerated. *D. mobile*, sp. n., Archer, *l. c.* p. 394, pl. 20. fig. 6, Ma-lur Valley, co. Wicklow; very rare.

Aphitrema wrightianum, gen. and sp. nov., Archer, *l. c.* p. 397, pl. 20. figs. 4, 5. (Diagnosis not given in the October number.)

Amoeba socialis, sp. n., Archer, *l. c.* p. 390, pl. 20. figs. 7–11.

Amœba. Mr. Tatem (*l. c.* p. 352) describes some forms of *Amœba* with a fine long undulating flagellum. *A. villosa* abounded in the water in which this form occurred, to the exclusion of almost every other known species; and the author suspects the flagellated forms to be but some phase of *amœba* life.

Amœba quadrilineata, Carter, from India, described as Irish by Barker. *Trans. Journ. Mic. Science*, 1869, p. 94.

Thalassicolla (*Sphærozoum*) and *Collosphæra*. Wallich, *l. c.*, suggests that these genera are the same: he is not prepared to allow that this genus forms a connecting-link between the Sponges and Foraminifera:—first, because the mode of siliceous deposit characteristic of the sponges is not met with in the *Thalassicollidæ*, but in the *Dictyochidæ*, as he has shown elsewhere; and, secondly, because the presence of a nucleus, and the much more highly differentiated condition of the rest of the sarcode-substance, attest the existence of a more advanced type in *Thalassicolla* than in the Foraminifera.

Thalassicolla nucleata. Macdonald, *l. c.* p. 149, mentions that this species gives out a phosphorescent light on being irritated.

Calodium. Wallich (*l. c.*) describes the following new species:—*C. caudatum*, *l. c.* p. 109, pl. 3. figs. 7, 8, 9, 10, 12. Several well-marked varieties of *C. caudatum*, Dally, are also described and figured. *Hab.* North Atlantic, depths varying from 371 to 2000 fathoms.

Protocystis, g. n., Wallich, *l. c.* p. 109. Shell siliceous, entire, hyaline, globular; surface of shell fitted with minute circular depressions. *P. auspiciosa*, sp. n., Wallich, *l. c.* p. 110, pl. 3. figs. 15–17, North Atlantic, 871 fathoms; *P. cuspidata*, sp. n., Wallich, *l. c.* p. 110, pl. 3. fig. 19 (this species is called by the explanation of the plate *P. spinifera*), North Atlantic, 2000 fathoms.

Dr. Haeckel's Monograph of Monera will be found translated in the Quarterly Journal of Mic. Science for 1869, pp. 27–42, 113–134, 219–232, 327–342, 399 & 400. It is to be noted that while the figures are reduced to about one-half the size of the original figures, the dimensions given in the descriptions of the plates are the same as in the original memoir, and are thus not reduced by one-half.

END OF THE SIXTH VOLUME.

